S. HRG. 106–504

HABITAT CONSERVATION PLANS

HEARINGS

BEFORE THE

SUBCOMMITTEE ON FISHERIES, WILDLIFE, AND DRINKING WATER

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED SIXTH CONGRESS

FIRST SESSION

JULY 20, 1999
JULY 21, 1999
OCTOBER 19, 1999
NOVEMBER 3 1999

ON THE DESIGN AND IMPLEMENTATION OF HABITAT CONSERVATION PLANS TO PROTECT ENDANGERED SPECIES, AS ADMINISTERED BY THE U.S. FISH AND WILDLIFE SERVICE AND THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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OPENING STATEMENTS

WITNESSES

HABITAT CONSERVATION PLANS

TUESDAY, JULY 20, 1999

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON FISHERIES, WILDLIFE, AND DRINKING WATER,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:32 a.m., in room 406, Senate Dirksen Building, Hon. Michael D. Crapo (chairman of the subcommittee) presiding.

Present: Senators Crapo, Reid and Chafee [ex officio].

OPENING STATEMENT OF HON. MICHAEL D. CRAPO, U.S. SENATOR FROM THE STATE OF IDAHO

Senator CRAPO. This hearing will come the order.

This is a hearing of the Subcommittee on Fisheries, Wildlife, and Drinking Water on the science of habitat conservation plans. We intend to have 2 days of hearings on this critical issue. This begins the series of important hearings.

Habitat conservation plans were authorized in 1982 through amendments to the Endangered Species Act to address problems that effectively precluded landowners from conducting lawful activities on lands where listed species were present. These plans have become win/win solutions for both species and landowners. Habitat needed for the conservation of threatened and endangered species is managed in a more sensitive manner, while providing landowners certainty about carrying out activities on their property.

Nearly 250 of these plans have been negotiated to date, and approximately another 200 are in progress. Habitat conservation plans have been praised by conservationists and private property rights advocates alike. Clearly, they are and will continue to be an innovative way to address species conservation and an important tool for preserving the rights of private property owners.

But, like many innovations, improvements are needed. Groups on both resource and conservation sides of the debate have raised concerns about policy and science of HCPs. They have been critical of the protracted and expensive process of negotiating HCPs and the adequacy of science used to develop HCPs, among other things.

These are valid concerns that must be addressed as more land is managed under habitat conservation plans. We must be able to protect species based on reliable, scientific information. At the same time, we must be able to protect private property by assuring

landowners that the Federal Government won't reopen negotiations on plans each time a new issue arises.

As I mentioned, this is the first in a series of hearings. Today and tomorrow we are going to focus on the issue of science, perceived flaws in the science of HCPs, the gaps in the data, and how scientists and land managers address the question of scientific uncertainty.

Wildlife managers and landowners do not have the luxury of waiting decades for an exhaustive scientific record to be compiled. In fact, this is quite probably an unrealistic objective when it comes to science. Wildlife fisheries managers and landowners are forced to make decisions regularly about how to manage or develop a particular tract of land without perfect knowledge of a species. They do this in an attempt to conserve species, while at the same time deriving an economic benefit from the land. This is the crux of the subcommittee's hearings on the science of HCPs.

Over the next 2 days, we will hear from witnesses who have been directly involved in the development of habitat conservation plans and who have conducted studies on many of the plans that are completed and being implemented. Making habitat conservation plans work better for species and landowners is an extremely important objective for this subcommittee. I look forward to listening to and learning from our witnesses over the next 2 days in an effort to make the much-needed improvement in habitat conservation plans.

At this time, I'd like to turn to the chairman of the full committee, Senator Chafee, for his remarks.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator CHAFEE. Thank you very much, Mr. Chairman.

I want to commend you for holding these hearings on the science of habitat conservation planning. I think it is splendid you are doing this, and I must say you've got a very, very distinguished group of witnesses, not only today but tomorrow, likewise, so I congratulate you.

I note in your remarks that you pointed out some statistics that are very important—that some 245 HCPs since 1995 have been approved, with another 200, as you mentioned, in the pipeline. And it is my understanding that over six million acres are now being managed under HCPs, with 75 different species being protected. So this is a big operation that we're involved with under the Endangered Species Act.

Mr. Chairman, because of time constraints, I would just ask that the balance of my statement might be put in the record. I look forward to hearing the witnesses today.

Senator CRAPO. Without objection.

[The prepared statement of Senator Chafee follows:]

STATEMENT OF SENATOR JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Thank you, Mr. Chairman. I want to commend you for holding these hearings on the science of habitat conservation planning. This is an important issue and one that I believe is directly relevant to the continued success of the Endangered Species

Act (ESA). We all often invoke the need for good science in decisionmaking; this hearing takes an important step toward *improving* the science that we use.

Habitat conservation plans (HCPs) are a true success story under the Endangered Species Act. They have played a critical role in bringing landowners to the table to help conserve hundreds of species at risk, both those listed as threatened or endangered under the ESA and a myriad of others.

I understand that the Fish and Wildlife Service and the National Marine Fisheries Service have approved over 245 HCPs since 1995, with another 200 in the pipeline. Those numbers are impressive. Each new HCP represents a commitment to preserve habitat or manage resources to benefit species. Over 6 million acres are now being managed under HCPs and over 75 different species are being protected. Perhaps just as importantly, each new HCP provides another landowner with needed regulatory relief from the strict prohibitions of the ESA.

I appreciate, however, that HCPs have not been perfect; they can and should be improved. There are certainly legitimate questions about the quality and quantity of science available to develop and implement many HCPs. Do decisionmakers have enough reliable information on which to base decisions about resource use and appropriate conservation measures in HCPs? In the absence of that information, how do they address the scientific uncertainty? How do they balance the risk to the species and the need for landowner certainty? And how do they encourage the continued collection of information and incorporate that information to improve the HCP?

To its credit, the Administration has, over the past few years, implemented a series of reforms to try to address some of these issues and make HCPs work better. I applaud their efforts, but I also believe that the underlying scientific and policy questions will benefit from a broader debate through the legislative process.

As you know, the ESA reform bill that we drafted in the last Congress included a number of provisions intended to enhance the HCP program, but many of the issues that you are addressing in these hearings were not yet ripe. They are now. Your leadership on these issues, therefore, is both timely and critical. I hope that with these and other hearings on HCPs, we can improve on the work that we began on HCPs in the last Congress.

I look forward to hearing from the distinguished witnesses this morning and their perspectives on how the science of HCPs can be improved.

Senator CRAPO. We expect several of our other Members to arrive from both sides, and when they do we will see if there is an occasion for them to make an opening statement, but without any further delay let's begin with the panel.

I believe you have already been advised that we would like you to keep your remarks to 5 minutes, if possible, so that we can have as much time as we can for questions and answers and interaction.

We will begin with Professor Stuart Pimm from the University of Tennessee.

Professor Pimm, please go ahead.

STATEMENT OF STUART PIMM, PROFESSOR, UNIVERSITY OF TENNESSEE, KNOXVILLE, TN

Dr. PIMM. Thank you.

I greatly appreciate your giving me the opportunity to discuss the issue of habitat conservation plans. The scientific community particularly welcomes your leadership on this issue, because it is quantitatively the most important aspect of endangered species protection.

Between one-half and two-thirds of endangered species are not found on Federal land. We Americans cannot adequately protect our natural heritage unless we protect species on private, State, county, and other lands encompassed by HCPs.

The rapid expansion of HCPs within the last 5 years or so provides unrivaled opportunities for the necessary stewardship. This is both an exciting time and a challenging one as scientists consider the progress to date and how to improve future plans.

Research confirms the old adage that one should not put all of one's eggs in one basket. Most endangered species have become endangered because we force them into a few baskets—a limited amount of space where they are now especially vulnerable to change, both natural and human-caused.

The first advantage of HCPs is their potential to minimize risk by protecting species in more than a few places. Spreading a species' risk of extinction across many places will often be a better bet than intensive scientific study and visionary management in just one place. Most of us manage our financial investments by spreading risk in much the same way.

The second advantage is that at least 60 percent of endangered species need active habitat management to survive. Without control of alien weeds or without periodic controlled fires, some species will succumb if all we do is to put a fence around them.

The HCP process can encourage appropriate habitat management, and do so over increasingly large areas.

The experience to date on HCPs has been that some have been better than others. How could it be otherwise? The analysis of HCPs undertaken by the National Center for Ecological Analysis must surely be viewed in this light. I believe that the report's most serious criticism argues that many HCPs may be based on the best available scientific data, but that those data may not be sufficient.

To me, the report's most important omission is that it does not fully address this tradeoff between having many good plans versus a few superb and omniscient ones. Limited resources will always mean that one cannot have many perfect plans.

Of course, the NC's report raises the possibility that we may have many plans, but poor ones. While I may manage my investments by spreading risk across many stocks, that does not mean I accept a preponderance of poor ones.

The report notices many numerous deficiencies that need to be addressed by future plans. Its greatest strength is its unified assessment of the plans. Its most important recommendation is that there should be a central repository of plans to provide models and comparisons for those who will produce plans in the future.

Criticisms of inadequate data need to be viewed in the context of what is practical. I have no personal experience of HCPs, but I have extensive experience of section 7 consultations between the Fish and Wildlife Service and other Federal agencies. I believe the parallels to be useful. Many of those consultations are informal, friendly, and the issues are quickly resolved. I suspect that many HCPs may be relatively uncontroversial. One size does not fit all, however. Some section 7 consultations are difficult, contentious, and require major investments of resources. Surely HCPs will be likewise.

It was to address different degrees of ecological uncertainty that Dr. Gary Meffe of the University of Florida and I wrote to Senator Chafee in January of last year. Our letter was co-signed by more than a dozen scientists, all with extensive experience of conservation issues. We offered the following recommendations:

First, the scientific rigor underlying the plan should influence the relative length of the accompanying assurances. The long-term assurances to accompany plans that encompass all or a very large

portion of a range of a species, the rigor of the underlying science is especially important.

Second, any No Surprises policy should be crafted in a way to encourage identification in the plan of possible future contingencies and a means of adapting management in response to them.

Third, and finally, the potential conservation benefit of a plan ought to influence the extent and duration of the assurances provided.

Thank you for your attention.

Senator CRAPO. Thank you very much, Dr. Pimm.

Next we will turn to Dr. Peter Kareiva. Dr. Kareiva is from the National Marine Fisheries Service in Seattle, WA.

Doctor.

STATEMENT OF PETER KAREIVA, NATIONAL MARINE FISHERIES SERVICE, SEATTLE, WA

Dr. KAREIVA. Thank you.

I am here to speak to you about a large national study of habitat conservation plans which I supervised while a professor in the zoology department of the University of Washington. Since this was before I worked for NOAA, these findings do not represent the views of NOAA.

First, about the study, the study was recently completed, with a posting of all of its results and data on a publicly available website in January 1999. We used volunteer labor of 119 biological researchers from eight premier research universities—Yale University, University of California Berkeley, Santa Cruz, Santa Barbara, University of Washington, University of Virginia, Florida State, NC State. The study was supported by the American Institute of Biological Sciences and National Center for Ecological Analysis and Synthesis.

We examined 208 HCPs that had been approved as of August 1997. Of those 208, we took a sample of 43 HCPs for which we attempted to read every supporting document and every relevant article in the scientific or agency literature that might provide pertinent data. Often, this amounted to reading several thousand pages of documents and tables.

The data base we produced contains nearly 90,000 entries. This is the largest quantitative study of HCPs yet produced, and in some sense is the first quantitative study.

First, major conclusions of the study. No. 1, we frequently lack adequate data regarding the most basic biological processes pertaining to endangered species, such as: What is the rate of change in their populations locally or nationally? What is their schedule for reproduction? What is happening to their habitat?

Second, given the data available, HCPs generally make the best use of the existing information in a rational manner, and there is evidence that the quality of HCPs with respect to using science has been steadily improving.

Third, however, for many HCPs scientific data are so scant that they really should not be called ''science based.'' There is no agency failing here nor any failing of individual preparers of HCPs. No one could do a better job, given the limited sources and poor quality of information that are available.

Fourth, very few HCPs included in this study were designed to include adequate monitoring of populations or habitats in a way that could at least allow us to learn from our actions and create data bases that could inform future decisions. This is a golden opportunity that is being missed.

The bottom line: Everything preceding in my testimony has had very little of my personal emphasis and reflects a straightforward condensation of the long National Center for Ecological Analysis report, which is available at a website.

I want to end by leaving you with what I see as the bottom line of this research regarding science and HCPs. Sometimes it is too easy to get lost in the details and lose site of the big message. I wish to emphasize, however, that the bottom line is my personal conclusion regarding what I think are the most important aspects.

First, the absence of data bases that track patterns of population change and habitat for threatened endangered species is a national embarrassment. Often, these data exist somewhere in a file drawer, in a researcher's notebook, or scattered among several publications, yet, in this age of computers and the internet, our data bases of information on basic natural history of endangered species are primitive.

Many of us are aware of how much national or even State computerized criminal data bases have revolutionized law enforcement. The same should happen with resource management and endangered species. Without such data bases, we cannot know where are the safe places or the dangerous places for endangered species. We need to be able to go on line and quickly find out what is happening with endangered species in terms of hard numbers: How many individuals? Where? How many acres of habitat left? How much of the remaining habitat exists in publicly owned lands? Investment in such a data base would be in the best interest of all parties so we can at least have access to the most current information before we begin debating consequences.

Second, we do not even have a national data base that tracks the paper administrative record of HCPs. In other words, at this point one cannot get on the internet and find a list of all HCPs that address a particular species or the total acreage of land for a species that is covered administratively by the HCP process. This is analogous to a doctor prescribing you medicine but not knowing what other prescription drugs you may be taking.

Third, in light of all this scientific uncertainty, if HCPs are to be pursued in the interest of balancing development and environment, then minimally HCPs should be required to include rigorous peer reviewed monitoring programs that allow us to learn from them.

Mr. Chairman, thank you for this opportunity to testify. I know the HCP process is being seriously improved. Moreover, one reason I came to work as a scientist for the Federal Government and especially National Marine Fisheries Service is it is easy to throw stones from an ivory tower and criticize how the Government does its resource management science, and I have thrown some of those stones, but I wanted to see if I could make the science work any better before I continued to criticize the jobs others were doing.

I look forward to answering questions.

Senator CRAPO. Thank you very much, Dr. Kareiva.

Finally, Dr. Dennis Murphy of the University of Nevada, Reno. Dr. Murphy.

STATEMENT OF DENNIS MURPHY, UNIVERSITY OF NEVADA, RENO, NV

Dr. MURPHY. Thank you very much.

Just as introduction, I should tell you that my background with HCPs started with the very first one on San Bruno Mound back in 1980 and has continued through work right now on the Nation's largest ongoing HCP, which is the 5.5-million-acre Clark County HCP in the State of Nevada.

I would like to say that the science that is being used to inform decisions under the Federal Endangered Species Act is a dynamic science. One would be hard-pressed to find more combative and constructive exchange in conservation biology than that between the supporters of the de-listing of grizzly bear populations in the northern Rocky Mountains and their opponents. Both sides have mustered compelling technical arguments to support their politically opposed cases. Our understanding of bears and their biology has immensely grown around that debate.

Likewise, both science and stewardship techniques have contributed to saving the California condor and the black-footed ferret, and, as you know, have brought the peregrine falcon and bald eagle back from the brink of extinction.

Moreover, one needs to look no further than the Fish and Wildlife Service's own recovery plans for the desert tortoise and northern spotted owl to identify path-breaking analysis and application of cutting-edge concepts from population biology. All this, of course, suggests that science is at the center of our efforts to save biodiversity, but the real question is: Are these examples the exceptions or the rule?

When it comes to science and the Endangered Species Act, unfortunately, they are the exceptions. Most recovery plans for listed species lack even the sparest description of the mechanics by which imperiled species perpetuate themselves. By and large, we know vanishing little about our species at risk and realistically how we might attempt to save them.

Now, while that state of affairs is lamentable, it is not wholly unexpected, since academic scientists are only now developing the tools necessary to understand the population dynamics of species and to predict with some accuracy their fates.

Very pertinent to these hearings today and tomorrow is that there is another suite of species that we may have lost the opportunity to save—species that would have benefited from good science. The unfortunate Houston toad provides a most poignant example. It was one of the earliest species listed under the 1973 Act. The application of science may well have saved it, but a flawed hypothesis about the habitat factors that support the species, a lack of responsive studies in the face of obvious declines, and poorly designed monitoring schemes have combined with land development to push the listed species toward extinction. The Houston toad, it appears, will be lost.

Against this background, we assess science and HCPs. My guess is—my conclusion that we need better and more science to produce

more effective, efficient, and accountable HCPs is shared by almost all my academic colleagues. Where I may part view with at least some of them, and certainly with some environmental organizations, is on how much more science is necessary and how it can be achieved.

I think we can create much better HCPs with not a whole lot more science, but that science must be focused, strategically directed, and creatively engineered.

Why don't we have a clear science agenda for HCPs? Certainly, to start with, the academic scientists have failed to deliver the realistic, what we might call "parsimonious" science necessary to inform HCPs. The Departments of Interior and Commerce, in their own turn, have failed to seek such a science, responding their HCP guidelines that cookbook guidance is not possible since the biological analysis demanded for each HCP, for each listed species, is unique and cannot be codified.

I sort of like that idea that the work that I do is so special that only a specialist can do it, but, frankly, the assessment is just not true.

Stephen's kangaroo rats, Tecopa pupfish, indigo snakes all share a multitude of biological characteristics that allow for a common theme to their conservation.

I think as soon as we are released from our artificial and unrealistic view of how much novel scientific information is necessary to inform HCPs, we can begin to develop the exportable toolbox of scientific techniques that are necessary to assist our best conservation intentions.

Tougher will be where multiple imperiled species are distributed across extensive landscapes and where they run into economic expediency, what Secretary Babbitt has called "environmental and economic trainwrecks." Under those circumstances, we're going to need the most creative engagement of available scientific information.

I recommend that the National Research Council cooperate with the Departments of the Interior and Commerce to develop science guidelines for conserving multiple species and natural communities on lands, both public and private. Those guidelines must recognize that HCPs have timetables driven by political and economic realities. Those guidelines must recognize that indicator or surrogate species will have to be identified which can allow us simple insights from complex natural systems. And those guidelines must encourage habitat conservation planners to learn by doing, to manage adaptively using the best current information.

To that point, we cannot hold up our HCPs waiting for all the answers to our most pressing technical questions. Frankly, the courts may not let us. However, we can engineer our plans to take advantage of emerging information and scientific breakthroughs.

I support adaptive management, even though I am a fan of this Administration's No Surprises policy, which many contend conflicts with adaptive management. Incorporating both adaptive management principles and No Surprises assurances in the language of a reauthorization bill should be a bipartisan goal of this committee.

Now, I don't suggest, in conclusion, that the greater public must pay the private sector to obey the law, but an infusion of Federal

dollars will inevitably be necessary when reasonable exactions of habitat for private landowners falls short of the pressing needs of species, or when unforeseen circumstances put imperiled species at unexpected additional risks.

HCPs are usually the results of a crafted deal. They allow for a public concerned about threatened and endangered species to take private property without fully compensating landowners. Lubricating that process with strategically directed dollars will be good for species, good for landowners, and good for the rest of us.

I thank you for your time.

Senator CRAPO. Thank you very much, Dr. Murphy.

We'll turn first to the chairman of our committee, if you have any questions.

Senator CHAFEE. No questions at this point.

Senator CRAPO. OK. I will proceed then.

Let me go back to you and start out with you first, Dr. Pimm.

Do you believe it is possible to generate better science and then, in turn, cause better HCPs in a relatively short time?

What I'm getting at is the issue here of how long it takes to generate the necessary science for adequate HCPs.

Dr. PIMM. When one considers that HCPs have been around only a very short period of time, I think it is clear that there has been a huge amount of progress made in looking at those plans and looking at our data needs, figuring out what we need to know, what we probably don't need to know, and therefore improving the process.

And I believe that Dr. Kareiva's report is a huge step forward, because it employs what we scientists call "the comparative method." It allows us to look at what other people have done and learn from their strengths and weaknesses. I believe we are on a very fast learning curve. When it comes to HCPs, great progress has been made in their quality.

Senator CRAPO. Thank you. And, Dr. Kareiva, there obviously is a conflict here between the amount of science we need and the amount of time we have to proceed. Could you comment on the same issue? Do we have the ability to develop general guidelines, as opposed to the specific science needed for each species, that will allow us to proceed with HCPs? Or must we hold off and wait for more-extensive science? How do you address that conflict between the need for more science and the need to be able to move ahead now and develop HCPs?

Dr. KAREIVA. Yes, and just listening to what the three of us has had to say, I think we would probably agree on this. There's a lot of information out there we already have, and it's not as though we have to undergo a national initiative for great basic research. Part of the challenge is just organizing that information with a little bit of energy.

I agree with Dr. Murphy that there are certain common principles that can be applied to sets of species. It would be good to do that.

I also think that we already know a lot—this is one of the things that I have tried to make clear and I think comes out in the report. It's just that what we know is not easily accessible. So given the time pace with which HCPs are negotiated and gone through, it's

not possible to go into those data notebooks and those file drawers and get all this out.

But if we did produce data bases, if we put energy into that, subsequent efforts would go much faster, because there are, I think, 70 or 80 endangered species currently covered by HCPs. Any data that you put in a computer data base for any of those HCPs will inform future conservation plans that touch on those same species.

In summary, I think we actually know quite a bit, and much could be accomplished simply by knowing, for example, for the spotted owl, how many acres are protected in habitat conservation plans. That should be easy to get off the web.

Senator CRAPO. I was intrigued by your bottom line suggestion, No. 1, of the lack—that we have a lack of a national data base, so to speak. And it sounded to me like you were recommending that, in any legislation that this committee might generate to deal with improving HCPs, that perhaps part of that should be a very major national effort to develop such a data base. Is that correct?

Dr. KAREIVA. I don't think I'm astute enough with respect to policy to know if that is correct, but I do think one thing that could be done even within the existing HCP process is to require HCP preparers to provide data in a publicly available way to what could be a national data base.

For example, in preparing an HCP, you could create a data file, put it on the web so that other people could examine the data for population trends and numbers. This would facilitate somebody or some organization putting together a data base.

Senator CRAPO. If that were done, and if we started to generate such a data base, do you believe that that data would ultimately lead to the types of generalizations that could be made that Dr. Murphy has suggested that would allow us to move ahead with common understandings across species?

Dr. KAREIVA. Yes, I do.

Senator CRAPO. Dr. Murphy, I'd like to ask you to comment on the same general issue. I think you had somewhat in your testimony, but please elaborate. I understood you to say that, although we need to engage in getting better and more thorough science, that we can proceed now to significantly improve HCPs and species restoration efforts.

Dr. MURPHY. An anecdote from the very early 1990's is probably appropriate here. You may remember one of the hot-button issues in endangered species implementation was the Stephen's kangaroo rat in western Riverside County, in which a great number of landowners in a very go-go real estate environment were not allowed to move forward with development while science supposedly resolved issues related to the conservation of the species.

Over a 2½-year period we were doing extremely arcane experiments with the demographics of the species and looking at the genetics of the species when, in fact, several years later we still had not mapped the distribution of the species. We had landowners who were being economically impacted that had no kangaroo rats, and other landowners who held some of the best habitat for the species who were not part of the conservation plan.

We need a hierarchical approach to the science in HCPs; a set of cookbooks that tell agency staff how and when to ask specific

questions at different levels of complexity—that is, from the landscape level to the metapopulation dynamics of species, down to structure of populations of species, and then to their genetics. I really do think that if the agencies sat down with academic scientists we could come up with a prioritization scheme that would at least keep to a minimum the wheel spinning that tends to go on with HCPs.

And, as you well know, one of the greatest criticisms of the implementation of the Act is the squandering of time—the fact that we go into HCPs with a degree of economic expediency; we come out of HCPs often exhausted.

Senator CRAPO. Now, even if we had such cookbooks, as you described them, with an approach identified to the kinds of questions that need to be asked, it seems to me the issue still arises: How do we deal with the question of time that is so critical for the owners of the private property who need to have some type of certainty in how to proceed.

How do we proceed with an HCP in the face of the voluminous questions that we would need to have answered about a species?

Dr. MURPHY. Well, I don't think the questions have to be many, but I do think that we haven't taken advantage of opportunities to learn from past activities. There are now 200 HCPs on the books and there are dozens of large-scale conservation efforts on our public lands, the most notable of which certainly being the plan for the northern spotted owl and the forest plan that followed it.

My sense is that we can infer greatly from other systems and other species, and we're losing that opportunity. One doesn't have to spend 5 years studying the population dynamics of the California gnatcatcher to create a conservation plan for that species if we creatively use information drawn from other species which have like biologies and live in like circumstances, since insectivorous birds share many reproductive and other life history characteristics with each other. We're not taking advantage of engagement of that sort of information, which is readily available.

Senator CRAPO. Thank you.

Senator Chafee.

Senator CHAFEE. Thank you very much.

Let me give you a hypothetical here and see if I understand what each of you are saying.

Let's assume that the red-cockaded woodpecker is disappearing and has been listed as endangered. Now, let's also assume that it is still fairly abundant in Georgia, in the forests of Georgia, some of it on private land and some of it on military land, Fort Benning, and the Interior Department is prepared to establish an HCP to protect the surviving red-cockaded woodpeckers.

Now, what ought we to do? I'll start with you, Dr. Pimm.

Dr. PIMM. I think the red-cockaded woodpecker is a superb example.

Senator CHAFEE. Well, thank you very much. You're doing very well so far.

[Laughter.]

Dr. PIMM. It is a superb example, because if we were to make Fort Benning the only place where that species could survive, in all probability it would not. That forest will be hit by a hurricane

eventually, like many of the other bits of forest in the southeast have, and there is always the risk of a catastrophic fire.

However well we were to manage that species in one place, it would suffer an unacceptably high risk of extinction. The only way that species can likely survive is if we protect it in a variety of different places across its range, and that range is mostly in private ownership.

I recall hearings in the House a couple of years ago, the House Resources Committee, on the Endangered Species Act, hearing from somebody giving testimony who had protected his land, looked after his land very well, and, as a consequence, had a large acreage of long-leaf pine savannah, which is a necessary habitat for this species, and he felt unnecessarily constrained because he had that endangered species, which seemed to be particularly unfair because had he chopped those forests down and grown Christmas trees he would not be so constrained.

We understand that there is a deal that must be done here, and that is to encourage those people who have grown large trees on their property in the southeast and have red-cockaded woodpeckers, and that process recognizes that those people must have a right to their livelihoods and, at the same time, must be encouraged to continue to protect, as they have done, some of their land.

HCPs provide for that, and therefore they are a very powerful way of protecting certain kinds of endangered species. Without HCPs, I do not think the red-cockaded woodpecker can persist.

Senator CHAFEE. But what has all that got to do with this requirement for better science that all three of you have been stressing? You know, without great scientific study, it is known that on these adjacent lands to Fort Benning are the red-cockaded woodpecker, and just the situation you were describing. Now, what should be done differently than is being done now in connection with the science?

Dr. PIMM. I think there is a tension in the conservation biology community of just how much science we need. What I am hearing from my colleagues and the colleagues here is that we often have sufficient science, even though we don't have complete science. Given the fact that we need to have sufficient science across a very large area, then the HCP process is one that allows a species to persist.

If we study this species to death in one place, that won't be sufficient. We have to have sufficient science, and we believe, I think, that we often do have sufficient science for many of these species.

Senator CHAFEE. Dr. Kareiva, what would you say to this situation that I've outlined?

Dr. KAREIVA. I think it is a good example, too.

Senator CHAFEE. I hope Dr. Murphy will come through, too.

Dr. KAREIVA. He'll say the same. But first, what we would like—when you're preparing that HCP for your Georgia site, you should be able to quickly find out what other HCPs have been done for the red-cockaded woodpecker. You should be able to find that out in 5 or 10 minutes.

Senator CHAFEE. You mean across the Nation?

Dr. KAREIVA. Right, because you're worried about a species. What other HCPs have been done and where for that species, for the woodpecker.

There are several. There are dozens of red-cockaded woodpecker HCPs. That's pertinent to how you view this particular one.

Second, since they did those HCPs, in order to receive their incidental take permits, they had to ask the question: What is the population and what is the take? So then you would like to summarize how many birds are on these other HCPs and how are they doing, how are those populations doing.

Third, because several of those HCPs have been in operation for 5 to 10 years, you'd like to be able to ask of these other HCPs: Have we learned anything from them?

Now, all of that is not rocket science, in any sense. That is all information that is already available in some HCPs, but it is not systematically accessible. That is what I mean. That could speed up the process of doing the Georgia HCP. It could make it better-informed scientifically. It would work to the advantage of all parties to put it in this broad context quickly.

Senator CHAFEE. So your principal point, if I understand it, is there ought to be some central data base on—whether it is some kind of rat or whether it is a red-cockaded woodpecker, that you can go to.

Dr. KAREIVA. Right.

Senator CHAFEE. You or whoever. I suppose it is Interior, isn't it?

Dr. KAREIVA. Right.

Senator CHAFEE. They can go and find out how this would work out. If you're going to set up this HCP near Fort Benning; is that how it worked in North Carolina?

Dr. KAREIVA. Yes.

Senator CHAFEE. Well, that makes sense. What do you say, Dr. Murphy, to the problem I posed?

Dr. MURPHY. A most incisive example, most certainly.

[Laughter.]

Dr. MURPHY. I'm from the great, untrammeled West, where we are actually working on a habitat conservation plan in southern Nevada, 5.5-million acres. Of the 5.5-million acres in Clark County, 93 percent is publicly owned. This habitat conservation plan is allowing for the entire build-out of the 7 percent of Clark County, NV, that is privately owned, and it will fund conservation planning, management, and monitoring, as well as science, on the rest of the landscape.

We, obviously, don't have that benefit across all of the country, but in your example, where there are public lands that can be managed for a species, that's where species conservation should start. We may need private lands, as Dr. Pimm suggested, to spread the risk of extinction. There are characteristics of some of the private lands, and certain private lands in States beyond Georgia, that will help to contribute to the perpetuation of the species.

I think that our job as scientists is to contribute to relieving the tension between Fifth Amendment Constitutional guarantees to landowners for compensation and the need to protect habitat on private property to spread extinction risk. Where incisive science

can help is in identifying the minimalist reserve design that can be used from private land which causes the least economic disruption. I think that the science necessary to do that, as I said in my prepared comments, is there. We just haven't synthesized it, and, as Dr. Kareiva suggests, we certainly haven't institutionalized it and made it available.

Senator CHAFEE. Well, suppose somebody has a thousand acres next to a person with a long-leafed pine on his property that he wants to eventually cut. That's how he is making his living. Along comes the Government and says, "We're putting this into an HCP." I think he would be disturbed, to put it mildly. In the HCP he is subjected to certain constraints. How encouraged will he be when they tell him that it is scientifically splendid?

Dr. MURPHY. In actuality, it is the landowners, not the Government that initiate HCPs. The history of HCPs suggests that sort of option less planning isn't really happening on the ground. The fact is the agencies, to their credit, have tried very hard to engineer plans that allow for planning options and fair economic development off landscapes. I don't know of any case where a landowner with a thousand acres was completely shut down to protect a species.

Most HCPs have been creative engagement to try to minimize potential economic impacts and losses and to keep the agencies out of court, most HCPs have tried to engineer deals that make it possible for species to be sustained in the face of scientific uncertainty.

Senator CHAFEE. Well, I think you're right. I think that these things have worked their way out fairly successfully. Dr. Pimm was talking about the landowner adjacent to Fort Benning. Under the way they've worked out these HCPs, there still can be takings under certain circumstances, because of the no-surprise policy. I think these things have worked out pretty well.

What do you think, Dr. Kareiva?

Dr. KAREIVA. I think sometimes they do work out very well, because conservation in practice is really about tradeoffs, and when the tradeoffs are intelligently informed, they are the right tradeoffs to make. Again, that returns to my point about the data, because it is only by looking at data that you can find out whether you are identifying what really is irreplaceable or whether you're identifying the right to the tradeoff.

So certainly in principle it is a good idea, and in practice occasionally it is. It could be done much better.

Senator CHAFEE. Thank you.

Thank you, Mr. Chairman.

Senator CRAPO. Thank you, Senator Chafee.

We've been joined now by Senator Reid. Welcome, Senator Reid. Would you like to make an opening statement or any comments?

Senator REID. I would ask, Mr. Chairman, that my statement be made part of the record as if it were read.

Senator CRAPO. Without objection.

[The prepared statement of Senator Reid follows:]

STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Thank you, Mr. Chairman, for holding this important hearing. As you know, habitat conservation plans and the "No Surprises" policy have been two of the trickier

issues facing this Committee as we have struggled in recent years to improve the Endangered Species Act.

I believe you are right to focus on the *science* of Habitat Conservation Plans first rather than an immediate discussion of the policy. Like so much of the Endangered Species Act, HCP's are driven by science and it is important for this Committee to get a better handle on exactly what that means.

All too often, there is a tendency to question as unsound scientific conclusions that are contrary to what we want to believe or that don't get us to where we want to be in terms of policies.

That is why I am glad that we are turning first to a panel of scientists, professionals who have dedicated their careers to working on these sorts of issues to help shed some light on what is working, what is not, and what is needed to make HCP's an effective tool.

Although I would like to welcome all of our witnesses to Washington this morning, I am especially pleased that Dr. Dennis Murphy is with us.

Dennis and I have been friends for many years. He runs the Biological Resources Research Center at the University of Nevada-Reno and is the Director of the Nevada Biodiversity Initiative, one of the nation's most progressive research initiatives.

While I understand that he is an expert in the area of Habitat Conservation Plans, I know him primarily due to his outstanding research and applied science efforts at Lake Tahoe.

I know that all of my colleagues have listened to me with great patience over the years talk about my determination to protect the Crown Jewel of the Sierras from further degradation. I won't go into great detail today.

However, I will make the point that it is due to the efforts of folks like Dr. Murphy that all of the diverse communities at Lake Tahoe have been able to unite behind a $900 million dollar plan to preserve and protect the lake.

Without the scientific underpinnings of the plan, no one would have the confidence required to justify the sacrifices that will need to be made to save this national treasure.

Let me close by saying that today's hearing is the kick-off of the second phase of an incremental process that we have begun this year to see if some legislative progress can be made on reforming the Endangered Species Act.

During May and June, this Subcommittee worked together to produce legislation that addresses some critical habitat and recovery habitat issues. It was a very open and collaborative process and it produced language that everyone can embrace.

That package is now awaiting action on the Floor. I am hopeful that the spirit of cooperation that has marked this process so far can continue and we can fix areas of the ESA that need some work.

After coming so close to getting a comprehensive reform bill done last year only to see it scuttled at the last minute, I have concluded that incremental reform is the only way to go at this time.

While I know that this approach is not universally popular, I feel confident that, as long as everyone remains willing to compromise and work together, we can make a lot of progress.

Thank you, Mr. Chairman. I look forward to working with you.

Senator REID. I also would express my appreciation to you for holding these hearings, and apologize for not being here at the time they started. I had some duties to cover for Senator Daschle with a meeting with Senator Lott and was unable to be here with the national Governors.

I wanted to be here for a number of reasons. One is the importance of this hearing. Senator Chafee, Baucus, and your predecessor, Kempthorne, you know, we worked on a bill that we thought was really a good compromise. Had it moved forward in the fall when we introduced it, the bill would now be law and we'd be all happier. But, as more time went on, barnacles gathered on the bill and people looked at it more closely than I think they should. Anyway, we weren't able to push that legislation.

I would hope that, as a result of the hearings you are going to hold today and tomorrow, that we can move forward with this reauthorization of this very important law.

Let me also say I wanted to be here because of Dennis Murphy. During almost my entire time that I've spent on this committee, which is now going on 13 years, I've worked with Dr. Murphy. He worked at Stanford, and we're very fortunate that he moved from Stanford to University of Nevada at Reno, where he is doing some outstanding work not only on endangered species, generally, but also on our joint work with the State of California on Lake Tahoe. He is certainly eminently qualified to testify on this issue and to help us with the myriad of problems that have developed at Lake Tahoe.

So, having said that, I got here late. I'm going to have to leave early because I have another meeting with the Prime Minister of Israel that I have to attend, so I really apologize for the interruption and extend to you my congratulations on your willingness to take on this very difficult issue.

Senator CRAPO. Well, Senator, we recognize your difficult schedule and appreciate the time and effort you've made to participate with us, and we also—I also, and I know I speak for Senator Chafee, look forward to finding the most effective path forward in terms of reforming the Endangered Species Act, and we'll look forward to working with you in that regard.

Senator REID. You know, if we don't do something, we're going to wind up with problems, as we're going to have the Interior bill we hope comes up this Wednesday, and we're going to have a knock-down, drag-out battle there dealing with the grizzly bear, and we shouldn't do that. We should be able to have a law that is in place that prevents those from doing this on a piecemeal basis.

Senator Chafee and I have been through those piecemeal battles, and we need to get rid of them, don't we, John.

Thank you very much.

Senator CHAFEE. Thank you very much, Senator.

Senator CRAPO. I'd like to ask a few more questions to each member of the panel. The issue I'd like to go into right now is this tension that is apparent between the policy of No Surprises and the need for adaptive management.

I'll start with you, Dr. Pimm. I would appreciate any comments that you might have in that regard, but there is, to a certain extent, a conflict between the need to be sure that we provide the landowner with the kind of certainty and assurances of No Surprises so that the landowner can then take necessary steps to utilize his or her private property in the way that is contemplated by the HCP, and the fact that, as we move along through the process, the policy of evaluating and developing and furthering the science may lead to new and different conclusions or new needs with regard to the species.

How should we address that issue?

Dr. PIMM. I think there are two ways of doing that. One of them is embodied in the HCP concept, itself. That is, as I said earlier, the risk spreading. If we have a lot of HCPs for red-cockaded woodpeckers, then the surprise failure of some of them would not be as catastrophic. We should spread the risk across a lot of different areas, recognizing that nature is full of surprises.

The second aspect to surprise, of course, is that you adapt to it. That's the nature of the second recommendation that I made,

which is that HCPs that allow for adaptation should be given a greater length of time than those that do not.

As an example, we often do not know what the optimal fire frequency should be for many of these habitats. Red-cockaded woodpecker is in a fire-dominated habitat. Because we don't know that, we can at least recognize that there could be different fire regimes that are optimal. We could encourage landowners to use different fire regimes, monitor the results, and then act accordingly, and those different alternatives, if they are specified ahead of time in the HCP, make it an ecologically, scientifically stronger plan than if there were to be just a fixed plan with a fixed management.

So I think the obvious solution is to encourage HCPs that allow for different outcomes, to monitor those outcomes, and to respond accordingly.

Senator CRAPO. Thank you.

Dr. Kareiva.

Dr. KAREIVA. Adaptive management is basically collect data as you manage, and also do management as an experiment.

I think one simple way to reconcile some of that tension is to, in the beginning, where vast areas are involved, or species at special peril are involved, be precautionary to begin with. Play it very safe. But then, as you collect data and do adaptive management, recognize that what you learn can go both ways. It doesn't just have to be that as you collect data you find out you have to impose more restrictions on the landowner. You could learn information that led you to impose less restrictions on the landowner.

So if you start off precautionary, as you collect data and adaptively manage, the information you glean can work in the favor of development. For example, we have de-listed some species, such as gray whales and effectively de-listing species is based on data. De-listing species results in less restrictions and it is based on collecting data, seeing how well species are doing.

Senator CRAPO. Thank you.

Dr. Murphy.

Dr. MURPHY. I was on the National Academy of Sciences Committee on Science and the Endangered Species Act that released a report in 1995. This was a point that we made quite clearly and was an example of what we thought needed to be done with either the statute or regulations; at the point of listing, we need to do an analysis of the challenges faced by the species to identify areas critical to the existence of the species, so that we walk into our habitat conservation plans with as few surprises likely as possible. I really do think where we need the science is up front.

There are relatively few species that get listed and then immediately enter into the HCP dialog. Most of the species subject to HCPs have been listed for quite a long time; the sad part of that is that we've lost opportunities to stockpile information that would be useful in planning. The biological opinion that accompanies proposals for listing quite often has a great deal of information that is useful to HCP planners. We should extend on that.

Senator CRAPO. I didn't hear any of you say we should hold off moving ahead with entering into HCPs, even though there may be a need in those HCPs to provide No Surprises.

As you are probably aware, the No Surprises policy is under criticism from some quarters and under attack in terms of whether it should even continue to be a policy.

I guess the question I have is this: If we were to, as a matter of policy, eliminate the No Surprises requirement or position in HCPs, I would assume that we would have fewer HCPs, and I would further assume that that would ultimately mean less benefit for the environment and for species, because we would have more conflict and less progress made in terms of entering into HCPs.

I'd like to know of your feelings about that. Am I correct in that? I guess the question is: Are we better to proceed now, even though we work with a No Surprises policy, rather than to hold off until we have so much assurance through the scientific study that we can address an HCP without engaging in No Surprises?

Dr. Murphy.

Dr. MURPHY. We have been operating under a functional No Surprises policy. In fact, we haven't re-initiated an HCP because of changed circumstances to my knowledge. As you point out, 1995 kicked off the most active time for those HCPs and we have made, *de facto* assurances to landowners and it has worked fairly well.

I think the problem may be just simply in the nomenclature. "No surprises" sounds terribly terminal. It suggests that if you've got a species on your property and circumstances change, doggone it, we're not going to do anything about it. I think a better term for it is "fair assurances." And I do believe that if landowners have entered into an agreement in which development activities are foregone. There should be contractual assurances.

If we want to sustain these agreements in the face of changing circumstances with species, then funds have to come from somewhere else.

It seems that we have starved our HCPs economically, and I think that has led to the perception that they are not as effective as they could be, and that, in fact, circumstances, when they change, may not be appropriately dealt with financially.

Senator CRAPO. Dr. Kareiva or Dr. Pimm, did either of you want to comment on that?

Dr. KAREIVA. I basically agree with the simple way that you stated it. It is better to live with some No Surprises in order to get more HCPs, and we could just be careful about how we use it.

Dr. PIMM. Yes, I agree with that.

Senator CRAPO. Thank you.

Senator Chafee, did you want to ask more?

Senator CHAFEE. Just a question or two if I might, Mr. Chairman.

In your written statements, I believe each of you referred to general scientific standards for HCPs, and I wonder if you could be a little more specific on what kind of standards you are referring to.

Would that cover you, Dr. Pimm?

Dr. PIMM. Yes. I think the point is simple. The HCPs are new. Some of them haven't been terribly compelling scientifically. Some have been very good. You'd expect there to be variation. I think the process is a learning one. I think it is a rapidly learning one. And I think we all understand that we need to have better standards. I think the best way of achieving that is to have a repository for

HCPs so people can see which are the good models and which are the ones that are not so good.

Senator CHAFEE. You're referring to the data base that Dr. Kareiva was referring to; is that correct?

Dr. PIMM. It's very obvious, when you read some of the HCPs, that some of them have missed out important information. When you have the two together, you can see that, and I think those who develop them would benefit from that comparison, too.

Senator CHAFEE. Do you agree with that, Dr. Kareiva?

Dr. KAREIVA. Yes, I do.

Senator CHAFEE. Dr. Murphy.

Dr. MURPHY. Dr. Kareiva's report identified five areas, and he might be able to detail those five areas where better science would be useful in HCPs. That's an extremely important starting point in terms of bringing better science to habitat conservation planning.

The other thing that may be lost in the discussion—and it is certainly lost when we try to compare small and large HCPs, southern HCPs with western HCPs, is the fact that the species that are targets of these planning exercises fall into very broad categories that in many ways differ greatly.

California condors, black-footed ferrets and some other species, after a zoo-like conservation challenge—we're down to a few individuals. It is a very different conservation challenge to save those species than most others. In addition, we've got narrowly endemic species, species that are found only on a few acres. Those species need a different science to save them than some of our more broadly distributed species. The species that recur in the media as conflicts where economic development is moving forward tend to be wide-ranging species that are relatively rare—spotted owls, your example of the red-cockaded woodpecker, desert tortoise, and so on. Those species need a different style, a different type of science.

And I think the idea of having guidelines that differentiate between these categories of species could go a long way in focusing the science at early stages of listing and reducing the possibility of surprises.

Senator CHAFEE. Your point being that some are so exotic, if you want to use that word, so rare that the approach on them would be different than something that is endangered but is more commonly found, if you could. Is that correct?

Dr. MURPHY. Yes. And then you can imagine the examples are numerous. There are rare plants that are found on only a couple of acres on the eastern slope of a mountain in Utah. There are also anadromous fish stocks that are found in just a few streams; those present a whole different suite of challenges in terms of their conservation, which are more complicated, both scientifically, politically, and economically.

Senator CHAFEE. Well, I agree with you. We have a Block Island—I believe it is called "burrowing beetle," which is apparently extremely rare and only found in this one particular area in Block Island, Rhode Island, and it is different than something that is like the bald eagle, which is found across such extensive areas in our Nation.

Thank you very much, Mr. Chairman. I appreciate having the opportunity.

Senator CRAPO. Thank you.

I have a few more questions. We may be interrupted by a vote here, and we may be finished by the time the vote occurs. If not, we'll make a determination at that point.

The Administration has published an exhaustive handbook on the guidance for HCPs, and I would be interested from each of the panel members if you have suggestions as to how this handbook might be improved, relating to some of the points that you've raised today.

Dr. Pimm.

Dr. PIMM. I can't address that specifically, but I can address it by parallel to other reporting needs that I have seen. However good the handbook, it surely helps to have a lot of examples in front of you, and I think, in addition to that handbook, a suite of examples, if not the entire data base on HCPs, would be very helpful.

Senator CRAPO. All right. Thank you.

Dr. Kareiva.

Dr. KAREIVA. Early on in our study many of us read that handbook. I think part of the problem is just the implementation of it, frankly. In the future, examples will help in the implementation. We need very concrete guidance. Also, instead of having one handbook to fit all species, we need to use some of the sort of categorization that Dr. Murphy is talking about. Breaking things up into different categories will help.

Senator CRAPO. You know, one thought I had was with regard to the data base that you talked about. I don't know if the handbook addresses developing such a data base, but perhaps administratively we could get moving toward that through handbook guidance.

Dr. KAREIVA. Yes, I think that would be—it would be very easy to do, in fact.

Senator CRAPO. Dr. Murphy.

Dr. MURPHY. There is just simply a disconnect between the academic scientific colleagues of mine who believe that there really are explicit scientific guidelines and agency staff who think otherwise. The explanation given by the Fish and Wildlife Service is that each individual species and each individual planning circumstance poses such a distinct challenge that you can't provide useful guidance. My sense is the right scientists sitting down and working on that guidance could go a long way toward creating a systematic and prioritized approach to bring better information to HCPs.

Frankly, the new HCP guidebook is long on implementation directions and very short on scientific guidance, and that could be fixed tomorrow.

Senator CRAPO. That's very helpful.

Would you contemplate that the handbook could also contain some of the common or the basic standards and guidelines that are common among species that could be considered? Is that where—would those types of things which you've discussed with us here today be appropriate for inclusion in the handbook?

Dr. MURPHY. Certainly, and I'd go further. The exercise of HCPs is an exercise of splitting the difference. An HCP doesn't move forward unless a landowner gets some sort of economic benefits from the HCP, itself. That process of splitting the difference between en-

vironmental and economic benefits has great implications certainly for species, but it is, in the end, a quantitative exercise: How much land to get how much benefit to species?

We're not only talking about categorization of species, we're talking about a method for assessing the costs and benefits of the taking of species in certain circumstances. That's a tougher thing to put into guidelines, but a narrative on the thinking that goes into that kind of an exercise needs to be documented.

Senator CRAPO. Thank you.

Dr. Murphy, to switch directions for a minute here, you've mentioned in your written testimony and also in some of your answers to questions that a source of funding to help facilitate the adaptive management would be very helpful. That idea is also very intriguing to me because, as we discussed the conflict between the need for No Surprises or, as you indicated, strong assurances, and the need for adaptive management, as that arises, if the adaptive management moves in the direction of more restrictive needs, often that can't be accommodated within the context of the kinds of assurances that need to be given at the beginning of an HCP to allow for the agreement of the landowners, but, sort of in the context, if I understand you right, in the context of mitigation, perhaps if there were some type of external source of resources brought into the picture by the Government to help address the needs that would be brought into conflict, we could breach the skids, so to speak, find a way to move forward in getting past the conflict between the private landowners and the needs of the species.

Could you elaborate on that? And I'd also like to get the information or the thoughts of the other members of the panel on that issue.

Dr. MURPHY. I don't know that I can elaborate. You've stated it quite clearly.

I do think that a process that is facilitated with adequate funding can allow for creative engagement that might not be realized otherwise.

An example is the Headwaters deal, which was funded with $500 million Federal and State funds and 3 years of negotiation—a very good HCP. My sense is that to facilitate HCPs through public funding would be a rarer-than-normal circumstance; that if there were a pool of funds, an endowment, that could be stewarded, we would find that we wouldn't have to dip into it all that often.

But there are circumstances, and the circumstances tend to be those in which we've got narrowly distributed species largely found on the private lands where the contribution to persistence of the species can't be buttressed by habitat on public lands. Those rare circumstances tend to be coastal southern California, the bay area of California, the valley lands there, and in some of the developing areas of the south and southeast, where a funding pool like that would really facilitate good planning in areas where economic constraints do exist.

Senator CRAPO. Dr. Kareiva, do you have any thoughts on this?

Dr. KAREIVA. Essentially I agree with Dennis in the sense that, yes, we need a pool like that. We probably wouldn't have to use it much. In fact, given a little time we could probably look at the data

much the way he just suggested in terms of rare endemics and find out and anticipate how much we would have to use it.

Senator CRAPO. Dr. Pimm.

Dr. PIMM. I, too, agree. I think that many of the HCPs are unlikely to be controversial. They are likely to be fairly straightforward, and they can move ahead with relatively little intervention.

There is always going to be somewhere we are going to have to sit down and expend a lot more time and effort and money, but my sense is that these two are going to be the noticeable and the controversial examples, but relatively the minority.

Senator CRAPO. I believe that was a notification of the vote. I have just a couple other questions, but, Senator Chafee——

Senator CHAFEE. No, I'm all set. Thank you very much, Mr. Chairman. I want to thank the members of the panel. This was an excellent panel, and I'd congratulate you for having assembled it.

Senator CRAPO. Well, thank you, Senator.

I will just ask a few other questions and you can feel free to get on your way if you need to.

Senator CHAFEE. OK. Fine. Thank you very much.

Senator CRAPO. We appreciate your participation here.

Senator CHAFEE. Thank you all very much. Dr. Pimm I understand came back especially from Brazil for this.

Dr. PIMM. Yes, sir.

Senator CHAFEE. I want to thank you very much for doing that.

Senator CRAPO. We appreciate it. In fact, I should say at this point that the information and insights that the panel has provided are going to be very helpful as we approach this, and I've already—not only through the written testimony, which I reviewed last night, but through the presentations today, developed a lot of ideas that I think could be very useful in pursuing reform of this area of the law.

I wanted to pursue a little bit further this question of how to use the financial resources that might be made available through some form of money.

As you were all answering my last question, I was thinking about the situation in my part of the country. The Pacific Northwest is very heavily public land dominated, where the HCP problem isn't directly involved with the public land, but if you've ever looked at maps of the interspersal of public and private land, it is sort of like a checkerboard effect, and the management of public land inevitably impacts the management of private land, and vice versa.

It seems to me that there may also be a need for financial support in terms of a lot of the management issues that we face in large ecosystems such as the management issues we face relating to salmon or steelhead, which virtually impact the entire watershed of the Snake and Columbia River systems, which is most of four or five States, or the bull trout, which is becoming another significant issue in some of those regions, or the grizzly bear, which was mentioned by you, Dr. Murphy.

You apparently are aware of some of the very difficult—I'll even use the word "hostile"—debates that we are having over how to manage some of those types of species.

The need for a financial source of mitigation for some of the impacts that the management will be ultimately needed for some of these species seems to me to be very evident.

One of the problems I see there is that that might be an area where the need to dip into the pool of money is not only regularly faced, but in large dollar amounts.

Is that context something which you had in mind in terms of what you were suggesting, Dr. Murphy, or am I going down an entirely different trail right now?

Dr. MURPHY. You can spend money very quickly by going after the grizzly bear.

My sense is that we're never going to get there if we have to go through an appropriations process to respond to crises; that we really do need a pool of money, an endowment of sorts that can be tapped, hopefully conservatively, to resolve problems.

I am concerned that we have disproportionately directed funds at a very few species over the years under the Endangered Species Act, and that in many ways has contributed to our current circumstance in which we've got many hundreds of species on the list.

I think well-directed funds from such a pool might be used to try to obviate the need for listing, to keep candidates off the endangered species list, to take care of many of the species that aren't being taken care of through the appropriations processes.

We've got an emergency room circumstance where grizzly bears, northern spotted owls, and a number of other species get a disproportionate amount of our economic attention, and anything we can do to spread the funds that are available to additional species is going to be very important.

But my thought is—and it is always a tough budget circumstance, but maybe now is the time that we should be looking for an endowment that would spin off some dozens of millions of dollars a year for strategic investment in species that are involved in HCPs.

Senator CRAPO. Thank you.

Any comment on that, Dr. Kareiva or Dr. Pimm?

Dr. KAREIVA. I think there certainly is a need for such an endowment, and instead of being so pessimistic about it we have to realize there is the opportunity to recover some of these endangered species. We have to realize that such an endowment could lead to faster de-listings. When species are de-listed a lot of money is spent enforcing the Act. The enforcement is done haltingly, in ways that hamper local economics. Here de-listing clearly can save money.

We really have to heed the benefits of taking species off the list. If we used such an endowment well, in the long run it could be very effective even economically, because it would help us get species sufficiently recovered that they could be de-listed.

Senator CRAPO. Thank you.

Dr. Pimm.

Dr. PIMM. With Dr. Kareiva being the expert on salmon and Dr. Murphy the expert on grizzly bears, I can't contribute to that other than to say that, "You know, the act is not that old, 25 years or so, and there are a lot of species like gray whales, peregrine falcons, bald eagles that we've recovered. It has been a very successful

act at preventing species' extinction, and I think we should always keep that in mind when we look at the potential for improving it."

Senator CRAPO. Thank you.

I have just about 5 minutes left, and so I want to get into one other area.

Some scientists have argued that the better approach to saving endangered species is to focus on preserving large tracts of habitat, sort of what you were saying, Dr. Pimm, I think, to preserve more area, not just hundreds of acres but thousands and tens of thousands of acres, rather than on individual conservation measures aimed at individual species. This is, you know, sort of like what has been called the ecosystem approach or the watershed approach.

As I understand it, the underlying argument is that if you preserve the habitat broadly like this, then the species that depend on that habitat will also necessarily be preserved, and you maintain the important ecological relationships among the habitat.

Can you comment on this ecosystem-based approach? And I'm thinking about is it scientifically justified? And also, how does that relate to the need for specific habitat conservation plans in more-localized and smaller situations?

Dr. Pimm.

Dr. PIMM. I think one of the most exciting documents that has been produced in the last few months has been the multi-species recovery plan for south Florida. There is no other area in our country that is as diverse ecologically. That area contains the Everglades, it contains uplands, it contains wetlands, it contains a barrier reef. And that plan recognizes that we should be planning at the landscape level—the ecosystem level, if you like—and for many, many species.

I actually think that in the past that has been implicit but not explicit, and the spotted owl issue was not just a single species but the several hundred other species that shelter underneath it in old growth forests.

I think there is a movement to recognize that we should make all of those species explicit, and that multispecies recovery plans involving hundreds of species do just that.

So I think the scientific community, the Fish and Wildlife Service, is indeed moving in the direction of looking at the entire package of species in an area.

Senator CRAPO. Thank you.

Dr. Kareiva.

Dr. KAREIVA. Two responses to that. First is in this large study that we did we broke the habitat conservation plans in two categories, they come in two categories—species-based and habitat-based. It was our evaluation that the habitat-based ones were generally sounder scientifically.

Second, more broadly, I think there is actually a pretty wide consensus that this sort of habitat ecosystem perspective is the way to go, with a caveat that you still always have to be counting birds, counting plants, counting fish, because if you just go out and count ground you may be wrong.

Senator CRAPO. Dr. Murphy.

Dr. MURPHY. Dr. Kareiva said it. I think we need to plan at the habitat, the landscape level. We need to do our science, though, not only at that level. We also have to focus on species, themselves.

The idea somehow that we can understand ecosystems well enough to be able to create a good habitat conservation plan that takes care of all the constituent species just doesn't hold up at this point. We need specific information about the species that reside in these habitats.

Senator CRAPO. And it seems to me that if you had a broad understanding of the needs of the habitat, in general, that that can form a significant part of the science that helps to develop what is appropriate in individual HCPs. Is that true?

Dr. KAREIVA. Certainly.

Senator CRAPO. Each of you are nodding yes.

Dr. PIMM. Yes.

Senator CRAPO. I will indicate that for the record.

Well, gentlemen, I want to thank you for coming today. As I indicated, the advice that you've given and the information that you've provided is very helpful.

To wrap it up, I'd like to just say that what I am hearing you say in a broad sense is that, although there is still a need for developing the data base and expanding our understanding of the science that is available and expanding the science that we can achieve, that we should not lose sight of the value of HCPs as they currently exist; that they are helpful and we can improve.

Is that a fair summary of the testimony?

Dr. PIMM. Yes.

Dr. KAREIVA. Yes.

Dr. MURPHY. Yes.

Senator CRAPO. Well, thank you.

I would also like to encourage you, as you have further thoughts on this, to feel free to submit them to the committee. We are working on this issue very closely, and we are going to try to identify the areas in which we can improve our focus at the policy level on how to address HCPs. We want to do so in a way that develops broad-based public support, and I think that the kinds of information and suggestions that you've provided today are going to help us do that.

Please continue to work with us.

I'm reminded that, because of the business of our schedule, which we always have around here, not all of the Senators have been able to attend. We are sure that some of them are going to want to ask you some questions for the record and we would ask you to remain available to respond to their questions as we provide them to you. Would you each be willing to do that?

Dr. PIMM. Yes.

Dr. KAREIVA. Yes.

Dr. MURPHY. Yes.

Senator CRAPO. All right. Thank you very much. Without anything further, then, this hearing is adjourned.

[Whereupon, at 10:51 a.m., the subcommittee was adjourned, to reconvene at the call of the chair.]

STATEMENT OF DR. STUART PIMM, UNIVERSITY OF TENNESSEE

I greatly appreciate your giving me the opportunity to discuss the issue of Habitat Conservation Plans. The scientific community particularly welcomes your leadership on this issue because it is quantitatively the most important aspect of endangered species protection. Between a half and two-thirds of endangered species are not found on Federal land. We Americans cannot adequately protect our natural heritage unless we protect species on private, State, County and other lands encompassed by HCPs. The rapid expansion of HCPs within the last 5 years or so provides unrivaled opportunities for the necessary stewardship. This is both an exciting time and a challenging one as scientists consider the progress to date and how to improve future plans.

My research confirms the old adage that one should not put all one's eggs in one basket. Most endangered species have become endangered because we have forced them into a few "baskets"—a limited amount of space where they are now especially vulnerable to change, both natural and human-caused.

The first advantage of HCPs is their potential to minimize risk by protecting a species in more than a few places. Spreading a species' risk of extinction across many places will often be a better bet than intensive scientific study and visionary management in just one place. Most of us manage our financial investments by spreading risk in much the same way.

The second advantage is that at least 60 percent of endangered species need active habitat management to survive. Without control of alien weeds or without periodic, controlled fires some species will succumb if all we do is to put a fence around them. The HCP process can encourage appropriate habitat management and do so over increasingly large areas.

The experience to date on HCPs has been that some have been better than others—how could it be otherwise? The analysis of HCPs undertaken by the National Center for Ecological Analysis must surely be viewed in this light. The report's most serious criticism argues that many HCPs may be based on "the best available scientific data" but that those data may not be sufficient. To me, the report's most important omission is that it does not fully address this tradeoff between having many good plans versus a few superb (and omniscient) ones. Limited resources will always mean that one cannot have many, perfect plans.

Of course, the NCEAS report raises the possibility that we may have many plans, but poor ones. While I may manage my investments by spreading risks across many stocks that does not mean I would accept a preponderance of poor ones. The report notices numerous deficiencies that need to be addressed by future plans. Its greatest strength is its unified assessment of the plans. Its most important recommendation is that there should be a central repository of plans to provide models and comparisons for those who will produce plans in the future.

Criticisms of inadequate data need to be viewed in the context of what is practical. I have no personal experience of HCPs, but I have extensive experience of the Section 7 Consultations between the Fish and Wildlife Service and other Federal agencies. I believe the parallels to be useful. Many of those consultations are informal, friendly, and the issues are quickly resolved.

I suspect that many HCPs may be relatively uncontroversial. One size does not fit all, however. Some Section 7 consultations are difficult, contentious, are require major investments of resources. Surely, some HCPs will be likewise.

It was to address different degrees of ecological uncertainty that Dr. Gary Meffe of the University of Florida and I wrote to you in January of last year. Our letter was co-signed by more than a dozen scientists all with extensive experience of conservation issues. We offered the following recommendations:

First, the scientific rigor underlying the plan should influence the relative length of accompanying assurances. Plans that rest upon a substantial scientific foundation, about which there is little serious disagreement as to their sufficiency or adequacy, should properly receive longer-term assurances than those that rest upon a more marginal scientific foundation and for which there is substantial disagreement regarding their sufficiency or accuracy.

For long-term assurances to accompany plans that encompass all or a very large portion of the range of a covered species, the rigor of the underlying science is especially important.

Second, any "No Surprises" policy ought to be crafted in such a way as to encourage identification in the plan of possible future contingencies and a means of adapting management in response to them. One way to do so is to link the duration of assurances provided to the extent to which a plan identifies and allocates responsibility for future contingencies. Other things being equal, those plans that specifically address a variety of potential future contingencies and clearly identify how

they will be handled warrant a longer term of assurances than plans that make little or no effort to do so.

Third, the potential conservation benefit of a plan ought to influence the extent and duration of the assurances provided.

Thank you for your attention.

RESPONSES BY STUART PIMM TO ADDITIONAL QUESTIONS FROM SENATOR CHAFEE

Question 1. You mentioned in your testimony that you agree with the report produced by the National Center for Ecological Analysis and Synthesis that there should be a central repository of plans in order to provide a source of models and comparisons for the future. Where do you feel would be the best location of this repository? Who should undertake this project?

Response. The Fish and Wildlife Service would seem to be an obvious place to deposit Habitat Conservation Plans, since it under the Endangered Species Act that they are produced. While I do not understand the administrative details, I do feel that in these days of web pages and easily produced CD-roms that this should not be a particularly onerous task. The plans themselves are documents that can very simply be uploaded onto a web site or assembled onto CDs. My experience of other large scale data bases available as government documents suggest that this would be well within the limits set by other activities. (For instance, the Multi-species Recovery Plan for South Florida is a huge document.)

Question 2. Some scientists have argued that the better approach to saving endangered species is to focus on preserving large tracts of habitat—not just hundreds of acres, but thousands and tens of thousands of acres—rather than on individual conservation measures at individual species. This is essentially an ecosystem approach. The underlying argument is apparently that if you preserve the habitat, the species that depend on that habitat will also be preserved. And you maintain the important ecological relationships within that habitat. Can you comment on this ecosystem-based approach? Is it justified? What are the scientific issues that need to be addressed if you focus on preserving ecosystems, instead of protecting species here and there?

Response. There is no doubt that protection of our national biological heritage will be achieved most effectively by protecting larger, more connected and more natural areas. The smaller, more fragmented, and more managed a set of areas, the greater the problems we will encounter. Some of the more contentious issues that we have faced—the spotted owl, the California gnatcatcher, various species in the Everglades, for instance—stem from the difficulties of managing species across too small an area.

Nor is there any doubt that protecting habitat is an essential task in protecting species. The ESA states precisely this in its opening statement of purpose. And the Supreme Court's decision (Sweethome versus Babbitt) confirmed the importance of habitat, agreeing with a Brief of Amici Curiae Scientists that I helped draft.

There is a danger, however, in thinking that ecosystem-management is somehow an alternative to species management. In practice, many examples of apparent single-species management including the three examples listed above are issues of ecosystem management: old growth forests in the Pacific Northwest, the Coastal shrublands of California, and our largest wetland, respectively. The issues surrounding the red-cockaded woodpecker are likewise an ecosystem problem: the longleaf pine savannas of the southeast are one the most endangered ecosystems in the country.

My sense is that many now understand that the use of particular species as "umbrellas" under which other species shelter has caused difficulties in the debates of protecting our natural heritage. Multi-species plans—like the one mentioned above—are more transparent in that they list all the species in danger. As a consequence, they are also manifestly oriented toward preserving ecosystems. It has to be so: I do not see how one can define a particular ecosystem except by the special species that it contains.

As an example, I see within the South Florida Plan an inevitable convergence between species planning and ecosystem management. And if multi-species planning can be done there, in the most biologically complex corner of our country, then surely it can be done elsewhere.

STATEMENT OF PETER KAREIVA, SENIOR ECOLOGIST, NORTHWEST REGION OF THE NATIONAL MARINE FISHERIES SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE

Mr. Chairman, my name is Peter Kareiva, and I am a senior ecologist with the National Marine Fisheries Service (NMFS) Northwest Science Center in Seattle, Washington, where my primary responsibility is developing a science-based risk analysis that can guide efforts to recover endangered salmon populations. I am here to speak to you about a large national study of Habitat Conservation Plans (HCPs) which I supervised while a Full Professor in the Zoology Department at the University of Washington. Since this was before I worked for NOAA, those findings do not represent the views of NOAA. My experience and expertise regarding HCPs are derived from this national study and from 20 years of active research in conservation biology.

ABOUT THE STUDY

The study was initiated in September 1997 and was completed with the posting of all of its results and data on a publicly available website in January 1999 (*http://www.nceas.ucsb.edu/projects/hcp/*). We used the volunteer labor of 119 biological researchers, including 13 faculty members and 106 graduate students from eight premier research universities around the country (Yale University, University of California at Berkeley, University of California at Santa Cruz, University of California at Santa Barbara, University of Washington, University of Virginia, Florida State University and North Carolina State University). The study was supported by the AIBS (American Institute of Biological Sciences: $19,000) and NCEAS (National Center for Ecological Analysis and Synthesis: $82,000). NCEAS is funded by the National Science Foundation as a center dedicated to bringing ecologists together to solve our most pressing problems in both basic science and in the arena of public interest (such as this HCP issue), and in a rapid-response fashion.

We examined 208 HCPs that had been approved as of August 1997. Of those 208, we took a sample of 43 HCPs for which we attempted to read every supporting document and every relevant article in the scientific or agency literature that might provide pertinent data. Often this amounted to reading several thousands of pages of documents and tables and speaking at length on the phone to biologists. Efforts were coordinated by using internet and the web to maintain a dialog among research courses being taught at the eight different universities. Data analysis and actual synthesis of these data took place at NCEAS, which houses excellent conference and computer facilities. The data base we produced contains 89,908 entries. This is the largest *Quantitative study* of HCPs yet produced, and in some sense is the first quantitative study. By quantitative I mean that our evaluation of HCPs is in the form of actual numbers and scores which can be statistically analyzed and updated, as opposed to narrative descriptions.

MAJOR CONCLUSIONS OF THE STUDY

(1) We frequently lack adequate data regarding the most basic biological processes pertaining to endangered species—such as what is the rate of change in their populations locally? Nationally? What is their reproductive schedule? What is happening to their habitats in quantitative terms (percent lost or gained per year)?

(2) Given the data available, HCPs generally make the best use of the existing information in a rational manner, and there is evidence that the quality of HCPs with respect to using science has been steadily improving.

(3) However, for many HCPs. scientific data are so scant, that the HCPs really should not be called ''science based'' since science requires data from which inferences are drawn and tested. There is no agency failing here, nor any failing of individual writers of HCPs—no one could to a better job given the limited sources and poor quality of information that are available.

(4) Very few HCPs included in the study were designed to include adequate monitoring of populations or habitats in a way that could at least allow us to learn from our actions and create data bases that could inform fixture decisions. This is a golden opportunity that is being missed. Second, so-called ''adaptive management'' may be mentioned in HCPs, but an extremely small percentage of HCPs actually establish any adaptive management procedures (complete with statistical power analyses for assessing whether they are likely to work).

THE BOTTOM LINE

Everything preceding in my testimony has had very little of my personal emphasis, and instead reflects a straightforward condensation of the report which is avail-

able at the website above. However, I want to end by leaving you with what I see as the bottom line of this research regarding science in HCPs. Sometimes it is too easy to get lost in the details, and lose sight of the big message. I wish to emphasize, however, that this "bottom line" is my personal conclusion from the study—what I pick out as its most important lessons.

(1) The absence of a data base that tracks patterns of population change and habitat alterations for threatened and endangered species is a national embarrassment. Often these data exist somewhere—in a file drawer, in researchers' notebooks, or scattered among several publications. Yet in this age of computers and the interest, our data bases and information on basic natural history of endangered species are staggeringly primitive. Many of us are aware of how much national or even state "computerized criminal data bases" have revolutionized enforcement. The same should happen with resource management and endangered species protection. Without such data bases we cannot know where are the "safe places" and the "dangerous places" for our endangered species. We need to be able to "go on line" and find out what is happening with endangered species in terms of hard numbers—how many individuals? where? how many acres of habitat? how much of the remaining habitat exists in publicly owned lands? and so forth. Investment in such a data base would be in the best interests of all parties, so we can at least have access to the most current information before we begin debating the possible consequences of future actions.

(2) We do not even have a national data base that tracks the "paper" administrative record of HCPs. In other words, one cannot get on the internet and find a list of all HCPs that address a particular species or the total acreage of land for a species that is covered by the HCP process. Increasingly, HCPs are being placed online (a very positive trend), but the sort of administrative data base that I feel is needed will require a much larger effort to synthesize and update information from many scattered sources in a format that will make the information easy to access.

(3) In light of all this scientific uncertainty, if HCPs are to be pursued in the interest of balancing development and the environment, then minimally, HCPs should be required to include rigorous peer-reviewed monitoring programs that allow us to learn from them.

Mr. Chairman. thank you for this opportunity to testify. I know the HCP process is being seriously improved. In addition, I know from personal experience that certain recent HCPs (after the publication of our study) include state-of-the-art monitoring designs, backed up by high quality research (e.g., the Pacific Lumber Headwaters HCP and its monitoring program for marbled murrelets). Moreover, one reason I came to work as a scientist for the Federal Government and especially for NMFS is that it is easy to throw stones from an ivory tower and criticize how the government does its resource management science (and I have thrown some of those stones)—but I wanted to see if I could make the science work any better before I continued to criticize the job others were doing.

I look forward to answering any questions you may have.

USING SCIENCE IN HABITAT CONSERVATION PLANS

EXECUTIVE SUMMARY

The Endangered Species Act of 1973 (ESA) was established to save species at risk of extinction and to protect the ecosystems upon which they depend. Toward that aim, the ESA makes it unlawful for any person to "take" a listed species. In 1982, the ESA was amended to authorize incidental taking of endangered species by private landowners and other non-Federal entities, provided they develop habitat conservation plans (HCPs) that minimize and mitigate the taking. Since 1982, HCPs have rapidly proliferated, leading in turn to widespread concern among conservationists that these plans are not being prepared with adequate scientific guidance. Critics have argued that scientific principles must be better incorporated into the process of developing HCPs. In response to these criticisms, we reviewed a set of approved habitat conservation plans to evaluate the extent to which scientific data and methods were used in developing and justifying them. The review was conducted through a nationwide graduate seminar involving eight major research universities, 106 students, and 13 faculty advisors. Our analyses focused on the extent to which plans could be substantiated by science. Thus, even if based on the best available data (the legal requirement), a legally and politically justified plan could be deemed scientifically inadequate because, by more stringent scientific standards, the data were insufficient to support the actions outlined in the plan.

A Systematic Effort to Collect Quantitative Data on Science in HCPs

This investigation proceeded along two lines. First, individuals gathered data on 208 HCPs that had been approved by August 1997 in order to obtain basic descriptive information about plans. Second, the group conducted a more comprehensive analysis for a focal subset (43) of these plans. The HCPs in the focal subset range widely in geographic location, size, duration, methods, and approval dates. For this in-depth investigation, we developed two separate data questionnaires: one asked for information on the plans themselves, and the other focused on listed species and their treatment within HCPs. These questionnaires included information about what scientific data were available for use in formulating the HCP, how existing data were used, and the rigor of analysis used in each stage of the HCP process. As a whole, the questions were designed to generate a detailed profile of each HCP and to document the use (or lack thereof) of scientific data and tools. Plans were not judged overall; rather, questionnaires focused on different stages of the planning process, including the HCP's assessment of (1) the status of the species; (2) the "take" of species under the HCP; (3) the impact of the take on the species; (4) the mitigation for the anticipated take; and (5) the biological monitoring associated with the HCP. All of the data sheets, plan descriptions, and other detailed results from this effort are available on the NCEAS website:
http://www.nceas.ucsb.edu/projects/hcp/

Results

From our data on 208 HCPs, we were able to outline an overall picture of HCPs across the landscape. These 208 HCPs involve permits for incidental take of 73 endangered or threatened species. Of those 208, a great majority (82 percent) involve a single species, although the profile is skewed by more than 70 plans involving the golden-checked warbler (*Dendroica chrysoparia*) in Travis County, Texas. HCPs occur in 13 states; the largest concentrations are in Texas, Florida, and California. They range in size from only 0.17 ha (0.5 acre) of habitat to 660,000 ha (1.6 million acres) of habitat. The duration of plans also varies widely, from 7 months for a plan in Travis County, Texas, to 100 years for the Murray Pacific Company's HCP in Washington. HCPs do not appear to be getting larger, smaller, longer, or shorter over time.

In our more comprehensive examination of the focal HCPs, we direct much attention to what we call scientific adequacy. It is important to note that an HCP would be labeled scientifically inadequate if insufficient data were available to justify an action formally, even though legally the plan might be defensible. HCPs and many other provisions of the Endangered Species Act require only that decisions be based on the best available data. Scientifically, however, to support a claim we require data that when analyzed give some statistical confidence of an assertion, and that confidence is often lacking in applications of science to conservation biology because of a paucity of data. For example, from a scientific perspective, the best data might suggest a particular relationship between loss of habitat and loss of individuals, but the data are so variable and scarce that one could never have scientific confidence in the presumed relationship. Our aim is not to change the law but to point out just how much science is being used, and can be used given the availability of data pertinent to HCP development. The conclusions we draw probably apply to many other facets of Federal decisions regarding species listed as endangered or threatened.

Status/Take/Impact

Because they involve take of endangered species, HCPs must include information about the status of populations and habitats of the species, an assessment of how many individuals and how much habitat will be taken under the plan, and what impact that take will have on the species overall. We found that, for most species (74 percent), population sizes were known to be declining globally before the HCP was submitted; 21 percent were stable, and 5 percent were increasing. The most important threat to species was habitat loss, although habitat degradation or fragmentation and direct human-caused mortality also represented important threats. Notably, for only 56 percent of the instances in which a listed species might be "taken" by an activity was the predicted take quantitatively estimated. And only 25 percent (23 of 97) of species treatments included both a quantitative estimate of take and an adequate assessment of the impact of that take.

Mitigation

A crucial measure for the success of HCPs is the choice and implementation of measures to avoid, minimize, and mitigate impacts on the species included in the permit. If the appropriate measures are chosen and implemented in a timely fash-

ion, the impact on the species in question might be effectively mitigated, justifying the issuance of an incidental take permit. For this analysis, we chose to evaluate avoidance, minimization, and mitigation measures as overall ''mitigation,'' because they all involve offsetting potential impacts to species. Minimization and avoidance of the threatened species are by far the most common mitigation measures (avoidance is proposed for 74 percent of species, and minimization for 83 percent). Our analyses identify some important gaps in quality of data underlying mitigation proposed in HCPs. Overall, particular mitigation measures commonly suffered from an absence of data indicating they were likely to succeed, leading to a situation in which ''unproven'' mitigation measures were relied on in the HCPs. Given this uncertainty, one would expect that a mitigation measure should be evaluated prior to the onset of take. Unfortunately, such a precautionary approach was often lacking.

Monitoring

We determined whether biological monitoring (i.e., ''effectiveness monitoring'' or monitoring of trends in the populations that are potentially affected) was included for the HCPs in our sample. In this analysis, we looked at each plan as a sampling unit (n = 43), and we only considered information included in the plan or associated documents. For only 22 of the 43 plans was there a clearly outlined monitoring program. Of those 22 well-described monitoring programs, only 7 took the next step of indicating how the monitoring could be used to evaluate the HCP's success. Interestingly, although most plans do not include provisions for ''adaptive management,'' when plans do include such provisions they are significantly more likely to include clear monitoring plans as well.

Availability and Use of Information Needed for Scientifically Based HCPs

In many cases, we found that crucial, yet basic, information on species is unavailable for the preparers of HCPs. By crucial, we mean information necessary to make determinations about status of the species, the estimated take under the HCP, and the impact of that take on the species. For example, in only one-third of the species assessments was there enough information to evaluate what proportion of the population would be affected by a proposed ''take.'' If we do not know whether one-half or one-hundredth of a species' total population is being affected by an action, it is hard to make scientifically justified decisions.

We assessed the overall adequacy of scientific analysis at each stage of the HCP process. Although this evaluation of scientific adequacy amounted to a largely qualitative assessment, the foundations of that assessment were well specified by series of background questions; ''overall adequacy'' was consistently well predicted by data obtained for these background questions. In general, the earlier stages in HCP planning are the best documented and best analyzed. In particular, species status is often well known and adequately analyzed, whereas the progressive analyses needed to assess take, impact, mitigation and monitoring are more poorly done or lacking. Our evaluations also indicate that the very large and the very small HCPs contain the poorest analysis. In terms of plan duration, it appears that shorter-duration plans have better estimates of the amount of take, but longer-duration plans have better analysis of the status of the species and the mitigation measures imposed.

Conclusions and Recommendations

Although our analysis points to several shortcomings of HCPs, we acknowledge that the HCP process is new, complex, and difficult. In general, the USFWS and NMFS are doing a good job with the data that are available. They do not have the resources to obtain the data that are needed for many of the decisions that must be made. Without such resources, the best scientific approach is to be more cautious in making decisions and to use the findings of this report to justify requests for additional resources.

Recommendations

1. We recommend that greater attention be given to explicit scientific standards for HCPs, but that this be done in a flexible manner that recognizes that all HCPs need not adhere to the same standards as high impact HCPs. A formalized scheme might be adopted so that small HCPs draw on data analyses from large HCPs, assuring that applicants are not paralyzed by unrealistic demands.

2. For the preparation of individual HCPs, we recommend that those with potentially large impact (those that are large in area or cover a large portion of a species' range) include an explicit summary of available data on covered species, including their distribution, abundance, population trend, ecological requirements, and causes of endangerment. HCPs should be more quantitative in stating their biological goals and in predicting their likely impact on species. When information important to the design of the HCP does not exist, it may still be possible to estimate the uncertain-

ties associated with the impact, mitigation, and monitoring, and to still go forward, as long as risks are acknowledged and minimized. Flexibility can be built into mitigation plans so that managers can be responsive to the results of the monitoring during the period of the HCP. When highly critical information is missing, the agencies should be willing to withhold permits until that information is obtained.

3. For the HCP process in general, we recommend that information about listed species be maintained in accessible, centralized locations, and that monitoring data be made accessible to others. During the early stages of the design of potentially high-impact HCPs and those that are likely to lack important information, we recommend the establishment of a scientific advisory committee and increased use of independent peer review (review by scientists specializing in conservation biology). This policy should prevent premature agreements with development interests that ignore critical science.

1. INTRODUCTION

1.1. The Endangered Species Act in Relation to this Study

The Endangered Species Act of 1973 (ESA) was established to save species at risk of extinction and to protect the ecosystems upon which they depend. Toward that aim, the ESA makes it unlawful for any person to "take" a listed species. This prohibition encompasses activities that directly kill or harm listed species, as well as activities that cause indirect harm through "significant habitat modification or degradation" (50 CFR § 17.3). In 1982, the ESA was amended to authorize incidental taking of endangered species by landowners and nonFederal entities, provided they developed habitat conservation plans (HCPs) that minimize and mitigate the taking, and that receive approval by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS). Any nonFederal entity, whether a private citizen, corporation, county, or state, can initiate an HCP. Once approved, an HCP results in an incidental take permit. The language of this amendment (Section 10a of the ESA—16 U.S.C. § 1539(a)) arose directly out of a model HCP designed to resolve a conflict between a development project and the needs of endangered species in the San Bruno Mountain area near San Francisco. Few landowners chose to undertake HCPs until the early 1990's. The USFWS approved only 14 HCPs from 1983 to 1992 (USFWS and NMFS, 1996), but since 1992 there has been an explosion of HCPs—225 were approved by September 1997, and approximately 200 are currently being formulated. Indeed, HCPs have become one of the most prominent mechanisms employed by the USFWS to address the problem of threatened and endangered species on private lands (Bean et al., 1991; Noss et al., 1997; Hood, 1998).

The rapid proliferation of HCPs has led to widespread concern among conservation advocates about the scientific information in these documents. From a policy perspective, critics charge (1) that HCPs may undermine species recovery because they can allow for impacts to species that are not fully offset, (2) that HCPs are developed without adequate biological information or scientific review, (3) that small-scale HCPs can lead to piecemeal habitat destruction and fragmentation, and (4) that meaningful public participation occurs infrequently (Hosack et al., 1997; Kaiser, 1997; Kostyack, 1997; Murphy et al., 1997; National Audubon Society, 1997; O'Connell and Johnson, 1997). Our objectives in this study were to conduct a major review of HCPs and to evaluate in detail the scientific merit of a substantial sample of HCPs currently in effect. We did not attempt to evaluate the biological success of HCPs or their attempt to balance economics with biology. That exercise would have been premature given the newness of most HCPs. Our emphasis is on scientific data and approach, whether they are adequate, and if not, what should be done. To strengthen the role of science in this process, we start with the premise that regardless of the compromises that may be made between economics and environmental concerns, HCPs should have clear scientific objectives, be based on the best available data, and employ well-tested procedures. It is important to emphasize that we scrutinized HCPs and their use of data and inference from a strictly scientific (as opposed to legal) perspective. We sought to determine whether a presumed impact, a proposed mitigation measure, and so forth could be scientifically substantiated given the data available. We adopted this strictly scientific stance because one of the outcomes of our analysis is a series of recommendations for improving the quality of scientific input; arriving at these recommendations required that we keep a clear vision of the highest possible scientific standards for HCP implementation. Although the focus of this report is science, it is useful to keep in mind more legal definitions of key terms such as "take," "compliance monitoring," "effects and effectiveness monitoring," etc. In Table 1 we define key legal terms and emphasize how our more biological use of language differs from some of these legal definitions.

1.2. HCP Requirements

Applicants proposing HCPs must specify the impact that will result from the incidental take of listed species, what the plan does to minimize and mitigate the impact, and what alternatives were considered (Table 2). NMFS is responsible for ultimately approving or rejecting the HCP (issuing the "incidental take permit") for marine and anadromous species, and USFWS is responsible for the remainder of listed species. The applicant may develop an HCP independently, but USFWS often works with the landowner in the plan's early stages, providing guidance as to what is or is not acceptable with respect to approval requirements. Typically, impact on species is minimized by limiting the geographic extent of harmful activities or the seasons when those activities are allowed (e.g., prohibiting timber harvest during the nesting season of an endangered bird). Mitigation often involves setting aside (through purchase or conservation easements) habitat elsewhere. USFWS or NMFS can only issue an incidental take permit if the HCP meets five criteria (Table 2). Incidental take permits are only issued for species listed as threatened or endangered, although for any unlisted species that is treated in the HCP as if it were listed, the landowner is assured of receiving a permit for that species when it becomes listed.

No set of particular actions must be specified in an HCP for it to gain approval, and overall the process is quite flexible. There is, however, standardized guidance in the form of the Habitat Conservation Planning Handbook distributed by NMFS and USFWS (USFWS and NMFS, 1996). The handbook gives general advice on all aspects of HCPs. It also suggests expediting small-scale HCPs, while indicating directions in which USFWS and NMFS wish to direct future HCPs, including habitat-based, multi-species planning and large-scale, multi-landowner plans. In addition, USFWS conducts training workshops across the country for employees who help applicants develop and implement HCPs.

1.3. The Impetus and Aims of This Study

HCPs are not purely scientific documents—they are compromises between the interests of resource development and conservation, and political and economic concerns play a major role. Some HCPs represent the outcome of negotiations that take years. HCPs have economic, political, and scientific dimensions. Because HCPs represent negotiated compromises, it is essential to know what exactly is "given up" in the process of arriving at a compromise. It is easy to identify what is given up from the viewpoint of a private landowner, because the dollar value of future land development or exploitation is readily calculable. It is much harder to quantify what is given up in terms of a species' prospects for long-term survival. That is the challenge for the scientific component of HCPs.

To examine the scientific component of HCPs, we decided to use a highly structured, detail-driven approach to collecting information on HCPs. To date, criticisms and recommendations about HCPs have emphasized broad policy implications and have sketched general qualitative attributes of particular HCPs (Hood, 1998; Noss et al., 1998). We sought to develop a quantitative data base that sampled a "population of HCPs," so that our analysis would be relevant to HCPs in general, and not only to particular HCPs. This highly structured quantitative analysis complements the more flexible analyses previously published and, by uncovering broad trends within a substantial data base, will set the stage for further analyses.

To examine the role of science in HCPs, the National Center for Ecological Analysis and Synthesis (NCEAS) and the American Institute of Biological Sciences (AIBS) initiated a 1-year project to analyze HCPs. A set of graduate seminars at eight universities (Florida State University; North Carolina State University; University of California, Berkeley; University of California, Santa Barbara; University of California, Santa Cruz; University of Virginia; University of Washington; and Yale University) were coordinated during the fall of 1997. These seminars comprised a total working group of 119 researchers, including 106 students and 13 faculty members. The group was charged with reviewing current plans to evaluate the extent to which scientific data and methods were used in developing and justifying the agreements. The group was also charged with recommending ways to strengthen the role of science in conservation planning. The group did not attempt to evaluate what effects the plans have had on biological systems or species. Because the vast majority of HCPs have been initiated since 1994, it is simply too early to evaluate whether the plans are working. Moreover, our goal was not a vague judgment of the overall quality of each plan or of the plans as a whole. Instead, the group focused on the scientific data and reasoning supporting the plans, paying particular attention to the key issues of take, impact, mitigation, and monitoring. All of the data sheets, plan descriptions, and other detailed results from this effort are available on the NCEAS website: *http://www.nceas.ucsb.edu/projects/hcp/*

This paper is both our synthesis of the data available at this website, and a reader's guide to the website. The scale of the data set is large—89,908 entries were recorded for HCPs (7,246 for the set of 208 plans, 75,094 for species questions pertaining to the 43 focal plans, and 7,568 for plan questions pertaining to the 43 focal plans). Throughout the paper, when discussing data we use the following key: AQ refers to questions applied to all 208 plans, SQ refers to species questions applied to the 43 focal plans, and PQ refers to plan questions applied to the 43 focal plans. The actual questions can be found in Appendix I.

2. METHODS AND RATIONALE FOR DATA COLLECTION AND ANALYSIS

2.1. Obtaining a Sample of HCPs for Descriptive Statistics

As part of our effort, we sought to characterize the largest possible sample of plans in terms of their most basic attributes. Data we attempted to identify for these plans included plan duration and area, basic species information included in the plans, and other factual descriptors of the agreements. Unfortunately, there is no centralized office or collection of HCPs. We therefore took advantage of the joint effort of the two nonprofit organizations, the National Wildlife Federation (NWF) and the Earth Justice Legal Defense Fund (EJLDF), to assemble HCPs in Washington, DC. As of November 1997, they had compiled 208 of the 225 HCPs completed at that time. The questionnaire applied to this sample of HCPs is given as Appendix I-C.

2.2. Detailed Data Collection for 43 Focal Plans

The time and energy required for careful evaluation of both an HCP and the relevant background information precluded a detailed investigation of all plans. We therefore selected 43 focal plans (21 percent of the all plans available at the time the project began) for detailed analysis. Plans were chosen non-randomly, to span the range of geography, size, duration, methods, and approval dates represented in the entire population of HCPs (Appendix II-B lists these 43 plans).

For the focal plans we performed three types of data collection. The first was accumulating evidence demonstrating the presence or absence of several types of scientific information. For this segment of our analysis, we chose a *priori* to define an "HCP package" as including the HCP itself, the incidental take permit (ITP), implementing agreement (IA), biological opinion, and any associated environmental review documents (EA/EIR/EIS). These documents were consulted for all focal plans for which they were available (some HCPs might lack some of these documents). Information contained in these and any other explicitly referenced documents was considered to be included in the plan. Second, we gathered general data about the HCP setting and the species covered by the associated incidental take permit. Many of these data were found in the documents listed above, but to augment them, corroborate conclusions made in the HCP documents, and provide a comparison to existing scientific knowledge, we completed surveys of relevant literature (which included both articles published in journals and the so-called "gray literature," represented by reports prepared by government agencies and consulting firms). In gathering this information, we considered all reports and publications available at least 1 year before the date of the HCP's approval as having been available for the HCP preparers. For 32 of the focal plans, we collected species-specific data for all species covered on the incidental take permit. For the other 11, we chose a taxonomically representative subset of the species covered. Finally, we gathered information about the local context and characteristics of the HCPs that included data about plan developers/preparers and the policy or social contexts in which plans were developed. Often, this profile was developed from both anecdotal and formal discussions with USFWS employees, consultants who worked on the development phase, and various stakeholders.

Our goal in analyzing these focal plans was not judgment of the overall quality of each plan, or plans as a whole, but rather a rigorous analysis of a variety of detailed questions about HCPs: What types of data or analysis do HCPs use well? What available information is ignored? Are data unavailable that are crucial to sound planning? Of the many steps in the planning for each species covered in an HCP, which are usually done well and which poorly? Which of the many features of a plan (size, duration, etc.) and of the plan's preparation (who prepared it, was there a scientific advisory committee?) are important in influencing its scientific adequacy? Answering these questions requires "dissecting" each plan—gathering information on its many factors and parts, so that statistical analysis can be used to judge what factors significantly influence the scientific quality of HCPs as a whole and to allow a clear assessment of the adequacy of existing HCPs. To ensure consistency of information gathering across groups, and to put the resulting data into

an organized and analyzable form, we developed two separate data questionnaires; one asked for information on the plans themselves, whereas the other focused on species listed in the incidental take permit and the treatment in HCPs of these species (see website). In total, the Plan questionnaire contained 176 questions/subquestions per plan studied, and the Species questionnaire contained 789 questions/subquestions per species per plan (these complete questionnaires are given as Appendices I-A and I-B).

The questions asked in the two questionnaires fall into three categories:

- For both plans and species, many questions seek to detail simple (although not always simple to acquire) factual information about the HCPs, the species, and the preparation process.

Essentially all plan questions are of this type.

- For species, a large number of questions address the details of what scientific data and analyses were used in formulating different steps in the planning process. Most involved a set of four parallel questions, which for a broad array of data categories asked (1) whether information of this type was used in the HCP, (2) the source of the data, (3) the quality of the use of this type of data, and (4) whether any important data of this type were missing from the HCP. In addition, there are questions about the importance of these types of data for application to the species and situation at hand. Together these questions seek to determine what data were used in formulating the HCP, the quality of their use, and their relative importance.
- Finally, both for detailed types of biological information and for larger steps in the HCP analysis process, the species questionnaire asked for judgments of the quality of the analysis.

Because the data included in the plan and species questionnaires form the basis of our results, it is important to describe the approach we took in designing and then analyzing these queries. As a whole, the questions were designed to generate a detailed profile of each HCP, to document the use (or lack thereof) of many different types of scientific tools and data, and to characterize the availability of these tools and data. The questions evolved over the first weeks of the project, as online discussion led to the creation of new questions, the deletion or modification of existing questions, and official "consensus interpretation" of ambiguous questions. We do not presume that these questionnaires are comprehensive, but they were certainly sufficient to generate a large body of data on our 43 sampled HCPs, covering the full spectrum of HCP ingredients.

Three lines of reasoning led us to the final set of questions in each questionnaire. First, we did not feel that it was either scientifically justifiable or most productive to judge the adequacy of entire plans, so we sought to confine our "quality judgments" to much smaller segments of analysis. This approach should better reveal the strengths and weaknesses of HCPs and suggest improvements in the HCP process. Second, the battery of questions is large, both to minimize the danger of missed information and to leave open the door to unexpected findings or issues. Third, because it is difficult to make scientifically defensible judgments about the quality or adequacy of even small pieces of a plan, each question regarding adequacy follows an extensive series of questions about the details of the information and analysis that were used in the plan, that were left out, and that would be needed to improve the analysis. Our goal was to lead ourselves (and others reviewing our results) through a clearly articulated set of steps that would clarify our judgments about importance and adequacy of different types of information. It was impossible to write out a rigid and explicit definition of "adequate" or a ranking score for each question, because we were flexible in our scoring. For example, if an HCP involved only a small amount of land and minimal take, we would score a rather crude assessment of "impact" as adequate simply because it was obvious there was no need to be especially careful for such a negligible activity. In other words, as professional biologists, we asked what level of scientific proof was required for different activities, depending on those activities and their context. All scorings and evaluations were presented to the local university seminar group and thus were subject to internal peer review by up to 20 other biologists. This review was an important part of the process. The graduate students involved included many with masters degrees (about one-third), some with extensive work experience in environmental consulting or as employees of USFWS, and some who had actually helped write HCPs. The biological, statistical, and practical experience of this large cohort of graduate students compares favorably with those employees of USFWS who actually administer the HCP process.

In sum, our approach of using detailed questionnaires to evaluate HCPs was designed (1) to include unexpected but important information, (2) to allow the dissection of plans so that clear judgments could be made about their merits and faults,

and (3) to make transparent the reasons for our judgments of quality. Although inevitably imperfect, our approach allows us to develop a detailed analysis of the limitations and the strengths of HCPs. In particular, it takes the analysis of HCPs away from the realm of unsubstantiated expert opinion and into an empirically based arena where arguments over methods and conclusions can be articulated, debated, and revisited.

2.3. A Framework for Judging the Biological Adequacy of HCPs

To be scientifically credible, HCPs must address a variety of issues for each species covered. Although in theory our data set allows us to address the scientific credibility of HCPs in their entirety, it is more informative to clarify the particular stages in habitat conservation planning where scientific knowledge or analysis may limit the scientific foundation of HCPs. How should the integrated process of HCP planning be dissected, however? Although there is no set of hard-and-fast rules or steps to which all HCPs must conform, the USFWS/NMFS HCP handbook mandates several issues that each HCP must address for species covered in the incidental take permit (USFWS and NMFS, 1996). Our review of HCPs, in combination with these mandated steps, led us to divide the HCP planning and analysis process into five stages:

- Analysis of current status of the species
- Analysis of take under the planned activities
- Analysis of the biological impact of the anticipated take.
- Analysis and planning of mitigation for the anticipated take.
- Analysis and planning of monitoring activities to follow the future status of the species, the actual take, and the effectiveness of mitigation procedures.

It is important to emphasize that failure to address any one of these stages adequately calls into question the adequacy of planning for a species, even if all other stages are addressed extremely well. For example, an HCP might have excellent data on the current status of a species, have excellent estimates of take and the impact of take on population health, and have a good monitoring plan, but if the proposed mitigation procedures are untested and there are no plans to allow for their review and modification, the plan is not scientifically credible. Similarly, a seemingly reasonable plan can be formulated that has good estimates of everything but the actual effect of the planned take on the population viability of the species. In this case, again, the entire plan is questionable, because there may be no good way to judge the real impact of the planned activities and hence the adequacy of planned mitigation work. These examples illustrate both that the division of plans into five stages is somewhat artificial and that each of these steps must somehow be addressed in an HCP for the whole plan to be a scientifically credible blueprint for balancing potentially damaging actions with potentially beneficial ones.

2.4. Units of Analysis

For the questions we address, two units of analysis are logical: (i) the individual HCP and (ii) the treatment of an individual species within an HCP. Plans are the basic unit in which HCPs are approved and implemented, and many of the steps or issues in the HOP process are inextricably part of an entire plan's formulation, but species protection is the goal and mandate of the ESA and of the individual plans. Similarly, although plans with many species will be over-represented in a strictly species-by-species analysis, this is to some extent as it should be. We therefore use a combination of approaches; some analyses are done at the plan level and some at the species level. When performing most significance tests for species-level analyses, we either include plan as a factor in the analysis or use a weighting factor that discounts the effect of a species by the number of analyzed species from that plan (1/(number of species in the plan included in our analysis)). One factor we do not consider in most of our analyses is the occurrence of the same species in multiple plans; because each plan analyzes different impacts in different places, it seems correct to count each plan-species combination as a separate data point. We also minimized the bias that could arise from making judgments on the basis of a large number of "minor species," when a plan was actually written primarily for just one or two major species. It would be unfair to call the scientific foundation of such a plan weak because it failed to deal with the minor species but did a superb job with the major species. We deal with this possible bias in two ways: (1) by choosing as a subsample only a few species (and always only listed species) from plans with long lists of species to be covered by the Incidental Take Permit and (2) by rating a plan's overall adequacy with respect to monitoring and so forth primarily on the basis of how well it applied to the main species. For example the Washington Plum Creek plan covers four listed species (grizzly bears, gray wolves, marbled murrelets, and northern spotted owls) and 281 non-listed species (some of which were can-

didate species and may be listed in the future). For this plan, we examined only the four listed species, and, because this plan was really tailored to northern spotted owls, we used the plan's performance with respect to spotted owls as the major issue to be evaluated.

3. CHECKS ON DATA REPRESENTATION AND ACCURACY OF ANALYSIS

With 89,908 entries in our data base and analyses conducted by several different individuals and universities, there was obviously an opportunity for errors to creep into our data. To offset this problem, we enlisted the cooperation of the USFWS and sent them a preliminary draft of the manuscript, the questionnaires, and all of the data. The USFWS then coordinated a review of all of these materials. Importantly, the data were sent to the USFWS regions that had originally approved the HCPs of concern. After a heroic review process, the USFWS suggested changes for 4367 data entries. We made 4328, or 99.1 percent, of their requested changes. It is important to note the tremendous effort USFWS put into examining our data base, and also to acknowledge that USFWS in no way endorses or takes responsibility for our data or our interpretations of the data. We simply point out that the raw data themselves were reviewed internally by our own research group and externally by USFWS. There still certainly remain errors, but we doubt that the analyses we report would be substantially altered by the errors in the data. For example, observation errors for field counts of animals are often on the order of 10–40 percent, a magnitude of error we are confident we were well below. All analyses, with one exception, are performed on the corrected data, and the data on the website represent the corrected data. The one exception is our analyses of "school bias," in which we asked whether groups from the participating universities answered questions differently. For that analysis, we used the "uncorrected data," because error rate is one way in which the groups might differ.

For many of the analyses presented below, we use one of the two questions that summarize the adequacy of each of the five stages of the HOP process (see above). To assess whether they are valid measures of scientific adequacy, we regressed the graded-scale (1–6) measures of adequacy (see Appendix I-B) for each section on seven aggregate variables indicating the knowledge about, and analysis of, various categories of biological information about each species (see website and Appendix I). We used both one-way regressions using just one set of biologically distinct answers to detailed questions (e.g., data on changes in numbers or demography) and multiple regressions using combinations of variables. These multiple regressions usually had much lower sample sizes than did the simpler analyses, due to many combinations of missing values. All analyses were performed on normalized variables. For each of the five stages, some types of information or types of question (e.g., the presence of data versus the type of analysis of the data) had little effect on quality rating, whereas others were extremely good predictors. For each stage, the R^2 values for the single best regression are Status, 0.66; Take, 0.92; Impact, 0.59; Mitigation, 1.0; Monitoring (performed separately for monitoring of take, status, and mitigation), 0.92, 0.91, 0.92. Overall, the results from these analyses show that the summary rankings are well predicted by the details of data and analysis used at each step of the HCP process (see Tables 3 and 4, and Appendix III).

Because of the time and effort needed to find, read, and synthesize the full background data for each of the 43 focal HCPs, each plan was analyzed in depth by only one university. Because the participants at different universities differed in background, and because of the unique cultural differences among our groups (e.g., Yale versus U.C. Berkeley versus N.C. State University), we were concerned to test that the identity of the evaluating university did not substantially influence plan evaluation. Two problems could arise from such differences. One of these is loss of power to detect real differences and effects in the plans due to added noise. The second and more serious problem is systematic biases in the patterns we see among plans. Furthermore, as noted above, we are often interested in analyzing for species-level effects and must therefore account for the correlation in species answers due to plan-level effects.

To check for university biases, we fit a set of mixed linear models to species-level data using SAS PROC MIXED, which allowed us to assess the effects of institution on the adequacy ratings in five major areas (Status, SQ:B43; Take, SQ:C33; Impact, SQ:D47; Mitigation, SQ:E49; and Monitoring, SQ:F80). We used these models to determine whether universities differed with respect to ratings and whether these differences affected the statistical significance of the relationship of the five adequacy ratings to the factors Date, Duration, Multiple Species (yes/no), Taxon, and Area. In the model, university and plan were considered random factors, and Date, Duration, Multiple Species, Taxon, and Area were considered fixed factors (Date, PQ:

181; Duration, PQ: 178, Plan Species Number (from PQ: 11, coded for three levels), Taxon SQ:A3; Area, PQ: 182; Existence of Recovery Plan, SQ:A8). The results showed that only for Mitigation effects was the school to school variation a sizable portion of the residual variation (Table 5). In sum, these tests for university biases suggest that there are generally not strong or consistent differences in the ratings of different universities—certainly nothing of a magnitude that is likely to influence our results or conclusions.

4. A DESCRIPTIVE OVERVIEW OF HCPS

Before beginning our analysis of how science is used in HCPs, we report the general characteristics and diversity of the HCPs in our sample of 208. In particular, we summarize descriptive data about where HCPs were implemented, who developed them, why they were developed, how large an area they address, how long they last, what species they address, and what approaches to habitat conservation planning are used. Second, we describe these same characteristics for our intensively studied sample of 43 focal HCPs and compare them to the larger set of 208 plans.

4.1. Attributes of Sample of 208 HCPs

More than 70 of the sample of 208 HCPs were coordinated and approved within the Balcones Canyonlands Conservation Planning area in Texas. Because these plans are very similar to one another and may bias general patterns of HCP characteristics, we report two results whenever appropriate: one based on data for all 208 plans and one excluding data for the Balcones Canyonlands plans.

Any nonFederal entity can develop an HCP in support of an incidental take permit application. Most HCPs (82 percent) were submitted by single private landowners (either corporations or individuals). Just 3 percent of HCPs were submitted by state and local governments. Fourteen percent were developed for lands under multiple jurisdictions (these could be public, private, or both); an example of a multiple jurisdiction plan is the Orange County NCCP (see website plan narratives). If the Balcones Canyonlands plans, which were developed for numerous private landowners, are excluded, these proportions change to 72 percent private, 5 percent public, and 22 percent multiple jurisdiction. The areas covered by HCPs can differ dramatically—on an "area basis," the figures are 14 percent private, 18 percent public, and 67 percent multiple jurisdiction.

HCPs are developed because some action is expected to take threatened or endangered species and thus to have impact, which can be either reversible or irreversible. Reversible impacts include those that could be expected to diminish substantially in 100 years or less; examples include the impacts of timber harvest rotations or livestock grazing. Irreversible impacts are those that have a permanent effect on species or their habitats, such as urbanization or land conversion. Fourteen percent of HCPs will result in reversible impacts and 81 percent in irreversible impacts. Five percent will have both reversible and irreversible impacts. When Balcones Canyonlands plans are excluded, the proportions shift to 23 percent having reversible impacts, 69 percent having irreversible impacts, and 8 percent having both. Data collected for the 43 focal HCPs allowed a more specific characterization of land uses motivating HCPs. Within this smaller dataset, the primary land use changes were specifically defined, e.g. agriculture, logging, urban development. For each plan, various land uses were ranked according to their importance in motivating that plan; a ranking of 1 identified the land use change that was the primary motivation for the HCP (PQ:42–49). Although plans may be motivated by many different changes in land use, 56 percent of those we examined in depth (24 of 43) were motivated by construction of buildings; logging came in second at 19 percent (8 of 43).

We analyzed the duration and size distribution for HCPs using the larger data set of 208 plans. Land areas covered are extraordinarily diverse, spanning six orders of magnitude. The smallest approved plan protects the Florida scrub jay (*Aphelocoma coerulescens*) on just 0.17 ha (0.4 acres). The largest plan to date covers over 660,000 ha (over 1.6 million acres) of forest managed by the state of Washington Department of Natural Resources. Nevertheless, most HCPs are relatively small. The median size is less than 10 ha (24 acres), and 74 percent of HCPs cover fewer than 100 ha (240 acres). If Balcones Canyonlands HCPs are excluded, the median size increases to about 44 ha (110 acres), and 59 percent of HCPs cover fewer than 100 ha (250 acres). For simplicity and comparative purposes, HCPs were categorized as small (0–10 ha), medium (>10–1000 ha), or large (>1000 ha). The largest proportion of all HCPs falls in the small size category (50 percent). When the Balcones Canyonlands plans are excluded, tile largest fraction falls in the medium category (48 percent). No directional trend over time in the mean size of HCPs is apparent. Regressions with and without Balcones Canyonlands plans of log(area) of HCPs on year of approval yield slopes not significantly different from zero (P >0.14

and P >0.07, respectively). Some recently approved plans are larger than their predecessors, but other recent plans are smaller, suggesting only that the aerial extent of HCPs has diversified with time.

The length of time over which an HCP is to be implemented is correlated with the duration of the ITP for which the plan was developed. Plan durations are diverse, ranging from 7 months for a plan in Travis County, Texas, to 100 years for HCPs implemented by the Murray Pacific Company in Washington. Two plans developed for private properties in Texas are to be maintained in perpetuity. Excluding those two plans, the median duration of HCPs is 10 years, and 60 percent of HCPs will be maintained for 20 or fewer years. Excluding the Balcones Canyonlands plans, the median duration of HCPs increases to 22.5 years. Over time, the durations of approved HCPs have diversified, but they exhibit no significant directional trend. When Balcones Canyonlands plans are excluded from analysis, a regression of plan durations on approval dates suggests that more recent plans may be longer, but the trend is not statistically significant (P >0.15).

Although no HCPs show directional trends in either duration or area, these two characters are positively correlated with one another (Figure 1). A regression of HCP duration on HCP area yielded a positive relationship in which small HCPs tend to have shorter durations and larger plans longer durations (P <0.001). Such a relationship seems reasonable because a larger planning area may necessitate a longer planning horizon.

The 208 HCPs examined cover 73 threatened and endangered animal species: 22 birds, 13 mammals, 19 reptiles and amphibians, 18 invertebrates, and 1 fish (Table 6). Fifteen species of plants are also covered under HCPs, even though the ESA does not mandate such protection on non-Federal lands. The number of HCPs that cover various threatened and endangered taxa are presented in Table 6. The majority of HCPs (143) cover one or more bird species. Mammals and covered by 32 HCPs and amphibians and reptiles by 33.

Because HCPs can address conservation of single species, multiple species, or habitats, the assessment of status, take, impact, and mitigation measures vary accordingly. For single-species plans, they are species specific. Multi-species plans are essentially scaled-up versions of single-species plans. Assessments of status, take, and impact are done for each covered species; mitigation measures may address multiple species simultaneously but are still species-specific. Habitat-based plans represent a distinctly different approach. They are based on the premise that, by protecting the ecological integrity of a natural habitat, one also protects the many species within that habitat (USFWS and NMFS, 1996). Such plans de-emphasize species-specific analyses and mitigation measures, focusing instead on more holistic protection and management of the habitat. Most HCPs (84 percent) are single-species plans. Multi-species plans make up 12 percent and habitat-based plans only 4 percent. Excluding the Balcones Canyonlands plans shifts these proportions to 74 percent single-species plans, 7 percent multi-species plans, and 19 percent habitat-based plans. Habitat-based plans have only been developed since 1993, so their prominence among HCPs is likely to change in the future. Certainly there is increasing interest in assessing the quality of large habitat-based plans because of their larger spatial scale and biological breadth.

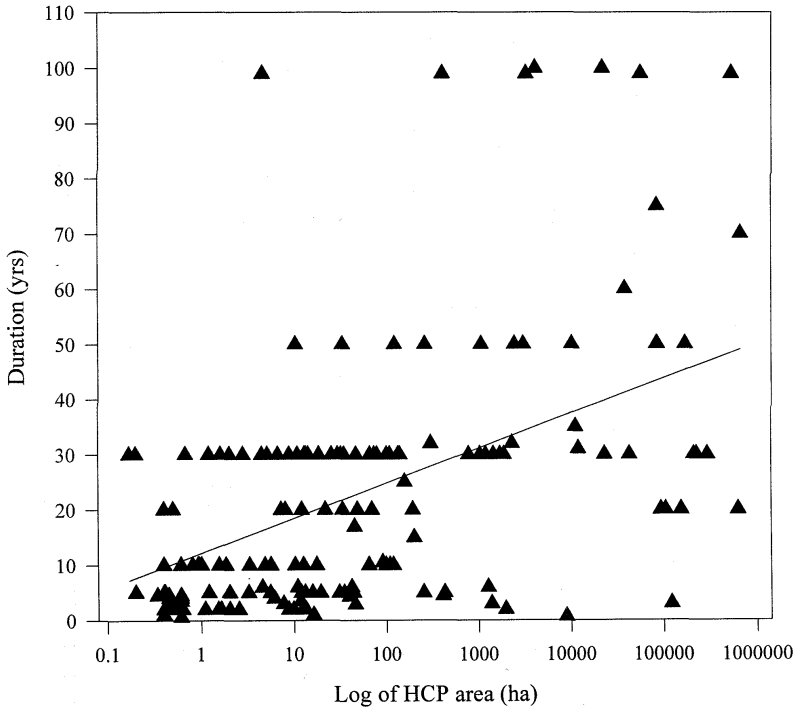

Figure 1. The relation between plan duration (AQ:3) and plan area (AQ:6a). The line shown is the best fit-linear regression, with R^2=0.27 and p<0.01. (N=192 HCPs)

4.2. Attributes of 43 Focal Plans

The following subsections compare characteristics of the 43 focal plans with those of the larger HCP population. We assert that the focal plans adequately represent the diversity of HCPs, allowing a general evaluation of how science is used in habitat conservation planning.

Time of Approval

When selecting focal HCPs, we biased our sample toward more recent plans. These presumably reflect current approaches and strategies in HCP development and are therefore more pertinent for the evaluation we have undertaken. Ninety percent of the 43 focal plans were approved after 1992, compared with 89 percent of the whole population of HCPs (PQ:3).

Applicant Types

To sample a sufficient number of plans developed by state and local governments and by multiple jurisdictions, we biased our selection of focal HCPs with respect to this characteristic. Among the focal plans, 71 percent were developed by private entities, 10 percent by state or local governments, and 19 percent for lands under multiple jurisdictions (PQ:65).

Area

We selected focal plans non-randomly with respect to size to avoid sampling bias due to the many small Balcones Canyonlands plans and to achieve more balanced representation of different-sized plans. As a consequence, the proportions categorized as small, medium, and large differ from those observed in the larger HCP

sample. Nineteen percent of the plans selected were small, 40 percent were medium, and 42 percent were large (PQ:28).

Duration

Plan durations were categorized as short (up to 5 years), medium (>5 to 20 years), and long (greater than 20 years). Twenty-three percent of the plans selected were of short duration, 20 percent of medium duration, and 58 percent of long duration (PQ:4 minus PQ:3).

Species

By selecting only 43 HCPs for intensive analysis, we necessarily reduced the number of different species protected under these plans. Nonetheless, 64 out of a possible 73 different listed species are covered in our focal-plan subsample. Birds, mammals, reptiles and amphibians, fish, and invertebrates were included.

Approach

The focal HCPs were chosen to represent the primary approaches to habitat conservation planning: single-species plans, multispecies plans, and habitat-based plans. Fifty-one percent of the focal HCPs were single-species plans, 21 percent were multispecies plans, and 29 percent were habitat based plans. These proportions differ from those for the larger HCP population in that multispecies and habitat-based plans are over-represented. We intentionally sought an over representation of these large multispecies plans because they represent the major impacts in terms of total area and because there has been a move toward increasingly favoring these types of plans (although small single-species plans continue to play a role) (PQ:7 and PQ:8).

5. THE USE OF AVAILABLE DATA FOR HCP PLANNING

Before evaluating the five key components of HCPs (status, take, impact, mitigation, and monitoring), we first discuss the more general issue of data availability. In particular, we assess what data are altogether lacking, what data are available but not used, and the quality of analysis of available data.

5.1. Data Limitations

To assess data availability during HCP preparation, we first documented the proportion of cases for which we were unable to determine basic information on a species or effects of actions authorized in the HCP on the species. These analyses provide a view of how often scientists lack information on species for basic assessments. Note that we did not restrict our search for this basic information to the HCP or its supporting documents—we did a thorough literature search that covered peer-reviewed publications and the "gray literature." We found that the basic information necessary to make determinations about potential threats to species (SQ:A12-A21), the status of a species or its habitat (SQ:B26-B42), and the type and magnitude of take that will occur (SQ:C19-C28) were unavailable in many cases. For example, we could not determine whether or not there currently exists sufficient habitat to ensure a species' viability for one quarter of the species-plan cases we examined. If we do not know whether or not there is currently enough habitat to sustain a species, it is hard to determine the impacts of future losses or alterations of habitats. Lack of this kind of basic information can severely limit our ability to make correct assessments regarding the effect of proposed developments on a given species. Indeed, for only one-third of the species are there enough data to determine what proportion of the population will be affected by the proposed development. All of the aforementioned data assessments were made for the literature up to 1 year prior to permit approval.

5.2. Unused, but Available, Information

To determine whether HCP preparers did not use important data that were available, we reviewed all the information we could find that was not in the HCP and judged the importance of this information for assessment of status, take, impact, and mitigation strategies (QD responses to SQ:B1–24, C7–18, D7–30 and E7–30). In gathering this information, we considered all reports and publications that were available at least 1 year prior to the date of the HCP's approval as available for the HCP preparers. The majority of the information we found was either cited in the HCPs or deemed not to be important to the conclusions drawn in the HCP. Thus, our analysis showed that HCP preparers do a good job of finding and citing relevant data; data omissions were judged to be significant only 15–25 percent of the time (Table 7). However, a few categories of data appear to be under-researched in HCPs. Of particular concern is the omission of information regarding cumulative impacts. For example, in 23 percent of the cases, we concluded that plans neglected

information on cumulative impacts that would have altered the assessment of the impact of take. Data omissions were also potentially serious in the development of mitigation or minimization efforts (Table 7). Of particular note was the omission of information about the amount and quality of habitat with respect to feeding, breeding, and migration—these are key aspects of habitat that will be central to any mitigation for habitat loss.

5.3. Analysis of Available Data

For each category of species-specific information we reviewed, we evaluated the quality of the analysis and use of any data reported in an HCP (QC responses to SQ:B 1–24, C7–18, D7–30, and E7–30). For analyses of status, take and impact, we found that, when data were available, the overall quality of their use was high (Table 8). Data on population sizes and habitat availability were generally used well in HCPs, whereas more detailed data on species or their interactions in the environment were more unevenly applied and stood out for their relatively low scores with respect to data use (Table 8). The most significant finding in this analysis is the poor use of existing data regarding extrinsic factors (such as anticipated human population growth with likely future pressures on the species) and environmental variability for designing mitigation strategies (Table 8). Information about possible catastrophic events and environmental variability is important when mitigation is designed, because such variability can often undermine otherwise effective mitigation.

6. ASSESSMENT OF STATUS, TAKE AND IMPACT

6.1. Determining the Status of Species

Accurate determination of the status of endangered and threatened species serves to justify procedures outlined in the HCP and provides baseline data to be compared with similar estimates after development has occurred. A fundamental aspect of a species' status is knowledge of the critical threats to that species' viability. As part of our evaluation of HCPs, we identified the primary threats to the 97 species-plan combinations (some species occur in several different plans, so 64 species yield 97 combinations: Figure 2, SQ:A12–23) both at the local scale (within boundaries of the HCP) and at the global scale (over the range of the species). Overall, the most important threat to species is habitat loss, which was cited as primary threat for over 75 percent of the species, both locally and globally (Figure 2), followed by habitat degradation, habitat fragmentation, and direct human-caused mortality. Other sources of declines for species covered in HCPs include pollution, water diversion and/or damming, interactions with invasive species, and changes in community composition (which affect interactions with food, predator, parasite, and disease species).

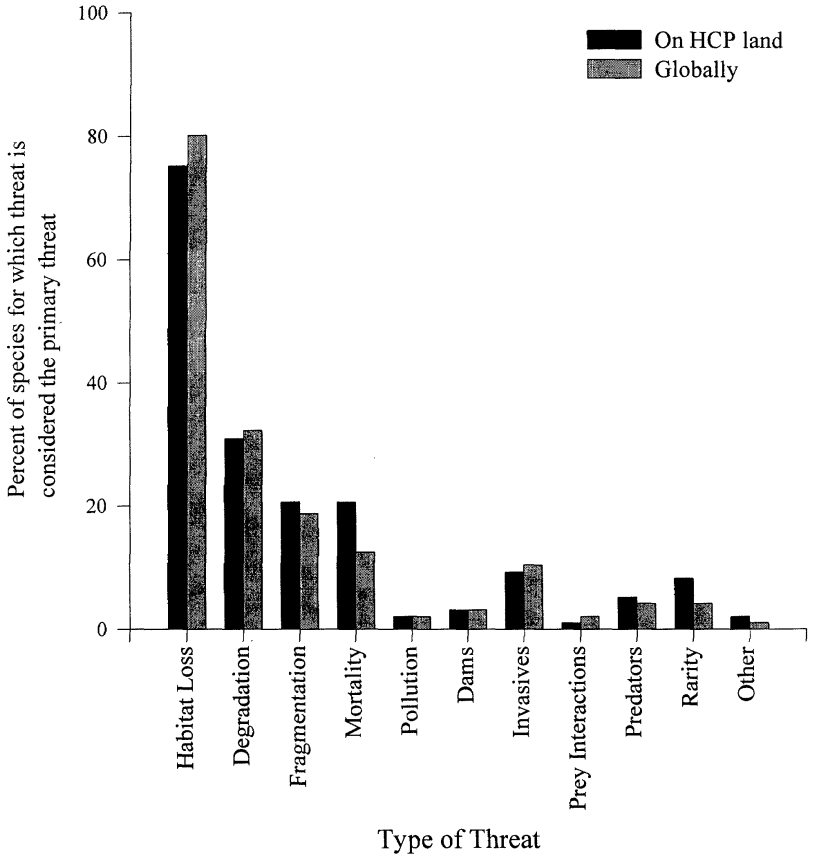

Figure 2. Major threats, at local and global scales, to species included in HCPs. For each threat category, columns indicate the number of times each type of threat was listed as most important (score of 1 for SQ:A12-22). Because multiple threats can be considered to be of major importance to any one species, the totals sum to greater than 100%. (N=97 species-plan combinations)

A second basic feature of species status is the estimated trend in abundance or numbers of individuals in the populations in question, both within the HCP area (SQ:B30) and globally (SQ:B31). For those species where population trends were known, we compared the proportion of species that were increasing, stable, or declining in numbers within the HCP area and globally. For most of the species, population sizes were known to be declining in the HCP area (57 percent total; 53 percent declining at a moderate rate and 4 percent declining so rapidly that extinction is possible within the next 20 years). An intermediate number of species were known to be stable (40 percent), and, for a small fraction of the species included in HCPs, the populations were increasing (2 percent) (Figure 3). Changes in populations for these species at a global scale are similar to those observed within HCP lands. Populations range-wide are declining for 74 percent of the species, stable for 21 percent, and increasing for only 5 percent of the species in our sample.

The status of populations of endangered species is highly dependent on the maintenance of sufficient adequate habitat for the species. Trends in habitat availability (Table 9) are similar to those observed for populations: habitat availability is declining in the local HCP area for 63 percent and is stable for 37 percent of the species in the HCPs we reviewed. Habitat quantity is not increasing for any of the species

we evaluated (Table 9; SQ:B34). Globally, habitat is declining for 88 percent of the species and stable for 12 percent and is not increasing for any of the species in our HCP sample (SQ:B35). The decline in habitat availability at larger scales underscores the importance of populations within HCP areas for overall viability of endangered species (Bean and Wilcove, 1997).

Most of the habitat remaining for species contained in the HCPs is of "medium" quality (51 percent of habitat in HCP area and 70 percent of habitat globally; Table 9; SQ:B28–29). We defined medium-quality habitat as that able to support self-sustaining populations but not able to produce an excess of individuals (i.e., not able to serve as consistent "source" populations). Habitat quality within the HCP area was generally rated of poorer quality than global habitat quality for the species in our HCP sample. In particular, 40 percent of the remaining habitat in HCP areas was deemed to be "poor" quality (i.e., not able to support isolated populations through time), whereas only 15 percent of habitat was determined to be poor globally.

6.2. Nature and Characterization of Take

Activities permitted in HCPs can result directly or indirectly in death of individuals of an endangered species, commonly referred to as "take" (ESA, 1982). Take also includes any type of harassment or harm to species and destruction or modification of a species' habitat (USFWS, 1981). Take was predicted to occur for the majority of the species-plan combinations we reviewed (73 percent; SQ:C25). For the remaining species either take was not predicted to occur as a result of HCP activities or not enough information was provided in the HCP to reveal whether take would occur. In cases where it was explicitly stated in the HCP that take would occur if the permit were approved, the quantification of take varied tremendously among plans (SQ:C27). Predicted take, in terms of the estimated number of individuals that will be displaced or killed, is poorly estimated for most of the species in our focal HCPs—in almost half of the cases (49 percent) no data in the HCP or associated documents addressed the level of take likely to result from the proposed development.

For each species evaluated in our 43 focal plans, we also asked what percentage of the population on the HCP land would be taken as a result of the proposed activities (SQ:C26). In a large proportion of the cases (42 percent), the HCPs do not explicitly estimate this figure. Among the plans in which take was estimated, the expected level of take was most often "all or nothing" (Figure 4). In the majority of cases either a small percentage (1 percent or less) or all (100 percent) of the population on the HCP land would be taken as a result of the proposed activities; few predicted intermediate take levels.

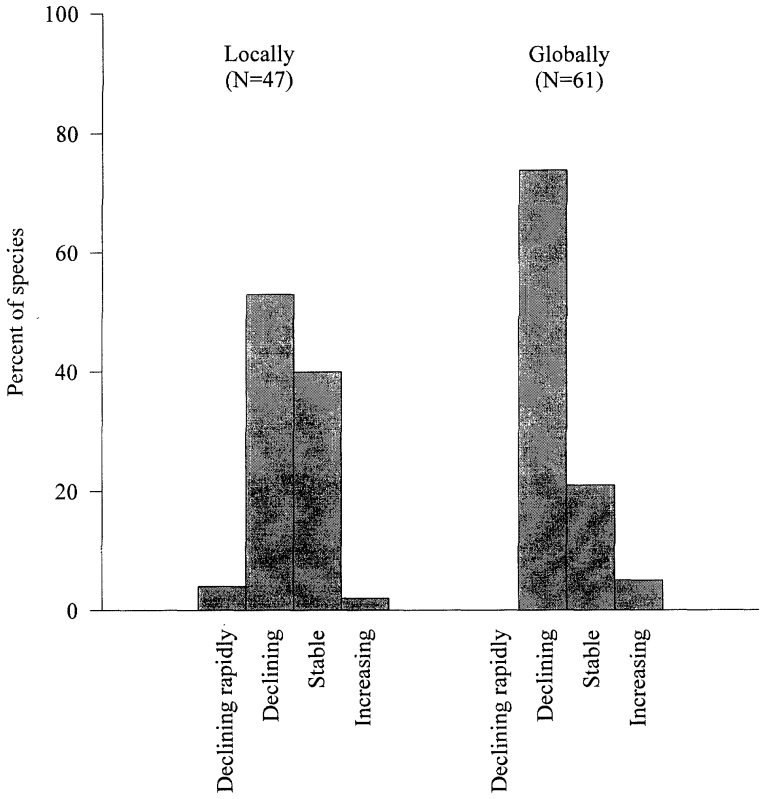

Figure 3. Local and global population trends (SQ:B30, B31) for species included in HCPs. For cases where population trends were known, we asked whether the impacted population was declining rapidly (with high probability of extinction within 20 years), declining, stable, or increasing in numbers. Sample sizes shown in parentheses.

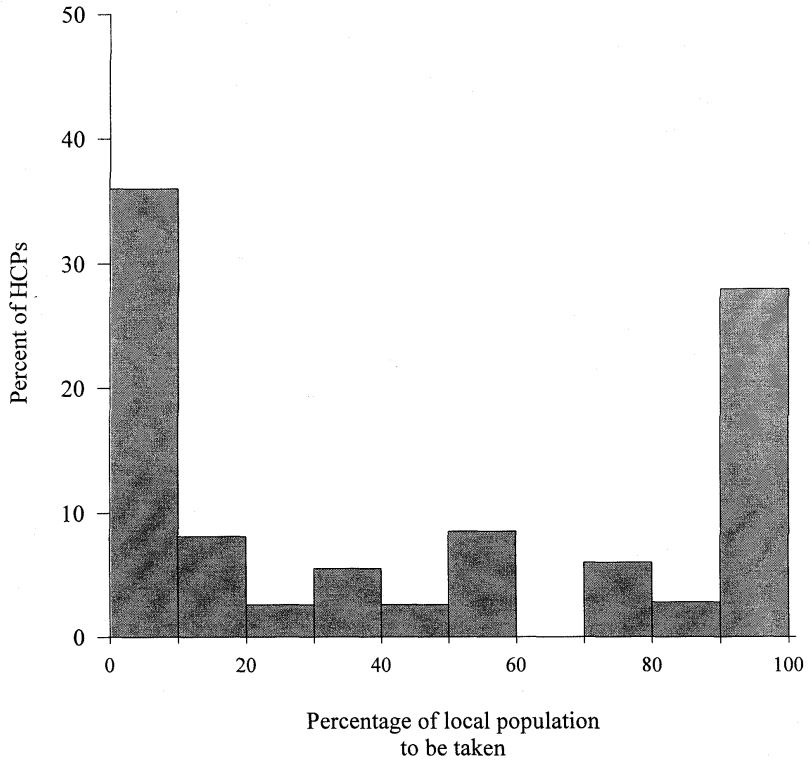

Figure 4. Percent of impacted local populations that will be taken as a result of the activities proposed in the HCP (SQ:C26). In the cases where the levels of take were estimated in the HCPs, either very few individuals from the impacted population are expected to be taken or the entire population is taken.

Our data suggest that little emphasis is currently placed on accurately estimating the consequences of proposed activities for the species or population in the HCP area. A high percentage of the species listed on incidental take permits have no quantitative estimate of take, either as the total number of individuals lost or the percentage of the affected population taken. In the cases where predicted take is quantified, our data suggest that HCPs fall into two categories: the plans either minimize take (resulting in many cases with low take estimates) or they allow for removal of 100 percent of the affected population.

6.3. Assessing Impacts of Development on Endangered Species

Impacts on populations in HCPs can be defined as the combined effects of take and habitat modification on the viability of endangered species. Because of its complex nature, quantifying impact is difficult and requires not only accurate estimates of take but also an understanding of the population dynamics, species requirements, and demographic thresholds that apply in each individual case; these data are often necessary to full understanding of the biological consequences of proposed levels activities. We reviewed the types of threats that were considered in HCPs (QE responses to SQ:D32–45) and compared those to the categories of impact we deemed important for the species given our knowledge of their biology and status (QG re-

sponses to SQ:D32–44). We ranked all categories for each individual species-plan combination on a four point scale ranging from 1 (not an important impact) through 4 (a serious impact that will significantly affect the population). We ranked area of habitat loss, percent habitat lost, direct mortality, habitat fragmentation, cumulative impacts, and altered interspecific interactions as the six most significant effects for the species in our sample (Table 10). With the exception of cumulative impacts, we generally found high concordance between our rankings and the number of times that the same impact was considered in the HCPs we reviewed.

7. MITIGATION AND MONITORING

7.1. Mitigation in Habitat Conservation Plans

A crucial feature of HCPs is the choice of mitigation procedures aimed at minimizing the threats to species included in the incidental take permit (see, e.g., gingham and Noon, 1997). In fact, this minimization of impact is required by the ESA (1982) and clearly outlined in the HCP Handbook (USFWS and NMFS, 1996). If the appropriate mitigation is chosen and implemented in a timely fashion, the impact to the species in question can be minimized to the maximum extent practicable, thus justifying the issuance of an incidental take permit. However, many scientists have criticized the mitigation plans proposed in HCPs because they have often seemed arbitrary, based more on political and economic constraints than empirical data on the species' ecology, life history, and specific requirements (Beatley, 1994; gingham and Noon, 1997; Buchanan et al.,1997). Given the importance of mitigation for the success of HCPs, we focused our analyses on the scientific basis of mitigation measures proposed. HCPs that include more than one endangered species must mitigate for impact to all species included in the take permit. Therefore, because of the species- and plan-specific nature of mitigation measures, we considered each species within a plan as our unit for analysis.

7.2. Types of Mitigation Most Commonly Used

We treated minimization of impacts (e.g., modifying construction and/or development at the site to minimize changes to the species or its environment) and avoidance of impact (e.g., working during the non-breeding or inactive season) as categories of mitigation. Minimization and avoidance were by far the most common mitigation measures proposed (Figure 5; QH responses to SQ:E32-E42). Avoidance was proposed for 74 percent of species for which permits were issued, and minimization of impact at site of development was proposed for 83 percent of species). Most mitigation efforts for a specific endangered species involve a combination of procedures. Thus, many of the less common mitigation measures (such as land acquisition, translocation, habitat restoration, etc.) are used in combination with strategies for minimization and avoidance of impact on the threatened species. The high reliance on avoidance and minimization is not surprising, as these are usually the easiest and least costly procedures to implement.

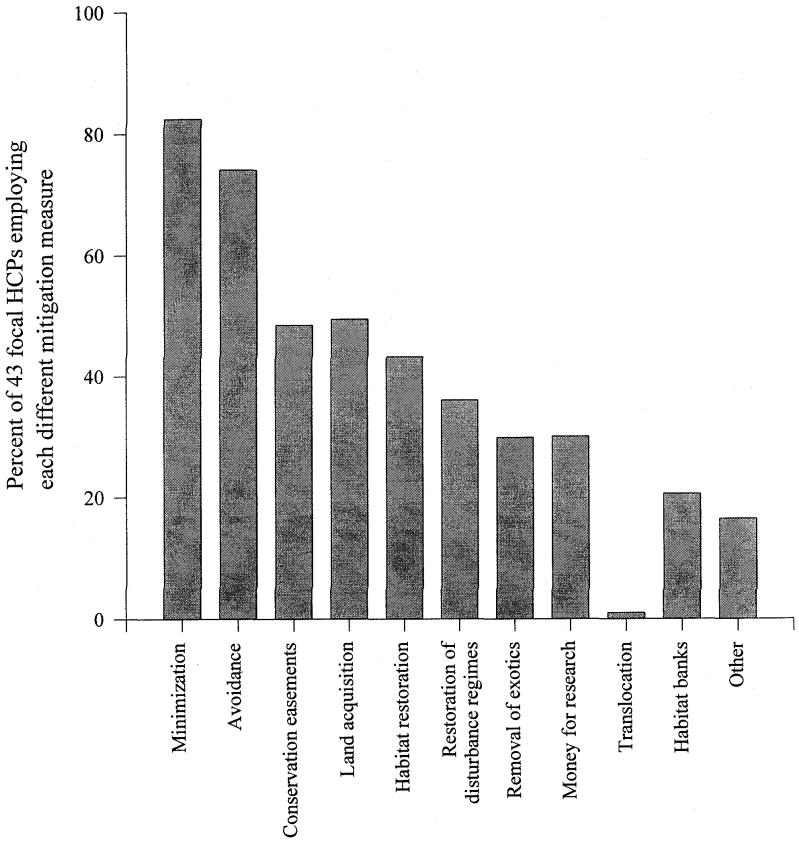

Figure 5. Frequency of specific mitigation measures proposed for all species in the 43 focal HCPs we examined (SQ:E32-42 QH). Minimization (defined as any measure at the site of development that minimizes the impact on the species while still carrying out the proposed activities) and avoidance are the most common forms of mitigation.

7.3. Quality of Data Used in Determining Specific Mitigation Measures

The quality of data underlying particular mitigation measures proposed for each species was evaluated on a 4-point scale (a continuous quality index from 0, representing "no data" used to support the chosen mitigation procedure and its reliability, to 3, representing cases where data amply document that the proposed mitigation procedure is likely to be effective; QJ responses to SQ:E32-E42). On average, the quality of data used to justify mitigation measures was relatively low (Figure 6); that is, all mitigation procedures were based on data ranked as 2 or below in our quality index (indicating that the data are, at most, moderately understood and reliable). The mitigation measures based on the highest data quality are conservation easements, land acquisition, avoidance, and minimization. Other measures such as translocation often lack data demonstrating the feasibility of the proposed actions. In general, HCPs seem to rely more on mitigation measures with higher quality scores and less on those with low scores (QI responses to SQ:E32-E42). However, there are some exceptions; for example, when habitat banks (payment of money into an account, which is then to be used to purchase land that is supposedly ideal habitat for the species threatened by the proposed activities) are used, they tend to be

a major component of mitigation programs, yet this mitigation approach has one of the lowest scores on our data quality scale (Figure 6). Given the generally low quality of data underlying many mitigation plans in HCPs, their success is not assured and, if implemented as proposed, may be very close to a "guess" in terms of curbing the impacts on the species.

7.4. How Well Mitigation Plans Address Threats to Endangered Species

Judging the actual success of mitigation procedures would require long-term information on the success of HCPs. Because very few plans have been in place for more than 8 years, this is not an option. Hence we must rely on current indicators that mitigation measures are likely to be successful. For each of the species in our sample, we estimated the likelihood of success by answering two questions. First, we asked how often mitigation measures actually addressed the primary threat to the species in question. Second, we asked to what extent the proposed mitigation measures are likely to reduce the impacts of the primary threats. Whereas the USFWS is required to adopt mitigation and minimization measures that protect a species to the maximum extent practicable, our focus was more on whether scientific evidence was presented to substantiate that the best possible mitigation was being adopted.

We found that, for the great majority of the species we examined, the mitigation procedures addressed the primary threat to the species' continued existence (85 percent; SQ:E44). However, the overall adequacy with which proposed measures addressed the primary threats varied tremendously among species (Table 11; SQ:E45). Overall, we found that for only 57 percent of the species in the sample did mitigation measures proposed in the HCP address the primary threat to the species to a degree considered "sufficient" or better. In other words, although HCPs most often identify the primary threat to the affected species, only a little more than half of the time do mitigation plans adequately address that threat.

7.5. Implementation of Mitigation Plans

An important determinant of the success of mitigation is the adequate implementation of the proposed measures. For maximum success rates of mitigation plans, it is important that the procedures be implemented in a timely fashion and preferably before the population of an endangered species is severely affected by activities proposed in the HCP. We examined two factors that affect the implementation of mitigation plans: funding for the measures and the timing of mitigation efforts relative to "take" of the impacted species.

Mitigation can be one of the most expensive steps in the development and execution of an HCP. Thus, it is important to determine the cost of the proposed measures, the source of funding for implementing mitigation, and the time period over which these funds are available. Under law, the plan for funding all expected mitigation measures should be outlined in the HCP; ideally the source of those funds should be determined a priori and not as the impact occurs in the course of development (we refer to the latter as a "pay as you go" funding program). We found that HCPs nearly always met these basic expectations: 98 percent of the HCPs outlined a priori the funding sources for the mitigation proposed (PQ:124), but only 77 percent had significant funds set aside to pay for mitigation at the onset of the HCP (PQ:125).

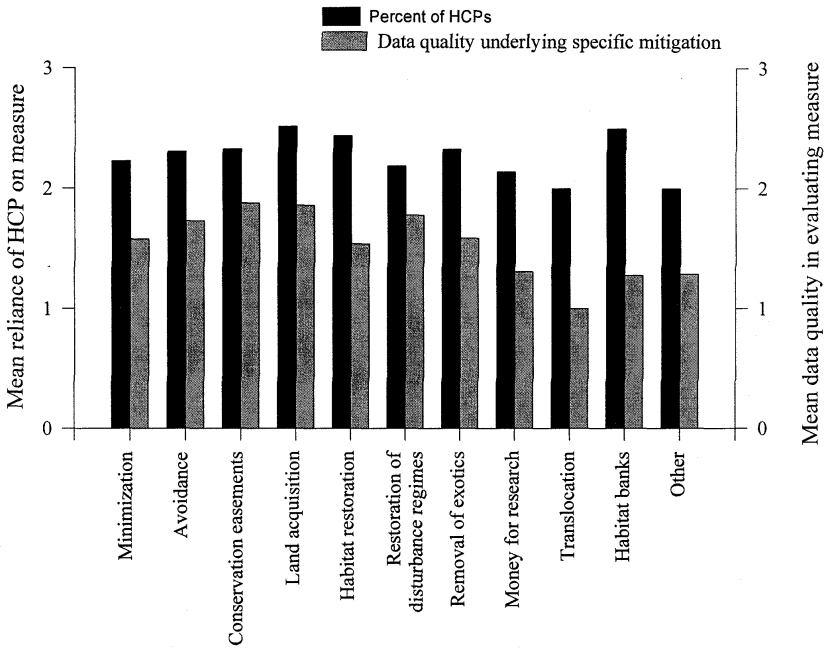

Figure 6. Data quality underlying the choice of proposed mitigation (SQ:E32-42 QJ) and reliance of HCPs upon those same mitigation measures (SQ:E32-42 QI). The quality of data underlying choice of mitigation for each species was rated on a 4 point scale ranging from 0 (no data to support the use of that measure and its reliability) to 3 (very good data, with mitigation known to work). The reliance of the HCP on these mitigation activities was also evaluated on a 4 point scale, ranging from 0 (no reliance on mitigation) to 3 (high reliance - this is one of the major mitigation measures used for the species). Bars represent the mean scores across all species examined.

Another critical aspect of mitigation is the timing of proposed measures relative to impact. It is important that mitigation measures are started at the time of take or preferably before any take occurs, thus increasing the probability that unsuccessful mitigation procedures can be detected and corrected. In contrast, if most take occurs before mitigation measures are put into effect, chances of adaptively improving on failed mitigation efforts are reduced. We found that take occurred before mitigation in a substantial number of cases (23 percent of the species examined; PQ: 126).

7.6. The Clarity and Effectiveness of Monitoring Programs

The first question to ask about monitoring is simply whether or not a clear monitoring program was outlined in the plan. We focused only on effectiveness monitoring, as opposed to compliance monitoring (see Table 1). An answer of "no" to this question does not necessarily mean that no monitoring is going on for the pertinent species, but rather that the text of the plan does not provide sufficient information or sufficiently explicit information to document that indeed a scientific monitoring program was part of the plan. Of course, a "no" could also mean that there was absolutely no monitoring whatsoever. For only 22 of the 43 plans was there a clear description of a monitoring program (PQ:60). The next obvious question concerns the effectiveness of those 22 clear monitoring programs we identified—in other words is the monitoring program designed in such a way that it would allow the success of the HCP to be evaluated? For this question the attributes of monitoring required for "evaluation of success" depended on the particular plan and the threats being

mitigated, and they could involve factors such as number and location of sample sites, frequency of sampling, and nature of data recorded. Again, a "no" does not imply that monitoring in the field is necessarily insufficient, only that the information presented in the plan and associated documents did not provide any confidence that the monitoring could evaluate success. Under this interpretation, only 7 out of 43 plans had clear monitoring programs that were sufficient for evaluating success (PQ:167). Because our criteria for answering "yes" to the questions about clear and sufficient monitoring relied on what was actually included in the documents, the reality may not be as gloomy as the numbers above suggest. If the monitoring programs were consistently a part of all HCPs, then HCPs on average would be better, and the monitoring programs themselves would be more likely to be scientifically supported because of their role in planning. We delved deeper into the data to determine exactly what was missing with respect to questions about particular species and whether any class of plans seemed to stand out as having better than average treatment of monitoring.

Monitoring can have more specific goals than evaluating a plan's success. For example, monitoring could be implemented to estimate take (SQ:F5) or population status (SQ:F31) or to evaluate mitigation success (SQ:F57). Our more refined analysis of monitoring according to take, status, and mitigation echoes the earlier conclusion about generally poor monitoring. In particular, when broken up into the components of "take, status, and impact of mitigation," monitoring was found to be adequate for any component in 65 percent of the plans at most (Figure 7).

Adaptive management and monitoring are clearly interconnected because adaptive management requires monitoring data with which to evaluate the success of alternative management strategies. Although most plans did not include provisions for adaptive management, those that did were also significantly more likely to include clear monitoring plans (cross analysis of PQ:60 and PQ:61). In particular, 88 percent of the plans with provisions for adaptive management had clear monitoring plans, whereas less than 30 percent of the remainder had clear monitoring plans ($\chi^2 = 14.93$, $P = 0.001$).

Many more detailed questions could be asked about monitoring, but so few plans were judged to include clear or sufficient monitoring programs, that sample sizes are small. Moreover, the major results are clear with the most straightforward analyses:

1. Barely 50 percent of the plans contain clear monitoring programs, and they rarely include monitoring programs that are both clear and sufficient for evaluation of a plan's success.

2. The provision of adaptive management in plans was often associated with clear monitoring programs.

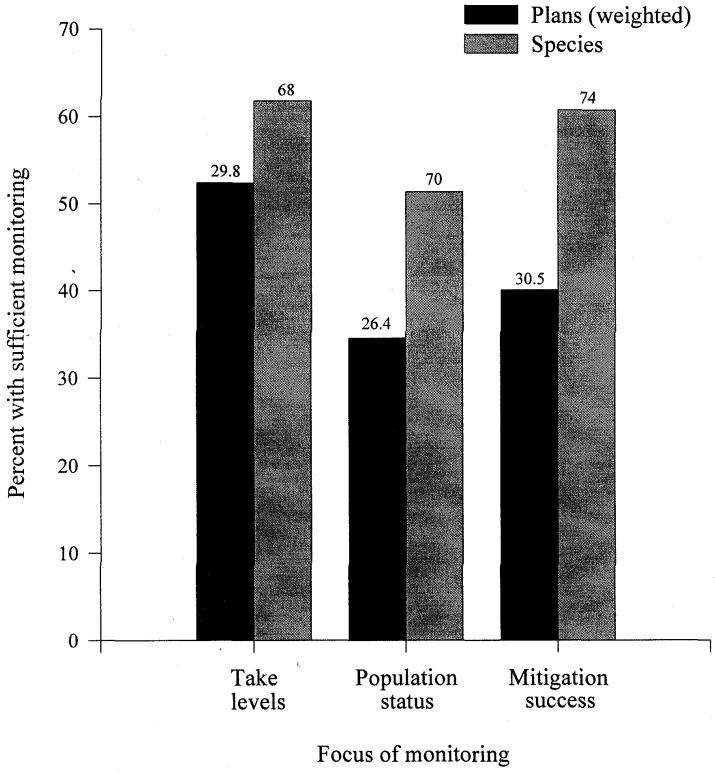

Figure 7. The percentage of monitoring programs deemed adequate with respect to their evaluations of take, status, and mitigation. The analysis was done in two different ways: For the plan-weighted analysis, each species in the plan is weighted by 1/(#spp. in the plan). For the species analysis, each species is treated as a separate and equally weighted unit regardless of how many other species might be subject to monitoring in the same plan. Sample sizes shown above each bar; fractional sample sizes are possible for plans because of the weighting factor.

Monitoring should be a key component of an HCP because there is no way to evaluate the performance of an HCP without adequate monitoring. Our data compellingly show that monitoring programs are often either poorly described or nonexistent within the HCPs themselves and their associated documents. It might be argued that this lack of description does not matter as long as sufficient monitoring is implemented "on the ground" in the real world, but if the HCPs fail to spell out the details of monitoring programs, the adequacy of monitoring cannot be scientifically evaluated.

8. GENERAL PATTERNS AND FACTORS SHAPING SCIENCE IN HCPS

Above we have presented analyses of each of five stages of HCP planning (status, take, impact, mitigation, and monitoring). Here, we investigate the interactions between stages of the HCP process and test for patterns and principles that connect and synthesize the different aspects of the HCP planning process. In particular, we focus on the cumulative effects for HCP adequacy of several factors (e.g., differences between single-species and multiple-species HCPs) that are likely to indicate trends in future HCP science. In this section, we have for the most part used species as

the sampling unit and used as dependent variables answers to questions regarding the overall quality of each stage of analysis (SQ:B42–43, C32–33, D46–47, E48–49, F79–80). We first present results showing overall patterns in adequacy and then discuss in more detail the importance of different aspects of species biology and plan characteristics for the scientific rigor of HCPs.

8.1. Multivariate Analyses of "Adequacy" Rankings and Correlations with Attributes of Plans

In general, the earlier stages in HCP planning are the best documented and best analyzed (Figure 8). In particular, species status is often well known and adequately analyzed, whereas the progressive analyses needed to assess take and impact are more poorly done or lacking; inadequate assessment of impact is especially common. We next consider what factors may explain the range of adequacy seen across different HCPs and different stages of analysis. Factors that we considered in our analyses were those that seemed most likely to influence the quality of HCP analysis, plus those that may indicate whether changes in HCP formulation will have desirable results. For example, both multispecies and large-area HCPs have been advocated, and thus we asked whether the area covered by an HCP or the number of species covered influenced the quality of biological analyses in HCPs. In particular, we tested for the effects of the following seven variables:

- Area covered by the Incidental Take Permit (PQ:28)
- Plan duration (PQ:4 minus PQ:3)
- Existence of an approved recovery plan (SQ:A8).
- Single-species vs. Multispecies Plan (PQ:7)
- Habitat-based vs. Species-based Plan (PQ:8)
- Taxon (SQ:A2)
- Date of permit (PQ:A3, categorized as Early [1983–1994] or Recent [1995–1997])

To test for effects of these variables on each of the five HCP planning steps, we performed a series of MANOVAs using standardized transformations of all variables. We first performed separate, one-way MANOVAs using each of the above variables, with the five ratings of analysis quality as dependent variables (SQ:B43, C33, D47, E49, F80). Next, we performed two multiway MANOVAs. The first used all seven independent variables; the second included only the five independent variables with one or more significant or near-significant ($P < 0.20$) effects in the first analysis. We used this combination of one-way and multiway analyses both because missing values considerably reduced the sample size of tests using all variables and because, without large sample sizes, multiway MANOVAs can provide only weak tests for effects. Finally, we repeated this entire set of analyses using weightings to account for unequal numbers of species per plan (weighting was by: 1/(number of species in plan)). Table 12 presents the overall results from these tests. In addition to these overall analyses, we also conducted a variety of other tests and comparisons to elucidate the effects of each factor on HCP quality. Below, we separately discuss HCP adequacy in light of each of these causal factors.

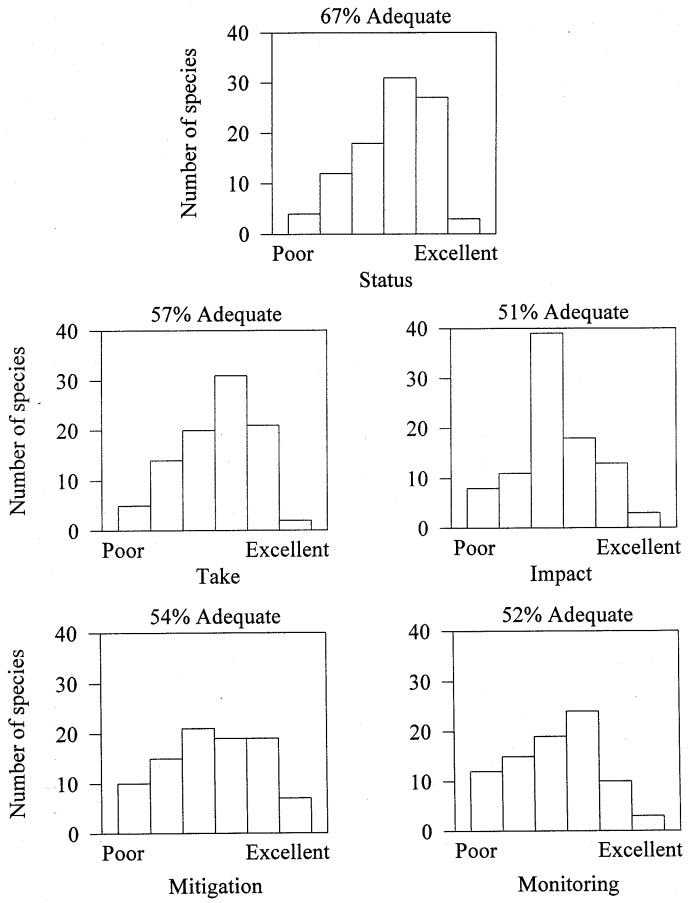

Figure 8. Quality of analysis and data at the five stages of HCP analysis: status (SQ: B43), take (SQ:C33), impact (SQ:D47), mitigation (SQ:E49), and monitoring (SQ:F80). Histograms show the number of species with analysis falling into each of six quality categories ranging from poor to excellent. Above each histogram is the percentage of species for which plans were scored as "adequate" as opposed to "not adequate" by a separate, binary ranking for that step of HCP analysis (SQ:B42, C32, D46, E48, F79).

8.2. Correlations Between Scientific Quality and Area or Duration of Plans

The promotion of large-scale HCPs incorporating "ecosystem management" by Secretary of the Interior Bruce Babbitt and the USFWS is viewed by many biologists as a positive trend (Noss et al., 1997). In addition, an increasing number of large-scale HCPs are region-wide programs dealing with single focal species. Along with promulgation of these very large-scale HCPs, there is also an effort to expedite the development and approval of the smallest HCPs; the HCP Handbook (FWS and NMFS, 1996) suggests both (1) that USFWS and NMFS encourage state and local governments and private landowners to undertake regional HCPs and (2) that "low effect" HCPs will be expedited and simplified as much as possible. "Low effect" HCPs are usually of small area and are defined as having minor or negligible effects on listed or candidate species and on other environmental resources. There has been a great proliferation of small HCPs, especially HCPs concerning the golden-checked

warbler in Travis County, Texas, which account for 36 percent of all currently approved plans.

Our univariate analyses of overall adequacy provide some evidence that the area covered by a plan is related to four aspects of species-based planning—status, impact, mitigation, and monitoring (Figure 9)—but the lack of significant results from multiway MANOVAs suggests that these results are weak (Table 12). Looking toward the future, we cautiously share the general view that larger scale HCPs should be encouraged, but past HCPs lend no evidence that the largest HCPs will necessarily be "better" scientifically.

Among our 43 sample HCPs, none permitted before 1995 exceeded 30 years duration; since 1995, a number of plans have been signed whose duration exceeds 50 years. These increases in plan duration have important implications for land-use planning by the permittee and for the likelihood of plan success from a biological standpoint. Longer plans may be advantageous for permit holders because they relieve the threat of changes in regulations governing land use. Likewise, plans of longer duration may be advantageous to species if they result in more careful research, more flexibility in take activities, or greater protection or enhancement of habitat. On the other hand, a 100-year HCP that lacks provisions for adjustments in land use practices in the face of declines in focal species could result in severe biological losses with no regulatory means to avoid them.

Our MANOVA results suggest that HCP duration had contrasting effects on the three stages of analysis—the analyses of status, take, and monitoring (Table 12). For example, plans of longer durations were characterized by higher quality status assessments, but lower quality take assessments. These results indicate that the effects of plan duration are complex—neither consistently increasing nor decreasing the quality of science in support of the assessments.

8.3. The Existence of Recovery Plans and Scientific Adequacy

Under the Endangered Species Act (ESA), the Federal Government is charged with drafting recovery plans for listed species. The development of these plans entails the collection and collation of detailed information related to the abundance, distribution, habitat needs, and life history of a species, the identification of primary threats to the species, and formulation of management prescriptions that will result in the de-listing of the species. Although, for a variety of reasons, recovery plans have not been established for most listed species (Tear et al., 1993), it seems clear that recovery plans ought to provide much of the information and management context needed for the formulation of good HCPs. In particular, it has been argued that recovery plans can provide a global context for activities proposed under an HCP, particularly through assignment of critical habitat needed for species recovery (USFWS and NMFS, 1996; National Audubon Society, 1997).

Of the 97 treatments of species in our sample of HCPs, 59 had recovery plans established prior to the development of the respective HCPs. In some, the text describing these attributes of species closely match the wording within the recovery plans themselves. Specific mitigation techniques, such as the design and placement of artificial nest boxes for red-cockaded woodpeckers (*Picoides borealis*) or the translocation of Utah prairie dogs (*Cynomys parvidens*), were borrowed directly from recovery plans in the development of HCPs. Discussions with HCP applicants and USFWS officials confirm this impression. Typically, when a recovery plan exists, it is used extensively by applicants in developing an HCP.

However, in contrast to expectations, there was evidence that adequacy of HCPs was negatively linked to the existence of a recovery plan (Table 12; Figure 10). In fact, using our yes/no delineations of adequacy, the trend was in the opposite direction for three of the five steps of HCP analysis (Table 13); a species was more likely to have adequate information included in its HCP if it did not have a recovery plan.

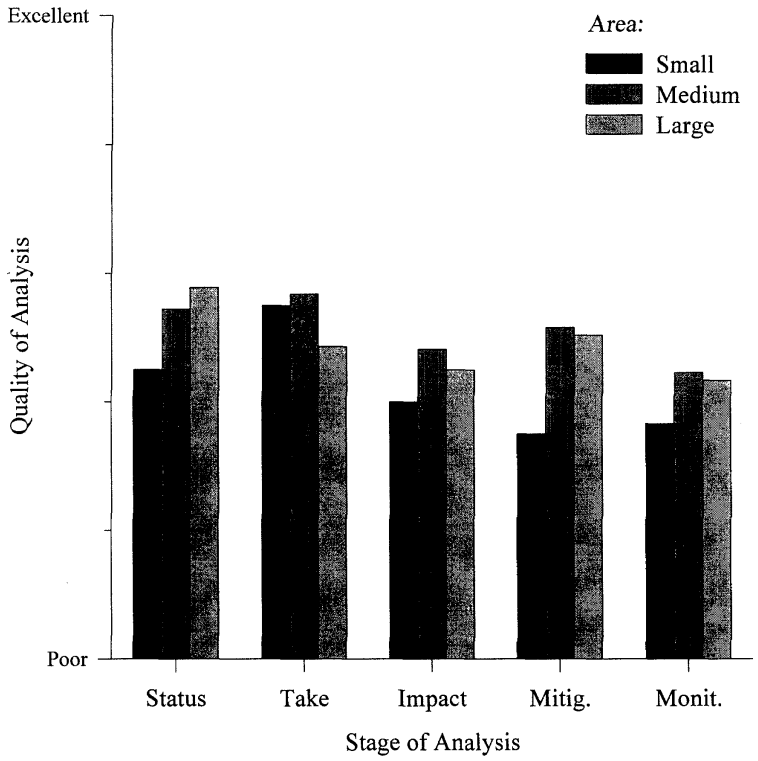

Figure 9. The effect of HCP area (PQ:28) on the quality of analysis and data at the five stages of HCP analysis (SQ:B42, C32, D46, E48, F79). In general, the results suggest that HCPs covering small areas (0-10 ha) are less likely to analyze status, mitigation, and monitoring adequately, whereas those covering large areas (>1000 ha) do a poorer job of analyzing take.

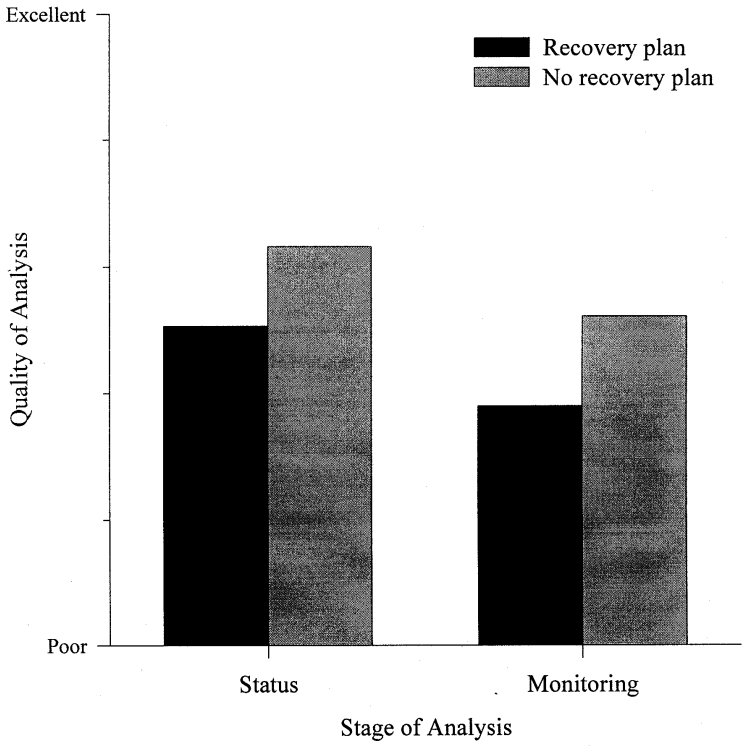

Figure 10. The effect of the existence of a recovery plan (SQ:A8) on the quality of analysis and data at several stages of HCP analysis (SQ:B42, F79). The results show that for both status and monitoring, the presence of a recovery plan is associated with a less adequate analysis.

We also asked whether there was a relationship between critical habitat designation for a species and the quality of HCP analyses for those species that did have recovery plans. As for recovery plans, we found no evidence that adequacy of HCPs was positively linked to the existence of a critical habitat designation (Table 13). Again, the trend was in the opposite direction for each of five categories of information collected from HCPs. On average, a species was more likely to have adequate information included in its HCP if it did not have a critical habitat designation.

8.4. Quality of Different Types of HCPs

Treatment of multiple species in the same HCP is appealing to both landowners and the government because it can provide a single planning process with which to address simultaneously all of the potential rare species issues for an area. Furthermore, by obtaining incidental take permits for many listed and currently unlisted species, multispecies HCPs can provide far higher assurance to landowners that they will not encounter future impediments to development plans. This assurance is an especially important incentive to landowners in areas with high densities of proposed and candidate species (e.g., California and Florida). Increasing the number of species (from single species plans to multispecies plans) tended to increase the quality of impact assessment, but had no impact on all other assessments (Table 12). A second way of including many species under the mantle of HCP planning is through "habitat-based" HCPs. For example, the NCCP program in southern California (see website for a narrative description of this plan) takes this approach—species are grouped according to the habitat communities they require, and plan-

ning relies in part on the assumption that adequate protection for each species can be gained through protection for each habitat type. In habitat-based plans, information about habitat and fragmentation, and trends in those habitat characteristics, is used as the primary indicator of species status. Theoretically, information about habitat quality and quantity can be related in a rigorous, scientific manner to population status for a particular species, and in this way, habitat characteristics can legitimately be used as a proxy for missing information on population status. Overall, our MANOVAs show positive effects of habitat-based planning on the scientific quality of HCPs (Table 12; Figure 11). For example, one-way analyses and comparisons of yes/no adequacy rating provide evidence of positive effects on status, take, and monitoring assessment. Taken together, these results suggest that habitat-based planning has not resulted in lower scientific quality in HCPs and may in fact result in better, more scientifically defensible, planning efforts.

8.5. Scientific Quality in Relation to Taxonomy and Date the HCP Was Signed

Major taxonomic groups differed strongly in how well or poorly planning was done, and also how these differences are manifested at different planning stages. We divided the species covered in our HCPs (except for the one fish species) into six taxonomic groups. Overall, taxonomic group was strongly related to adequacy of planning (Table 12), and these differences are also evident at three of the five stages of analysis: impact, mitigation, and monitoring (Table 12; Figure 12). Surprisingly, taxonomically determined differences in adequacy ratings seem to be much more easily explained by the difficulties posed by biology than they are by the political profiles or universal appeal of different groups. For example, plants had the most effective monitoring programs, probably as a result of their sessile—and thus easily studied—lifestyles. In contrast, mammals scored low with respect to impact assessment, monitoring, and mitigation. This pattern is probably due to the difficulty of obtaining good estimates of abundance, population trends, and demography for such mobile and largely nocturnal animals. Birds and herps (reptiles and amphibians) had intermediate ratings for each of the steps of analysis (Figure 12).

The date of issuance of the incidental take permits for our 43 focal HCPs ranged from a single plan in 1983 (San Bruno Mountain, the first HCP completed) to 25 plans in 1996–97. For several stages of planning, and for overall quality, more recent plans are better than older ones (Table 12). Perhaps the most biologically important aspect of this improvement is in mitigation analysis; before 1995, only 10 percent of species covered included "adequate" analysis of mitigation, whereas from 1995–1997, 59 percent of species were adequately analyzed. Similar improvements have occurred in all other steps of analysis, indicating that HCPs are—as their advocates have claimed—becoming more rigorous scientific documents.

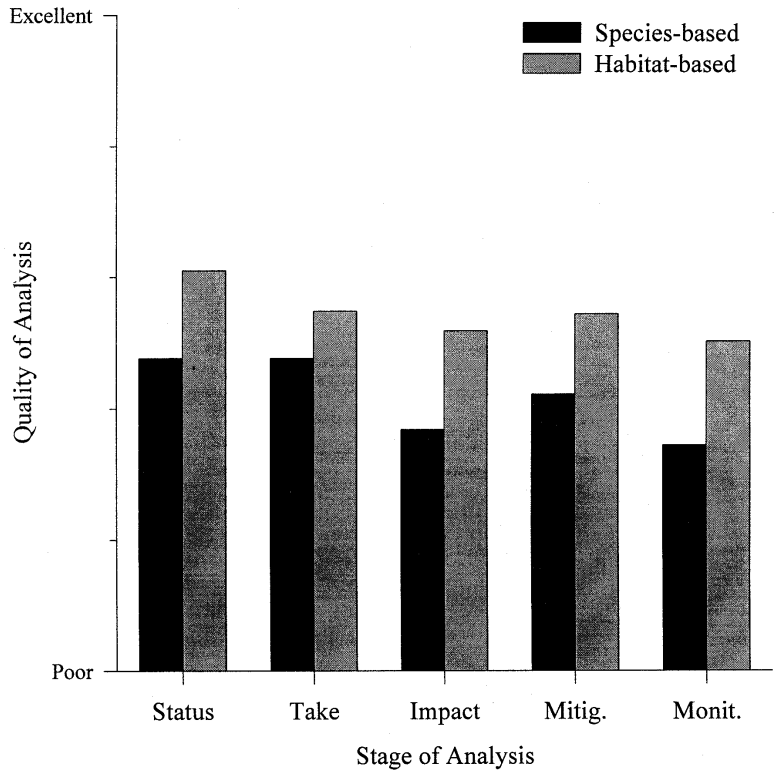

Figure 11. The effect of using a species-based versus habitat-based planning approach (PQ:8) on the quality of analysis and data at the five stages of HCP analysis (SQ:B42, C32, D46, E48, F79). The results indicate that at all stages of analysis, habitat-based HCPs are associated with better analysis and data.

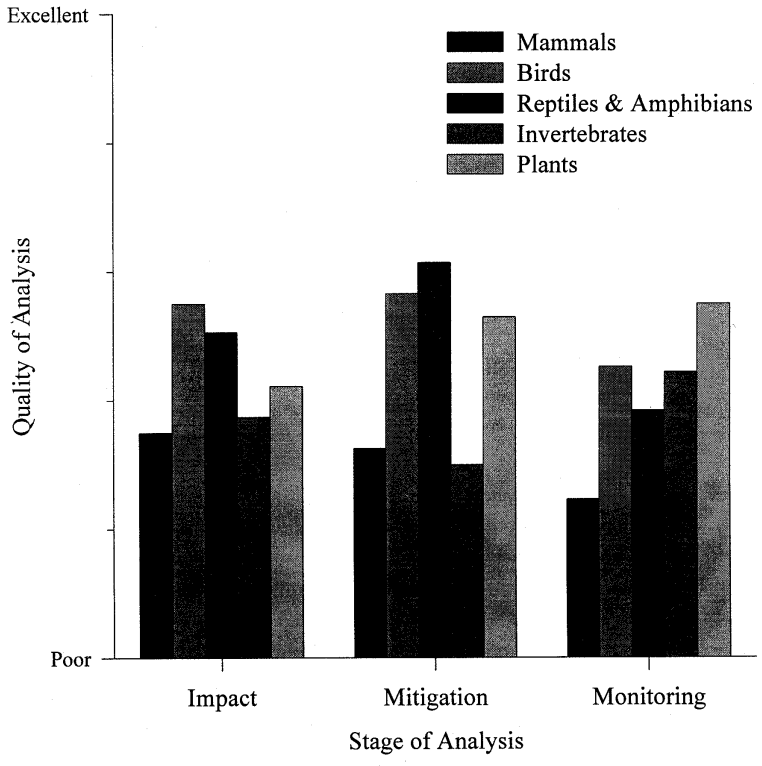

Figure 12. The effect of taxonomic group (SQ:A3) on the quality of analysis and data at several stages of HCP analysis (SQ:D46, E48, F79). Note that mammals have among the lowest scores of any group for all three steps of analysis.

9. CONCEPTUAL CHALLENGES TO THE QUALITY OF SCIENCE IN HCPS

Many of the gaps in HCP science reflect an absence of basic natural-history information, an absence of straightforward monitoring protocols, or inadequate reporting of data, but the HCP process is also challenged by subtler scientific issues, which are not easily remedied by greater care and thoroughness. The three conceptual hurdles we found to be most widespread were a failure to appreciate the potential complexity of assessing impact, the neglect of occasionally pertinent ecological theory, and violation of the precautionary principle in habitat planning.

1. Take Is Not the Same as Impact

As a first approximation, "impact" is clearly proportional to take, but simply reporting the number of individuals removed by an activity does not estimate the impact of this take on a species' viability or potential for recovery. At a minimum, there should be some indication of what proportion of a population (locally and globally) corresponds to a given take and of whether the take represents a loss from part of the species range that is a major source of population growth and vitality (as compared to a sink population, see Pulliam, 1988, and Wootton and Bell, 1992). In an ideal world one would perform some sort of population viability analysis to assess the impact of take on a population's viability, but data sufficient to conduct these analyses are scarce, and the analyses themselves conjure up an entire series

of additional problems. However, for some cases involving well-studied species and large areas of land that comprise major portions of a species' range, some sort of viability analysis would be worthwhile (and indeed some HCPs do include population viability analyses). A more down-to-earth question would be to ask of any given take, what is lost beyond simply numbers? Is a genetically unique subpopulation lost? Is a substantial portion of genetic variability lost? Is a unique combination of species and habitat lost? Preparers of HCPs cannot be faulted for their limited assessments of take because the HCP handbook gives very little guidance on this matter. This is an area where a combination of population biologists and USFWS scientists could work together to develop some more specific guidelines.

9.2. The Use of Quantitative Methods and Ecological Theory in HCPs

Ecologists and conservation biologists have developed a large body of theory aimed at predicting impacts of management on populations and species (Burgman et al., 1993; Meffe and Carroll, 1994). The conservation literature abounds with suggestions that theory can lead to sound management decisions. We sought both to test and to refine this statement, using two related analyses. First, we determined the extent to which HCPs used quantitative tools and "theory" to assess impacts and mitigation strategies. We divided "theory" into ideas and methods arising from six different subdisciplines: population genetics, population ecology, behavioral and physiological ecology, island biogeography, community ecology, and ecosystem ecology. As an example, an HCP applying genetic theory might estimate inbreeding depression resulting from reduced population sizes related to the planned take. In the same HCP, the effect of take on a species might be estimated from a population model incorporating the influence of habitat loss on population size. We also determined the type of data used to bring a theory to bear on impact or assessment and the quality or appropriateness of the use of theory.

We found that most HCPs did not use theory to make assessments about the impacts of take or to support mitigation strategies. Of the 97 species-plan examples we examined, the six different categories of theory were applied to impact analysis between 8 and 44 times (for some species more than one variety of theory was applied) and to mitigation analysis between 8 and 50 times (Table 14; QB responses to SQ:D1–6 and E1–6). Genetic theory was used least, and theory related to population ecology was applied most often. When theory was used, it most often took the form of a quantitative statistical analysis; such analyses were clear and relevant about 60 percent of the time and inadequate in the remaining cases. None of the HCPs we analyzed used more sophisticated theories—quantitative models—to project the impacts of take on populations. Such models were also used very infrequently (8 cases total) to project the success of mitigation and minimization efforts. It is important to emphasize that we did not score HCPs as inadequate simply because they failed to use theory. We remark on the absence of theory in HCPs largely as a commentary on a major lack of connection between academic conservation biology and conservation practice.

9.3. Uncertainty and the Precautionary Principle

In many fields of environmental analysis, uncertainty is increasingly recognized as the universal background against which all decisionmaking takes place. This tenet and its consequences have become known as "the precautionary principle." This principle, long applied in fields as diverse as engineering and economics, holds that in the face of poor information or great uncertainty, managers should adopt risk-averse practices. That is, management actions should be chosen such that there is a correspondence between the uncertainty or lack of information underlying the decision and the size of the potential negative impact resulting from that decision. Adoption of these ideas can be formal or informal. That none of the HCPs we reviewed made explicit mention of the precautionary principle does not mean that the writers and evaluators of these plans did not use risk-aversion criteria in formulating HCP strategies. If HCPs adhere to the ideas of the precautionary principle, we would expect to see four clear patterns:

1. As available information becomes increasingly scarce or uncertain, HCPs should be of shorter duration and/or cover a smaller area.
2. As available information becomes increasingly scarce or uncertain, HCPs should increasingly avoid impact or be restricted to reversible impacts.
3. In all cases, but particularly when mitigation success or take levels are highly uncertain, mitigation measures should be applied before take is allowed.
4. HCPs should include contingencies based on the impact of take and whether or not mitigation efforts succeed. Such contingencies can only be applied in the context of adequate monitoring. Adaptive management in HCPs would provide for various management alternatives according to various future conditions.

One way of assessing the extent to which a precautionary approach is adopted in HCPs is to contrast strategies of mitigation for cases where data were judged to be sufficient and insufficient. For example, if there are insufficient data regarding the impact of take, then one might expect avoidance of take to be more commonly pursued than if there are sufficient data regarding impact. This was not the case. In fact, the precautionary approach of avoidance was either equally likely or even less likely where data were insufficient than where they were sufficient. Another precautionary approach is to minimize take, and again this precautionary strategy was either equally likely or even less likely to be pursued when data were lacking (Figure 13). Finally, according to our rating scheme, the most precautionary scenario would involve a mitigation approach that clearly minimized impact to the maximum possible extent. It is worth noting that this line of reasoning is not legally required of USFWS but rather is a more stringent scientific standard for mitigation than current law dictates. We found many HCPs that did pursue such a cautious approach, but it was no more likely when data were insufficient than when data were adequate (Figure 13). In several HCPs, adaptive management is mentioned (even if not clearly developed) as a component of the management scenario. One might think these instances would be most likely where data were lacking. Ironically, the opposite is true—plans for which the data regarding mitigation reliability were judged insufficient were significantly less likely to include a discussion of adaptive management than were plans with adequate data: 45 percent of the 38 cases with insufficient data (SQ:E48) included a discussion of adaptive management (PQ:61), whereas 77 percent of the 48 cases with adequate data did so ($\chi^2 = 9.5$, $P < 0.05$). In summary, although some HCPs are reassuringly cautious, greater caution was not related to lack of critical information about status, take, and impact. Thus, a precautionary approach does not seem to be evident as a pattern among a large sample of HCPs. Put another way, there is no evidence that the quality of data regarding status, take, and impact influences the approach to reducing impact adopted by HCPs.

10. RECOMMENDATIONS

In this section, we outline scientific standards to which we think HCPs should be held. Our standards identify specific attributes that HCPs should have to be considered scientifically credible. We make these recommendations based on a thorough review and analysis of science in HCPs, but we also recognize that practical constraints may make it difficult to meet these standards. In many cases the landowner or contractor designs an HCP in the absence of critical data. The information required to develop an HCP is often nonexistent. Because this situation was common in the plans we reviewed, and it is likely to recur, we also provide a set of practical recommendations for handling a shortage of data or desired information scientifically. When data are lacking, uncertainty is large and unavoidable. It then becomes imperative that this uncertainty be explicitly acknowledged and measured in some wav (even if only on a three-point scale of high, medium, low). We conclude by offering general policy recommendations.

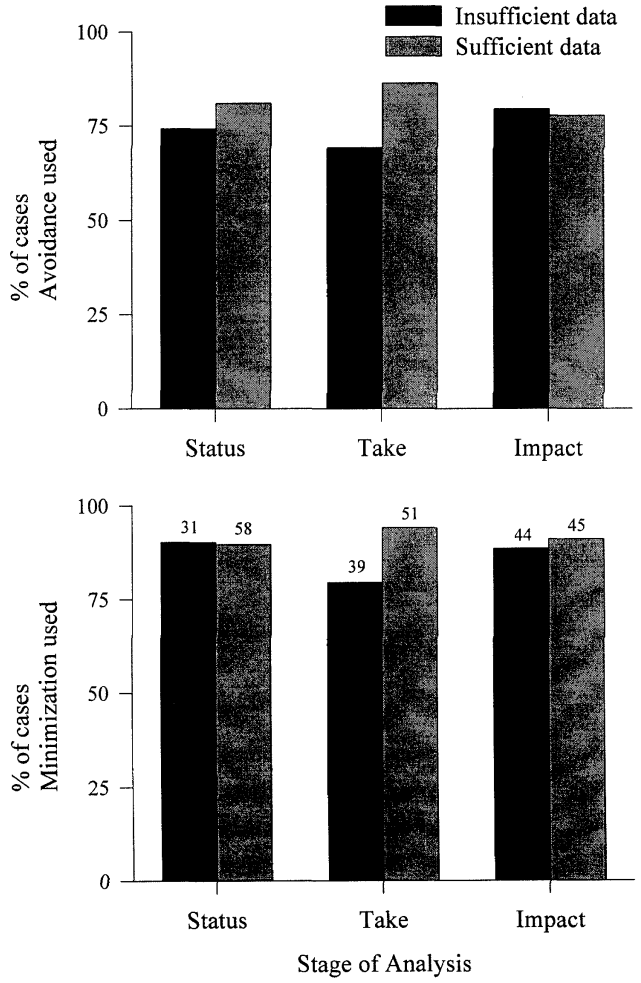

Figure 13. The percentage of cases in which avoidance (SQ:E32 QH) and minimization (SQ:E33 QH) measures were used when supporting data for status, take, and impact were either sufficient or insufficient (SQ:B42, C32, D46).

10.1. Standards for a Scientifically Based HCP

Ideally an HCP would be based on knowledge of the basic population biology of all species covered in the incidental take permit, their ecological requirements, and a quantitative estimate of the impact of take on population viability. The plan would evaluate the cumulative effects of multiple plans and activities on covered species, as well as potential interactions among effects. Given limited resources and information available during HCP development, these standards will be difficult to achieve. Nevertheless, we need standards toward which planners can strive and against which HCPs can be measured.

The foundation of any HCP, and its supporting documents, must be data. Assertions such as "take will be 54 animals" do not constitute data. Data must exist, be accessible, and be explicitly summarized in the HCP in order to be scientifically credible. The absence of any of these three "ingredients" precludes a scientifically

based HCP. Existence of the data is not sufficient; they must be included in the HCP and available for analysis. It is still possible for scientists to debate how best to use or interpret data, but there is no question that the data must exist in the first place. Data standards should be formalized: all large-area HCPs (or HCPs that cover a major portion of a federally listed species' range) should include an inventory and summary of available data on each covered species, including its overall distribution, abundance, population trends, ecological requirements, basic life history, and the nature of the causes of endangerment. Smaller HCPs can simply point to other HCPs or readily available data sources and inventories. All sources of data should be formally documented. An explicit acknowledgment describing what data are not available should also be included to allow a more accurate assessment of uncertainty and risk in the planning process. In order to provide more concrete suggestions, we consider status, take, impact, mitigation, and monitoring separately.

Status

Adequate determination of status requires that data on distribution, population trends, habitat needs and trends, and threats be examined. The analysis should be both local (within the HCP) and global (so that whatever is going on within an HCP can be put in a biological context). Determining status requires knowledge of a substantial amount of natural history—the threats to a species cannot be identified without considerable knowledge of that species' natural history. Similarly, population trends should be based on more than just a few years of census information.

Take

Take can generally be assessed either by census of a population and prediction of the portion that will be lost or by establishment of relationships between habitat area (and quality) and expected number of individuals contained within that habitat, which in turn allows one to predict reductions in population due to reductions in habitat. An explicit quantitative model should link the activity for which the HCP is initiated to loss of individual organisms, if at all possible.

Impact

Impact does not equal take. This simple fact must be emphasized, because it is neglected or overlooked in a large portion of existing HCPs. Measurement of impact on population or species viability requires data on population processes both within and outside of the HCP (minimally the same data discussed for "status"). If an HCP comprises a large area and a substantial portion of a species' range, then some attempt should be made at developing a "model" (explicit, but not necessarily mathematical). This model should link take to key population processes. For example, taking 40 percent of a global population from a source population for the species' whole range is very different from taking 40 percent of a global population from a sink area. Similar arguments can be made for genetic and evolutionary impacts. Careful thinking about impacts can alter how one goes about summarizing take. For example, the types of individuals taken may be as important as their numbers—the removal of young reproductive individuals usually has the greatest impact on population growth and recovery, so avoidance or preferential take of this age class will profoundly influence the impact of the take. This possibility demonstrates that the quantification of take must be conceptually linked to insights about the population-level impacts of take.

Mitigation

The details of proposed mitigation measures must be explicitly described and accompanied by data regarding their effectiveness. Documenting effectiveness requires information on two levels. First specific effectiveness of the proposed measure should be documented. For example, if transplantation is proposed, what proportion of the transplanted individuals survive to reproduce? Second, the more general effectiveness of the mitigation measures in minimizing impact must be analyzed, so the outcome of mitigation actions must be linked to population processes of the target species.

Monitoring

Without adequate and appropriate monitoring, the success of plans cannot be evaluated. The principal criterion for determining the adequacy of monitoring should be the ability of a monitoring plan to evaluate the success of mitigation measures and the consequent effect on protected species. Monitoring frequencies, methods, and analyses should be designed to permit appropriate modification of mitigation measures in response to species status and should be explicitly documented in the HCP. Monitoring data should be incorporated into centralized data bases to facilitate access to information on the overall status of species and to facili-

tate assessment of cumulative impacts. Even if monitoring does not lead to rectifying mistakes in its associated HCP, it can furnish information from which future HCPs can be designed so that mistakes are not repeated.

Peer Review

Finally, HCPs should be open to peer review (review by scientists specializing in conservation biology). Although HCPs are the property and responsibility of the applicant, they concern protection of public resources (endangered and threatened species). Thus, the data, analyses, and interpretations made regarding status, take, impact, mitigation, and monitoring should be reviewed to ensure that the scientific foundations of the plans are sound. Peer review is already a standard for science in other regulatory arenas and should be incorporated into the HCP process. The need for peer review is not universal; small HCPs without large irreversible impacts require less scrutiny than large HCPs of long duration and broad ecological impacts.

10.2. Scientific Approaches to a Paucity of Data

The standards we have defined are difficult, if not impossible, to achieve because of a current paucity of pertinent data, but HCPs are not therefore fundamentally unscientific. They must simply use existing data in a scientifically credible fashion. Before we discuss recommended approaches to habitat conservation planning with data shortages, we must address two more general issues about data.

First, when pertinent data are lacking, the top priority before developing an HCP should be to acquire those data. How the data are collected, and by whom, is an issue that will have to be resolved among resource agencies such as USFWS and HCP developers, but there is no surer way to garner scientific credibility than to use data. When collection of all desirable data is not practicable, then the planning process should proceed with caution commensurate with the anticipated risks and uncertainties.

Second, when critical data are absent, an HCP should not be initiated or approved. It would be wrong to call the HCP process scientific, or even rational, if there were no option to halt the process in the absence of crucial information. We need not have all the desired data to produce an HCP—the planning process would be paralyzed because data will always be determined to be insufficient. Rather, the absence of crucial data for certain types of HCPs must be in principle a possible reason for not allowing take until the problem has been corrected. In general, the greater the impact of a plan, (e.g., plans with high impact are those with irreversible impacts, covering a large area or multiple—gaps in critical data should be tolerated.

Shortage of Data on Status

When data on status are few, we must err on the conservative side. What must be avoided is the assertion of healthy status with few supporting data.

Shortage of Data on Take

For small-area HCP's (which we assume will involve small takes) an absence of data on take is acceptable, but for HCP's covering vast expanses of land, take must be quantitatively assessed; if it is not, the HCP process should not be entered into. This is a standard principle of risk assessment—when the hazards are large, the requirements for safety assurances become more severe. When take is not the most pertinent quantity to estimate (as when something like water quality for salmon is subtly degraded) but rather impacts are the issue, a careful assessment of impacts can replace attention to precise take numbers.

Shortage of Data on Impact

A scarcity of data on impacts of take can best be handled by best- and worst-case scenarios. Even without quantitative data, biologists can usually construct a worst-case scenario.

Shortage of Data on Mitigation

If no information validates mitigation as effective, then assessment of mitigation should precede any take. In addition, monitoring must be especially well designed in those cases where mitigation is unproven.

Absence of Explicit Description of Monitoring

Careful monitoring is in some cases a solution to data shortage. For example, when the effectiveness of mitigation is uncertain, monitoring can determine that effectiveness, but only if it is well designed (for example, as a before-and-after study of impact and control). When data are few, explicit measures are needed for using the information from monitoring to alter management procedures. That is, a precise criterion for "mitigation failure" must be specified, as well as procedures for adjust-

ing management when that criterion is recognized. The key point here is that the existence of monitoring is not a solution to data shortage—a quantitative decision process must link monitoring to adjustments in management.

Responding to Uncertainty

In addition to the specific recommendations given above with respect to lack of data, there are general scientific principles for dealing with a lack of information. First, the precautionary principle argues that, in the face of poor information, risk-averse strategies should be adopted. That is, when data are extremely poor, HCP's should be limited to small areas or short duration. Scarce information requires particular care about activities that are irreversible (building a shopping mall as opposed to logging), and monitoring becomes more crucial for assessing the well-being of threatened species. Mitigation measures should be applied before take is allowed, so that their effectiveness can be evaluated. Perhaps the simplest approach would be to put in place scientific advisory panels for plans that lack information and have both long durations and large impact areas. This panel could advise on the development of the plan and its implementation; scientists from recovery teams would be logical choices as a starting point.

10.3. Policy Measures for Attaining More Effective Science in the HCP Process

The goal of our analysis was to evaluate the role of science in the HCP process. In this section we provide a set of recommendations for improving its quality and effectiveness. We recognize that science is not the primary motivation for HCPs and that they must address multiple, often conflicting objectives. They have political, economic, and social objectives as well as scientific ones. We also understand that Section 10 of the Endangered Species Act does not prescribe any scientific standard upon which the approval or disapproval of HCPs is to be based. Section 7 requires only that decisions be based on the "best scientific and commercial data available." While acknowledging these dimensions, we have nonetheless chosen to focus our study on evaluating how science is being used in the HCP process. Our assessment leads to the following recommendations:

1. We recommend that greater attention be given to explicit scientific standards for HCPs, but that this be done in a flexible manner that recognizes that low impact HCPs need not adhere to the same standards as high impact HCPs. A formalized scheme might be adopted so that small HCPs draw on data analyses from large HCPs, assuring that applicants are not paralyzed by unrealistic demands.

2. For the preparation of individual HCPs, we recommend that those with potentially large impact (those that are large in area or cover a large portion of a species' range) include an explicit summary of available data on covered species, including their distribution, abundance, population trend, ecological requirements, and causes of endangerment. HCPs should be more quantitative in stating their biological goals and in predicting their likely impact on listed species. When information important to the design of the HCP does not exist, it may still be possible to estimate the uncertainties associated with impact, mitigation, and monitoring, and to still go forward, as long as risks are acknowledged and minimized. Flexibility can be built into mitigation plans so that managers can be responsive to the results of monitoring during the period of the HCP. When highly critical information is missing, the agencies should be willing to withhold permits until that information is obtained.

3. For the HCP process in general, we recommend that information about listed species be maintained in accessible, centralized locations, and that monitoring data be made accessible to others. During the early stages of the design of potentially high-impact HCPs and those that are likely to lack important information, we recommend the establishment of a scientific advisory committee and increased use of independent peer review (review by scientists specializing in conservation biology). This policy should prevent premature agreements with development interests that ignore critical science.

To pursue these measures will require major agency initiatives or policy alterations. First, the coordination of efforts to protect and recover threatened and endangered species must be improved. This coordination will be essential to the accurate estimation of the cumulative impacts of various management efforts for threatened and endangered species. The data pertaining to these management activities (e.g., HCPs, recovery efforts on Federal land, safe-harbor agreements on nonFederal land) should be organized into a single distributed data base system. These data must be accessible to agency and academic scientists for analysis and evaluation of the effectiveness of HCPs and recovery efforts. Better coordination and accessibility of scientific examinations of endangered species recovery does not require any legislative change, but it would require a funding commitment to put a centralized data base in place. Frankly, we think that centralized and readily accessible data on en-

dangered species could do for species protection what centralized and accessible data on criminals and outstanding warrants has done for public safety protection. Surely, if we can do this for law enforcement, we can also do it for environmental protection.

Second, both academic and agency scientists should become more involved in the HCP process, for example through encouragement of peer review and the establishment of advisory committees. Recovery plans are currently peer-reviewed, and the culture to obtain such review already exists in the pertinent government agencies.

Last, we encourage USFWS and NMFS to conduct their own review of the HCP process from the perspective of identifying mechanisms for making the job of their agency scientists more clearly defined. This process could entail revision of the HCP handbook, pushes for better data access, and institutional commitment to peer review. The HCP process need not compromise the quality of its science just because it must balance science and negotiation with development interests. Clearly, it could sharpen the light cast by science if the guidelines for scientific input were improved. Reference to data, peer review, and significant adaptive management are too often absent from the HCP process. To remedy these deficiencies will require more resources. The USFWS is currently being asked to do too much with too few resources in this HCP process.

ACKNOWLEDGMENTS

We thank NCEAS and the American Institute of Biological Sciences (AIBS) for financial support of this project and the USFWS for a heroic review of our data base under intense time pressure. Michael Bean and Hilary Swain provided two rounds of comments and advice that were invaluable. Jim Reichman and Frank Davis allowed (and even encouraged) hordes of students to overrun NCEAS and out of chaos produce these data syntheses. Most importantly, the staff at NCEAS (Marilyn Snowball, Shari Staufenberg, John Gaffney, Kristan Lenehan, and Matt Jones) faced the chaos of this project with good humor and provided enormous help at all stages (travel, logistic support, and computers).

STATEMENT OF DENNIS D. MURPHY, PROFESSOR, UNIVERSITY OF NEVADA

The science that is being used to inform decisions under the Federal Endangered Species Act is a dynamic science. One would be hard-pressed to find a more combative and constructive exchange in conservation biology than that between supporters of the delisting of grizzly bear populations in our northern Rocky Mountains and their opponents. Both sides have mustered compelling technical arguments to make their politically opposed cases. Our understanding of bears and their biology has grown immensely around the debate. Likewise, both science and stewardship techniques have contributed to saving the California condor and black-footed ferret, and brought the peregrine falcon and bald eagle back from the brink of extinction. Moreover, one needs to look no further than to the Fish and Wildlife Service's recovery plans for the desert tortoise and northern spotted owl to find pathbreaking analysis and application of cutting edge concepts from population biology. These examples suggest that science is at the center of our efforts to save biodiversity.

But, are these examples the exception or the rule? When it comes to science and the Endangered Species Act, unfortunately, they are the exception. Most of the recovery plans for our listed species lack even the most spare description of the mechanics by which endangered and threatened species perpetuate themselves. By and large, we know vanishingly little about our species at risk and how realistically we might attempt to save them. While that state of affairs is lamentable, it is not unexpected, since after all academic scientists are just now developing the tools necessary to better understand the population dynamics of species, and to predict with some accuracy their likely fates. Pertinent to this hearing is another suite of species which we may have lost the opportunity to save species that would have benefited from good science.

Many species are on insidious or precipitous declines because the agencies empowered to save them have not used available knowledge and, frankly, common sense, to engineer conservation responses to clear and present dangers. The unfortunate Houston toad provides a poignant example. One of the earliest species listed under the 1973 Act, it has continued its unbroken tumble toward disappearance for two and a half decades. Application of reliable science might well have saved it. A flawed hypothesis about the habitat factors that support the species, a lack of responsive studies in the face of obvious declines, and poorly designed monitoring schemes have combined with land development to push the listed species toward extinction. The Houston toad, it appears, will be lost.

The diminutive quino checkerspot butterfly offers a similar and accelerated story. Back when the Houston toad was being conferred protection under the Act, the checkerspot may have been the most abundant butterfly in coastal Southern California. Within a decade development, drought, and exotic plant invasions appeared to have eliminated the species entirely. I petitioned the Fish and Wildlife Service to list the species in 1988, but rather than respond with the simples of science, basic surveys to confirm the butterfly's fate, the agency failed to act. When amateur lepidopterists rediscovered the butterfly 6 years later, a moratorium on new listings was on. Fully 9 years elapsed between petition and listing, and 11 years to a first recovery team meeting. The quino checkerspot butterfly now survives in less than 1 percent of its former range and is likely doomed. Any science at this point may be too late to save the butterfly.

Against this background we assess science and Habitat Conservation Plans. My guess is that my conclusion that we need more and better science to produce more effective, efficient, and accountable HCPs is shared by my academic colleagues. Where I may part view with some of them, and certainly with many environmental organizations, is on how much more science is necessary and how it can be achieved. I think we can create much better HCPs with not much more science. The technical information necessary to reduce the uncertainties associated with our conservation prescriptions does not need to break the bank. But, the gathering of that information must be focused, strategically directed, and creatively engineered and exercised. Conservation scientists must remember that HCPs support incidental take permits issued by the resource agencies; they do not call for broad research agendas of the sort supported by the National Science Foundation.

Why don't we have a clear science for habitat conservation plans? To start, we in the academic scientific community have failed to deliver the realistic, the parsimonious science that is necessary to inform HCPs. The Departments of the Interior and Commerce, in their own turn, have failed to seek such a science, responding in their HCP guidelines that cookbook guidance is not possible since the biological analyses demanded of each HCP for each listed species is unique and cannot be codified. I like that idea—that the work in my field is so special that only a specialist can do it. But that assessment just is not true. Stephen's kangaroo rats, *Tecopa pupfish,* and indigo snakes share a multitude of biological characteristics that allow for a common theme to their conservation. A problem-solving template based on that premise and using good science to craft reasonable conservation plans is doable and overdue.

Just as soon as we are released from an artificial and utterly unrealistic view of how much novel scientific information is necessary to inform HCPs, we can begin to develop the exportable toolbox of scientific techniques that are necessary to assist our best conservation intentions. We first need to remind ourselves that science in HCPs is not science in a traditional sense at all. In HCPs, we rarely use hypothetico-deductive reasoning and experimental data to differentiate among alternative explanations about how an HCP could or should work. Instead, we normally use the sparest of data, often gathered in uncontrolled circumstances, and subject it to our best professional judgment. Scientific rigor in HCPs is not typically *de rigueur.* And that's alright for the many HCPs of limited spatial extent, and for HCPs with limited impact. When HCP impacts to species and habitat are limited, a rigorous science often is unnecessary.

Tougher, of course, is planning where multiple imperiled species distributed across extensive landscapes run head on into economic immediacy—Interior Secretary Bruce Babbitt's environmental and economic trainwrecks.In these circumstances, we need the very most creative engagement of available scientific information. We must focus on landscape-level and ecosystem processes; we must draw strong inferences from basic principles—for instance, that bigger, well-linked, and appropriately managed reserves are better than the options; we must use inferential data from disparate sources, from other species and other locations; we must develop management plans that can ameliorate the inevitable mistakes we will make in up-front planning; and we must share the lessons learned from the two hundred HCPs already in action. Little of that is being done today. All of that can be conveyed explicitly in regulations and guidelines, and should be.

I recommend that the National Research Council cooperate with the Departments of the Interior and Commerce to develop science guidelines for conserving multiple species and natural communities on lands both public and private. Those guidelines must recognize that HCPs have timetables driven by political and economic realities. Those guidelines must recognize that indicator or surrogate species will have to be identified which can allow simple insights from complex natural systems. Those guidelines must encourage habitat conservation planners to learn by doing, to manage adaptively using the best current information.

To that point, we cannot delay our HCPs waiting for all the answers to our pressing technical questions—frankly, the courts may not let us. We can, however, engineer our plans to take advantage of emerging information and scientific breakthroughs. I support adaptive management, even though I am a fan of this administration's "No Surprises" policy (which many contend conflicts with adaptive management). Incorporating both adaptive management principles and "No Surprises" assurances in to the language of a reauthorization bill should be a bipartisan goal of this committee.

Parties that bargain in good faith, under Section 10(a) of the Act, should not be held economically responsible when nature proves to be more complicated than we could have expected. We, all of us, share in the benefits from our national heritage when it is conserved and well managed. The costs of those benefits should be similarly shared. Once prime habitat for the California gnatcatcher is now under the Fish and Wildlife Service parking lot in Carlsbad, California. Yet we expect that nearly all of the burden of conserving that threatened species should fall on the shoulders of neighboring landowners who wish for economic development of their own properties. Clearly, science alone cannot solve that dilemma.

I do not suggest that the greater public must pay the private sector to obey the law, but an infusion of Federal dollars will inevitably be necessary when reasonable exactions of habitat from private landowners fall short of providing for the needs of species, or when unforeseen circumstances put imperiled species at unexpected additional risks. HCPs usually are the results of a crafted deal. They allow a public concerned about threatened and endangered species to take private property without fully compensating landowners. Lubricating that process with strategically directed dollars will be good for species, good for landowners, and good for the rest of us.

In conclusion to this brief statement, I contend that our Habitat Conservation Plans are not as poorly informed as many environmentally concerned citizens and organizations portray them. I also contend that the costs of making HCPs significantly better informed may not be as great as is feared by many others. Nonetheless, the tension between Fifth Amendment guarantees to landowners and the statutory authority to conserve species on private land is not likely to be remedied by a better application of science alone. You all know that very well, indeed.

HABITAT CONSERVATION PLANS

WEDNESDAY, JULY 21, 1999

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON FISHERIES, WILDLIFE, AND
DRINKING WATER,
Washington, DC.

The subcommittee met, pursuant to recess, at 9:30 a.m., in room 406, Senate Dirksen Building, Hon. Michael D. Crapo (chairman of the subcommittee) presiding.

Present: Senators Crapo, Lautenberg, Thomas, and Chafee [ex officio].

OPENING STATEMENT OF HON. MICHAEL D. CRAPO, U.S. SENATOR FROM THE STATE OF IDAHO

Senator CRAPO. The hearing will come to order.

Ladies and gentlemen, this is the second in a series of two hearings that we are holding in the Subcommittee on Fisheries, Wildlife, and Drinking Water on the science of habitat conservation plans, with a focus on improving the Endangered Species Act's tools for preserving habitat for endangered species.

As I indicated, this is the second of two hearings that we are holding on habitat conservation plans. We had a very interesting set of testimony yesterday and a lot of interesting information presented with regard to the science of habitat conservation plans. Today we will be focusing a continuation of those issues through some of the Federal officials and others from interest groups in the private sector to obtain their perspective on the utility of these plans and how they may be improved in terms of our administration of them.

I don't intend to make a further opening statement. I would turn now to our chairman, Senator Chafee.

Senator CHAFEE. Thank you very much, Mr. Chairman.

I have no opening statement. I think yesterday's hearing was extremely interesting. I want to commend you again for what you are doing. I think you've got some good witnesses today, and I look forward to hearing them.

Thank you.

Senator CRAPO. Thank you very much, Senator Chafee.

Senator Lautenberg, did you wish to make an opening statement?

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Yes. And, Mr. Chairman, I commend you for holding this hearing.

The importance of science in the habitat conservation plan I think is a crucial factor, and, Mr. Chairman, I think what you've done is present a reasonable approach to the problem, and this analysis will, I think, help us satisfy as many interested parties as we can.

I am, Mr. Chairman, for growth on a sensible, planned basis because, in the final analysis, growth without protecting our species, our environment, is a questionable asset, but I believe that we can be both for growth and for the environment, cleaner environment, protected environment at the same time. I hope that we can arrive at a consensus within the committee.

At best, the habitat conservation plan is the ultimate pro-growth, pro-environmental statement, and an HCP should ideally give the landowner the certainty needed to develop land while specifying measures that would allow endangered species to be protected. The challenge is to turn this ideal into a reality.

While I salute the Administration for its willingness to try new approaches, I am worried about the accelerated pace of its work in the HCP area. HCPs are already approved for 11 million acres, approximately, of our country—an area larger than my State of New Jersey—and there are plans pending for another 20 million acres. I am particularly concerned that in our haste we may leave sound science behind.

The No Surprises policy may not be creating enough incentive using sound science to protect us as we develop these HCPs. And, while I appreciate the scientific basis of the five-point policy guide, I am concerned that it is not used uniformly.

In this context, Mr. Chairman, I especially appreciate the way you've framed this hearing. This is the hearing on the science of the habitat conservation plan. Science should be our focus here, just as it was in the critical habitat bill we reported out of this committee, and focusing on the science will be testimony to your continued success, Mr. Chairman.

I thank you.

Senator CRAPO. Thank you very much, Senator.

Senator Thomas.

OPENING STATEMENT OF HON. CRAIG THOMAS, U.S. SENATOR FROM THE STATE OF WYOMING

Senator THOMAS. Thank you, Mr. Chairman. I can't resist a comment or two.

First of all, I am pleased that you are doing this. I think there have to be some changes in the endangered species operations. We talk about it a lot but, frankly, there haven't been a lot. I think still we need to make some substantive changes in the way it is done. We've had a long time to work at it. We've found some things that don't work very well, but we don't seem to change them. We've had a couple of experiences recently in Wyoming that I think show the need for some change.

It seems that habitat conservation plans work fairly well for large companies and timber companies. I'm not sure it has a great impact on small landowners, but hopefully it can.

We talk a lot about science, and science is part of it, but, we are not effective when we endlessly talk about science. We went out some time ago to have a hearing on spotted owls, and everybody brought their own scientist. They didn't sound as if they had talked at all about what is common to them.

I think this is a good thing to think about, but we really need to make some decisions with regard to habitat. We have to make some decisions with regard to listing and de-listing. This hearing is a portion of it, and I appreciate the fact that you're doing this.

Thank you, Mr. Chairman.

Senator CRAPO. Thank you very much, Senator Thomas.

There are no other Senators present for an opening statement at this time, so we will begin with our first panel.

Our first panel consists of: The Honorable Donald J. Barry, who is the Assistant Secretary for Fish, Wildlife, and Parks of the Department of Interior; and Ms. Monica Medina, general counsel for the National Oceanic and Atmospheric Administration.

I think you both have testified many times. I'll just remind you that we ask you to try to keep your testimony to 5 minutes.

Mr. Barry, why don't you begin?

Senator THOMAS. Mr. Chairman, I wanted to welcome Don Barry here. I have worked with him, particularly in the parks arena, and he has been very cooperative and is always willing to talk and work. I simply wanted to welcome him here and thank him for his accessibility as Assistant Secretary. I appreciate it.

Senator CRAPO. We do welcome you both.

Mr. Barry.

STATEMENT OF HON. DONALD J. BARRY, ASSISTANT SECRETARY FOR FISH, WILDLIFE AND PARKS, DEPARTMENT OF THE INTERIOR

Mr. BARRY. With your permission, Mr. Chairman, what I would like to do is just ask that my written statement be submitted for the record and I'd like to make just some oral comments, if I could.

Senator CRAPO. Without objection, all witnesses present should know that their full statements will be made a part of the record.

Mr. BARRY. Thank you very much.

Mr. Chairman, this is my 17th year in working on habitat conservation plans, having been involved in the negotiation of the very first one in 1982. It is safe to say that I have been involved in virtually every phase of the habitat conservation planning program over the last 17 years, from having worked on the development of the original HCP implementation regulations to the drafting of the No Surprises policy in 1994 to the editing of the Fish and Wildlife Service and NMFS' handbook on HCPs. I've also been involved in sort of the deal-closing side of a number of major HCPs. So I have no excuse for suggesting that I'm clueless about the HCP program.

I'd like to summarize my views. In fact, I could observe that I can summarize my views on HCPs in one single sentence, and that would be that the only things worse for endangered species conservation than HCPs are all of the other alternatives.

Secretary Babbitt and I both view HCPs as probably the single-most important development for the conservation of endangered and threatened species since the enactment of the original Act, period.

I would like to just offer some general thoughts based on yesterday's testimony.

First of all, I was personally pleased to learn that, by and large, the scientists that testified yesterday were in general support and agreement that the habitat conservation planning program offers many benefits and opportunities for endangered species conservation. I also was pleased to learn that, as a general matter, they felt that the HCP process needs to be viewed from or critiqued from the perspective of what is practical, and that they generally agreed and concurred that one cannot hold up the development of HCPs while one waits for the perfection of science or the quest for better science.

There was a lot of discussion yesterday, it is my understanding, about the need for a national data base on HCPs. Actually, the Fish and Wildlife Service and the National Marine Fisheries Service are now maintaining not only a hard copy library of virtually every HCP and all of its related documents, but also an electronic HCP data base on the Service's internet-based ECOS program, which has numerous fields of data. It is my understanding that a copy of the printout that you can get from it is attached to my testimony.

The Service is currently in the process of dramatically expanding the fields of data that would be available off of the internet, and I've got a long list of areas that it is going to be expanding into so that you would be able to sit down at your terminal, pop up a list of all the HCPs, the amount of acres per species that you're interested in. If you want to see red-cockaded woodpecker HCPs, you'd be able to call it up and see how many acres are involved, how many of them are large industrial owners, how many are small landowners, and so on, and the Service is in the process right now of field testing and trial running that new data base that it's adding into the eco-internet program.

So I think actually we are much further along, and it has been based on the criticisms we've received in the past about the need for this type of data base, but I would suggest that we are well on the trail to solving that particular problem and giving Congress and the environmental community and the regulated community access to a tremendous amount of new information.

I would also like to offer to this committee and to your staffs, at your convenience, a demonstration of the new data base process that the Fish and Wildlife Service is developing on HCPs. I will just leave that as a standing invitation to the committee, any of the members that are interested or any of the staff members, to have the Fish and Wildlife Service and NMFS come up and demonstrate the new HCP data base that they have to show you what they can pull off of the web at this point and what people have, in general.

I think there was also yesterday a fair amount of discussion about the possible tension between No Surprises and adaptive management. My own personal feeling is that the tension is not

anywhere near as pronounced as people think it might be, and I would welcome a question or two on this particular matter.

I think there was also a lot of discussion about the need for a Federal pot of money to improve monitoring capability of HCPs and to respond in emergency situations as part of our commitment under No Surprises.

On the one churlish note of my testimony this morning, I would reluctantly comment that the Fish and Wildlife Service in their fiscal year 2000 budget request, which is currently in front of the Senate, specifically asked for $10 million to assist it in working on the implementation of HCPs and the monitoring and development of HCPs, and to date we have gotten none of that money from either the House or the Senate.

So here is an example of where the Fish and Wildlife Service and the Administration listened to the criticisms that we've received in the past about our inadequate resources for being able to stay on top of HCPs and make sure they are being implemented correctly, and when we put it in our budget request Congress declines to fund it.

The Senate has not taken up our Department of Interior appropriations bill in full, so, who knows, maybe there is good news at the end of the trail, but to date we have been fairly disappointed in the response of Congress.

Let me just close, because I know the red light has gone on, which means I will be electrocuted momentarily——

Senator LAUTENBERG. That means you passed it. That's what the red lights are for, if you go past it.

Mr. BARRY. Let me just close by offering one of my favorite somewhat off-colored quotes from Mo Udall, who once said that, "When you go to bed with the Federal Government, you usually get more than a good night's sleep."

[Laughter.]

Mr. BARRY. And I would have to say that that quote seems to be particularly apt when applied to the habitat conservation planning program and private landowners and their need to work cooperatively and collaboratively with the Federal Government.

Our goal is to make sure that if they "go to bed with the Feds," they get more than a good night's sleep and feel that they got a fair deal—a deal that not only works for landowners, but also for endangered and threatened species.

Thank you very much.

Senator CRAPO. Thank you very much, Mr. Barry.

Ms. Medina.

STATEMENT OF MONICA P. MEDINA, GENERAL COUNSEL, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Ms. MEDINA. Thank you, Mr. Chairman.

My name is Monica Medina, and I am the general counsel of NOAA, and I am pleased to be here today not only as a member of the Administration but also as a former staff member to this committee from 1993 to 1995, so it is good to be back in this room.

NOAA is responsible for 52 listed species under the ESA, including salmon, sea turtles, whales, dolphins, seals, and other species. The breadth of our challenge in recovering these species is great,

so we cooperate with non-Federal landowners such as States, tribes, counties, and private entities to do this important job.

For instance, we have the challenge of ensuring the survival and recovery of salmon across the geography that spans the entire Pacific Coast, from Canada to Los Angeles. In addition, the highly migratory nature of Pacific salmon places them in many areas in numerous States, impacting large numbers of stakeholders, many of whom are private citizens.

Long-term management of habitat such as that done through HCPs with non-Federal landowners has proven to be an effective means of recovering species. So far, our experience is new. We've only issued two incidental take permits thus far associated with an HCP. We're party to a few others with the Fish and Wildlife Service, where we had previously unlisted species, and we're working to turn those into full permits. But we are currently negotiating approximately 35 additional HCPs, all of which are large scale and concern the salmon.

We don't impose a one-size-fits-all prescription on applicants when participants provide unusual but scientifically credible analysis of effects or a creative approach. We are very willing and will take their approach very seriously. We're very willing to look at those efforts.

I think, as Don has talked about, flexible implementation of the ESA is a hallmark of our Administration's efforts to conserve species, and it is evidenced by our five-point plan and just the way that we have gone about our approach. Adaptive management, again, as Don mentioned, is an essential component of HCPs when there is significant uncertainty. It is how we close the gaps. It is how we make up for the things that we aren't sure about right now. We plan for it in our HCPs.

As you well know, I'm sure, we are required to use the best science in making our HCP permit decisions. Our scientists are up to date in all of the latest methods, the state-of-the-art analytical techniques, and we do our very best to understand the species and the ecosystems to be managed in our HCPs.

For example, in development of aquatic management components of a timber HCP, our biologists worked closely with the applicant, but also with academic, State, tribal, and local agency scientists to gather all of the relevant information necessary to make a very comprehensive and credible HCP.

When necessary, we go out to the field and we augment our existing information with actual field data. It's not simple to manage ecosystems across large areas, and so we also welcome scrutiny from the scientific community and the informed public, as this helps to ensure that our HCPs are of the highest quality.

We put every HCP out before the public for notice and comment so that everyone can be aware of what we are doing, and obviously we have these data bases now, and hopefully that will improve our ability to get comments from the regulated community as we go along.

I want to mention three specific HCPs that I think are worthy of attention. The first one is a mid-Columbia HCP. It is in draft now, but it is ready for public review and comment. It is an example of how NOAA is using performance-based goals to—instead of

prescriptive measures in HCPs, the focus is on improving the survival of salmon migration through the mid-Columbia segment of the Columbia River, and the goal is a no-net-impact to salmon from the hydroelectric dams associated with the reservoirs operated by the two public utility districts.

Compensation for a 9 percent unavoidable fish loss will be met by a combination of hatchery production and tributary restoration, and we also have extremely detailed schedules and contingency agreements for every aspect of that HCP.

Also, I brought along with me a copy of the Washington DNR HCP. It includes some innovative features designed to advance the science of forestry and landscape conservation.

As you can see, these are not short documents. They are very lengthy. They are very weighty. And they include all of our scientific—all the scientific support for the conclusions that we draw.

Finally, I want to mention that the Pacific lumber HCP, which I know the committee is aware of, is well underway, and that plan rests upon a foundation of watershed analysis that will be used to tailor site-specific prescriptions.

I also want to close by saying that our efforts are only as good as the amount of money we have to spend on them. In 1999, our budget is expected to be $23 million, but only 8.3 of that is being spent on science. Our 2000 budget request has an additional $24.7 million for new funding to strengthen our scientific capabilities in HCPs. Five million of that would be used specifically to partner on HCP development with landowners and other agencies in the local area.

In conclusion, I'd just like to say that the program is showing a lot of benefits to us at NMFS, but it is still a work in progress. We are trying our very best. HCPs are not perfect, but they are less confrontational and adversarial than our alternatives, which are enforcing the prohibitions of the take under section 9 of the ESA. We're doing what we can to recover salmon and hopefully ensure that future generations will know of these magnificent fish.

Thank you very much for the opportunity to testify. I look forward to your questions.

Senator CRAPO. Thank you very much, Ms. Medina.

I'll begin with the questions.

The first question I have is for you, Mr. Barry.

If I understood you correctly, you indicated that you didn't think there was necessarily a conflict between adaptive management and the No Surprises policy. Would you like to elaborate on that?

Mr. BARRY. Sure.

The reason I say that is that, under the No Surprises policy, what we basically say we are going to do is to lay all of our cards on the table and to negotiate out all of the possible adjustments up front with the particular landowner so they can foresee the types and range of changes that could occur should circumstances change during the life of the HCP permit.

A good example of how that is different from the way we used to do business is that probably the Fish and Wildlife Service felt that they could arrive on the scene later in time unilaterally and just sort of ambush or surprise the landowner with the HCP and

say, "Well, we want you to change things now. That was then, this is now."

But we say what you're going to do now is to negotiate up front with the landowner the range of changes that may be required because of adaptive management requirements or changed circumstances, and that way then before they even get the permit and before they decide whether they want to continue, they can economically net out the cost to them and decide whether they are prepared to live with those types of adjustments up front.

So we try to negotiate all of those terms and conditions up front. We lay down the range of changes that might occur under the agreement or during the life of the agreement. It is up to the landowner then to decide whether they like what they hear or whether they think they can live with what they hear, or whether they want to say, "Sorry, we are out of here. We can't live with those terms."

The other reason I don't see that type of huge tension between No Surprises and adaptive management is because I think No Surprises continues to get a bad rap—that somehow we are putting these iron-clad handcuffs on the ability of the Federal agencies and, for that matter, even the HCP permittee, to respond to changed circumstances. I just don't believe that's the case.

What the No Surprises policy says is that once we reach an agreement with the landowner we're not going to go back and change the economics of that agreement, but it doesn't say that we're not going to go back at all.

I can use a good example. Let's say we've reached agreement with a developer who is going to be building out a piece of property over a period of time, and he agrees to have some type of assessment on each house that will go into a conservation fund. This is basically what we agreed to with the San Bruno HCP, the very first HCP in California.

Let's say that we, at the time, assume that we know how that money should be spent for a particular species, but over time let's assume that the status of the species continues to decline, and we believe that we need to make our conservation programs more effective and more efficient for the conservation of the species.

Without changing the amount of money the landowner has committed to into that fund, we reserve the right, even under No Surprises, to go back and change the way that money is spent. If we think we can get a better bang for our buck, we may shift the whole strategy from habitat restoration to predator control. We may dramatically be able to squeeze greater efficiency and effectiveness out of the conservation program without changing a dollar on the table. So that would be one example where I think that No Surprises has retained a lot more discretion and flexibility than people think.

Our commitment to the landowner, to the permittee, is no changes in the amount of money it is going to cost you and no changes in the level of restrictions on the use of your property, but if you are a timber company and you've already agreed to set aside a certain acreage as a conservation zone, we reserve the right, even under No Surprises, to go back in that area that you've agreed to set aside to look for ways of enhancing its management for species

conservation, again as long as it doesn't change your economic bottom line.

I think it is a combination of those two together. No surprises is not as draconian as people think it is. And I also think that we just try to negotiate up front the economic costs and the range of change with the landowner through adaptive management. For these reasons, I don't think there is a pronounced level of tension between No Surprises and adaptive management.

Senator CRAPO. Thank you.

Ms. Medina, yesterday our panelists agreed that scientific standards and guidelines associated with HCPs would significantly improve the science of HCPs. Would such a set of scientific standards and guidelines be useful, in your opinion?

Ms. MEDINA. I believe we already operate under those and we are always trying to be consistent in the way we approach HCPs. That doesn't mean our results are always the same, because different landscapes have different uses. They've been altered differently by humans or by nature. But we definitely try to be consistent. Obviously, we're always looking for improvements, and I think at our agency we are working within a matrix of habitat conditions that we look at for every HCP in trying to develop those HCPs.

Mr. BARRY. Mr. Chairman, if I could just also add one thought?

Senator CRAPO. Mr. Barry.

Mr. BARRY. I think it probably would enhance the efficiency of the HCP negotiation process if there were generally agreed-upon scientific guidelines for certain species.

A good example of that is the red-cockaded woodpecker. I think there has been a general consensus among most of the scientists as to what the red-cockaded woodpecker needs and what its conservation strategy should be, so it is a lot faster and lot easier to negotiate an agreement for one of those species because there has been that convergence of the science and we have some sort of off-the-shelf standards that we can apply. So I think in that instance it could be helpful, as long as we aren't finding ourselves stuck at the station and the assumption is you can't do anything unless you've got that type of consensus for a particular species.

Senator CRAPO. Thank you.

Mr. Chairman.

Senator CHAFEE. If you have further questions you wanted to ask, I'll wait.

Senator CRAPO. I have a whole bunch.

Senator CHAFEE. OK. Thank you, Mr. Chairman.

We have been focusing a great deal of time on this hearing on a recent study of HCPs that was authored by Dr. Peter Kareiva, who testified yesterday, and I understand that Fish and Wildlife has reviewed Dr. Kareiva's report and has posted a brief response on your web page.

What are your views of the Kareiva study?

Mr. BARRY. Let me first start off by saying that we truly welcome the critiques and reviews of the HCP program that have been conducted over the last few years. I think the recent five-point plan that we developed to further improve the HCP program was a di-

rect result of a lot of the feedback that we've gotten from people over the years.

So, in terms of the study, we are glad that it was done. I have to tell you, in all honesty, that we had some fairly significant concerns about the quality of some of the conclusions reached in that study, and all you need to do is take a look at how Plum Creek was rated under that study to understand what the problems were.

Basically, they asked about 106 graduate students, who, of course, are carrying full loads, to become instant experts on the Endangered Species Act and HCPs and to be able to wade through the massive documents that you can get for an HCP.

If you take a look at what happened with Plum Creek, though, you can see what some of the problems are with this type of study.

Plum Creek was rated fairly poorly on its science and it was accused of having no peer-reviewed science. That's just flat-out wrong. They had 13 peer-reviewed scientific papers that were the basis for that HCP. How did the person miss that? I don't know. But the graduate student that was reviewing it missed the boat on that one.

Let me read to you some of the other documents that were skipped over in the Plum Creek HCP.

They didn't take a look at the Environmental Impact Statement, the biological opinion for the HCP permit, the NEPA document Record of Decision, the set of findings, the unlisted species assessment, and, as I said, these 13 peer-reviewed papers.

I can provide another example of how they were a little bit thin on their analysis. A person on my staff talked to the chief staff person the Fish and Wildlife Service had working on this agreement for many, many years. He said he was asked two questions by the graduate student and that was it. The person called him up, showed up in his office or talked to him on the phone. Two questions. That's it. Thank you very much. And that was the level of analysis that went into the Plum Creek HCP permit assessment.

I know you have Lorin Hicks from Plum Creek on as a witness a little bit later. I wanted to suggest that even a study that attempts to be as ambitious as AIBS was flaws and limitations.

And so I guess the only message is that I think Congress needs to take with a grain of salt some of the conclusions that are reached that attack the quality of the HCPs that have been done.

I would not agree that they have been of poor quality. I think they clearly have been continually getting better, but that doesn't mean that the ones that we were doing before were poor.

Senator CHAFEE. Let me—I don't have much time here, so—now, the no-surprise policy was an administrative policy that has been set forth. It is my understanding that has been challenged; is that correct?

Mr. BARRY. That's correct. We have a lawsuit right now on that.

Senator CHAFEE. And so where do things stand? There's a challenge to it and it hasn't been heard yet?

Mr. BARRY. We were heading toward the usual dueling briefs being filed by the Government and the environmental plaintiffs. There was just recently another hearing on the matter. Things have been put off now until November. There has been additional

briefing requested, and so it is going to be probably in November some time before everybody gets back in court.

Senator CHAFEE. Now, I would think that you'd like us to pass a statute that included some of these protections, including the No Surprises policy. I assume that; is that correct?

Mr. BARRY. Mr. Chairman, that was one of the primary reasons that we were very supportive of S. 1180 coming out of your committee 2 years ago. One of the major parts of that bill was the congressional ratification of all of the administrative ESA reforms that we've implemented in the last few years, including No Surprises.

Senator CHAFEE. Well, I think I agree with you, and I, of course, obviously knew that we had that in that legislation a year or so ago, but I think this No Surprises policy make a lot of sense.

Mr. Chairman, I hope that we can do something to protect the Department; otherwise, in the suit they are liable to get blown away. I think that the No Surprises policy is really an essential part of the whole HCP program.

Mr. BARRY. Mr. Chairman, I'm assuming that your reference to being blown away is not a characterization on your part of the poor legal arguments we have to muster on behalf of the defense of this fine policy.

Senator CHAFEE. Well, I'm not predicting who is going to prevail, but——

Mr. BARRY. It would be nice to have certainty.

Senator CHAFEE [continuing]. It would be nice to have certainty. Absolutely. Thank you. Thank you very much, Mr. Chairman.

Senator CRAPO. Thank you, Mr. Chairman.

Senator Lautenberg.

Senator LAUTENBERG. Thanks, Mr. Chairman.

I thank each of you for your excellent testimony.

The No Surprises policy brings some surprises to me, and I just want to make sure that I understand it.

Does it say that if the plan isn't working that there is no risk at all to the landowner? I know what we are trying to do is provide some sense of reliability to plans that the landowner makes, but have we removed any incentives from the landowner for them to enforce the plan or—what kind of supervision do we have that says that, "OK, the landowner is doing what they have to, but we've made a mistake in the plan and now we have to change it?" You made reference to it a little bit earlier, but I wondered if you'd expand on that, please.

Mr. BARRY. Well, first of all, it is tied back to our budget. Our ability to monitor the implementation of these plans has two components to it. No. 1 is: Is the permittee doing what he said he'd do? And, No. 2: Are we getting the conservation benefits that we thought we'd get?

Senator LAUTENBERG. Right.

Mr. BARRY. You know, we're struggling to be able to keep pace with all of those plans that we're negotiating, which is why we felt it was fair to note this in our budget request.

But I have to tell you again why I think that No Surprises really has put us on a whole different level in dealing with private landowners, and I would use Toby Murray as an example.

Toby is the head of the Murray Pacific Timber Company, a private, family owned company, 50,000 acres, roughly. For Toby, he first had negotiated a spotted owl HCP and then eventually went back and upgraded it to a multi-species HCP, but for him the big tradeoff was No Surprises. He felt for the first time he was being treated fairly and he was being treated respectfully by the Government.

I have absolutely no doubt in my mind that if we had endangered species problems that arose unexpectedly on Murray Pacific's property, Toby would welcome us in, we'd sit down with him, and we'd work through these things, not because we could wave our regulatory swagger stick in his face and say, you know, "If you don't do this, we are going to punish you," but I think because Toby just felt that he now is being treated differently and he is being treated respectfully as a property owner who is viewed as a conservation partner, and I just have this confidence that Toby will do that. Because he feels that No Surprises gave him a recognition that we see a need for a fair balance between economics and conservation, he's willing to work with us to make sure that we can constantly make those adjustments to achieve that.

Senator LAUTENBERG. Well, is there a guarantee or representation that for the landowner, should change be required, that they will have no further economic demands put upon them?

Mr. BARRY. That's basically the No Surprises commitment, in a nutshell. We say we will not go back and ask for more money or more restrictions on the use of your property, your water rights, whatever it was that was otherwise agreed to to be available for use under the terms of the agreement.

Senator LAUTENBERG. And how then do we correct a mistake if one is made?

Mr. BARRY. Well, as I said, within the agreement they will have agreed to do certain things. There is a certain cost associated with the conservation package they've already developed. We reserve the right to go back in and look for ways of making that more efficient, adjusting that, as long as it is not going to cost them more money.

If they already in their own mind have netted it out and it is going to cost them $100,000 a year for endangered species compliance, and we come back in and say, "Look, we can turn this thing around if we just start working on depredation control instead of habitat restoration, and it is not going to cost you an extra dollar," we've reserved the right to do that so we can make adjustments in the program.

The other thing we can do——

Senator LAUTENBERG. Who pays costs that might arise as a result of that?

Mr. BARRY. Well, again, we are saying it is not going to cost him or her anything more. We would have to work within the revenue stream that they've already agreed to.

But there are a lot of other things that we can do, ourselves. The Fish and Wildlife Service has—I mean, not unlimited resources, but we have millions of dollars that we are putting into endangered or threatened species conservation programs. We can make adjustments in our own programs. We can look for ways of getting other landowners who are in the same area who have the same problem

to work with us to achieve a different conservation direction. We can see if Federal agencies can help contribute in a different way.

I am personally unable to think of a scenario where we would basically be clueless and helpless and would watch the species go down the tubes because of No Surprises.

Senator LAUTENBERG. So we'll pay for the mistakes if any are made—we, the Government, the taxpayers of the country, we'll pay for it?

Mr. BARRY. Well, we're involved in endangered species conservation activities day in and day out right now, and I guess the big difference, Senator, between——

Senator LAUTENBERG. I support a No Surprises policy.

Mr. BARRY. Yes.

Senator LAUTENBERG. If there is an error and the plan doesn't work, my——

Mr. BARRY. We are prepared——

Senator LAUTENBERG [continuing]. My question is: Who pays to revise or——

Mr. BARRY. At that particular point, we're prepared to carry the load.

Senator LAUTENBERG. OK.

Mr. Chairman, if I might, just one other question.

The Service has recently published a decision that says if activities are causing a problem, jeopardy to an endangered species, the HCP has to be reopened, renegotiated. Does the Service plan to retroactively apply that kind of review?

Mr. BARRY. Well, what you're referring to are some adjustments that we made in what are known as the "part 13 regulations" in the Fish and Wildlife Service's Code of Federal Regulations. These are the general regulations that apply to virtually every permit the Fish and Wildlife Service issues, from marine mammals to migratory birds and to endangered species.

In there we made some adjustments. When we went out with the final No Surprises rule—excuse me, it wasn't in the No Surprises, it was in the safe harbor and candidate conservation agreement rulemaking recently that indicated that if, at the end of the day, the continuation of an HCP permit, despite all the adjustments, everything that anybody could do—the Government could do, the private sector could do, the States could do, or the landowner could do—if at the end of the day the continuation of that HCP permit would result in the jeopardy of the species, we would consider the revocation of the permit.

So at the end of the day you don't have the ability to take your HCP permit and drive a species into extinction.

Again, we don't get to that point, though, until we have tried virtually everything else, and one of the criteria up front for issuing an HCP permit in the first instance is that the issuance of that permit will not result in jeopardy to the species, and so we feel that that provision in the part 13 regs is consistent, ultimately, with the issuance criteria for an HCP permit in the first instance.

Senator LAUTENBERG. Thanks, Mr. Chairman.

Senator CRAPO. Thank you, Senator.

I'd like to followup on that question with a question to both of you, and the question is whether you believe there is a difference

between a standard of preventing the jeopardy of the species in the development of an HCP versus the standard of trying to recover the species in the development of an HCP, and, if there is a difference between those standards, does that difference impact the success of the HCP program?

Ms. MEDINA. I'm happy to lead off on this one, because I think we've articulated at least our vision of what those words mean in a letter that I'm happy to provide to the committee. It was to some timber companies that wrote us about 2 years ago and asked us that very question.

We went back and looked very long and hard, talked with our scientists, and tried to understand and have them understand what those words mean—recovery and survival. To them, the terms didn't mean anything different. They really were consistent with one another.

Our species in NMFS are extremely depleted, they are severely depleted, there are not many left, and so in order to get—I think of it as pushing a ball up hill. If you can push the ball up far enough to get past whatever that bright line is that means survival, you're going to get it, it is going to be rolling hard enough to keep rolling past recovery.

They are essentially merged in the long run over time. What it will take to get to one will get you to the other. That's the way the biologists have explained it to me. That's the way they think of it.

I think the struggle here has been for the lawyers and the scientists to figure out a common framework, a common understanding of what the words in the statute mean.

So, for all intents and purposes, for everything that we do, they are the same. There isn't really a bright line that you can draw on the landscape that will get you to one but not the other. We can't calibrate that way.

Senator CRAPO. Mr. Barry, before you answer I'd like to followup with Ms. Medina just for a second there.

Using your analogy of the ball on the hill, it seems to me that the standard of preventing jeopardy of the species would be stopping the ball from moving further down the hill, and the standard of improving or recovering the species would be actually pushing the ball up the hill into a safe harbor, or whatever.

But to me I can see a very big difference there, and it seems that the standard between those differences would have a significant impact on the HCP.

Does NMFS or NOAA disagree with that?

Ms. MEDINA. Our scientists just can't think of it that way. For their purposes, it really is very difficult to discern between one and the other, especially when you're looking at the long-term impacts of these HCPs, because they are very long-term agreements that we're signing now, at least we are for the most part.

Senator CRAPO. So you're saying that the requirements that would be imposed in an HCP negotiation would not change, depending on whether the standard was preventing jeopardy as opposed to recovering the species?

Ms. MEDINA. It's not that the standards wouldn't change in that you could calibrate it. It is really that they can't see a difference. For them, long-term viability, survival, long-term survival, recov-

ery—the words that actually hearken back to the explanation of this program that the committee wrote when they passed the HCP amendments in 1982 is what they're trying to do.

What they're trying to do is translate those words into actions on the ground, and for them there really isn't a bright line. There isn't a great distinction that they can draw, particularly because our species are so depleted.

We're starting so far down at the bottom of the hill there is not much more room to roll down. I mean, we're really all in an up mode, and, you know, most of our species are in really bad shape, and for them this is the way that they see it.

We've also talked about it in terms of habitat, because in ESA, as you well know, often what we have to do is not just look at the species but at their habitat, as well, and they have tried to, in the long run, design HCPs that will return habitat to its properly functioning condition. That's sort of the marker for them. The words "survival" and "recovery" are things that they then equate to that.

Senator CRAPO. And you indicated that there is a letter drafted out of your office?

Ms. MEDINA. Yes, indeed. Well, I think it is a joint letter——

Senator CRAPO. Is a joint?

Ms. MEDINA [continuing]. But we can provide it for the committee.

Senator CRAPO. Yes. Would you provide that letter?

Ms. MEDINA. And there is a scientific memo that supports it. We'd be happy to provide it.

Senator CRAPO. Thank you.

[The memorandum follows:]

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region Office
7600 Sand Point Way N.E., BIN C15700
Seattle, WA 98115-0700

DEC 24 1997

MEMORANDUM FOR: F/PR - Hilda Diaz-Soltero

FROM: F/NWR - William Stelle, Jr.

SUBJECT: Discussions on Survival and Recovery Standards under the Endangered Species Act

There have been active discussions recently within the regulated community and between the public and the National Marine Fisheries Service and the Fish and Wildlife Service (the Services) relating to various terms and standards used by the Services in our long-term habitat conservation planning program under section 10 of the Endangered Species Act (ESA) on the west coast. The attached two documents are intended to help clarify those terms as they are being applied to our section 10 permitting discussions for long-term conservation agreements (as compared with short-term permits for short-term activities). I believe they should be shared with the relevant agency program personnel to ensure consistency of perspective.

The fundamental point of these documents is that the Services are seeking long-term conservation agreements that have a reasonably high probability of providing fully functioning habitat on the landscape covered by the agreements to contribute to the long-term survival of listed species.

Taking note of the discussions within legal circles seeking clean distinctions between survival and recovery, the memorandum from Dr. Waples reflects a prevailing scientific perspective that there may well be no meaningful distinction in the scientific community between long-term survival and recovery, as those terms relate to the long-term perspective. This fact, coupled with the requirements that the Services use the best scientific information available, leads to the conclusions on the matter as articulated in the letter from Dr. William Hogarth to Mr. David Dun, Esq.

Attachments

cc: R. Schmitten, Director, National Marine Fisheries Service
Regional Administrators, NOAA Fisheries
Regional Directors, U.S. Fish and Wildlife Service
M. Hayes, Assistant NOAA General Counsel for Fisheries

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Fisheries Science Center
Conservation Biology Division
2725 Montlake Boulevard East
Seattle, Washington 98112-2097

December 1, 1997

MEMORANDUM FOR: The Record

FROM: F/NWC1 - Robin Waples RSW

SUBJECT: Habitat Conservation Plan Language

As requested, we are providing comments on some terms used in recent documents related to Habitat Conservation Plans (HCPs) for Pacific salmon and anadromous trout. I have discussed these issues with, and include input from, Drs. Mary Ruckelshaus and Tom Wainwright. It should be recognized that although it can be useful to consider their scientific context, these terms are not strictly technical or scientific. Legal and policy issues must also be considered in interpreting these terms in the HCP and federal Endangered Species Act (ESA) arenas.

Survival, recovery, and viability

As articulated in the joint ESA rules published by FWS and NMFS, "survival" implies "continued existence." Both "survival" and "continued existence" are open-ended in the sense that no time frame is specified. Because many HCPs are long-term agreements, the term "long-term survival" is also important to consider. It follows from the above that "long-term survival" implies the continued existence of a species over a long period of time.

This can be compared with the concept of "recovery" under the ESA. According to the ESA, a species can be listed as endangered if it is "in danger of extinction" and can be listed as threatened if it is "likely to become an endangered species within the foreseeable future." Listing a species under the ESA therefore reflects a concern for its continued existence; the concern is immediate for endangered species and less immediate (but still real) for threatened species. Once a species is listed, the goal of the ESA is to improve its status to the point at which it is no longer threatened or endangered and can be delisted; this constitutes "recovery" under the ESA. Recovery, then, represents a state in which there are no serious concerns for the long-term survival of the species. The two terms--"recovery" and "long-term survival"--are therefore closely linked, at least as the latter is used under the ESA. As articulated in ESA policy documents by the National Marine Fisheries Service, listing and recovery determinations for salmon under the ESA focus on natural fish, which spend their whole life in natural ecosystems.

The terms "viable" and "viability" have also been used frequently in the regulatory as well as the scientific literature, generally to apply to populations but sometimes to species as a whole. Biologically, a viable population is one that has a high probability of persisting into the future. "Viability" therefore has an inherent link to the concepts of "survival" and "continued existence." However, the term "viability" is limited in a scientific sense because it depends on the concepts of "high probability" and "into the future," and these terms do not have precise scientific definitions. [The ESA terms "threatened," "endangered," and "recovery" also have a probabilistic component without a precise scientific definition.] For example, by one set of definitions a population might be considered viable if it has at least an 80% probability of persisting for 50 years, while under another set of standards it might be considered viable only if it has a 99% probability of persisting for 1000 years. There is a general consensus within the scientific community that choosing the time horizon and the probability of persistence involves consideration of social and policy issues as well as scientific ones[1].

Essential habitat functions

There is also a strong consensus, if not unanimity, within the scientific community that long-term survival of natural salmon populations is heavily dependent on functioning natural ecosystems. The cornerstone of functioning ecosystems is high quality habitat that can sustain essential habitat functions. We do not see any important differences in essential habitat functions required to ensure long-term survival and those required to achieve recovery under the ESA.

Local breeding populations and survival

Although ESA listing and delisting determinations are made at the level of an ESA "species," HCPs and other human activities may affect only one or a few populations within a species. Thus, it is important to consider how factors affecting local populations relate to risks to the ESA species as a whole. This is a complex issue that has policy as well as scientific components. However, we can say with some confidence that, in general, conservation of local breeding populations is important to the long-term survival and recovery of ESA listed species, for the following reasons:

1. A species can be listed under the ESA if it is threatened or endangered in "all or a significant portion of its range." If only one or a few local breeding populations are

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[1] The 1995 National Research Council report on Science and the ESA concluded, "The selection of particular degrees of risk ... to trigger ESA decisions reflects scientific knowledge and societal values."

conserved, the species could still be at risk in a significant portion of its range.

2. In general, the probability of persistence of a species increases with the number of healthy populations that make up the species. Focus on only one or a few local populations may not be sufficient to ensure the long-term survival of the species as a whole.

3. Most local populations within an ESA species are probably not independent of one another over the long term with respect to genetic and population dynamic parameters. To the extent that this is true, focus on individual populations will not be effective in conserving even those populations in the long term, because their persistence depends on interactions with other local populations. This emphasizes the importance of conserving a diversity of local populations and maintaining the connectivities among them.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213
NOV 25 1997

David H. Dun, Esq.
Dun & Martinek LLP
730 Seventh Street, Suite B
Eureka, California 95501

Re: Habitat Conservation Plans

Dear Mr. Dun:

This responds to your letter to me dated May 21, 1997, and also addresses concerns raised at the meeting here in Long Beach on July 9, as well as in the letter dated June 12, 1997, from Mr. James T. Brown, Vice President and General Manager of Simpson Timber Company; Mr. David S. Dealey, Vice President, Northern Operations, Fruit Growers Supply Company; and Mr. M. D. Emmerson, Vice President and Chief Financial Officer, Sierra Pacific Industries. I apologize for the delay in this response. Significant issues were raised in these letters and at the meeting regarding the authorities and responsibilities of NMFS in the development of long-term conservation plans (HCPs) to support issuance of incidental take permits under Section 10 of the Endangered Species Act. We welcome the opportunity to respond.

On May 6, 1997, NMFS listed as threatened the Southern Oregon/Northern California Coast Unit of coho salmon (the "Transboundary ESU"). This is the salmon species for which your clients seek an incidental take permit for certain of their timber operations. NMFS noted in the listing document that the coho populations in the Transboundary ESU are "very depressed," currently numbering fewer than 10,000 naturally-produced adults. According to the California Department of Fish and Game, populations in the California portion of the ESU could be less than 6 percent of their abundance during the 1940's. 62 Fed. Reg. at 24588. NMFS found that habitat degradation from activities such as logging and road construction, among others, has contributed to the decline of coastal coho salmon. 62 Fed. Reg. at 24592.

The coho salmon's status and prospects for long-term survival are tenuous at best. Habitat conservation plans now under development in California and Oregon will be particularly important to the species' survival as approximately 65 percent of the habitat in the range of the Transboundary and Oregon Coast ESUs is in non-federal ownership. 62 Fed. Reg. at 24602. Because many of these HCPs will cover large tracts of land and be in effect for many decades, the plans will, to a significant degree, determine the long-term viability of these ESUs. In NMFS' opinion, unless forest habitat conservation plans include those conservation measures necessary to provide essential habitat functions for the coho salmon, the likelihood of the species' survival and recovery could be appreciably reduced.

In general, the objective of NMFS is the same in each HCP: to achieve during the term of the plan the essential habitat functions required for long-term survival of listed species of anadromous fish, while allowing for incidental take. This objective requires that riparian measures in HCPs have a high probability of achieving habitat conditions that will support well-distributed, viable populations of the listed species. NMFS' objective fully comports with Section 10(a)(2)(B)(iv) of the Act, which requires the Secretary to find that a proposed permit will, at a minimum, "not appreciably reduce the likelihood of the survival and recovery of the species in the wild."

You have suggested that NMFS' insistence that forest HCPs provide essential habitat functions for coho salmon amounts to a requirement that permittees "recover" the species and exceeds the agency's authority under Section 10(a)(2)(B). This contention implies that scientists are able to draw a bright line between those riparian prescriptions necessary to provide for the survival of a species and those that would achieve recovery. For species such as the coho salmon, however, there is no such bright line.

In the joint ESA rules published by the U.S. Fish and Wildlife Service and NMFS (51 Fed. Reg. 19926 (1986); 50 C.F.R. Part 402), the Services explained their role in Section 7(a)(2) consultations and responded to comments that injury to recovery of an already depleted species would require issuance of a jeopardy opinion. In response, the Services noted that distinguishing between these standards could be difficult.

> The 'continued existence' of the species is the key to the jeopardy standard, placing an emphasis on injury to a species' 'survival.' However, significant impairment of recovery efforts or other adverse effects which rise to the level of 'jeopardizing' the 'continued existence' of a listed species can also be the basis for issuing a 'jeopardy' opinion. The Service acknowledges that, in many cases, the extreme threats faced by some listed species will make the difference between injury to 'survival' and to 'recovery' virtually zero.
> 51 Fed. Reg. at 19934.

The prevailing scientific view is that long-term survival of imperiled salmonid species requires protection and restoration of local populations and their habitat. As the National Research Council's recent report on salmonid conservation concluded:

> The long-term survival of salmon depends crucially on a diverse and rich store of genetic variation. Because of their homing behavior and the distribution of their populations and their riverine habitats, salmon populations are unusually susceptible to local extinctions and are dependent on diversity in their genetic makeup and population structure. Therefore, management must recognize and protect the genetic diversity within each salmon species, and it must recognize and work with local breeding populations and their habitats.

National Research Council, Committee on Protection and Management of Pacific Northwest Anadromous Salmonids, *Upstream* at 4 (1996). The prescriptions sought by NMFS are designed to provide habitat that will support a diversity of local breeding populations and are thus necessary for salmonid species' long-term survival.

The legislative history of the 1982 amendments to Section 10 of the ESA indicates that Congress viewed habitat improvement and species conservation as appropriate considerations in determining whether to issue long-term incidental take permits.

> The Secretary, in determining whether to issue a long-term permit to carry out a conservation plan should consider the extent to which the conservation plan is likely to enhance the habitat of the listed species or increase the long-term survivability of the species or its ecosystem.
> House Conf. Rep. No. 97-835. (emphasis added)

Forest HCPs often allow for significant timber harvest and consequent species impacts during the initial years. Thus, it may take decades before the riparian measures under the plan produce stream conditions that provide essential habitat functions for the listed species. In light of these facts, the legislative history of the Act supports the inclusion in Section 10 permits of measures which will provide for improved fish habitat over the life of the plan.

Requiring achievement of essential habitat functions necessary to support long-term survival of coho salmon is also supported by the "No Surprises" policy developed by the Fish and Wildlife Service and NMFS. Under that policy, which is currently the subject of rulemaking, once an HCP agreement has been executed, neither Service will seek additional financial compensation or land restrictions beyond those required under the terms of the HCP without the concurrence of the permittee. The policy provides significant long-term assurances to the Section 10 permittee that are not available to federal agencies or license or permit holders under Section 7. In order to be able to provide these assurances under the "No Surprises" policy, NMFS must ensure that conservation measures in the HCP provide a high probability that aquatic habitat functions essential to the species' long-term survival will be achieved and maintained during the term of the permit.

NMFS believes that measures to provide essential habitat function for coho are necessary for the species' long-term survival. NMFS' authority to require such measures is not limited to the authority provided in section 10(a)(2)(B)(iv). Section 10(a) confers broad authority to the Secretaries of Commerce and Interior in fashioning the terms and conditions of incidental take permits. For example, Section 10(a)(2) requires the permittee, through the habitat conservation plan, to minimize and mitigate the impacts of the taking "to the maximum extent practicable." That section also authorizes the Secretary to include in the permit additional measures "necessary or appropriate for purposes of the plan."

Throughout each HCP effort, NMFS has committed to ensuring that we employ the best available scientific information to determine the necessary terms and conditions, and to work in a collaborative effort with the applicant to ensure that the best information is brought to bear in the discussions. We remain committed to this process, and to a successful conclusion of each negotiation that will yield certainty and stability to the applicant and lasting benefits to fish and wildlife resources.

Once again, we thank you for your interest in this matter and look forward to working with you in the coming months.

Sincerely,

William T. Hogarth, Ph.D.
Acting Regional Administrator

cc:
James Brown, Simpson Timber Co.
David Dealey, Fruit Growers Supply Co.
M.D. Emmerson, Sierra Pacific Industries
Wayne Whitlock, Esq.
John Leshy, DOI
Lois Schiffer, DOJ
Terry Garcia, NOAA
Rolland Schmitten, NMFS
David Evans, NMFS
Will Stelle, NMFS
Hilda Diaz-Soltero-NMFS
James Lecky-NMFS
Monica Medina, NOAA-GC
Melanie Rowland, NOAA-GCNW
Ted Beuttler, NOAA-GCSW

Senator CRAPO. Mr. Barry.

Mr. BARRY. Yes. Let me just offer some other thoughts, in addition to what Monica has just mentioned.

I'd go back to the 1986 section seven regulations. There is a provision or a discussion in the preamble which notes that for some species that have declined so severely, there is virtually no bright line between adverse effects on recovery potential of the species and jeopardy. Even going back to 1986, we recognized that there are some species that are so critical—whooping crane is a good example. We just don't have much margin for error. California condors is another example—we are down to just a few left in the wild.

For some species, the average scientist is going to say, "Hey, if you affect their recovery potential, they are so low right now you've affected their survival potential, as well."

Under the Act, it is true that the issuance criterion that we have to clear is whether or not the issuance of the permit would jeopardize the continued existence of the species, so jeopardy is clearly the statutory hurdle. There are other issuance criteria in the act, though, that give us additional flexibility to truly try to get the best deal that we can for the species.

We have to be able to clear not only a jeopardy hurdle, and what Monica was saying was that for some of their salmon species they

feel that they are so far gone to begin with that virtually anything that affects them, that affects their recovery potential, could affect their survivability, as well, and would hit the jeopardy standard.

But, in addition to that, we basically are obligated to negotiate to try to minimize and mitigate the level of take to the maximum extent practicable. We've got a number of other provisions and authorities in negotiating HCPs to try to get the best deal we can for the species, regardless of how the lawyers endlessly debate whether it is jeopardy that is the standard or recovery.

I mean, the statute says ''jeopardy.'' No question about that. I think once you get into the biology and the science, though, it gets a lot murkier and a lot grayer very quickly.

Senator CRAPO. It would seem to me that—again, I still see a difference in my mind, and it would seem to me that if HCPs were not successfully negotiated as a result of seeking to get too much, that we could end up essentially not availing ourselves of the benefits that could be achieved by achieving the lack of jeopardy standard, and I just—you know, the second part of my question was: Does the utilization of an increased standard jeopardize the success of HCP programs?

Ms. MEDINA. I would say ''no,'' Senator. I appreciate your question and I understand, as a lawyer and not a scientist, how hard it is for us to try and see things the way that the scientists do, because the words seem very clearly different and we, you know, have this joint interpretation of what they mean.

But for the scientist it isn't that clear, and I think that you can hearken back to adaptive management as another way that, if we're asking what we don't need in an HCP, we continually monitor it so that we can ratchet it back and get protections elsewhere so that there is never a waste, there is never a mismatch between what we ask of the applicant and what the species needs to get there.

Senator CRAPO. I'd be interested in this. You've already indicated that you can provide the letter and whatever backup documentation there is for that letter. If you have any other materials on this, I'd be interested in what you have.

Were you going to say something, Mr. Barry?

Mr. BARRY. I would acknowledge that, in fact, disagreements between a permit applicant and the agencies over some of these issues clearly has resulted in additional delay in the negotiation of these agreements. I mean, I would be lying to you if I said that didn't happen.

One of the things that I've noticed over the years, though, that aggravates the situation is when—and heaven forbid, since I am a recovering lawyer, myself, right now—when the lawyers over-lawyer the negotiation process.

I think that was one of the big problems with the Plum Creek HCP for a while. We had everybody dug in up to their axles over a debate over what constituted ''take.'' It was a legal debate.

Finally, Kurt Schmitch, who was the head of the negotiation team for the Fish and Wildlife Service, said, ''Lawyers aside, out of the room. Let's just talk about the biology. What are the landscape conditions that we want to achieve at the end of this agreement?'' Suddenly, it was framed in a different light, and Lorin

Hicks and Kurt Schmitch and the biologists all the sudden started approaching it from a different direction because it wasn't being burdened with legalistic definitions of what constitutes take, what constitutes recovery, and what doesn't. They just started discussing what they would like to see at the end of the day.

Ms. MEDINA. "What are we going to do?"

Mr. BARRY. Yes. "What are we going to do?" Then all the sudden they started thinking like scientists again and they were able to make some sufficient progress.

I'm not sure what the message there is other than Shakespeare was probably right that first we ought to kill all the lawyers.

[Laughter.]

Senator CRAPO. Well, being a lawyer, myself, I won't comment on that.

I have several more questions, but I'd be very willing to interrupt for another round.

Senator LAUTENBERG. No thanks, Mr. Chairman.

Senator CRAPO. Isn't it true that several HCP negotiations are in jeopardy because NMFS is requiring the applicants to meet this higher standard?

I mean, one of the reasons I raise this question is because that issue has been raised to us.

Ms. MEDINA. I understand and I don't think that they are in jeopardy. I think that we're moving ahead on all of our HCPs now. You know, we do have disagreements. It is a negotiation, no doubt about it. It is a discussion. We need all the information the applicant can give us. It is beneficial if everyone is open-minded and comes into the process willing to share information and work together, but I'm not aware of anywhere we're completely at a loggerhead and not moving forward.

The thing that kept us from doing more HCPs over the last year-and-a-half or so was the fact that we had put so many of our resources into the PalCo HCP. We were virtually at a standstill in California because all of our resources were dedicated to that HCP. It was an incredibly intensive effort, and I think the timber companies, the landowners, were looking to see what would happen. They weren't anxious to move forward and negotiate terms until they saw what we were doing in that HCP, because it truly was, you know, innovative, forward-looking, ground-breaking—all of those things. We tried to really advance our science and our implementation of the program in that HCP.

Senator CRAPO. Well, you may have given at least part of an answer to my next question, because one of the things I wanted to get at with regard to the National Marine Fisheries Services that—and I recognize that Fish and Wildlife has a lot more species that they cover and has a lot more opportunity for HCPs, but with the significant fisheries issues in the Pacific northwest, it seems to me curious that NMFS has issued only two incidental take permits associated with HCPs.

Can you explain why that is the case?

Ms. MEDINA. Well, some of our listings are very recent, Senator. They are as recent as March of this year. So we really are just ramping up our program, and I think we were not prepared for the intensive nature of the work involved in these HCPs. It takes time

for us to get staff on the ground out in the northwest who are capable.

I mean, as you know, Dr. Kareiva has now joined our NMFS staff. We are ramping up. We are getting ready for this, and we expect that we will be doing HCPs not just with timber companies but with public water districts, local governments like the mid-Columbia HCP is with two counties in Washington State, and that one is right on the verge of being ready to go and done.

We are really trying to hit the ground running on a problem that we are only just recently faced with, so our experience is really new and really recent, and I'd love to be back here in a few years and tell you how we are doing then.

Senator CRAPO. I'd love that, too.

Mr. Barry.

Mr. BARRY. Yes. I'd like to just—I don't want to sound like a broken record here for OMB, but in the case of the Fish and Wildlife Service one of the real challenges that we have and one of the reasons that the HCP program takes so long—in fact, one commentator said the Berlin Wall came down faster than most HCPs get negotiated—but one of the problems that we have is that within the Fish and Wildlife Service's endangered species budget the people that are doing HCPs are also the same people that are doing section 7 consultations. It comes out of the same pot of money.

And so what you frequently have is this real frustrating sense of tension among the staff people in these field offices. They've got statutory deadlines for section 7 consultations. Within 90 days you have to have it finished. You have to have your biological opinion out within 35 days after that or 45 days after that, and so they are constantly being torn by the need to go off and work on these section 7 opinions which have congressionally imposed deadlines versus these HCPs.

One of the things that we did up in the northwest to try to eliminate that tension was to have a group of people that did nothing but HCPs. They were focused. They didn't have to race off to handle a section 7 consultation.

Unfortunately, that experiment has come to pass and I have been watching to see what happens with that team now having been disassembled, but one of the real problems we have is that, given the resources we have, the same people that are supposed to be negotiating HCPs are the ones who are supposed to be responding to Federal agencies, and so you get this terrible tradeoff, almost like Sophie's Choice. Do we respond to the Federal agencies and give them a quick turn-around, or do we let the landowner just sort of hang in the breeze? It's one of the reasons that we asked in our budget for the fiscal year 2000 for a significant increase in the amount of money for the consultation element. It was to give us the ability to respond to private landowners more efficiently. Unfortunately, again, Congress has chosen to give us very little of that new money.

Senator CRAPO. I, for one, will be very glad to support those efforts, and hopefully we will be able to get you the resources to respond more quickly.

I think I will just make a comment and then one last question.

The comment is I hope that we're not going to let the search for the perfect be the enemy of the good. Hopefully we will be able to make progress in a number of these areas.

I did want to suggest that it seems to me, from what I've heard yesterday and today, and from what I've heard from those who have given input to us on this issue, that one of the reasons it seems to take so long is that we don't really have a clearly defined process for negotiating a plan. When a landowner comes to the agency, it's not really clear what it is that is expected and what process needs to be followed so that we can expeditiously get through the necessary hoops and get to a point where an agreement can be reached, and I think it would be helpful if those kinds of standards and if a clearly defined process could be defined.

My last question is for you, Mr. Barry, and it is that in your testimony you mentioned that HCPs covering small, non-industrial, private tracts of land do exist. My question is: How many of those kinds of HCPs exist, and what can you tell me about the time and cost required versus—well, relative to these smaller HCPs?

Mr. BARRY. Well, you anticipated the last word that I wanted to try to get in before you closed down this panel.

If I had to pick one area where I think we have the biggest challenge ahead of us, it is to make HCPs more readily available and affordable to small landowners.

The big corporate timber companies and the large developers have the wherewithal and the ability to comply with the Act. They can hire the consultants, they can hire the lawyers, they can slug it through. They're used to paying environmental compliance costs as a part of doing business. For the smaller landowners, though, it is hard. It is frightening. They don't know where to go. They don't have the resources available to them.

We have actually issued a fair number of small landowner HCPs, in particular in the South, for homeowners, people who are going to build on a quarter acre lot in scrub jay habitat. There's not much you can do, there's not mitigation that makes much sense, and so we have issued a number of HCPs for people at a quarter-acre, half-acre, less-than-an-acre level, primarily for homes.

If you are a wood lot owner, small wood lot owner, and you've got 50 acres or 100 acres, we have, in fact, actually issued HCPs in those instances, but I would have to say I don't think we've done as good a job as we should.

One of the things that I'd like to see happen in the future is for us to be able to develop more of a template HCP that could be utilized readily, pulled off the shelf in a particular area for certain species, and use that as a way of streamlining the cost and the process.

We actually did issue an HCP handbook, a jointly prepared Fish and Wildlife Service NMFS HCP handbook that was designed to try to provide people with a greater understanding going in on what are the different steps, what are the different offices you need to work with, what are the questions you need to be prepared to ask, and in the back of that my recollection is we tried to come up with a template model of a small-scale, low-impact HCP.

So we are trying. I don't think we have perfected it. It's the one area that I would like to spend more time, personally, focusing on.

Senator CRAPO. I appreciate that, and I would encourage you to do so.

Before we conclude, Senator Lautenberg, did you have any further questions of this panel?

Senator LAUTENBERG. No. I'm satisfied. I'm listening very carefully, Mr. Chairman. You asked almost everything I wanted you to.

Senator CRAPO. All right.

Well, thank you. We appreciate your time and your effort and we'll continue to work with you on this issue.

Mr. BARRY. Thank you.

Ms. MEDINA. Thank you very much.

Senator CRAPO. This panel is excused.

I'd like to call up the second panel now.

The second panel consists of: Dr. Lorin Hicks, the director of Fish and Wildlife Resources for Plum Creek Timber Company; Mr. Steven Courtney of Sustainable Ecosystems Incorporated out of Portland, OR; Mr. Mike O'Connell of The Nature Conservancy; Ms. Laura Hood of the Defenders of Wildlife; and Mr. Gregory A. Thomas, president of the Natural Heritage Institute.

I don't think that the name plates are in the same order that I read them, but we'll go in the order that I read them.

Dr. Hicks.

While we're getting ready, I'll remind this panel that this is a larger panel, and therefore we ask you to pay even closer attention to the lights so that we do have the time for the questions and the interaction among the panel members, and I will advise this panel, as well, that your full written statements, as well as any other material you would like to submit, will be made a part of the record.

Dr. Hicks, you are welcome to begin at any time when you are ready.

I also encourage each of you, when it is your turn, to pull the microphone as close as you can to your mouth so that we can hear you. Sometimes it is hard in this room unless the microphone is very close to you. Thank you.

STATEMENT OF LORIN HICKS, DIRECTOR, FISH AND WILDLIFE RESOURCES, PLUM CREEK TIMBER COMPANY, SEATTLE, WA

Mr. HICKS. Good morning, Mr. Chairman and members of the committee. I am Dr. Lorin Hicks, and I am a "recovering" HCP applicant. I am also director of Fish and Wildlife Resources for Plum Creek Timber Company, Incorporated. Plum Creek is the fifth-largest private timberland owner in the United States, with over 3.3 million acres in six States.

I am here today to talk about how important habitat conservation planning is to our leadership in environmental forestry. Habitat conservation planning promises to be the most exciting, progressive conservation initiative attempted on non-Federal lands in this country.

Plum Creek is no stranger to habitat conservation planning. Plum Creek's Central Cascades HCP, a 50-year plan covering 285 species on 170,000 acres, was approved in 1996. We are currently working on another called the "Native Fish HCP," covering 1.7 million acres in three northwest States. A third HCP for red-cockaded

woodpeckers in the South is under development with the Fish and Wildlife Service.

In 1995, we also initiated an 83,000-acre grizzly bear conservation agreement in Montana's Swan Valley.

Since 1974, few issues have been surrounded with more controversy than the Endangered Species Act. It is often criticized as unworkable and characterized as iron-fisted. Regardless of its image, its impact on landowners has been profound. My company, Plum Creek, is no exception. Our 3.3 million acres supports no less than 12 federally listed species and others, such as salmon and lynx, which have been proposed for listing.

This committee faces a critical question. Can HCPs continue to work for landowners and for endangered species into the future? This hearing hopefully will give the committee insights in the underlying science and principles that drive HCPs.

Two of the fundamental foundations of HCPs are under great pressure.

First, the No Surprises policy, which is critical for landowners to undertake an HCP, is being challenged. It provides the necessary incentives for landowners to undertake the costly and resource-intensive process to complete a habitat plan. To ensure that the program remains strong, we believe that it should be codified.

Second, pressures mount to standardize HCPs and compare them to each other, with a tendency to use each one to raise the bar for those which follow. In my opinion, this one-size-fits-all approach is precisely what has challenged ESA since its inception and could be the most important deterrent to the inclusion of small landowners in the HCP program.

It is important to understand that HCPs are as different from one another as landowners and land uses. They are as small as one homesite and as large as 7 million acres. They are as short in duration as one construction season and as long as 100 years. They are as focused as a single species and as expansive as hundreds of species. And, importantly, each landowner has a different incentive for entering this voluntary process.

To help demonstrate this, I have attached a new booklet just produced by the Foundation for Habitat Conservation providing brief case histories of 13 HCPs from around the country. These case studies give better definition to my point that HCPs vary widely in scope and intent, and I recommend this document for you to review. These examples give credence to the notion that HCPs can be an effective tool for conservation.

Let's dispel a myth that HCPs are not based in science. When my company, Plum Creek, created its first HCP, we took on a very complex challenge. Not only did we have four listed species in our 170,000-acre Cascades project area, but 281 other vertebrate species, some of which would likely be listed within the next few years. Combine this with the challenges of checkerboard ownership, where every even-numbered square mile section is managed by the Federal Government under their new Northwest Forest Plan, and you have a planning challenge of landscape proportions.

To meet this challenge, we assembled a team of scientists representing company staff, independent consultants, and academic experts. We authored 13 technical reports covering every scientific

aspect, from spotted owl biology to watershed analysis. We sought the peer reviews of 47 outside scientists, as well as State and Federal agency inputs.

As a result of these inputs, we made technical and tactical changes to the plan, and additionally we developed working relationships with outside professionals that were invaluable and have been maintained to this date.

Let's also dispel the myth that the public has no access or input to HCPs. During the preparation of the Cascades HCP, which took 2 years and $2 million, we conducted over 50 briefings with outside groups and agencies to discuss our findings and obtain additional advice and input. During a public comment period, all HCP documents and scientific reports were placed in eight public libraries across the planning area.

I brought with me today some of the major documents from the Plum Creek Cascades HCP, which was completed in 1996. These documents include the draft and final EIS, the final plan, a compendium of the 13 peer-reviewed technical reports, and this is a notebook with all of the Federal decisionmaking documents that were completed, including the biological opinion and the statement of findings.

This is all part of the public record and part of the documentation of our HCP.

We continue to publish our scientific work that myself and my team completed for this in technical publications. For instance, we do have a paper in this month's ''Journal of Forestry'' on spotted owl habitat research that we did preparatory to the HCP.

Today, Plum Creek is nearing completion of a new HCP. This new plan focuses on eight aquatic species and covers 1.8 million acres of our lands in Montana, Idaho, and Washington. The company and the Services have been working over 2 years on this plan, which will be the first HCP for the Rocky Mountain region.

To provide a scientific foundation for this HCP, I assembled a team of 17 scientists that authored 13 additional technical reports spanning topics from fish biology to riparian habitat modeling. These technical reports were peer reviewed by 30 outside scientists and agency specialists.

We have all made the technical reports and white papers available to interested parties on this CD, and have done so well in advance of the public release of the HCP, which is scheduled for September 1.

The good news is that anyone can have access to the latest science and technology used in the development of the HCP.

My point here is to emphasize that for Plum Creek and other applicants the HCP process has been a principal catalyst for private landowners to undertake unprecedented levels of scientific research and public involvement.

I'll rush ahead here and make sure that I can get my time done here.

Mr. Chairman, these HCPs are not only science plans but also business plans which commit millions of dollars of a company's assets in a binding agreement with the Federal Government.

In the Pacific northwest, the stakes are high for both conservation and shareholder value in private timberlands. The con-

sequences of failure are so ominous for both interests that careful evaluation of the economic and ecologic ramifications are essential to successful completion of HCPs. Guesswork is not an acceptable alternative for either the Services or the applicant.

As enthusiastic as we are about HCPs, the process is not without its faults. Since our first foray into HCPs, we've noticed some significant shifts in policy and practice. One downstream effect of the five-points policy has been the requirement of the Services to more-thoroughly analyze the effects of adding multiple species to the HCP, resulting in deletion of conservation measures for lesser-known species because the Services lack the information needed to complete their new requirements. This creates a major obstacle for completion of multi-species plans.

There is a need for the Services to commit necessary resources and personnel to the development of HCPs from beginning to end, a period often as long as 2 years. Far too often, we experience shifts in key agency staff and biologists whereby professional experience is lost and continuity in plan development is broken.

Once the majority of the scientific content of the plan has been completed, we have experienced excessive focus on relatively minor technical details. These are often speculative or hypothetical issues that are unproven in the literature but for which there are strong emotional concerns. In other words, with 95 percent of the scientific work completed, most of the debate centers on the remaining 5 percent, creating unnecessary delays.

As we near completion of the native fish HCP, we are again reminded of the duplicative nature of the HCP and NEPA processes. The HCP is, by definition, a mitigation plan for the potential impact of lawful operations on listed species and their habitats. The NEPA process also requires a similar assessment of the HCP and management alternatives. Not only does this add additional expense and resources to duplicate work already done, but requires additional review and response by the Services.

Senator CRAPO. Your time has expired. Could you try to wrap up quickly?

Mr. HICKS. OK.

As you are aware, many of the HCPs being completed in the West require both the Fish and Wildlife Service and the National Marine Fisheries Service to work with the applicant and approve their final plan. Despite their efforts, these two agencies do not work in sync. The agencies provide varying levels of technical support to applicants. The combined effect of this lack of interagency coordination is further time delays to the applicant.

Mr. Chairman, I thank you for the opportunity to testify.

Senator CRAPO. Thank you. And your full testimony is a part of the record.

Mr. HICKS. Thank you, Sir.

Senator CRAPO. Next we'll hear from Mr. Steven Courtney.

Dr. Courtney.

STATEMENT OF STEVEN COURTNEY, SUSTAINABLE ECOSYSTEMS INSTITUTE, PORTLAND, OR

Mr. COURTNEY. Good morning. I am Steven Courtney, a biologist and vice president of Sustainable Ecosystems Institute.

SEI is a nonprofit organization dedicated to using science to solve environmental problems. We are not an advocacy group, and our charter states that we will not engage in litigation. Instead, we believe that cooperative programs using good science can find lasting solutions.

My testimony will focus on the positive lessons that can be learned about HCPs. I'll also make some suggestions for improving the process.

The staff of SEI has acted in many ESA issues. Most of our work is for governments, but we also work closely with both industry and environmental groups. I, personally, have been involved with six HCPs and was an advisor to Dr. Kareiva on the AIBS project.

I will report on two issues: the recently completed Pacific Lumber HCP and the SEI Santa Barbara meeting on how to integrate science into HCPs.

Let me first State that HCPs are important to conservation. Without them, there would be few options for management of endangered species on non-Federal lands. Rigorous scientific analyses are crucial to those plans; however, science is just part of any HCP, which is a management document.

Ultimately, the plan is a result of a negotiation and of decisions made by landowners and regulatory agencies. Science can help in this process, but it is not a magic bullet. Scientists can provide information on planning objectives and options and on the biological consequences and risks of these options. The better the information we provide, the more likely the planners can then make good decisions.

In the Pacific Lumber HCP, we used science to diffuse a controversial situation. We coordinated a large scientific program on the threatened marbled murrelet. Federal, State, and private scientists all cooperated to determine the effects of different management options.

Ultimately, the program was successful in that it provided clear guidance to the decisionmakers. Several items stand out.

First, the program was very well-funded by the company, which invested heavily in obtaining good scientific information.

Second, the quality of the scientific work was improved by an independent advisory group or peer review panel. In this chart I show here, I show the results of an independent audit to the PalCo HCP using the very same techniques that were used in the AIBS study by Dr. Kareiva and his group.

You will see that the green symbols indicate the original draft for the PalCo HCP and the red symbols equal the final draft, and you can see the change in performance on many different criteria, and the blue are the performance of four other unnamed plans.

You will see that the quality of the HCP did improve dramatically from the early to the final draft under the panel guidance. Note also that the final plan outperforms its other murrelet HCPs.

A third important point on the Pacific Lumber HCP was that the scientists were not asked to make management decisions. The separation of roles is key. The use of good science can build trust between parties precisely to the extent that scientists avoid becoming advocates.

Now, I am pleased that Dr. Kareiva in his written testimony agrees that the PalCo monitoring plan uses good science. This monitoring program was developed using the most-advanced analytical techniques available.

The AIBS study was useful in pointing out that not all HCPs do use such methods, or even information that already exists; however, that information—the AIBS study of Dr. Kareiva—was essentially a research study, an academic study. It did not address important practical considerations, as Mr. Barry has already said, and it didn't really discuss how to improve the process.

In April of this year, SEI brought together leading decisionmakers and scientists to develop those practical improvements, and participants were from a broad range of groups. Working by consensus, we identified numerous ways to strengthen the process, as outlined in the minutes of that meeting.

There was, for instance, general recognition, a message you've already heard, that the regulatory agencies and many applicants lack the sufficient resources for the technically demanding tasks they face. Academic and other scientists could help to bridge those gaps, but they lack incentives or opportunities to do so.

Most importantly, there are actually significant barriers to making more effective use of science. We need new infrastructure to make that use of science possible.

The SEI Santa Barbara group initiated development, for instance, of a national peer review program for HCPs. We are now working to make that a reality and have expanded our group.

By this consensus approach, we are seeking voluntary improvement to HCPs. By improving the science in their plans, permit applicants will then smooth the negotiation process, save time and money, and gain certainty.

The general public also wants to see better science in HCPs, and an open peer review process will improve public confidence.

Last, if I could just have 1 second to comment on previous testimony, you've heard that science is doing pretty well in HCPs, but there are some improvements that are possible. I want to emphasize that the HCP process, itself, is not in an entirely healthy state. I know that numerous applicants are talking or have walked away from the table, and that there is a need to improve the process for everyone's sake, and that science may be one way that we can do that.

Thank you.

Senator CRAPO. Thank you, Dr. Courtney.

Mr. O'Connell.

STATEMENT OF MIKE O'CONNELL, THE NATURE CONSERVANCY, MISSION VIEJO, CA

Mr. O'CONNELL. Thank you very much, Mr. Chairman and members of the committee. Thank you for the opportunity to address the committee on the science of regional conservation planning under the ESA.

The Nature Conservancy has been involved in conservation planning almost as much as Don Barry, since the ESA reauthorized section 10(a) in 1982. I, myself, have worked both on the ground and as a student of HCPs for 12 years, and so the observations I

want to offer and comments reflect both Conservancy's experience and my own.

When I was reviewing my testimony last night, I realized that my written testimony perhaps came across a little bit harsher about habitat conservation plans under section 10(a) than I had intended. And in fact, what I want to talk about is not that HCPs are bad, because I don't believe they are—I believe they are, in fact, a good thing for what they are—but I want to talk about what they are and what they are not and how some scientific improvements can actually help them become better and solve some of the endangered species conflicts that I think they do not.

Part of the problem I think is that HCPs are, in fact, a reactive process, generally. They are developed in response to proposed impacts on generally listed species. You don't have a listed species, you don't have a prohibition problem under section 9, and you don't end up generally getting an HCP.

And part of the problem, as well, is that HCPs have generally focused on the wrong biological scale, not that focusing on a species scale is bad, but that they miss an entire scale of conservation that is important, and that is of the natural community or the ecosystem level.

I think it is important to compliment the Fish and Wildlife Service on their work to improve the habitat conservation planning program. They've done their best to try to make it work and make it more conservation-oriented, both through practice and through policy. Their solutions, however, are limited by a legislative policy that is weak on natural systems conservation, and it is also weak on incentives to participants.

I think the Service has done pretty well, all things considered, with habitat conservation plans. So what's the answer from a scientific standpoint?

I think the key is how we focus our entire suite of conservation actions, including HCPs and how they are deployed.

I want to name a couple of scientific principles that are important to consider if we want to achieve broad-scale natural community conservation under the Endangered Species Act with HCPs as a part of that tool.

First, biodiversity conservation is important to consider at many different spacial and temporal scales. HCPs, by their definition, by their nature, by their legal definition, generally are focused on the species level and they are generally focused on listed species or species that are going to be listed very shortly in the future.

There is never one best scale for conservation action. The key is to find the appropriate scale for the problem and integrate across a number of different scales in an overall conservation strategy.

The second principle is that ecosystems are much more complex than we think. Science can never provide all the answers to questions about conservation, so our responses should be to exercise caution and prudence when we are designing answers. A good example of this is the adaptive management that people have spoken about.

Third, nature is full of surprises. Ecosystems are characterized by non-linear, non-equilibrium, and random dynamics, and unex-

pected events will occur. The question is not whether there are No Surprises, it is whose responsibility those surprises are assigned to.

Fourth, conservation planning is interdisciplinary, but science is the foundation. I think this is important, because frequently science is treated in habitat conservation planning negotiations as sort of a seat at the table rather than what it should be, which is a method of evaluating how to reach specified objectives.

This raises the critical question of how to integrate both scientists and scientific information in the process.

So what are some potential solutions? Given these important principles and the limitations of habitat conservation plans, both from a scale and a scope perspective, I think there are some improvements that can be made, and I will quickly go over them.

The natural community conservation planning program in southern California that I have been involved in for the past 5 years is an attempt to move beyond the reactive conservation planning of tradition to a more up-front, creative program that looks at not only endangered and threatened species but preventing—conserving natural communities and preventing these conflicts from occurring in the future.

The most critical improvements that this program has made is clear regional scientific guidance developed in order to tie individual conservation plans and permits together.

Also, the habitat level of conservation action that was taken, less concerned with individual species and where they might occur today, their occupied habitat, as it is with constructing a regional conservation system that will protect both species and the natural communities that sustain those species. And then, finally, how biological information has been brought to bear on the process.

This includes comprehensive management and monitoring, and, as I said before, the two most important, I think, things for that are regional conservation framework, regional guidance, a vision of what the regional conservation strategy will look like, more than just species and impacts to those species, and then a habitat basis for conservation planning and action that I hope I can expand upon in the question and answer session.

I would encourage you to take a look at my written testimony, and I appreciate the opportunity to testify today.

Senator CRAPO. Thank you, Mr. O'Connell. We will carefully review the written testimony, as well, and, in fact, have already to a certain extent and will further.

Senator CRAPO. Ms. Hood.

STATEMENT OF LAURA HOOD, DEFENDERS OF WILDLIFE, WASHINGTON, DC.

Ms. HOOD. Thank you for the opportunity to testify today before the Senate Subcommittee on the scientific aspects of habitat conservation plans.

I am with Defenders of Wildlife, a nonprofit conservation advocacy organization based in DC. with over 300,000 members and supporters.

Defenders' mission is to protect native animals and plants in their natural communities. As an organization that is committed to science-based management of endangered species, Defenders has

been heavily involved in individual HCPs, as well as HCP policy, on a national level.

The results of our scrutiny of the program reveals that significant improvements must be made to HCPs in order to improve the scientific basis for them and to reduce the risk that they impose to endangered species.

Starting in 1996, Defenders started research on HCPs that would—culminate in our 1998 report on the topic, entitled, "Frayed Safety Nets." In researching this report, we reviewed plans nationwide, then we selected a representative sample of 24 plans and evaluated them using criteria that should be satisfied in order for plans to lead to conservation benefits on private land.

In the course of the research, we read each plan and associated documents, we interviewed key plan officials, and we looked at any recovery plans for the species.

The report itself focused on the science, public participation, funding, and legal aspects of HCPs.

Our objective was to point out the best and worst examples of those aspects of HCPs and to examine national trends.

Our findings showed that, as they were being implemented, many plans represented large risks to endangered species because often they lacked an adequate scientific basis, they were difficult to change if they resulted in unanticipated harm to species, and they were often inconsistent with species recovery.

We identified the need for more scientific information to provide a platform to support well-informed HCPs. In the study of HCPs led by Dr. Peter Kareiva, scientists took a more quantitative approach to this same issue, and that study also pointed out that substantial scientific data are often missing.

For example, in two-thirds of the cases that were reviewed, there were no data available for the proportion of the total population that would be affected by the HCP.

I propose two classes of recommendations in response to the need to improve the scientific basis of HCPs.

First, I agree with the panel of scientists in yesterday's hearing in calling for increased, organized information on species and habitats.

Second, I recommend policy measures for moving forward with HCPs when scientific uncertainty exists, while still reducing risk to species.

But before I get to the risk management for species, let me explore opportunities to increase scientific information for HCPs.

First, we already have several tools in the Endangered Species Act for addressing this. Recovery plans can be excellent repositories of information on species, provided that they are well-informed, peer-reviewed, and adaptive.

Having information-rich, updated recovery plans to guide HCPs puts HCPs within the sphere of recovery, which is where they belong. Similarly, critical habitat designation also provides essential information about the ecology and distribution of species and habitats.

Outside the Endangered Species Act, large-scale ecosystem-based protection plans are being developed, and these strategies may allow us to understand how HCPs fit within the larger landscape.

And, finally, to improve the quality of science in HCPs, independent scientists need to be more involved in the development of HCPs, whether through consultation or formal peer review.

That being said, despite our best efforts, scientific information for HCPs will never be complete. This scientific uncertainty does not mean that HCPs cannot go forward. It is essential to recognize scientific uncertainty in the HCP process and to implement procedures for managing risk to species.

My second set of recommendations has to do with this risk management.

First, when information is scarce, precautionary measures can be incorporated into HCPs in multiple ways, including increasing protection for species up front as a buffer, ensuring that mitigation is successful before a take occurs, and limiting the duration of HCPs and assurances.

Second, adaptive management is an essential component of scientifically based HCPs. Unfortunately, under No Surprises adaptive management is fundamentally restricted by the fact that no additional money or land can be required of the permittee.

While assurances are clearly important for private landowners, I would like "no surprises" to become "earned assurances." That is, currently landowners receive assurances automatically when HCPs are approved. I would like to see a system where landowners earn those assurances, based upon the likely benefit or the impact to the species, the amount of scientific uncertainty involved in the plan, and the amount of monitoring and adaptive management that is involved in the plan.

With that point, I'll conclude. Thank you very much.

Senator CRAPO. Thank you very much, Ms. Hood.

And, finally, Mr. Thomas.

STATEMENT OF GREGORY A. THOMAS, PRESIDENT, NATURAL HERITAGE INSTITUTE, SAN FRANCISCO, CA

Mr. THOMAS. Good morning, Mr. Chairman. Good morning, Senator Lautenberg. I'm Greg Thomas. I'm the president of the Natural Heritage Institute, a nonprofit conservation organization located in San Francisco.

My statement today reflects the reality that the HCP process must be made to work because there just is no other vehicle for protecting endangered species habitat in lands and waters subject to private rights, and the objectives of the ESA cannot be met without conserving such habitat.

That's clear when you consider that for 80 percent of listed species some portion of their habitat is found on private lands, and for 50 percent their habitat is found only on private lands.

Yet, the HCP process so far has not kept pace with the biodiversity challenge. This is revealed by one of the many useful statistics coming out of the NCEAS review that Dr. Kareiva testified about yesterday.

It points out that 62 percent of species are declining in areas covered by HCPs. Now, making HCPs work has two dimensions, we believe: first, producing conservation strategies that contribute toward the long-term survival of the species and the associated elimination of their habitat needs as a development constraint; and, sec-

ond, apportioning the burdens and responsibilities among the rights holders and the public in a manner that produces the appropriate inducements.

Now, the science of conservation planning can be better utilized in the HCP process to advance both of those dimensions.

After 17 years of operating experience with HCPs as the principal vehicle for conserving biodiversity on private lands, it is now possible to take stock of what is working and what is not and how the process can be improved.

With that objective in mind, in June last year NHI, my organization, convened a technical workshop to synthesize the results of the dozen or so empirical reviews of the performance of HCPs that have been conducted to date by academic researchers, practicing conservation biologists, and national environmental organizations.

Incidentally, that workshop included four of the witnesses and institutions that you've heard from at this hearing—Dennis Murphy, the NCEAS review, Michael O'Connell and The Nature Conservancy, and Defenders of Wildlife—so most of the good lines have already been taken by previous witnesses.

But let me summarize a few of the findings and recommendations on how this HCP process might be redesigned in a manner that could benefit both species and applicants for incidental take permits.

First, HCPs for individual landholdings would work better if they were designed to fit within the context of a more systematic habitat-wide or bioregional conservation strategy. Michael O'Connell has already explicated this point in some detail, and I hardly need to repeat what he has said.

But the central point here is that the optimal planning unit for habitat conservation is not the individual landholding or the water diversion. The optimal focus is not an individual listed species. What we want to do here is create a portrait, if you will, that is a picture of long-term survival of the species.

If you want to think of this as a mosaic, then the individual habitat conservation plans, the parcel-by-parcel plans, are the tiles in this mosaic, and all we're saying here is that if you want to create the picture you have in mind, you'd better know what that portrait looks like before you start designing the individual tiles.

We need a master plan, in other words, for this process to work optimally, and that master plan is a landscape-scaled plan that is going to require a more proactive and less reactive stance by the Services to produce, and that's part of where the reallocation of the burdens of habitat planning probably needs to take place. This spells Federal dollars, and there is no masking that.

The advantages of this approach are many and are outlined in the written testimony in some detail. Landscape-level planning can specify the overall conservation effort that is required and provide a basis for determining and apportioning the contribution that needs to be made by the individual rights holders.

There is no mechanism at present under the act for apportioning burdens as between incidental take permit applicants and public lands. Basically, whoever gets there first tends to cut the best deal.

It is more feasible to calibrate habitat conservation planning to long-term survival rather than simply minimizing impacts, and

that's important because, as long as habitat conservation planning is viewed, rightly or wrongly, as nickel-and-diming endangered species further toward the brink of extinction, it is going to remain controversial.

What we need is to set up a process that provides some assurance of net survival benefit for these species.

I am perhaps a fifth of the way through the comments that I intended for you this morning, so perhaps in the question period I can move into some other terrain.

Thank you very much, Mr. Chairman.

Senator CRAPO. Thank you very much, Mr. Thomas.

We thank the entire panel. We realize the 5-minute limitation makes it very difficult for all of you to get what you have to say said, and I assure you that we do review the written testimony very carefully.

Senator Lautenberg, would you like to start out this round?

Senator LAUTENBERG. If I might, Mr. Chairman, I want to again commend you. I think the witness group that we've had here is an excellent one, and we get kind of a different picture than is traditionally done in committee hearings, and I'm pleased to hear the concerns that are registered here about whether or not HCPs do what we want them to do.

I would ask Ms. Hood, how many of the HCP policies that are approved thus far include the substance of the five-point policy guidance that we are focused on as one way to assure the quality of the HCP plan?

Ms. HOOD. Well, the five-point policy has recently been drafted and put under public comment, so it is a relatively new process that the Services have instituted.

Senator LAUTENBERG. When was the five-point policy——

Ms. HOOD. I believe that it was out for public comment this past spring, so they are in the process of starting to implement it at this point.

Senator LAUTENBERG. OK. So we can't really determine what—if we look at the plans to date, there is no basis for considering the five points. But would you say that, without a clear definition, that in your examination of the HCPs thus far that they included much or enough of the five points to give us the value that you would like to see in these HCPs?

Ms. HOOD. I think that basically we have been pleased that the Services have promulgated this new guidance on HCPs, because the five-point plan does address many of the issues that we brought up as, you know, fundamental deficiencies in some of the HCPs that have been put forward in the past. The five-point plan addresses some of the problems that we did identify, including the need to include more public participation, the need to identify biological goals for plans so that you can judge the progress of plans based on what the plan was aiming to do for the species, and incorporating more biological monitoring and adaptive management. These are all changes that we really want to see included in HCPs and we're glad that they are listening to our concerns about them.

I would say that one problem that we have is that the guidelines are not regulatory, they're not required of landowners, so we're still faced with the situation that No Surprises assurances are given to

private landowners based on just the approval of the HCP, and, instead of having assurances be offered as an incentive to include the best adaptive management possible, biological goals that truly aim toward a benefit for the species that are involved, and some of these other recommendations from the five-point plan.

Senator LAUTENBERG. It has been said many times this morning that the HCPs have been a substantial step forward in terms of protecting habitat, so I'm inclined to agree with that. And now what we are trying to do—and, once again, my compliments to the chairman because what we've done is ask the question today: "How can we better assure that there is a standard that measures what these plans are expected to produce?" And in order to do that you have to understand what it is that your requirements are. Are they based on something solid or are they based on just the—those of us who would like to protect the environment. I just announced which side I'm on, I guess.

How many of the HCPs—anyone who would be inclined to answer—approved to date are based on a recovery standard so that they do not undermine the recovery of the endangered species?

The chairman identified recovery as opposed to jeopardy as a matter of interest. What would any of you say regarding the fact that the recovery standard does not jump out at you as one of those standards that is included?

Dr. Hicks.

Mr. HICKS. Senator, if I could offer my attempt at an answer on that from my perspective, having been a designer and practitioner of several HCPs now, my understanding and the counsel I've given to my company is that, although we may not be necessarily adopting a recovery goal or recovery standard for the HCPs, our task and the counsel we've gotten from the agencies is that what we are planning to do under the HCPs should not somehow subvert or set back recovery of those species.

Two perspectives to leave you with. When we did the analysis for the Cascades HCP, the Fish and Wildlife Service, in their decision-making documents, analyzed the approach we were taking in the HCP from the standpoint of the draft spotted owl recovery plan that was there at that time.

They concurred that where we were instituting harvest deferrals and where we were leaving habitat for the owls was consistent with the direction that the Federal Government was taking in their recovery plan. We were putting them in the right areas, in other words.

And so, although we were not necessarily emulating the goals, we were consistent with the plan and reviewed as not setting back the goals of recovery should those goals be implemented aggressively on Federal lands.

The second point I want to make is that, with many HCPs—for instance, our native fish HCP right now—we started development of this plan while the bull trout was a candidate species for listing. We thought about this being a candidate conservation agreement, or something you might do prior to the listing of a species.

Because it has taken us over 2 years to develop this, we have now been into the development of the plan since the species has been listed, so we've converted the plan over to an HCP, as well

as the other species along the road here that we're considering in the development of this plan.

But there is no recovery plan for the bull trout and likely will not be before we are done with our plan, so the landowner is faced with a choice should he delay conservation, delay a notion, an idea of how to proceed ahead, or should he provide not only some conservation on the ground early for the species, but be able to obtain some regulatory predictability for his company in this shifting mosaic of recovery planning, as well as bring along some other species.

For instance, in the native fish HCP, the west slope cutthroat is brought along and considered in the plan, and that has not yet—is still being considered for listing at this point.

And so the point is that recovery plans are great. We can look at some of the tactics and techniques taken in those plans. But HCPs—one of the values is that it allows the landowner to get out ahead of recovery plans.

Mr. THOMAS. Senator, if I may——

Senator LAUTENBERG. Yes.

Mr. THOMAS. As I think Don Barry affirmed this morning, the standard of performance for HCPs is basically whatever the negotiation process will yield. The Government seeks to get the best arrangement it can, and that means inherently—and let's not hide the fact—economics intrude. The best deal you can get is, to some extent, a function of the affordability of mitigation measures by the private rights holder.

The better approach, as many of us have suggested, is to be able to calibrate these plans to some kind of an overall conception of what it will take to get this species out of difficulty and what contribution any individual HCP needs to make in that direction, and the extent to which the public fisc has to be willing to pick up the difference, which often will be the case. That's another benefit of landscape scale planning.

Mr. O'CONNELL. Senator, if I might add, as well, part of the problem is that recovery is so difficult to pin down as what it actually is. I'm convinced that some people think recovery means there's so many of them running around you can't avoid stepping on them, and that's clearly not in a realistic definition.

It is so different from species to species and from location to location. In San Diego County, which is one of the places I work, we have a plant called the "otimesamint," which is a very narrow endemic species. It is restricted to a very narrow area and a narrow habitat type. There are three known locations of this plant species. They are all three protected under the conservation plan. Is that recovery? You could argue one way or the other about that.

On the other hand, one of the species that is addressed under the conservation plan is the golden eagle, and San Diego County represents a tiny portion of the range of the Golden Eagle. I think there are five or six pairs that nest in the county. And those locations of the nests and the habitats surrounding them are protected, as well as the natural community and landscape that supports them. Is that a contribution to recovery?

I think it is difficult to pin that down as a bright line that we would then judge the adequacy of HCPs on. On the other hand, I

think it is important that we look at actions that are simply not holding actions—actions that don't just say, "Are we keeping the ball from rolling further down the hill," but actually making a contribution.

And, as Greg said, apportionment of that responsibility is an essential part of that equation, and that's not a scientific question at all.

Senator LAUTENBERG. Mr. Chairman, I've taken more than my share, and I appreciate it. Perhaps we'll have an opportunity to submit a couple questions to the witnesses and would ask for their cooperation in responding back to us as quickly as you can.

I thank you very much.

Senator CRAPO. Thank you very much, and you're welcome to ask further questions if you have time.

Senator LAUTENBERG. I'll leave that to you, Mr. Chairman.

Senator CRAPO. Mr. Courtney, my first question is to you. Yesterday there was some discussion devoted to the concept of scientific standards and guidelines and the need for those. Do you believe that a set of scientific standards and guidelines would improve the quality of HCPs and the science with regard to HCPs?

Mr. COURTNEY. That's actually a fairly difficult question, Senator.

I'm fairly cautious about the need for a prescriptive approach with a cookbook and standards that we must all meet. I think you've heard from many of the other witnesses that we need flexibility in our approach and that each HCP is different and the issues that it deals with are different.

I do, however, think that it has real value if we can find and define our goals up front.

You've heard from some of the other witnesses on this panel that having a clear ecosystem-wide program of where we are going and a set of goals and, for instance, also the Fish and Wildlife Service proposal to provide goals at the time of listing, all those are positive steps, but I would be very cautious about ideas that we would have to have a particular sort of analysis or particular standard that we must meet in every HCP. I find that hard to see how we could achieve that.

Senator CRAPO. Thank you.

Mr. Hicks, the issue of trying to address both No Surprises and adaptive management seems to raise some level of contradiction, although there are those who believe that it can be overcome. I think that Mr. Barry indicated he believed that that was something that could be addressed.

How have you addressed those issues in the plan that you've worked out?

Mr. HICKS. Mr. Chairman, I think that the term has been used several times about the dynamic tension between the No Surprises policy and adaptive management.

It is important to realize that—and I think really this adaptive management, although it is viewed as learning by doing, it is more of a classroom term, probably better discussed in the classroom than practiced on the ground. It is a very difficult thing to actually put in on the ground.

Within the context of HCPs, really adaptive management is an agreement between the Services and the applicant whereby management actions will be modified in response to new information.

I view adaptive management as a way to address some significant leaps of faith, if you will, in HCPs where there is dependence on models or adoption of untested conservation measures.

The policy may limit the amount of mitigation that can be required of an applicant unless unforeseen circumstances occur, but adaptive management provides the flexibility to deal with that uncertainty within the sideboards of the No Surprises policy.

So, as an example of what we've done in HCPs, for instance, in our Cascades HCP, we used a model that I had developed to help us predict how many owls might be—how many site centers might occur in an area based on the configuration of habitat now and in the future, so we used adaptive management to focus our information-gathering, our monitoring to gather information to see if the model was working and to set some sideboards upon which how far the model should depart or could depart from our predictions before we had to sit down with the Fish and Wildlife Service and decide how do we respond to information that the model might not be accurately predicting occupancy of landscape habitat by owls.

So we set some sideboards there to help with that, and it helps drive our monitoring program to gather information to get us to that end point.

Senator CRAPO. Thank you.

Mr. O'Connell, you suggested in your testimony developing an endangered species problem-solving fund that would provide a strong incentive to private landowners to participate in the objectives of the ESA. Could you elaborate on that a little bit? How would that fund be created and used? What do you have in mind there?

Mr. O'CONNELL. Yes. Thank you for asking that, because I wasn't able to get to that.

One of the things that becomes clear when you look at when HCPs are initiated, which is with impacts imminent and with listed species which are pretty much at the brink of extinction, is that what the ESA requires in terms of conservation for those species and what is necessary to recover them, there's a gap between that. And part of the discussion over recovery is who is responsible for filling that gap.

Senator CRAPO. Right.

Mr. O'CONNELL. I think it is very important that we recognize that, depending on—no matter what the assignment of responsibility is, there is going to be a public responsibility for part of that. We don't currently have a mechanism to fund the type of conservation that would improve habitat conservation plans from a conservation standpoint and be a fair allocation of resources from the private sector.

So I would envision a fund like that as having benefits on both sides. That's why I was talking about it being a problem-solving fund. It would help habitat conservation plans become a better conservation tool, contribute more to the recovery goals of the ESA, but also make them more workable and doable for private landowners and then therefore make them a better incentive there.

Senator CRAPO. Thank you.

And I'm not going to miss you, Ms. Hood, but I want to skip to Mr. Thomas here, first.

Mr. Thomas, in the context of this dynamic tension between adaptive management and the No Surprises policy and the proposals that are being talked about as to who is responsible for this, to make up the difference when adaptive management shows that more needs to be done, I'm aware that—at least it is my understanding that in some of your writings you have been critical of the No Surprises guarantee. Is that correct? If so, how would you approach the issue?

Mr. THOMAS. In my view, the way to reconcile the need for regulatory assurances with the adaptive management discipline is by converting the concept of No Surprises to a concept of no uncompensated surprises.

The fundamental problem with No Surprises is that it flies in the face of biological reality, and it is not helpful, or at least it is not a sufficient answer to say we will negotiate the potential adjustments up front as a part of the initial deal.

Well, when these deals last for decades and the data is as inconclusive as it often is, that isn't very satisfying. What would be far more satisfying would be an acknowledgement that we don't know enough to regulate for decades. We simply don't. And HCPs are nothing better than a set of testable hypotheses that need to be tested. And we need to abide by the scientific verdict that that testing will provide. And if that verdict is that adjustments in the fundamental deal are needed to accomplish the goals of the Act, then the question of apportioning that burden as between the rights holder and the public is a legitimate question.

So, you know, what it seems to me can be negotiated up front is that apportionment of financial responsibility for adjustments if they prove to be needed, but the idea that somehow or another there are foreseen and unforeseen circumstances up front when you're dealing with plans of this nature is, frankly, wishful thinking, and that's the problem with the—it's too rigid in that respect.

Senator CRAPO. So if I understand you right, you're proposing that, in one way or another—I was interested by your concept of no uncompensated——

Mr. THOMAS. Right.

Senator CRAPO [continuing]. Surprises. So we identify up front that there almost certainly will be adjustments that need to be made, but the landowner is able to know up front what his or her responsibility economically will be if those developments take place.

Mr. THOMAS. Indeed. I mean, we analogize it to insurance. It is risk insurance. If there is a fund that could absorb unanticipated risks without that falling on the shoulders of the private rights holder, everybody is better off.

And, incidentally, in exploring this concept with developers, one of the interesting potentials here is that the cost of debt service for developments where there is an appreciable risk of species complication, that cost can probably be reduced through this kind of an insurance concept.

That means that, in a sense, a portion of the premiums for such an insurance can be defrayed through savings in the development scheme.

So we tend to think this is a concept that has a lot of potential to it and needs to be examined.

Senator CRAPO. Before I go to Ms. Hood, did you want to say something, Dr. Courtney?

Mr. COURTNEY. Yes. I would like to comment on that.

I'm sure a lot of permit applicants would welcome the idea of having some insurance about what would happen if unforeseen circumstances did come along, but I would like to say, just coming from a purely scientific approach, that I think the notion of No Surprises precludes adaptive management should be knocked on the head, that we clearly do adopt many adaptive processes in HCPs, and sometimes the processes—the management changes that come into place can be quite dramatic.

For instance, in the Pacific Lumber HCP for spotted owls, it is a performance-based standard, and if the spotted owls actually decline, the HCP moves to a no-take situation. That is, the company is not allowed to do anything which would harm the owl any further—that is, no more timber harvest. That's a fairly substantive change which is written into the plan.

So adaptive management is really and the limits to adaptive management can often be seen as a test of our scientific ingenuity, and if we do the job right we can probably cover many of the circumstances that can be foreseen.

Senator CRAPO. Thank you.

And, Ms. Hood, you indicated in your testimony—I think you used the word "earned assurances" as opposed to "no surprises."

Ms. HOOD. Yes.

Senator CRAPO. Would you like to comment on this entire question in that context?

Ms. HOOD. Yes. I think, like I said in my testimony, I think part of the problem that we've had with the No Surprises assurances is that they are granted as part of the normal approval process with no additional requirements associated with them. So, as we've seen from the other witnesses today, part of those approval standards can be—the bottom line can be quite low at times.

If minimization and mitigation to the maximum extent practicable does not mean recovery in some cases, then that can be a problem for HCPs. And also the jeopardy standard is also not a strong standard for HCPs, as well. So what we'd like to see is earned assurances that are granted, as an incentive to go beyond what was required previously to earn those assurances through building in good adaptive management programs, like Dr. Courtney said, "Sometimes these adaptive management programs can be quite complex and costly, and perhaps they should be rewarded with assurances for incorporating such adaptive management."

But right now we are in the situation where these assurances are granted and landowners are basically asked to incorporate these adaptive management flexibility programs. What we'd like to see is assurances be more of an incentive, and also to have some kind of economic mechanism whereby, when assurances are granted and we do need to step in and provide additional mitigation for impacts

that were not anticipated, that there is some kind of economic mechanism for paying for some of that.

And I would like to go back to one example where, over the decades, our scientific understanding has changed very rapidly about endangered species management. If we look back on the San Bruno Mountain HCP, the crafters of that HCP envisioned that for substantial areas on San Bruno Mountain, they wanted to clear out some of the exotic vegetation and restore some of the natural habitat for the butterflies that are imperiled on the mountain.

Under that program, it has been much more difficult than they thought it would be to actually remove that exotic vegetation and restore that habitat, and it has been a lot more costly than they had anticipated, as well.

So I think that, even going back to the first HCP, we can see that over time we need to be able to adjust the amount of money available and how that money is distributed to management.

Senator CRAPO. Mr. Hicks, did you want to comment on that?

Mr. HICKS. Yes, Senator.

In the practical discussions of development of an HCP—and I bring to case the native fish HCP, which we've been working on now for a couple of years with the agencies—really a major sort of rule of the road is that you either front-end load a lot of science and information on the species you would like to have addressed in the plan at the beginning, or else you'd better be prepared to be doing a lot of adaptive management and monitoring at the back end of the plan in order to verify or prove out some of the notions and hypotheses you have to begin with.

This has really been a major counsel that I've given to our company, and a way that landowners should prepare to do HCPs is do as much on the front end science as you can so that you don't have to do as much on the back end to assure the agencies and the public that you know what you're doing.

You won't be able to escape that. There is an obligation now, and it comes up all the time in discussion with the Services. It is: What sorts of issues should we put into that adaptive management corral and address at the end of the day? And usually, at least in my situation, one of the final stages of the HCP development we are in right now with the Services is that adaptive management program, because at this point we've discussed many of the technical issues. We've decided which ones we have confidence in and which ones we don't, and so adaptive management is usually that last thing and should be that last thing you look at so that you make sure that those questions are answered, especially in the case of some applicants where they may not have a lot of information at the front end.

And, finally, one way to address the issue of risk is to shorten the permit period. For a landowner, if the agencies are uncomfortable with the approach he is taking, then, instead of it being a 30-year plan, it may be a 10-year plan at that end, so there are some ways in the process to compensate for that issue.

Senator CRAPO. Thank you.

And did anybody else want to add anything else to this issue?

Mr. O'Connell.

Mr. O'CONNELL. Yes. I wanted to—I'm sorry, I'll save it for another issue. That's OK. It's not on this particular——

Senator CRAPO. Go ahead if you've got something on your mind.

Mr. O'CONNELL. Yes. Actually, I did want to talk about one thing that I do feel is important, which is the small landowner issue that came up earlier.

Senator CRAPO. Yes.

Mr. O'CONNELL. A question that is frequently asked when we talk about regional-scale visions and regional-scale planning is: How is the small landowner affected there? I think it is important to mention that.

And we found that, in fact, regional conservation plans, as opposed to individual section 10 permits for small landowners, actually provide an economy of scale that eases that burden for small landowners. Most of the small landowner issues that arise are in urbanizing areas. That's where the parcels are smaller. And, in fact, in most of those areas local governments have been able to take on the burden of implementing the planning program and the conservation program, and that then provides a secondary benefit to small landowners in that they may be able to develop their entire parcel or they may be able to have their entire parcel bought if their entire parcel is one that——

Senator CRAPO. So a small landowner, if there was a regional plan in place, could just make sure that they were complying with the regional plan and take the benefit of the plan?

Mr. O'CONNELL. That is exactly correct. And it ranges from the extreme of their entire parcel is important for conservation, and so therefore it can be purchased at fair market value, or their entire parcel does not fit into a regionally sound scientific conservation strategy and therefore it can be entirely developed, whereas if you were focusing on it as an ownership, exclusively, without that regional context, you may say, "Well, your quarter acre, you have to do something on that," when, in fact, that quarter acre and the compensation for it may have very little consequence. So that's an economy of scale that is important for small landowners.

Senator CRAPO. Dr. Courtney.

Mr. COURTNEY. I'd just like to followup on what Mike just said, and to expand also to address some of the issues about adaptive management and No Surprises in the context of the small landowner, because on a small HCP the potential for adaptive management is really non-existent.

Something that came up out of our workshop in Santa Barbara was the notion that adaptive management sometimes operates on different scales to that of the individual HCP, and so, from a scientific point of view, we are allowed to learn from experience, but that doesn't factor into the small HCPs which are a done deal.

For that to work—and so the particular message here is that adaptive management in this context is no conflict at all with No Surprises, but for that to work, what you need is monitoring and you need a regional perspective, a regional plan.

You've heard from many of the witnesses, and I think we would all support the notion of regional planning which included a coordination of a monitoring program which is yet to happen in most cir-

cumstances, and most scientists I think would support such a thing.

Mr. O'CONNELL. I'd encourage you to take a further look at what we've been working on in southern California because it does try to take these concepts, experiment with these concepts a step further on just those issues.

Senator CRAPO. I want to thank the panel for the testimony you've presented. We're running into some time constraints here, and so I'm not going to be able to ask any more of my questions right now. I've got pages and pages of questions here.

The testimony we've heard over the last 2 days has helped me to identify a lot of not only issue areas but solution areas and potentials for finding the common ground between the competing concerns that I think could help us move forward and improve the HCP process.

As I said, I do have a lot more questions, and I'd like to be able to spend more time here but can't, and in that regard I would like to submit questions to each of you, and I believe you'll probably get questions from some of the other Senators, as well. We'd ask that you respond to those.

[The information referred to follows:]

Senator CRAPO. The committee is trying to develop a solution here and find something that can avoid the traditional battles we have over endangered species reform actions and form the basis of a positive step forward that can be achieved in the context of what is politically doable at this point in time, and I think that a lot of ideas that have been presented in your testimony here today, as well as in your written testimony, are good candidates for that type of reform.

So if you would be willing, I will submit a number of questions to each of you, as well as ask you to be available for some of the other Members who were not able to make it here because of their schedules.

Without anything further, this hearing is adjourned and all witnesses are thanked for their attention and their efforts.

[Whereupon, at 11:36 a.m., the subcommittee was adjourned, to reconvene at the call of the chair.]

[Additional statements submitted for the record follow:]

STATEMENT OF DONALD J. BARRY, ASSISTANT SECRETARY, FISH AND WILDLIFE AND PARKS, DEPARTMENT OF THE INTERIOR

INTRODUCTION

Mr. Chairman and Members of the Subcommittee, I am pleased to be here today to talk about habitat conservation plans (HCPs). The Fish and Wildlife Service and the National Marine Fisheries Service have been using these plans as an important tool to conserve and protect threatened and endangered species. My testimony will discuss the science used in HCPs and provide specific examples. A list of all of the HCPs approved by the Service as of July 16, 1999 is attached.

HABITAT CONSERVATION PLANS REPRESENT AN INNOVATIVE AND SUCCESSFUL PERMIT PROGRAM

HCPs are authorized by Section 10(a)(1)(B) of the Endangered Species Act (ESA) to allow the incidental take of listed species in the course of an otherwise lawful activity. The Service has experienced tremendous growth in the demand for HCPs in recent years. You only need to look back to 1992 to see how different the landscape has become. In 1992, 14 HCPs had been approved. As of today, we have 246

HCPs covering more than 11 million acres of land, providing conservation for approximately 200 listed species. More than 200 HCPs are in some stage of development. Numerous success stories are contained in the HCPs already approved, and we are currently working on a number of strong partnerships with local governments and the private sector through the HCP process.

The HCPs that are in place today, and the demand for additional HCPs, clearly show a change in how Federal agencies work with private parties for species conservation. We have become partners with landowners. Local governments have incorporated HCP development into their planning process for growth in an unprecedented manner. The HCP process also can provide flexibility for landowners by including unlisted species, which enables the process to employ an ecosystem and landscape-level approach. This proactive approach can reduce future conflicts and may even preclude the listing of species, furthering the purposes of the ESA.

Except for the need for additional funding, the Service is very pleased with where the program is today. The quality of approved HCPs is constantly improving, and we are making continuous strides in endangered species conservation through the use of this tool. In collaboration with the National Marine Fisheries Service (NMFS), the Service has made many refinements to the process in recent years. These refinements, as well as the collective knowledge gained from past years, are available to the public in a very useful HCP Handbook, issued jointly by the Service and NMFS in November 1996.

The major strength of the HCP program is that it is a national scale program that readily allows for the development of local solutions to wildlife conservation instead of a one size fits all top down regulation. Applicants can explore different methods of achieving compliance with the ESA and choose the method that best suits them. The Service intends to continue to support this flexibility, and we expect that our increased emphasis on achieving biological goals over specific prescriptive measures will further applicants' flexibility.

Without a doubt, the most frustrating issue with respect to HCPs is that this innovative, collaborative program is not receiving the necessary funding as set forth in Administration requests. HCPs also require money for implementation and monitoring to determine whether the biological goals are being achieved. The President's budget request for fiscal year 2000 clearly recognizes this reality. We asked for an increase specifically to address HCP development, monitoring and implementation in the fiscal year 2000 budget. However, the Senate did not fund our request. Without increased funding, we will not be able to adequately monitor HCPs to the extent desired by both supporters and critics of the HCP program. We encourage the members of the Subcommittee to support the President's fiscal year 2000 budget request for the endangered species program including the requested increases for HCPs. In the absence of adequate funding, some excellent opportunities may be lost or at least greatly delayed. A number of communities, such as Santa Cruz County, California, Laramie County, Wyoming, and the wheat growers in Douglas County, Washington, are eager to proceed with development of their HCPs and have many good ideas but lack the initial funding to get the process underway. As the demand increases, we want to approve more HCPs that incorporate sound science, partner with public and private parties, and create win-win solutions for species conservation and development.

HABITAT CONSERVATION PLANS ARE WORKING WELL

In general, HCPs that are currently in operation are working quite well. First, the permitters have displayed a high level of commitment to and compliance with their HCPs. In fact, many permitters have shown enthusiasm in sharing their early successes with the Service and the public. Second, although the program is young, tangible results are already apparent in many approved HCPs. The following examples represent just a few of the HCPs that are accomplishing their objectives as expected.

Red-cockaded woodpeckers

The Service's red-cockaded woodpecker (RCW) program provides a showcase of how Section 7 and Section 10 work together across the landscape to achieve conservation. For private lands, the program emphasizes implementation of novel and flexible conservation strategies, including the HCP process and Safe Harbor agreements, both of which are contributing significantly to species recovery objectives.

RCW HCPs provide an excellent example of the ability of HCPs to involve a wide array of applicants, both large and small, who are interested in finding solutions to endangered species land management challenges. Past and current applicants include large industrial forest landowners, small "mom and pop" woodlot owners, development corporations, quail plantation owners, non-industrial forest landowners,

and State wildlife agencies. The 12 non-industrial timber RCW HCPs that have been completed to date and the five currently being developed exemplify the versatility and appropriateness of the HCP process. The 12 permits that have been issued in seven states authorized the incidental take of 29 RCW groups; the mitigation for this incidental take involved the potential establishment of 54 new RCW groups on other private and/or public properties. Tangible conservation benefits delivered by HCPs include: (1) increasing the size and therefore the demographic viability of recovery or support populations, (2) stabilizing and/or maintaining small, at-risk recovery or support populations, and (3) rescuing very small, demographically isolated (i.e., biologically doomed) RCW groups from fragmented landscapes. Seven of the 12 HCPs have been successfully completed with all mitigation requirements being met and the other five are in progress and are fully expected to succeed.

With respect to industrial timber lands, the Service has entered into conservation partnerships with nine corporations (Georgia-Pacific, Hancock Timber Resource Group, Champion International, Westvaco, Weyerhaeuser, Potlach, International Paper, Norfolk Southern Railroad, and Temple Inland). In total, these corporations have established 115,560 acres as RCW management areas and are protecting 309 RCW groups, with the goal of raising this number to 338-RCW groups.

The Safe Harbor concept originated in the North Carolina Sandhills as an innovative response to a decline in available unoccupied RCW habitat. In order to encourage landowners to manage their land in a way that benefits RCWs, the Service announced the Safe Harbor policy, which provides assurances that RCWs attracted to property as a result of active management for the species will not cause new restrictions to attach to that property.

Safe Harbor effectively eliminates the regulatory disincentive that is normally associated with attracting listed species to new lands and, thus far has proven to be successful in attracting landowners who otherwise may not participate in species protection programs. As of October 1, 1998, the number of acres involved in the North Carolina Sandhills Safe Harbor program included: 19,023 acres enrolled under 23 agreements; 6,380 acres under 4 agreements awaiting landowner signature; and, 7,174 acres under 16 agreements currently in preparation. The 23 currently enrolled parcels provide nesting and foraging habitat for 46 groups of red-cockaded woodpeckers. Interest in the Sandhills Safe Harbor Program has far exceeded our expectations. In less than 3 years, 43 landowners have been enrolled or are in the process of enrolling in this program; a total of 32,577 acres will be enrolled by the end of fiscal year 2000. The size of currently enrolled properties ranges from 3 to 3,300 acres. By reducing and/or eliminating regulatory disincentives, Safe Harbor has provided an effective way to increase available RCW habitat and population numbers while providing landowners with land management flexibility. The program has involved a diversity of landowners. They include golf course owners, nonindustrial forest landowners, horse farms, and small property landowners.

In response to the overwhelming success of Safe Harbor in the Sandhills of North Carolina, the Service has issued permits to states that provides landscape level conservation. To date, two Safe Harbor permits have been issued, both in 1998; one to the South Carolina Department of Natural Resources (SCDNR) and the other to Texas Parks and Wildlife Department (TPWD). The results have been outstanding. As of June 1999, South Carolina has enrolled 16 landowners with 72,223 acres, harboring 123 RCW groups; nine landowners have pending agreements which will add another 31,496 acres and 41 RCW groups to the program. Most of the properties enrolled in South Carolina are quail hunting plantations. In Texas, 2 landowners (both industrial forest landowners) have enrolled 2,285,260 acres (7,000 dedicated to RCW management) and 17 RCW groups in the program. In cooperation with the Service and other partners, the State wildlife agencies in Georgia, Alabama, and Louisiana have completed final draft statewide RCW Safe Harbor plans for their states. The Service is currently in discussions with the states of Virginia, Florida, North Carolina, and Mississippi regarding development of statewide Safe Harbor programs for RCWs.

The success of the Service's comprehensive private lands strategy has resulted in significant improvements in the status of the species since the early 1990's. For example, many Federal populations are now increasing or stabilized, 100,000's of acres of private lands are "officially" enrolled in RCW conservation (compared to none in 1990), and many State properties are developing RCW conservation/management plans. In 1995, based on a comprehensive range wide survey, the Service estimated the RCW population at 4,694 groups. In 1998, using the same survey methodologies, the Service estimated the range wide population at 4,950 groups; this-increasing population trend is expected to continue and indeed accelerate. The foundation of the entire RCW program is based on strong and meaningful partnerships between the private, State and Federal sectors. These partnerships have the common goals

of mutual respect, trust, honesty, and the best available science. The highly successful application of the Service's RCW private lands strategy has clearly shown that Section 10 of the ESA can make integration of wildlife conservation with the interests and objectives of private landowners a reality.

Plum Creek Timber I–90 HCP

The Plum Creek Timber Company I–90 HCP in Washington State is providing conservation benefits for 11 listed species and numerous unlisted species through ecosystem management efforts across 170,000 acres. The HCP was designed to support and complement the conservation efforts of the Northwest Forest Plan on adjacent Federal lands.

Large riparian buffers, similar to those identified in the Northwest Forest Plan, provide protection for bull trout and anadromous salmon by reducing sedimentation, maintaining cool temperatures, and providing large woody debris for pool formation. The HCP provides habitat for nesting owl pairs currently in an area of concern for north-south connectivity in the Cascades. Surveys required under the HCP have led to the discovery of two species that were not known to occur in these watersheds: the marbled murrelet and the Larch Mountain salamander.

This HCP is science-based and that science was documented in the 13 peer-reviewed technical papers that accompanied the HCP as it underwent public comment. Significant amounts of new information were gathered during the development of the 13 technical papers. For instance, reproduction and survival information since 1993 is now available for almost every owl pair in the planning area. We expect that the first monitoring and research progress report, due in December, will include updates of habitat inventory information, plus progress reports of the avian research being done in conjunction with the University of Washington, and status of research design for the amphibian research projects.

Adaptive management is a central concept of the Plum Creek I–90 HCP and is explicitly built into the strategies for conserving riparian areas, spotted owls, and amphibians. The parts of the HCP containing the greatest amount of scientific uncertainty have the most explicit adaptive management provisions associated with them. Adaptive management allows for greater flexibility and increases in protection when resources need the added protection. For instance, if watershed analysis indicates that riparian buffers need to be wider, then Plum Creek has agreed to be bound by the science and will provide wider buffers.

Plum Creek takes pride in their HCP and is fully achieving or exceeding the level of species protection envisioned during development of the HCP. Pre-harvest reviews have been conducted with State agencies, Tribes, and environmental groups. Minor modifications have been made to the satisfaction of both Plum Creek, the Service, and NMFS. The Services and Plum Creek are maintaining a close working relationship with efficient communications.

Metro-Bakersfield HCP

Approved in August 1994, Metro-Bakersfield HCP addresses urban development and endangered species conservation. The HCP covers 261,000 acres surrounding Bakersfield, California, in the southern San Joaquin Valley. The permit covers 18 species (4 listed animals, 5 listed plants, 3 unlisted animals, and 6 unlisted plants).

Through March 1999, the Metro-Bakersfield HCP Implementation Trust has purchased 4,093 acres of habitat which has been dedicated to endangered species conservation and provided endowment funds for their management. The lands purchased are consistent with the habitat protection objectives of the "Recovery Plan for Upland Species of the San Joaquin Valley, California." The purchased lands are primarily in areas identified as important core population areas or as important for maintaining connectivity of those populations. One of the most significant benefits has been that the public and the building industry now realize that development can proceed along with endangered species conservation. The development community, in particular, likes the certainty and timeliness of the process. By adopting the process, we can achieve conservation for these species on private lands that may otherwise not occur.

Small Landowner HCP

The HCP process also serves small landowners. One owner of approximately 80 acres of forest land in Monroe County, Alabama, developed an HCP with the Service in 1994. This landowner sought an incidental take permit from the Service for the threatened Red Hills salamander in order to selectively harvest pine timber from portions of her land. This HCP met the goals of the landowner and protected the Red Hills Salamander by: (1) allowing timber revenue to be generated from the land while continuing to protect habitat for the species; (2) eliminating or minimizing disturbance (cutting) within preferred and marginal habitat for the species; (3) limiting

the use of chemicals within the marginal habitat zone; and (4) requiring certification and the conservation briefing of loggers prior to conducting logging activities that may result in take of the species. This HCP provides for conservation of forest habitat above that provided by Alabama Best Management Practices (BMP) for logging. In addition, it provides for certification and education of loggers on ways to minimize impacts beyond those identified by Alabama BMPs. The HCP will also protect currently suitable habitat for the species and allow for further study.

SCIENCE AND SCIENTIFIC UNCERTAINTY IN HABITAT CONSERVATION PLANS

We cannot conserve our nation's threatened and endangered species on Federal lands alone. Therefore, it has been this Administration's priority in shaping ESA policy to provide incentives to conserve species on non-Federal lands. The HCP program has always recognized that there is a degree of uncertainty in conservation biology. The first HCP, San Bruno Mountain, incorporated approaches for addressing unexpected changes. The HCP program subsequently developed into an adaptable process for many different situations to address varied species needs and activity impacts. The HCP program is a versatile program that allows applicants to create plans that fit their needs as well as the conservation needs of species.

When developing an HCP, the Service is required to use the best available scientific information. Such data come from a variety of sources: scientific literature and peer-reviewed publications, inhouse expertise, other State or Federal agencies, academia, and non-governmental organizations, to name a few. For listed species, the Service can draw upon a number of existing information sources, all of which have gone through peer and public review. ESA listing packages are used to gain further species-specific biological information, and where possible, the Service will draw upon recovery plans to identify conservation and monitoring measures and objectives for listed species. HCPs are designed to minimize and mitigate the impacts to the species under consideration in the HCP as well as ensure that the permitted activity does not appreciably reduce the likelihood of survival and recovery of the species. Determining whether an HCP meets these criteria is based on a biological analysis using the data that are available.

Information used in HCPs can range from factual information such as baseline data and survey results, to complex research and adaptive management, based on ecological theory and models. For example, impact and take analyses of covered species can cover a wide spectrum of scientific issues: population distribution and density; meta-population dynamics; net reproductive success; population viability analyses; pollution; and habitat fragmentation, among others. Likewise, mitigation and monitoring strategies may look at additional factors such as the impact of vegetation successional stages on the covered species, impacts from invasive alien species over time, and increased predation and competition.

The biologists negotiating the HCPs are limited by the constraints of time and information when analyzing impacts under the HCP but have an array of approaches to choose from when developing mitigation and monitoring strategies. Choosing the best approach to take is based upon a risk analysis of the conservation program. The Service builds upon the knowledge gained through implementation of each HCP to improve future HCPs. For instance, in March of this year, the Service, along with NMFS, released a draft five-point policy as an addendum to the HCP Handbook. This draft addendum proposes pathways to accommodate biological uncertainty while providing regulatory certainty to the permitters.

Biological Goals and Objectives are the Scientific Foundation of HCPs

Biological goals and objectives are the broad guiding principles for the operating conservation program of the HCP; they are the rationale behind the minimization and mitigation strategies. HCPs have always been designed to achieve a desired biological purpose or target, yet they may have not specifically stated those biological goals or objectives. In the future, we plan to better and more consistently define the desired biological outcome. This rather simple concept of biological goals and objectives facilitates communication between the scientific community, the agencies, and the applicants by providing direction and desired biological conditions and targets for the development of these HCPs. The specification of the biological goals and objectives of an HCP is perhaps an overlooked yet significant piece to the HCP program.

There are two ways to base the design of an HCP: prescription-based or results-based. A prescription-based HCP outlines a series of specified tasks to be implemented; these tasks are designed to meet the biological outcome. This type of HCP may be most appropriate for smaller permits, particularly where the permitter does not have an on-going management responsibility. A results-based HCP has greater flexibility in its management, allowing the permittee greater latitude to pick and

choose among various conservation tools, so long as they achieve the intended result (e.g., biological goal or objective), especially if they have a long-term commitment to the conservation program of the HCP. The Mid-Columbia Public Utility Districts' HCP is an example of a results-based HCP. HCPs can also be a mix of the two strategies, where the Service and the applicant determine the range of acceptable and anticipated management adjustments necessary to respond to new information. This process will enable the applicant to assess the potential economic impacts of adjustments before agreeing to the HCP while allowing for greater flexibility in the implementation of the HCP in order to meet the biological goals and objectives of the plan.

Use of Adaptive Management to Deal with Uncertainty

Adaptive management refers to a structured process for learning by doing. The "structured" portion of this definition is important for two reasons. First, it becomes a formalized and mutually agreed upon process for incorporating change—a feedback loop into management. Second, it defines in advance the sideboards within which the permittee will be expected to operate, including any possible future adjustments in the HCP's operating conservation program, in order to fulfill their permit responsibilities. As applied to HCPs, it is a method for addressing significant uncertainty in the conservation of a species covered by an HCP. In an HCP, adaptive management is used for examining alternative strategies for meeting measurable biological goals and objectives through research and/or monitoring, and then, if necessary, through the adjustment of future conservation management actions according to what is learned. Adaptive management is necessary in HCPs where there is either significant biological uncertainty or a significant risk exists due to uncertainty about the impacts of the activity and how we address those impacts.

Some people in the scientific community maintain that adaptive management can only be appropriately done using a strict experimental design, which would compare specific treatments to controls. While this is certainly one ideal approach that could be utilized, we believe that meaningful adaptive management can be done without this strict and expensive adherence to standards of experimental design. Additionally, we do not believe it to be appropriate to burden the landowner with research that is not proportional to their activity. However, we can incorporate flexibility into medium and small scale HCPs so as to utilize the results of on-going research and monitoring programs in other areas.

Often, there is a direct relationship between the level of biological uncertainty for a covered species and the degree of risk that an incidental take permit could pose for that species. In such cases, the HCP may need to be relatively cautious initially with a well-integrated monitoring program and adjusted later based on new information. A practical adaptive management strategy of a long-term HCP should include biological milestones that are reviewed at scheduled intervals. If there is a relatively high degree of risk, early and frequent milestones may need to be set and previously agreed upon adjustments made accordingly.

Permit Duration Accounts for Implementation of Conservation Measures

The average duration of HCP incidental take permits issued to date is 25 years; pending applications for incidental take permits currently have an average requested duration of 30 years. Different permit durations may be necessary or desirable to account for both the varying biological impacts resulting from the proposed activity (e.g., long-term chronic effects to a riparian zone resulting from timber rotations and treatments versus short-term intensive effects from a real estate subdivision build out), and the nature or scope of the permitted activity and conservation program in the HCP (e.g., short-term housing or commercial developments versus long-term sustainable forestry). Longer permits ensure long-term commitments to the HCP and typically include up-front contingency planning for changed circumstances to allow appropriate changes in the conservation measures. By implementing a long-term permit, the permittee takes on ownership of the conservation measures within the HCP, a plus for species conservation.

Factors that are considered when determining permit duration include the duration of the applicant's proposed activities and the duration of expected positive or negative effects on the covered species. For instance, if the permittee's action or the implementation of their conservation measures occur over a long period of time, such as timber harvest management, the permit would need to encompass that same time period.

The Service will also consider the extent of information underlying the HCP, the length of time necessary to implement and achieve the benefits of the operating conservation program and the extent to which the program incorporates adaptive management strategies.

No Surprises Assurances Stimulate Planning for Uncertainty

No Surprises Policy and HCP assurances were designed to be incentives to re-channel habitat loss through the HCP permitting program by offering regulatory certainty to non-Federal landowners in exchange for a long-term commitment to species conservation. Essentially, private landowners are assured that if "unforeseen circumstances" arise, the Service, or NMFS, will not require the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level initially agreed to in the HCP without the consent of the permitter.

Given the significant increase in landowner interest in HCPs since the development of the No Surprises Policy, the Service believes that the Policy has accomplished one of its primary objectives—to act as a catalyst for integrating endangered species conservation into day-to-day management operations on non-Federal lands. No Surprises assurances have also provided a catalyst for contingency planning within HCPs. Most possible changes in circumstances during the course of an HCP can reasonably be anticipated and planned for in the conservation plan. Plans should describe the modifications in the project or activity that will be implemented if these circumstances arise. Planning for changed circumstances and adopting adaptive management strategies proactively within the HCP will better serve the permittee and endangered species conservation than a reactive "band-aid" fix later. Therefore, these contingency plans and adaptive management strategies are part of the deal and allow the Service and the permitter to adjust the conservation measures if necessary.

CONCLUSION

The HCP program has seen many changes since 1983. We have created a conservation program that empowers the applicants to integrate endangered species conservation into their activities while using the best available science and approaches. The ideas that have been generated have served to strengthened the HCP program. We remain committed and open to learning from our experiences and considering new ideas. As we look to the future of the HCP program, we see many more success stories. However, it will not be easy to get there. As the demand for HCPs increases and more HCPs are approved, providing careful attention to each HCP will become more and more challenging. Challenges facing the HCP program include: ensuring adequate implementation and monitoring through increased landscape-level planning with inadequate resources, developing partnerships with the scientific community to better utilize their expertise in HCP development and implementation, and continuing to learn and improve the program while still retaining incentives to landowners to develop and implement conservation measures.

Mr. Chairman, this concludes my testimony. I would be happy to answer any questions that the Subcommittee may have.

Habitat Conservation Plans

As of July 16, 1999

Total Number of Habitat Conservation Plans Issued: 246
Total Number of Amendments Issued: 28
Total Number of Permits Issued: 256

Region 1									
Plan Title	**Permits**	**Location**	**Status**	**Complexity**	**Primary Listed Species**	**Primary Non-Listed Species**	**Date Assistance Initiated**	**Size**	**Duration**
ARCO Western Energy	809228	Kern Co., CA	I (03/01/1996)	H	• Blunt-nosed leopard lizard • Giant kangaroo rat • San Joaquin kit fox • Tipton kangaroo rat	• Multi-species	02/01/1994	120320 acres	30 years
Basin A, Willow Pass Grade	833486	Concord, CA	I (10/06/1997)	L	• California red-legged frog	No candidate species	02/01/1997	5 acres	20 years
Bennett Property, Lamco Housing, Inc.	842272	Chula Vista, CA	I (05/06/1998)	L	• Coastal California gnatcatcher	No candidate species	02/01/1997	5 acres	0 years (8 mos.)
Cal. Dept. of Corrections Delano Prison	744882	Delano, CA	I (01/18/1990)	L	• Blunt-nosed leopard lizard • San Joaquin kit fox • Tipton kangaroo rat	No candidate species	02/01/1989	635 acres	51 years
Champagne Shores	768386	Kern Co., CA	I (06/01/1994)	H	• Blunt-nosed leopard lizard • San Joaquin kit fox • Tipton kangaroo rat	No candidate species	02/01/1990	82 acres	30 years
Chevron Pipeline	807634	Kern Co., CA	I (01/08/1996)	L	• Blunt-nosed leopard lizard • Giant kangaroo rat • San Joaquin kit fox	• Multi-species	02/01/1994	25.5 acres	50 years
Citation Builders Ridge at Cresta Verde	760140	Riverside Co., CA	I (09/28/1992)	L	• Stephens' kangaroo rat	No candidate species	02/01/1991	22 acres	2 years
City of Marysville	748810	Marysville, CA	I (01/29/1991)	L	• Valley elderberry longhorn beetle	No candidate species	02/01/1990	27 acres	6 years
City of Waterford	801047	Waterford, CA	I (06/09/1995)	L	• Valley elderberry longhorn beetle	No candidate species	02/01/1994	5 acres	10 years
Clark County - Desert Tortoise (Long-Term)	801045	Las Vegas, NV	I (08/01/1995)	H	• Desert tortoise	No candidate species	04/01/1994	525000 acres	30 years
Clark County - Desert Tortoise (Short-term)	756260	Las Vegas, NV	I (07/24/1991)	H	• Desert tortoise	No candidate species	02/01/1990	22352 acres	3 years

Clark County - Desert Tortoise (Short-term) Amendment (Extension)	756260	Clark Co., NV	I (07/29/1994)	H	• Desert tortoise	No candidate species	01/01/1993	Data not available	1 years
Coachella Valley	698685	Riverside Co., CA	I (04/25/1986)	M	• Coachella Valley fringe-toed lizard	No candidate species	02/01/1984	70000 acres	30 years
Coalinga Cogeneration	754027	Coalinga, CA	I (03/01/1991)	L	• Blunt-nosed leopard lizard • San Joaquin kit fox	No candidate species	02/01/1989	6.5 acres	20 years
Coast Range Conifers	791930	Yachats, OR	I (03/01/1995)	L	• Marbled murrelet • Northern spotted owl	No candidate species	02/01/1994	110 acres	5 years
Colton Transmission Line	805901	Colton, CA	I (11/29/1995)	L	• Delhi Sands flower-loving fly	No candidate species	02/01/1994	8 acres	10 years
Corona Development Co.	787639	Corona, CA	I (12/30/1991)	L	• Stephens' kangaroo rat	No candidate species	02/01/1990	715 acres	2 years
Corona Development Co. Permit Amendment (Extension)	787639	Corona, CA	I (03/03/1994)	L	• Stephens' kangaroo rat	No candidate species	02/01/1993	Data not available (N/A)	5 years
Corrections Corporation of America	842781	California City, CA	I (05/17/1998)	M	• Desert tortoise	• Mojave ground squirrel • Western burrowing owl	02/01/1997	425 acres	20 years
Coyote Hills East (UnoCal)	658184	Orange Co., CA	I (11/01/1993)	M	• Coastal California gnatcatcher	• Cactus wren	02/01/1992	391 acres	25 years
Cushenbury Sand & Gravel	795218	San Bernardino Co., CA	I (01/02/1996)	M	• Desert tortoise • Parish's daisy	• Alkali Mariposa lily	02/01/1991	200 acres	30 years
Elliott State Forest	803344	Coos Bay, OR	I (10/03/1995)	M	• Marbled murrelet • Northern spotted owl	No candidate species	03/01/1993	93000 acres	0 years (60/6)
EnviroCycle, Inc.	771172	Bakersfield, CA	I (02/26/1993)	M	• Blunt-nosed leopard lizard • Giant kangaroo rat • San Joaquin kit fox	No candidate species	02/01/1989	20 acres	50 years
Fieldstone	818041	Carlsbad, CA	I (06/07/1995) original permit #795759	H	• Coastal California gnatcatcher • Least Bells' Vireo • Southwestern willow flycatcher	• Multi-species	07/01/1992	1918 acres	30 years
Fieldstone, permit transfer	818041	Carlsbad, CA	I (08/29/1996)	No info	• California red-legged frog • Coastal California gnatcatcher • Least Bells' Vireo • Southwestern willow flycatcher	No candidate species	No info	Data not available	30 years

Granite Construction, Phase 1	778268	Coalinga, CA	I (12/01/1993)	L	• Blunt-nosed leopard lizard • San Joaquin kit fox	No candidate species	02/01/1990	54 acres	20 years
Grover Tree Farm	830269	Brookings, OR	I (07/15/1997)	L	• Marbled murrelet	No candidate species	02/01/1997	86 acres	5 years
John Laing Homes, Cantara Completion	835424	Colton, CA	I (10/29/1997)	L	• Delhi Sands flower-loving fly	No candidate species	02/01/1996	44 acres	8 years
John Laing Properties, Inc.	788945	Corona, CA	I (03/22/1995)	L	• Stephens' kangaroo rat	No candidate species	02/01/1993	30 acres	5 years
Kern County Waste Facilities	830963	Bakersfield, CA	I (10/24/1997)	L	• Blunt-nosed leopard lizard • Giant kangaroo rat • San Joaquin kit fox • Tipton kangaroo rat	• Nelson's antelope ground squirrel	02/01/1994	1500 acres	50 years
Kern Water Bank	828086	Bakersfield, CA	I (10/02/1997)	M	• Blunt-nosed leopard lizard • Giant kangaroo rat • Hoover's wooly-star • San Joaquin kit fox • San Joaquin wooly-threads • Tipton kangaroo rat	• Multi-species	02/01/1996	19900 acres	75 years
La Rue Housing/Bowley Center	TE008810-0	Yolo Co., CA	I (03/10/1999)	L	• Valley elderberry longhorn beetle	No candidate species	No info	16.7 acres	10 years
Lake Mathews	805839	Riverside Co., CA	I (12/05/1995)	H	• Coastal California gnatcatcher • Quino checkerspot butterfly • Stephens' kangaroo rat	• Multi-species	No info	5110 acres	50 years
Lennane Properties	730836	Sacramento, CA	I (08/17/1990)	L	• Valley elderberry longhorn beetle	No candidate species	02/01/1990	48 acres	5 years
Los Osos Center	844723	Los Osos, CA	I (07/31/1998)	L	• Morro Bay shoulderband snail	No candidate species	02/01/1997	5.5 acres	5 years
MSCP, City of Poway Subarea Plan	803743	Poway, CA	I (07/19/1996)	M	• Coastal California gnatcatcher • Least Bells' Vireo • Southwestern willow flycatcher	• Multi-species	02/01/1993	25000 acres	50 years
MSCP, City of San Diego Subarea Plan	830421	San Diego Co., CA	I (07/18/1997)	H	• American bald eagle • Brown pelican • California least tern • Coastal California gnatcatcher • Least Bells' Vireo • Light-footed clapper rail • Southwestern willow flycatcher • Western snowy plover	• Multi-species	02/01/1991	582243 acres	50 years

MSCP, County of San Diego Subarea Plan	840414	San Diego Co., CA	I (03/17/1998)	M	• American bald eagle • Brown pelican • California least tern • California red-legged frog • Coastal California gnatcatcher • Least Bells' Vireo • Light-footed clapper rail • Multi-species • Southwestern willow flycatcher • Western snowy plover	• 57 unlisted species • 8 proposed species • Multi-species	No info N/A	50 acres	0 years (N/A)
Maxwell Irrigation District	842926	Maxwell, CA	I (07/24/1998)	L	• Giant garter snake	No candidate species	02/01/1997	2.5 acres	5 years
Meadowlark Estates, SunCal Company	839428	San Marcos, CA	I (02/13/1998)	L	• Coastal California gnatcatcher	No candidate species	02/01/1997	214 acres	2 years
Metropolitan Bakersfield	786634	Bakersfield, CA	I (08/24/1994)	H	• Bakersfield cactus • Bakersfield cactus • Blunt-nosed leopard lizard • California jewelflower • Giant kangaroo rat • Hoover's wooly-star • Kern mallow • San Joaquin kit fox • San Joaquin wooly-threads • Tipton kangaroo rat	No candidate species	02/01/1987	262000 acres	20 years
Murray Pacific Corp.	777837	Morton, WA	I (09/01/1993)	M	• Northern spotted owl	No candidate species	12/01/1991	55000 acres	100 years
Murray Pacific Corp. Amendment	777837	Morton, WA	I (06/01/1995)	M	• American bald eagle • Grey wolf • Grizzly bear • Marbled murrelet • Northern spotted owl	• Multi-species	02/01/1993	Data not available (N/A)	100 years
Natomas	823773	Sacramento, CA	I (12/31/1997)	H	• Giant garter snake	• Multi-species	02/01/1994	53342 acres	50 years
North of Playa Shopping Center, D B O Development Corp.	808240	Sand City, CA	I (04/25/1996)	M	• Sand gilia • Smith's blue butterfly	• Black legless lizard • Sandmat manzanita	02/01/1994	33 acres	5 years
Nye County Landfill	776604	Parhrump, NV	I (02/10/1995)	L	• Desert tortoise	No candidate species	02/01/1992	80 acres	30 years
Ocean Trails	799348	Rancho Palos Verdes, CA	I (02/04/1997)	M	• Coastal California gnatcatcher	• Aphanisma • Cactus wren • Catalina mariposa lily • Ocean locoweed • Seaside calandrinia • South coast saltscale	11/01/1993	270 acres	10 years

Orange County Central/Coastal (11 permits under one HCP)	810191 810567 810569 810572 810574 810575 810579 810580 810581 810582 810583	Orange Co., CA	I (07/10/1996)	H	• American peregrine falcon • Arroyo southwestern toad • Coastal California gnatcatcher • Multi-species • Pacific pocket mouse • Quino checkerspot butterfly	• Multi-species	02/01/1992	208000 acres	75 years
P.G.& E. Blackhawk Power Plant	817075	Walnut Creek, CA	I (09/04/1996)	L	• California red-legged frog	No candidate species	02/01/1996	5 acres	10 years
Pacific Gateway Homes	787915	Riverside Co., CA	I (05/27/1994)	L	• Stephens' kangaroo rat	No candidate species	02/01/1993	27 acres	2 years
Pacific Lumber, Headwaters	TE828950-0	Scotia, CA	I (03/01/1999)	H	• American bald eagle • American peregrine falcon • Coho salmon • Marbled murrelet • Northern spotted owl • Western snowy plover	• Multi-species	02/01/1992	211700 acres	50 years
Parkside Homes (Les York)	811259	South San Francisco, CA	I (07/08/1996)	M	• Mission blue butterfly • San Bruno elfin butterfly	• Callippe silverspot butterfly	02/01/1995	25.4 acres	10 years
Plum Creek Timber I-90	808398	Cle Elum, WA	I (06/27/1996)	H	• Grey wolf • Grizzly bear • Marbled murrelet • Northern spotted owl	• Multi-species	06/01/1993	169177 acres	0 years (50/100)
Port Blakely RB Eddy Tree Farm	813744	Raymond, WA	I (07/19/1996)	M	• Fish • Marbled murrelet • Northern spotted owl	• Multi-species	02/01/1995	8000 acres	50 years
Quail Hollow Quarry	830417	Santa Cruz Co., CA	I (08/01/1997)	M	• Ben Lomond spineflower • Ben Lomond wallflower • Mount Hermon June beetle • Zayante band-winged grasshopper	No candidate species	02/01/1995	32 acres	3 years
Quail Hollow Quarry Amendment #1	830417	Santa Cruz Co., CA	I (08/31/1998)	M	• Ben Lomond spineflower • Ben Lomond wallflower • Mount Hermon June beetle • Zayante band-winged grasshopper	No candidate species	02/01/1995	220 acres	100 years
Raley's Landing	829945	West Sacramento, CA	I (08/20/1997)	L	• Valley elderberry longhorn beetle	No candidate species	02/01/1996	13.7 acres	5 years
Regli Estates	803749	Humboldt Co., CA	I (08/30/1995)	L	• American bald eagle • American peregrine falcon • Marbled murrelet • Northern spotted owl	• Multi-species	02/01/1994	500 acres	20 years

Riverside County, SKR (Long-Term)	805414	Riverside Co., CA	I (05/03/1996)	H	• Stephens' kangaroo rat	No candidate species	12/01/1992	540000 acres	30 years
Riverside County, SKR (Short-Term)	739678	Riverside Co., CA	I (08/01/1990)	H	• Stephens' kangaroo rat	No candidate species	02/01/1988	4400 acres	2 years
Riverside County, SKR (Short-Term) Amendment #1 (Temecula Addition)	739678	Riverside Co., CA	I (01/01/1991)	H	• Stephens' kangaroo rat	No candidate species	02/01/1990	Data not available (N/A)	0 years (N/A)
Riverside County, SKR (Short-Term) Amendment (1st Time Ext. w/Amendment)	739678	Riverside Co., CA	I (04/30/1993)	L	• Stephens' kangaroo rat	No candidate species	10/01/1992	Data not available (N/A)	0 years (N/A)
Riverside County, SKR (Short-Term) Amendment (Boundary Change #1 Reconsideration-Orangecrest)	739678	Riverside Co., CA	I (02/24/1993)	M	• Stephens' kangaroo rat	No candidate species	06/01/1992	Data not available (N/A)	0 years (N/A)
Riverside County, SKR (Short-Term) Amendment (Boundary Change #1)	739678	Riverside Co., CA	I (02/01/1992)	L	• Stephens' kangaroo rat	No candidate species	02/01/1991	Data not available (N/A)	0 years (N/A)
Riverside County, SKR (Short-Term) Amendment (Boundary Change #2 Moreno Highlands Addition)	739678	Riverside Co., CA	I (03/25/1993)	H	• Stephens' kangaroo rat	No candidate species	01/01/1992	Data not available (N/A)	0 years (N/A)
Riverside County, SKR (Short-Term) Amendment (Boundary Change) (#2-22 Amendments)	739678	Riverside Co., CA	I (03/15/1993)	M	• Stephens' kangaroo rat	No candidate species	02/01/1992	Data not available (N/A)	0 years (N/A)

Riverside County, SKR (Short-Term) Ammendment (2nd Time Ext. w/Amendment)	739678	Riverside Co., CA	1 (12/29/1993)	L	• Stephens' kangaroo rat	No candidate species	08/01/1993	Data not available (N/A)	0 years (N/A)
San Bruno Mountain	2-9818	San Mateo Co., CA	1 (03/04/1983)	H	• Mission blue butterfly • San Bruno elfin butterfly • San Francisco garter snake	• Callippe silverspot butterfly	02/01/1982	3000 acres	30 years
San Bruno Mountain Amendment #1 (South Slope)	2-9818	San Mateo Co., CA	1 (12/31/1985)	L	• Mission blue butterfly • San Bruno elfin butterfly • San Francisco garter snake	• Callippe silverspot butterfly	02/01/1984	35 acres	27 years
San Bruno Mountain Amendment #2 (County Park)	2-9818	San Mateo Co., CA	1 (06/19/1986)	L	• Mission blue butterfly • San Bruno elfin butterfly • San Francisco garter snake	• Callippe silverspot butterfly	02/01/1986	19 acres	27 years
San Bruno Mountain Amendment #3 (Rio Verde)	2-9818	San Mateo Co., CA	1 (12/24/1985)	L	• Mission blue butterfly • San Bruno elfin butterfly • San Francisco garter snake	• Callippe silverspot butterfly	02/01/1985	40 acres	27 years
San Bruno Mountain Amendment #4 (NE Ridge)	2-9818	San Mateo Co., CA	1 (08/24/1990)	L	• Mission blue butterfly • San Bruno elfin butterfly • San Francisco garter snake	• Callippe silverspot butterfly	02/01/1990	230 acres	23 years
San Bruno Mountain Amendment #4 (NE Ridge/permit #74660)	2-9818	San Mateo Co., CA	1 (08/24/1990)	L	• Mission blue butterfly • San Bruno elfin butterfly • San Francisco garter snake	• Callippe silverspot butterfly	02/01/1990	230 acres	23 years
San Diego Gas & Electric	809637	San Diego Co., CA	1 (12/18/1995)	M	• Multi-species	• Multi-species	02/01/1993	100 acres (approximately)	55 years
Scofield Corporation	811110	Leavenworth, WA	1 (04/03/1996)	L	• Northern spotted owl	No candidate species	02/01/1995	40 acres	1 years
Seascape Uplands	794374	Aptos, CA	1 (08/18/1997)	M	• Santa Cruz long-toed salamander	No candidate species	02/01/1989	192 acres	30 years
Seneca and Enron Oil and Gas	TE000955-0	Bakersfield, CA	1 (08/14/1998)	M	• Blunt-nosed leopard lizard • California condor • Giant kangaroo rat • Hoover's wooly-star • San Joaquin kit fox	• Nelson's antelope ground squirrel • Short-nosed kangaroo rat	02/01/1997	650 acres	30 years
Shell Oil Company	784571	Yorba Linda, CA	1 (11/07/1996)	M	• Coastal California gnatcatcher	• Cactus wren	02/01/1993	3216 acres	50 years
Simpson Timber Company	767798	Humboldt, Del Norte, Trinity Cos., CA	1 (09/17/1992)	M	• Northern spotted owl	No candidate species	02/01/1991	380000 acres	30 years

Spring Mountain Ranch (Nevada Division of State Parks)	804120	Clark Co., NV	I (09/01/1995)	L	• Pahrump poolfish	No candidate species	02/01/1994	3 acres	30 years
Sunland Communities Inc.	757505	San Bernardino Co., CA	I (06/01/1994)	L	• Desert tortoise	No candidate species	02/01/1992	160 acres	100 years
Teichert Vernalis Project, Phases 1&2	820643	Tracy, CA	I (01/09/1997)	M	• California red-legged frog • San Joaquin kit fox	• Western burrowing owl	02/01/1992	497 acres	50 years
U.S. Borax	837858	Boron, CA	I (02/05/1999)	M	• Desert tortoise	• Mojave ground squirrel	02/01/1996	3465 acres	50 years
Valley of Fire State Park	781039	Overton, NV	I (01/20/1994)	L	• Desert tortoise	No candidate species	02/01/1991	16.6 acres	30 years
Washington Dept. Natural Resources Lands	812521	Western WA	I (01/30/1997)	H	• Aleutian Canada goose • American bald eagle • American peregrine falcon • Columbian white-tailed deer • Grey wolf • Grizzly bear • Marbled murrelet • Northern spotted owl • Oregon silverspot butterfly	• Multi-species	10/01/1993	1600000 acres	70 years
Weyerhauser (Millicoma Tree Farm)	796822	Coos Bay, OR	I (02/01/1995)	M	• Northern spotted owl	No candidate species	10/01/1993	209000 acres	50 years
Wilder Quarry	842273	Santa Cruz, CA	I (06/19/1998)	L	• California red-legged frog	No candidate species	02/01/1997	125 acres	30 years
Wildwash Sand & Gravel Mine, E.L. Yeager Construction	839580	Barstow, CA	I (02/23/1998)	L	• Desert tortoise	• Migrant loggerhead shrike • Mojave ground squirrel	02/01/1997	200 acres	5 years
Yucca Valley Church Sites	770983	San Bernardino Co., CA	I (08/26/1993)	L	• Desert tortoise	No candidate species	08/01/1992	5 acres	3 years
Zanker Road Resource Mgmt., Ltd.	TE006962-0	Santa Clara Co., CA	I (02/23/1999)	L	• Salt marsh harvest mouse	No candidate species	No info	83 acres	3 years
Boise Cascade Timber Company	TE005227-0	Clatsop Co., OR	A (04/05/1999)	No info	• Northern spotted owl	No candidate species	No info	65 acres	1 years

City of Seattle	No permits issued	King Co., WA	A (03/01/1999)	No info	• American bald eagle • Grey wolf • Grizzly bear • Marbled murrelet • Northern spotted owl • Peregrine falcon	• Bull trout (Coastal-Puget Sound) • Salmon spp.	No info	90546 acres (90, 546 water-shed)	50 years
City of the Dalles Municipal Watershed	TE004366-0	Wasco, OR	A (02/05/1999)	L	• Northern spotted owl	No candidate species	02/01/1996	1200 acres	30 years
Joe and Cindy Hord, Hord Residential Development Project	No permits issued	Los Osos, San Luis Obispo Co., CA	A (05/14/0099)	No info	• Morro Bay shoulderband snail	No candidate species	No info	4.2 acres	10 years
Kaiser's Felton Sand Plant	No permits issued	Santa Cruz Co., CA	A (01/07/1999)	No info	• Mount Hermon June beetle • Zayante band-winged grasshopper	No candidate species	No info	47 acres	8 years
North Peak Development Project	No permits issued	Riverside Co., CA	A (04/16/0099)	H	• Coastal California gnatcatcher • Least Bells' Vireo • Stephens' kangaroo rat	No candidate species	No info	997 acres	30 years
Nuevo-Torch	No permits issued	Bakersfield, CA	A (12/09/1998)	M	• Bakersfield cactus • Bakersfield cactus • Blunt-nosed leopard lizard • California condor • California jewelflower • Giant kangaroo rat • Hoover's wooly-star • Kern mallow • San Joaquin kit fox • San Joaquin wooly-threads • Tipton kangaroo rat	• California horned lizard • Mountain plover • Nelson's antelope ground squirrel • Recurved larkspur • San Joaquin LeConte's thrasher • San Joaquin coachwhip • San Joaquin pocket mouse • Short-nosed kangaroo rat • Tulare grasshopper mouse • Western burrowing owl	02/01/1997	21800 acres	30 years
San Bruno Mountain Amendment #5	2-9818	San Mateo Co., CA	A (03/18/1999)	L	• Callippe silverspot butterfly	No candidate species	01/01/1998	Data not available (N/A)	0 years
Notice of Intent to Prepare an EIS for Northwestern San Diego County MSHCP	No permits issued	Northwestern San Diego Co., CA	N (05/17/0099)	H	• American bald eagle • Brown pelican • California least tern • California red-legged frog • Coastal California gnatcatcher • Least Bells' Vireo • Light-footed clapper rail • Southwestern willow flycatcher • Western snowy plover	No candidate species	No info	Data not available	0 years

Notice of Intent to Prepare an EIS for the Mid-Columbia Public Utility Districts	No permits issued	Douglas, Chelan, Grant Cos., WA	N (02/05/1999)	No info	• Chinook salmon (spring upper Columbia R.) • Sockeye salmon • Steelhead trout (lower Columbia R.)	• Sockeye salmon	No info	Data not available	0 years
Notice of Intent to Prepare an EIS to address Simpson Timber NW Operations	No permits issued	Grays, Harbor, Mason, and Thurston Co., WA	N (03/11/1999)	No info	• American bald eagle • Marbled murrelet • Steelhead trout (lower Columbia R.)	No candidate species	No info	214000 acres	50 years
Notice of Intent to Prepare an EIS to address the Tacoma Waters management activites associated with the Green River Watershed	No permits issued	King Co., WA	N (03/31/1999)	No info	• American bald eagle • Grey wolf • Grizzly bear • Marbled murrelet • Northern spotted owl • Peregrine falcon	• ~25 Unlisted species	No info	14000 acres	50 years
Notice of Intent to Prepare an EIS to address timber harvest by Crown Pacific Ltd. (Hamilton Tree Farm)	No permits issued	Whatcom and Skagit Cos., WA	N (03/31/1999)	H	• Aleutian Canada goose • American bald eagle • American peregrine falcon • Columbian white-tailed deer • Marbled murrelet • Northern spotted owl • Oregon chub • Umpqua cutthroat trout	• Multi-species	No info	84664 acres	100 years
Plum Creek Timber I-90 Supplemental Draft EIS (Land Exchange)	808398	Central Cascades, King, Kittitas Cos., WA	N (02/08/1999)	No info	• Grey wolf • Grizzly bear • Marbled murrelet • Northern spotted owl	• Multi-species	No info	169177 acres	50 years (50/100)

Region 2									
Plan Title	**Permits**	**Location**	**Status**	**Complexity**	**Primary Listed Species**	**Primary Non-Listed Species**	**Date Assistance Initiated**	**Size**	**Duration**
Adler, Stephen	800130	Travis Co., TX	I (05/24/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	73 acres	5 years
Andrus Subdivision	806828	Travis Co., TX	I (02/23/1996)	L	• Golden-cheeked warbler	No candidate species	05/01/1995	31.3 acres	20 years
Baggett, Richard (Long Canyon)	800131	Travis Co., TX	I (05/23/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	4 acres	4 years

Baker, Robert A. (Rob Roy on Lake)	809217	Travis Co., TX	I (05/20/1996)	L	• Golden-cheeked warbler	No candidate species	10/01/1995	5 acres	10 years
Balcones Canyonlands	788841	Travis Co., TX	I (05/02/1996)	H	• Bee Creek Cave harvestman • Blackcapped vireo • Bone Cave harvestman • Golden-cheeked warbler • Kretschmarr Cave mold beetle • Tooth Cave ground beetle • Tooth Cave pseudoscorpion • Tooth Cave spider	• Barton Springs salamander • Canyon mock orange	08/01/1988	633000 acres ( )	30 years
Balfour Tract/Baldwin Ranch	TE-003593-0	Travis Co., TX	I (03/31/1999)	M	• Golden-cheeked warbler	No candidate species	08/26/1998	714 acres	30 years
Barclay, Douglas	808691	Travis Co., TX	I (02/19/1996)	M	• Golden-cheeked warbler	No candidate species	09/01/1995	164 acres	30 years
Barton Creek Community	782833	Travis Co., TX	I (02/10/1995)	M	• Golden-cheeked warbler	• Barton Springs salamander	09/01/1993	9000 acres ( )	30 years
Beasley, Larry (Lot owner) (Lake Travis Subdivision)	800080	Travis Co., TX	I (05/24/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	9 acres	5 years
Bee Cave Oaks Dev. Inc.	812688	Travis Co., TX	I (09/23/1996)	L	• Golden-cheeked warbler	No candidate species	02/01/1996	347 acres	30 years
Bell, Wayne	799946	Travis Co., TX	I (05/01/1995)	L	• Golden-cheeked warbler	No candidate species	02/01/1995	3 acres	4 years
Blum, Richard (Lake Georgetown)	809218	Williamson Co., TX	I (05/27/1996)	L	• Golden-cheeked warbler	No candidate species	11/01/1995	13.9 acres	10 years
Brubaker, Lance (Cardinal Hills Lot 56)	806827	Travis Co., TX	I (03/27/1996)	L	• Golden-cheeked warbler	No candidate species	09/01/1995	1 acres	5 years
Burris, Howard L. Jr. (Lot #15)	798286	Travis Co., TX	I (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.5 acres ( )	4 years (4 each)
Burris, Howard L. Jr. (Lot #17)	798288	Travis Co., TX	I (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.5 acres ( )	4 years
Burris, Howard L. Jr. (Lot #18)	798289	Travis Co., TX	I (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.4 acres ( )	4 years
Burris, Howard L. Jr. (Lot #19)	798290	Travis Co., TX	I (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.5 acres ( )	4 years

Burris, Howard L. Jr. (Lot #20)	798291	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.6 acres ( )	4 years
Burris, Howard L. Jr. (Lot #21)	798292	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.4 acres ( )	4 years
Burris, Howard L. Jr. (Lot #22)	798293	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	1.1 acres ( )	4 years
Burris, Howard L. Jr. (Lot #23)	798294	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	1.3 acres ( )	4 years
Burris, Howard L. Jr. (Lot #24)	798295	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	1.4 acres ( )	4 years
Burris, Howard L. Jr. (Lot #25)	798296	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.5 acres ( )	4 years
Burris, Howard L. Jr. (Lot #27)	798297	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	1.6 acres ( )	4 years
Burris, Howard L. Jr. (Lot #28)	798298	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.5 acres ( )	4 years
Burris, Howard L. Jr. (Lot #33)	798299	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.4 acres ( )	4 years
Burris, Howard L. Jr. (Lot #34)	798300	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.7 acres ( )	4 years
Burris, Howard L. Jr. (Lot #35)	798301	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.4 acres ( )	4 years
Burris, Howard L. Jr. (Lot #36)	798302	Travis Co., TX	1 (04/11/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	.7 acres ( )	4 years
Canyon Ridge	777083	Travis Co., TX	1 (08/17/1993)	L	• Golden-cheeked warbler	• Canyon mock orange	09/01/1992	198 acres	18 years
Canyon Ridge Amendment 1	777083	Travis Co., TX	1 (02/15/1995)	L	• Golden-cheeked warbler	No candidate species	09/01/1993	24 acres	0 years (N/A)
Cedar Park Waterline	788842	Travis Co., TX	1 (09/06/1994)	L	• Golden-cheeked warbler	No candidate species	11/01/1993	46 acres	30 years
City of Austin/Barton Springs Pool	839031	Travis Co., TX	1 (10/05/1998)	M	• Barton Springs salamander	No candidate species	01/27/1998	3.5 acres (4 freshwater springs within Zilker Park Austin TX)	15 years
Clinton, Chuck (Yucca Mtn)	812703	Travis Co., TX	1 (07/08/1996)	L	• Golden-cheeked warbler	No candidate species	02/01/1996	2.99 acres	5 years
Davenport Ranch	782829	Travis Co., TX	1 (09/09/1996)	L	• Golden-cheeked warbler	No candidate species	04/01/1993	272 acres	30 years ( ) ( ) ( )

Davenport Ranch Amendment #1	782829	Travis Co., TX	I (04/01/1997)	L	• Golden-cheeked warbler	No candidate species	04/01/1993	200 acres	0 years
DiJoy, David (Rob Roy on Lake)	804125	Travis Co., TX	I (10/02/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	5.1 acres	30 years ( )
Dixon, Charles (Long Canyon)	798532	Travis Co., TX	I (04/18/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	1.5 acres	0 years (-) (indefinite)
El Coronado Ranch	837858	Cochise Co., AZ	I (04/17/1998)	M	• Yaqui catfish • Yaqui chub	• Yaqui longfin dace	02/01/1996	15204 acres	25 years
Ethridge, Cecil	799863	Travis Co., TX	I (05/24/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	.68 acres	1 years (<1)
Goulding, Jim (Belle Mountain)	813478	Travis Co., TX	I (10/07/1996)	L	• Golden-cheeked warbler	No candidate species	03/01/1996	1 acres	2 years
Goynes, Janis (Cardinal Hills Lot 8)	806825	Travis Co., TX	I (03/29/1996)	L	• Golden-cheeked warbler	No candidate species	09/01/1995	.32 acres	5 years
Graci, Albert (Lot #17)	801823	Travis Co., TX	I (08/28/1995)	L	• Golden-cheeked warbler	No candidate species	04/01/1995	1.3 acres	2 years
Graci, Albert (Lot #18)	801837	Travis Co., TX	I (08/28/1995)	L	• Golden-cheeked warbler	No candidate species	04/01/1995	1.5 acres	2 years
Graci, Albert (Lot #19)	801838	Travis Co., TX	I (08/28/1995)	L	• Golden-cheeked warbler	No candidate species	04/01/1995	1.5 acres	2 years
Great Hills Reserve, Yaupon Great Hills, L.P., Amendment 1	782832	Travis Co., TX	I (03/05/1999)	No info	• Golden-cheeked warbler	No candidate species	No info	Data not available	0 years
Great Hills Reserve, Yaupon Great Hills, LP	782832	Travis Co., TX	I (07/30/1997)	M	• Golden-cheeked warbler	No candidate species	05/01/1993	294.2 acres	30 years
Hausman, Louie (Cardinal Hills Lot 13)	806829	Travis Co., TX	I (03/29/1996)	L	• Golden-cheeked warbler	No candidate species	09/01/1995	.65 acres	5 years
Herbert, Jim	801839	Travis Co., TX	I (07/24/1995)	L	• Golden-cheeked warbler	No candidate species	04/01/1995	.8 acres	2 years
Hogan, Mark and Brenda	TE-005497-0	Travis Co., TX	I (02/26/1999)	L	• Golden-cheeked warbler	No candidate species	10/01/1998	10.12 acres	5 years
Hurst, Jane Marie	818874	Travis Co., TX	I (12/09/1996)	L	• Golden-cheeked warbler	No candidate species	06/01/1996	8 acres	5 years

JPI Texas Development	790130	Travis Co., TX	I (06/12/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1994	66 acres	20 years
James, Larry W.	798674	Travis Co., TX	I (04/18/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	5.8 acres	4 years
Koster, Ralph (Lot owner) (Cardinal Hills Lot 133)	801381	Travis Co., TX	I (07/19/1995)	L	• Golden-cheeked warbler	No candidate species	04/01/1995	1.25 acres	2 years
Lake Pointe IV (Bon Terre-B Ltd.)	817371	Travis Co., TX	I (12/18/1996)	L	• Golden-cheeked warbler	No candidate species	03/01/1996	128 acres	30 years ( )
Lake Pointe/Don Walden	782186	Travis Co., TX	I (02/15/1994)	M	• Golden-cheeked warbler	No candidate species	05/01/1993	496 acres	25 years
Lakeline Mall	762988	Williamson Co., TX	I (02/13/1992)	M	• Bee Creek Cave harvestman • Tooth Cave ground beetle	No candidate species	03/01/1990	116 acres	30 years
Lakeway Highlands, Ltd.	812696	Travis Co., TX	I (07/16/1998)	M	• Golden-cheeked warbler	No candidate species	02/01/1996	1277 acres	30 years
Lakeway Rough Hollow Ltd.	812690	Travis Co., TX	I (07/16/1998)	M	• Golden-cheeked warbler	No candidate species	02/01/1996	304 acres	30 years
Lakeway Vista Royale Ltd.	812695	Travis Co., TX	I (07/16/1998)	M	• Golden-cheeked warbler	No candidate species	02/01/1996	498 acres	30 years
Lazy K Bar Ranch L.L.C.	TE-003597-0	Pima County, AZ	I (12/03/1998)	M	• Cactus ferruginous pygmy-owl	No candidate species	04/01/1998	160 acres	0 years (-) (in perpetuity)
Locus, Paul A. (Patterson Lane Lot 4)	809215	Travis Co., TX	I (05/17/1996)	L	• Golden-cheeked warbler	No candidate species	09/01/1995	5 acres	2 years ( )
Madere, Steven	799859	Travis Co., TX	I (05/23/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	1.1 acres	4 years
McIntyre, Earlynn G.	818877	Travis Co., TX	I (01/27/1997)	L	• Golden-cheeked warbler	No candidate species	06/01/1996	1.7 acres	30 years
Milam, Chris (Lot #1)	801131	Travis Co., TX	I (08/28/1995) 4 permits	L	• Golden-cheeked warbler	No candidate species	05/01/1995	4.99 acres ( )	2 years
Milam, Chris (Lot #2)	803132	Travis Co., TX	I (08/28/1995)	L	• Golden-cheeked warbler	No candidate species	05/01/1995	4.99 acres ( )	2 years
Milam, Chris (Lot #3)	803133	Travis Co., TX	I (08/28/1995)	L	• Golden-cheeked warbler	No candidate species	05/01/1995	4.98 acres ( )	2 years

Milam, Chris (Lot #4)	803135	Travis Co., TX	I (08/28/1995)	L	• Golden-cheeked warbler	No candidate species	05/01/1995	4.98 acres ( )	2 years
Mill, Joseph (Lodge Acres)	803148	Travis Co., TX	I (08/28/1995)	L	• Golden-cheeked warbler	No candidate species	05/01/1995	5 acres	2 years
Mirzadegan, Jalil/Judith	809220	Travis Co., TX	I (05/20/1996)	L	• Golden-cheeked warbler	No candidate species	10/01/1995	14 acres (14 (3 lots))	10 years
Misstex	TE-0035960-0	Montgomery Co., TX	I (03/01/1999)	L	• Red-cockaded woodpecker	No candidate species	06/01/1997	753 acres	4 years
Murski, Paul/Angela	806824	Williamson Co. TX	I (03/29/1996)	L	• Golden-cheeked warbler	No candidate species	09/01/1995	1.17 acres	10 years
Overlook at Cat Mountain	782824	Travis Co., TX	I (08/31/1995)	L	• Golden-cheeked warbler	No candidate species	08/01/1993	213 acres	10 years
P-WB Joint Venture	808694	Travis Co., TX	I (03/12/1996)	M	• Bone Cave harvestman • Golden-cheeked warbler • Tooth Cave ground beetle	No candidate species	04/01/1995	333 acres	30 years
Park 22	807192	Travis Co., TX	I (05/16/1996)	L	• Golden-cheeked warbler	No candidate species	09/01/1995	32 acres	30 years
Pratt, Carolyn (Windmill Bluff)	801373	Travis Co., TX	I (07/24/1995)	L	• Golden-cheeked warbler	No candidate species	04/01/1995	2.7 acres	2 years
Pressler, Bette (Lot #1)	800438	Travis Co., TX	I (06/13/1995) 6 permits	L	• Golden-cheeked warbler	No candidate species	03/01/1995	2.5 acres ( )	10 years (10 each) ( )
Pressler, Bette (Lot #2)	800439	Travis Co., TX	I (06/13/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	3.85 acres ( )	10 years ( )
Pressler, Bette (Lot #3)	800440	Travis Co., TX	I (06/13/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	2.35 acres ( )	10 years
Pressler, Bette (Lot #4)	800441	Travis Co., TX	I (06/13/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	2.3 acres ( )	10 years
Pressler, Bette (Lot #5)	800442	Travis Co.,	I (06/13/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	2 acres ( )	10 years
Pressler, Bette (Lot #6)	800443	Travis Co., TX	I (06/13/1995)	L	• Golden-cheeked warbler	No candidate species	03/01/1995	2 acres ( )	10 years
Richland SA, Ltd (Lot #01)	804126	Travis Co., TX (Canyon Mesa, Lots 1-10, 12-14)	I (09/29/1995) 13 permits	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.37 acres ( )	30 years
Richland SA, Ltd (Lot #02)	804127	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.24 acres ( )	30 years ( )
Richland SA, Ltd (Lot #03)	804128	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.25 acres ( )	30 years ( )

Richland SA, Ltd (Lot #04)	804129	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.25 acres ( )	30 years ( )
Richland SA, Ltd (Lot #05)	804130	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	26 acres ( )	30 years ( )
Richland SA, Ltd (Lot #06)	804131	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.39 acres ( )	30 years ( )
Richland SA, Ltd (Lot #07)	804132	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.31 acres ( )	30 years ( )
Richland SA, Ltd (Lot #08)	804133	No info	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	26 acres ( )	30 years ( )
Richland SA, Ltd (Lot #09)	804135	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.24 acres ( )	30 years ( )
Richland SA, Ltd (Lot #10)	804136	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.23 acres ( )	30 years ( )
Richland SA, Ltd (Lot #12)	804137	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.32 acres ( )	30 years ( )
Richland SA, Ltd (Lot #13)	804138	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.41 acres ( )	30 years ( )
Richland SA, Ltd (Lot #14)	804139	Travis Co., TX	I (09/29/1995)	L	• Golden-cheeked warbler	No candidate species	06/01/1995	.38 acres ( )	30 years ( )
Rivers, Rex	799945	Travis Co., TX	I (05/01/1995)	L	• Golden-cheeked warbler	No candidate species	02/01/1995	6.7 acres	4 years
Schlumberger Technology Corp	827597	Travis Co., TX	I (12/19/1997)	M	• Golden-cheeked warbler	No candidate species	05/01/1996	440 acres	30 years
Schutler 33 Commercial Development (Tim Jamail)	817362	Travis Co., TX	I (01/13/1997)	L	• Golden-cheeked warbler	No candidate species	09/01/1995	33 acres	30 years
Shelley, Daniel O.	840322	Travis Co., TX	I (08/07/1998)	L	• Golden-cheeked warbler	No candidate species	02/12/1998	18.8 acres	5 years
Smith, Richard J.	787380	Travis Co., TX	I (04/04/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1994	5 acres	4 years (each) ( ) (Indefinite)
Spicewood at Bull Creek (formerly Richland Bull Creek Assoc.)	783564	Travis Co., TX	I (12/16/1994)	L	• Golden-cheeked warbler	No candidate species	03/01/1993	196 acres	30 years

Spicewood at Bull Creek (Mark Harren) Amendment 1	783564	Travis Co., TX	I (09/24/1998) Change of ownership From Jack Bray to Mark Harren	L	• Golden-cheeked warbler	No candidate species	No info	196 acres	30 years
Spicewood at Bull Creek Amendment 2	783564	Travis Co., TX	I (11/19/1998)	No info	No listed species	No candidate species	No info	Data not available ( )	0 years
Spicewood at Bull Creek Amendment 3	783564	Travis Co., TX	I (02/09/1999)	No info	No listed species	No candidate species	No info	Data not available ( )	0 years
Stein Single Family Residence	TE-007891-0	Williamson Co., TX	I (06/03/1999)	L	• Golden-cheeked warbler	No candidate species	01/12/1999	5 acres	5 years
Thomas, Bobby (Lot owner) (Georgetowne Street)	801588	Travis Co., TX	I (08/28/1995)	L	• Golden-cheeked warbler	No candidate species	04/01/1995	1.5 acres	2 years
Van Cuylenburg, Peter	798667	Travis Co., TX	I (04/18/1995)	L	• Golden-cheeked warbler	No candidate species	01/01/1995	5.4 acres	1 years
Volente Group (Housing Development)	806831	Travis Co., TX	I (10/07/1996)	M	• Blackcapped vireo • Golden-cheeked warbler	No candidate species	09/01/1995	2573 acres	30 years
Volente Group Amendment 1	806831	Travis Co., TX	I (11/10/0098)	M	• Golden-cheeked warbler	No candidate species	No info	0 acres ( )	0 years
Volente Group Amendment 2	No permits issued	No info	I (12/22/1998)	No info	• Golden-cheeked warbler	No candidate species	No info	Data not available ( )	0 years
Wallace Tract	782991	Travis Co., TX	I (02/19/1996)	L	• Golden-cheeked warbler	• Barton Springs salamander	09/01/1993	73 acres	30 years
Westminster Glen	793122	Travis Co., TX	I (02/24/1995)	L	• Golden-cheeked warbler	No candidate species	09/01/1993	270 acres	30 years
Buttercup Creek Subdivision (Lumbermans Investments Corp, Bobby Mann)	836384	Williamson Co., TX	A (05/16/1999)	M	• Tooth Cave ground beetle	No candidate species	09/01/1997	438 acres	30 years
Chambers, Anita and Kent	TE-010979	Travis Co., TX	A (07/02/1999)	L	• Golden-cheeked warbler	No candidate species	04/15/1999	5 acres	5 years
Comanche Canyon/Lucas/Ulrich	TE-004683-0	Travis Co., TX	A (02/20/1999)	No info	• Golden-cheeked warbler	No candidate species	07/01/1998	750 acres	30 years

Grandview Hills/Tomen Parke (subdivision)	815447	Travis Co., TX	A (05/22/1999)	M	• Bee Creek Cave harvestman • Blackcapped vireo • Bone Cave harvestman • Golden-cheeked warbler • Tooth Cave ground beetle • Tooth Cave pseudoscorpion	No candidate species	02/01/1998	550.3 acres	30 years
Hunt, John & Jim Single Family Residence	TE-010556-0	Travis Co., TX	A (06/16/1999)	L	• Golden-cheeked warbler	No candidate species	04/05/1999	20.5 acres ( )	5 years

Region 3

Plan Title	Permits	Location	Status	Complexity	Primary Listed Species	Primary Non-Listed Species	Date Assistance Initiated	Size	Duration
Town of Rome	TE-006295	Adams Co., WI	I (04/14/1999)	L	• Karner blue butterfly	No candidate species	No info	10.6 acres	30 years
State-Wide Karner Blue/Wisconsin DNR	TE-010064	WI	A (06/14/1999)	H	• Karner blue butterfly	No candidate species	05/01/1994	9000000 acres	10 years

Region 4

Plan Title	Permits	Location	Status	Complexity	Primary Listed Species	Primary Non-Listed Species	Date Assistance Initiated	Size	Duration
Aronov Realty and Management	802986	Baldwin Co., AL	I (01/26/1996)	L	• Alabama beach mouse	No candidate species	No info	52 acres	30 years
Balmoral (O.C. Mendes)	791224	Brevard Co., FL	I (08/10/1994)	L	• Florida scrub jay	No candidate species	No info	5 acres	4 years
Bradley, Sarah	795455	Monroe Co., Al	I (12/02/1994)	L	• Red Hills salamander	No candidate species	No info	80 acres	30 years
Brandon Capitol Corp. (Villages of Tramore)	791241	Brevard Co., FL	I (08/12/1994)	L	• Florida scrub jay	No candidate species	No info	4 acres	3 years
Brett Real Estate/Phoenix VI & VII	809898	Orange Beach, Al.	I (04/18/1996)	L	• Alabama beach mouse	No candidate species	No info	22 acres	30 years
Cavalcar Co (Cloisters)	795856	Brevard Co., FL	I (03/28/1995)	L	• Florida scrub jay	No candidate species	No info	104 acres	5 years

Charles Ingram Lumber Co., Amos McLeod	822028	Florence Co., SC	I (04/14/1997)	L	• Red-cockaded woodpecker	No candidate species	No info	753 acres	30 years
Coconut Point Incorporated	797088	Brevard Co., FL	I (02/21/1995)	No info	• Florida scrub jay	No candidate species	No info	11.29 acres	5 years
Collins-Miller (Bay to Breakers)	819363	Baldwin Co., AL	I (11/08/1996)	M	• Alabama beach mouse • Nesting sea turtles	No candidate species	No info	11.2 acres	30 years
Cone, Ben (Cone's Folly)	816491	Pender Co., NC	I (10/01/1996)	M	• Red-cockaded woodpecker	No candidate species	No info	8012 acres	99 years
D&E Investments, Ltd.	787172	Baldwin Co., AL	I (05/03/1994)	L	• Alabama beach mouse	No candidate species	No info	252 acres	30 years
Driscoll Properties	736470	N. Key Largo, FL	I (01/01/1990)	L	• Key Largo cotton mouse • Key Largo woodrat	No candidate species	No info	42 acres	5 years
Driscoll Properties, Inc., Driscoll Foundation, Inc., and Ocean Reef	TE-004859-0	Monroe Co., FL	I (01/29/1998) permit extension	L	• Key Largo cotton mouse • Key Largo woodrat • Schaus swallowtail butterfly	No candidate species	No info	20 acres	10 years
Farr, Robert	798697	Baldwin Co., AL	I (05/24/1995)	L	• Alabama beach mouse	No candidate species	No info	5 acres (less than)	30 years
Fel-Kran Plumbing	787698	Baldwin Co., AL	I (05/09/1994)	L	• Perdido Key beach mouse	No candidate species	No info	27 acres	30 years
Friendfield Plantation, Inc.	827374	Citrus Co., FL	I (07/21/1997)	L	• Red-cockaded woodpecker	No candidate species	No info	792 acres	3 years
Ft. Macaulay Development Co. (Windsor Estates)	799977	Brevard Co., FL	I (05/16/1995)	L	• Florida scrub jay	No candidate species	No info	98 acres	5 years
Gasque/Felkel	810934	Orangebury Co., SC	I (03/28/1996)	L	• Red-cockaded woodpecker	No candidate species	No info	446 acres	2 years
General Real Estate (Bal Harbor)	794539	Brevard Co., FL	I (10/27/1994)	L	• Florida scrub jay	No candidate species	No info	15.1 acres	3 years
Gross, Nick (Snow Construction, Inc.)	816732	Osceola Co., FL	I (10/22/1996)	M	• American bald eagle	No candidate species	No info	12 acres	99 years
Heron's Cove	837313	Charlotte Co., FL	I (02/19/1998)	L	• Eastern indigo snake • Florida scrub jay	No candidate species	No info	173 acres	0 years (15, mgmt for 99)

Hill, Joseph	806150	Brevard Co., FL	I (04/16/1996)	L	• Florida scrub jay	No candidate species	No info	1.7 acres	10 years
Holnam, Inc./HCR Limestone	829937	Citrus Co., FL	I (08/21/1997)	M	• Red-cockaded woodpecker	No candidate species	No info	1281 acres	4 years
International Paper	780914	Monroe and Conecuh Cos., AL	I (10/19/1993)	H	• Red Hills salamander	No candidate species	03/01/1993	30000 acres	30 years
International Paper	833203	TX; AR, LA, GA, AL, NC, and SC	I (01/29/1999)	H	• Red-cockaded woodpecker	No candidate species	No info	5000000 acres	30 years
Jack Primus Tract	804465	Berkeley Co., SC (coastal)	I (10/24/1995)	L	• Red-cockaded woodpecker	No candidate species	No info	988 acres	99 years
Langboard, Inc.	833793	Atkinson Co., GA	I (11/02/1997)	M	• Eastern indigo snake	No candidate species	No info	723 acres	30 years
Luce, Gregory	797979	Baldwin Co., AL	I (04/25/1995)	L	• Alabama beach mouse	No candidate species	No info	1.21 acres	20 years
M. Kodsi of Lantana Development (Milford/Martesia Project)	840501	Brevard Co., FL	I (07/13/1998)	L	• Eastern indigo snake • Florida scrub jay	No candidate species	No info	10 acres	10 years
MacMillan-Bloedel Timberlands	811415	Monroe and Conecuh Cos., AL	I (04/26/1996)	M	• Red Hills salamander	No candidate species	No info	4000 acres	30 years
Michalski (landowner)	821922	Baldwin Co., AL	I (01/22/1997)	L	• Alabama beach mouse • Nesting sea turtles	No candidate species	No info	5 acres	30 years
Mouhot (single family lot)	832536	Charlotte Co., FL	I (09/29/1997)	L	• Florida scrub jay	No candidate species	No info	.9 acres	0 years (6 mos.)
Nichols/Hendrix/Post	691992	N. Key Largo, FL	I (01/01/1986)	L	• Key Largo cotton mouse • Key Largo woodrat	No candidate species	No info	1 acres	5 years
Ocean Ridge, Limited	787965	Brevard Co., FL	I (06/01/1994)	L	• Florida scrub jay	No candidate species	No info	9 acres	10 years
On Top of the World	822026	Marion Co., FL	I (04/21/1997)	M	• Red-cockaded woodpecker	No candidate species	No info	1683 acres	30 years
Paradise Joint Venture (Head Properties)	819464	Baldwin Co., AL	I (11/27/1996)	L	• Alabama beach mouse	No candidate species	No info	87 acres	30 years
Phoenix VIII/Brett Real Estate	834795	Orange Beach and Baldwin Cos., AL	I (04/17/1998)	L	• Alabama beach mouse	No candidate species	No info	5.06 acres	30 years

Pine Belt Regional Landfill Authority	804406	Covington and Parry Cos., MS	I (09/22/1995)	L	• Gopher tortoise	No candidate species	No info	120 acres	20 years
Plantation Palms	816555	Baldwin Co., AL	I (11/27/1996)	L	• Alabama beach mouse • Nesting sea turtles	No candidate species	No info	4 acres	30 years
Potlatch	807592	Ashley, Bradley, and Calhoun Cos., AR	I (02/28/1996)	M	• Red-cockaded woodpecker	No candidate species	No info	233000 acres	30 years
Presley, H.	789188	Brevard Co., FL	I (06/10/1994)	L	• Florida scrub jay	No candidate species	No info	.5 acres	5 years
RNR Properties (Cypress Creek-Phase I)	798698	Brevard Co., FL	I (05/03/1995)	M	• Florida scrub jay	No candidate species	No info	225 acres	10 years
Red Oak Timber Co.	800149	Vernon Parrish, LA	I (07/17/1995)	L	• Red-cockaded woodpecker	No candidate species	No info	1106 acres	4 years
Sage Development	811416	Baldwin Co., AL	I (05/15/1996)	L	• Alabama beach mouse	No candidate species	No info	25 acres	30 years
Sage Development Amendment #1	811416	Baldwin Co., AL	I (04/25/1997)	L	• Alabama beach mouse • Green sea turtle • Hawksbill sea turtle	No candidate species	No info	9.6 acres	30 years
SeaMist, Inc.	784126	Baldwin Co., AL	I (12/27/1993)	L	• Alabama beach mouse	No candidate species	09/01/1993	46 acres	30 years
Stallworth Preserve	796769	Walton Co., FL	I (02/02/1995)	L	• Choctawhatchee beach mouse	No candidate species	03/01/1993	7 acres	30 years
Tapper, W.	790906	Brevard Co., FL	I (07/19/1994)	L	• Florida scrub jay	No candidate species	No info	.5 acres	5 years
Tidewater Association L.L.C.	832539	Orange Beach and Baldwin Cos., AL	I (12/02/1997)	L	• Alabama beach mouse	No candidate species	No info	4.3 acres	30 years
Towne Realty Company (Satellite Motel Time Share)	831754	Brevard Co., FL	I (10/01/1997)	L	• Eastern indigo snake • Florida scrub jay	No candidate species	No info	6.7 acres	10 years
Union Camp Corporation	821527	SC (Statewide)	I (01/08/1997)	M	• Red Hills salamander	No candidate species	No info	150000 acres	30 years
Volusia County	811813	Volusia Co., FL	I (11/21/1996)	H	• Nesting sea turtles	No candidate species	01/01/1995	50.03 linear miles (miles of beach)	5 years

Wal-Mart Corporation	774603	Highland Co., FL	I (03/11/1993)	L	• Blue-tailed mole skink • Eastern indigo snake • Florida scrub jay • Highlands scrub hypericum • Papery whitlow-wort • Sand skink • Scrub blazing star • Scrub plum • Wireweed	• Sandlace	03/01/1993	25 acres	1 years
Waterside Down (Cochran)	800150	Brevard Co., FL	I (05/21/1996)	L	• Eastern indigo snake • Florida scrub jay	No candidate species	11/01/1994	42 acres	5 years
Waterside Down (Cochran) Amendment #1 (phase II)	800150	Brevard Co., FL	I (05/26/1998)	L	• Eastern indigo snake • Florida scrub jay	No candidate species	No info	100 acres	15 years
Weyerhauser	809072	AR & OK	I (07/11/1996)	M	• American burying beetle	No candidate species	No info	28000 acres	35 years
Wilmon (aka Simpson) Timber Co.	824543	Monroe Co., AL	I (03/19/1997)	M	• Red Hills salamander	No candidate species	No info	10000 acres	30 years
Windover Farms/Pineda Crossing	808474	Brevard Co., FL	I (08/01/1996)	M	• Red-cockaded woodpecker	No candidate species	08/01/1994	1263 acres	5 years
Woolbright Venture (Howard Scharlin)	811902	Indian River, FL	I (07/10/1996)	L	• Florida scrub jay	No candidate species	No info	3.2 acres	5 years
Aronov Realty and Management - Availability of Supplemental FONSI	802986	Baldwin Co., AL	A (07/01/0099)	L	• Alabama beach mouse	No candidate species	No info	52 acres	30 years
Lamar County School Board	PRT-TE007399-0	Lamar Co., MS	A (04/17/0099)	L	• Gopher tortoise	No candidate species	No info	39 acres	50 years
Linda B. Walters (single family development)	TE-008789-0	Volusia Co., FL	A (05/06/0099)	L	• Eastern indigo snake • Florida scrub jay	No candidate species	No info	Data not available	20 years
Mortgage Management, L.P.	TE004632-0	Volusia Co., FL	A (12/20/1998)	No info	• Eastern indigo snake • Florida scrub jay	No candidate species	No info	48 acres	10 years

Paradise Joint Venture (Head Properties) - Availability of Supplemental FONSI	819464	Baldwin Co., AL	A (07/01/0099)	L	• Alabama beach mouse	No candidate species	No info	87 acres	30 years
Waltz and Company of Sebring (Palm Haven Development)	TE-009033-0	Highlands Co., FL	A (05/07/0099)	No info	• Blue-tailed mole skink • Eastern indigo snake • Florida scrub jay • Sand skink	No candidate species	No info	8 acres	5 years

Region 5									
Plan Title	**Permits**	**Location**	**Status**	**Complexity**	**Primary Listed Species**	**Primary Non-Listed Species**	**Date Assistance Initiated**	**Size**	**Duration**
Home Port on Winchester Creek Development Project	TE006310-0	Queen Anne's Co., MD	I (05/13/1999)	L	• Delmarva fox squirrel	No candidate species	No info	56 acres	50 years
Piping Plover HCP (State of Massachusetts)	813653	Essex, Plymouth, Barnstable, & Bristol Cos., MA	I (04/12/1996)	M	• Piping plover	No candidate species	01/01/1994	200 linear miles (200 linear-coastal miles)	2 years

Region 6

Plan Title	Permits	Location	Status	Complexity	Primary Listed Species	Primary Non-Listed Species	Date Assistance Initiated	Size	Duration
Church of Jesus Christ of LDS	825570	Cedar City, Iron Co., UT	I (03/27/1997)	L	• Utah prairie dog	No candidate species	No info	6.3 acres	2 years
Coleman Company	804404	Cedar City, Iron Co., UT	I (09/20/1995)	L	• Utah prairie dog	No candidate species	02/01/1995	3.7 acres	2 years
Connel Gower	817340	Iron Co., UT	I (10/13/1996)	L	• Utah prairie dog	No candidate species	08/01/1996	63 acres	20 years
Flandro Quarry	784336	Salt Lake, UT	I (02/10/1994)	L	• American peregrine falcon	No candidate species	05/01/1993	30 acres	20 years
Heritage Arts Foundation	798634	Washington Co., UT	I (03/31/1995)	M	• Desert tortoise	• Banded Gila monster • Chuckwalla	08/01/1994	96 acres	2 years
Iron County	MB000142-0	Iron Co., UT	I (07/09/1998)	L	• Utah prairie dog	No candidate species	No info	12397 acres	20 years
Noriega, Jose, Sam Zitterring, Phillip Finch	835638	Panguitch, UT	I (12/16/1997)	L	• Utah prairie dog	No candidate species	No info	1.66 acres	20 years
Smead Manufacturing Company	814008	Iron Co., UT	I (05/29/1996)	L	• Utah prairie dog	No candidate species	No info	29 acres	0 years (3 yrs, 7 mos.)
Washington County	811471	Washington Co., UT	I (02/23/1996)	H	• American bald eagle • American peregrine falcon • Desert tortoise • Dwarf bear-claw poppy • Siler pincushion cactus • Virgin River chub • Woundfin minnow	• 27 candidates	09/01/1990	135000 acres	20 years
West Hills LLC	804479	Cedar City, Iron Co., UT	I (09/20/1995)	L	• Utah prairie dog	No candidate species	02/01/1995	33 acres	2 years
Maytag Trail	No permits issued	Douglas Co., CO	A (07/06/0099)	L	No listed species	No candidate species	No info	Data not available	3 years

Region 7

Plan Title	Permits	Location	Status	Complexity	Primary Listed Species	Primary Non-Listed Species	Date Assistance Initiated	Size	Duration

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STATEMENT OF MONICA MEDINA, GENERAL COUNSEL, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE

Mr. Chairman, my name is Monica Medina, and I am General Counsel of the National Oceanic and Atmospheric Administration (NOAA). Thank you for the opportunity to testify on the science that serves as a basis for Habitat Conservation Plans (HCPs) agreed to under the Endangered Species Act (ESA).

THE IMPORTANCE OF HCPS

NOAA is responsible for 52 species listed under the ESA, including salmon, sea turtles, whales, dolphins, seals, and other species. The breadth of our challenge in recovering these species is great, so we cooperate with non-Federal landowners such as states, Tribes, counties, and private entities to do this important job. For instance, we have the challenge of ensuring the survival and recovery of salmon

across a geography that spans the Pacific coastline from the Canadian border to Los Angeles. In addition, the highly migratory nature of Pacific salmon places them in many areas in numerous states, impacting large numbers of stakeholders, many of whom are private citizens who hold large tracts of land valued as both commercial property and salmon habitat.

Long-term management of habitat, such as that done through HCPs with non-Federal landowners, has proven to be the most effective means of recovering species. HCPs are also a popular conservation tool for both the private property owner and NOAA. So far, NOAA has issued only 2 incidental take permits associated with an HCP, but we are a party to 5 Implementing Agreements for HCPs issued by the Fish and Wildlife Service (FWS), and are currently negotiating approximately 35 additional HCPs. All of the large-scale HCPs developed by NMFS concern salmon. NOAA has issued joint guidance with the FWS on how to assist applicants in developing HCPs. Our HCP handbook describes the information we need to evaluate whether these plans will be effective and accomplish their goal of minimizing and mitigating the effects of taking threatened and endangered species. The Services assist the applicant in exploring alternatives, and are flexible when prescribing mitigation measures. We do not impose one-size-fits-all prescriptions on applicants. When participants provide an unusual, but scientifically credible analysis of effects, or a creative but effective solution for mitigating the effects of incidental taking, we will seriously consider their approach.

Flexible implementation of the ESA has become the hallmark of this Administration's efforts to conserve species, and it is evidenced in our draft 5-point policy with FWS, proposed last March. One of the important aspects of this policy is adaptive management. Adaptive management is an essential component of HCPs when there is significant uncertainty or an information gap that poses a significant risk to the species. Rather than delay the process while sufficient information is gathered to predict the outcome accurately, the Services and applicants jointly develop an adaptive management strategy, assuring all parties of a suitable outcome. For example, a cautious management strategy could be implemented initially, and through exploration of alternate strategies with an appropriate monitoring program and feedback, the permitted could demonstrate that a more relaxed management strategy is appropriate as time goes on.

SCIENCE

NOAA is required by the ESA to use the best available information in making its determinations, including all HCP permit decisions. This means that our agency is legally required to utilize the best available science—data, analysis, models, and synthesis. Our scientists stay up-to-date in their respective fields, and use state-of-the-art analytical techniques and methods to assess and understand the species and ecosystems to be managed under HCPs.

For example, in development of the aquatic management component of a timber HCP, our biologists work closely with academic, state, tribal, and local agency scientists to gather all relevant data for the watershed, including hydrology, salmon population dynamics, sediment dynamics, water quality, and forest successional structure. When necessary, additional data is collected in the field to augment existing information. Management goals and objectives are developed to ensure healthy spawning grounds, good quality rearing habitat, suitable temperatures, and safe fish passage conditions. The riparian corridor flanking the river is managed to ensure that the stream channel is maintained as a dynamic, natural system with intact physiological, biological, and chemical processes.

However, it is not a simple matter to manage ecosystems across large areas, particularly when this management includes significant human alterations from resource extraction or infrastructure development. We have solid, reliable, quantitative information on the temperature, water flow, fish passage, and water quality needs of salmon, but more subtle factors that may determine the long-term success or failure of ecosystem and endangered species management are only just beginning to be understood . New areas of scientific research such as nutrient cycling, food chain dynamics, biodiversity, population genetics, and climate change are at an emerging stage—many significant new questions and concerns have been identified, but few practical tools and methodologies have emerged.

Our scientists fully recognize this uncertainty, and our HCP agreements are designed to manage biological risk in spite of the fact that in many cases we are implementing new, landscape-scale, ecological experiments. Where we have solid, quantitative information, such as the temperature needs of juvenile salmon, we can set specific, quantitative temperature targets that the management regime must achieve. In areas where the science is less developed, HCPs typically include more

qualitative goals, such as a multi-tiered forest canopy with a diverse age structure or maintenance of insect prey biodiversity.

Because HCPs are at the limits of our scientific capability and knowledge, extensive monitoring and adaptive management strategies are essential. By monitoring as many indicators of ecosystem and species health as possible, we can adjust our management strategies as we discover how the ecosystem responds to our management regimes, If we do a good job of monitoring and assessing our management, we can learn from the successes and failures of the preceding HCPs and apply that new knowledge in new HCPs.

Our scientists work closely with their scientific peers in academia and other agencies to review ecosystem management approaches. We welcome scrutiny from the scientific community and the informed public as this helps to ensure that the HCPs are of the highest quality. HCP programs are subject to intense debate and review within the agencies, as well as in professional conferences and peer-reviewed journal articles. Furthermore, all HCPs must fully comply with the National Environmental Policy Act (NEPA) and the ESA, which ensures ample review and comment on all science and management approaches.

HCP SUCCESSES

At this time, I would like to discuss some of our science-based HCPs that incorporate the principles just mentioned.

The Mid-Columbia draft HCP, now ready for public review and comment and expected to be signed this year, is an example of how NOAA is using performance-based goals in addition to prescriptive measures. This HCP is focused on improving survival of salmon migration through the Mid-Columbia segment of the Columbia River near Wenatchee, Washington. Historical fish losses at the Mid-Columbia dams have been significant—an average of 15 percent loss of juvenile salmon per dam. The goal of the HCP is no net impact to salmon from the three hydro-electric dams and associated reservoirs operated by the two Public Utility Districts (PUDs). The Federal and State agencies' fisheries experts agreed that a maximum amount of unavoidable project mortality was 9 percent. Required fish survivals are expressed in two ways—95 percent juvenile fish passage at each dam, and 91 percent survival at each dam for both adult and juvenile fish.

Specific methods to attain the 91 percent project survival were not described, but would be left to the project operators for the first 5 years of the HCP (thereafter it is a joint process with the NMFS and FWS). Studies to develop the fish-survival improvements will use the best technology and methods available and review of study proposals will be done collaboratively. In addition to the FWS and NMFS, oversight will be provided by the parties to the negotiations—the State agencies, local Tribes, and an environmental group.

Compensation for the 9 percent unavoidable fish loss will be met by a combination of hatchery production (7 percent) and tributary restoration (2 percent). A tributary habitat conservation fund established by the PUDs would be managed collaboratively to identify, design, construct, and monitor projects to increase natural fish production in the four tributaries (Wenatchee, Entiat, Methow and Okanogan rivers). The hatchery production would also be overseen by the broader group and designed to help recover listed species. This effort would be state-of-the-art in regards to ESA concerns (i.e., designed to produce fish in a manner consistent with recovering listed plan species and not deleteriously affecting other listed non-plan species such as Snake River salmon). In addition, the HCP contains detailed schedules and contingencies for every part of the agreement.

The Washington State Department of Natural Resources (WDNR) HCP was signed by the FWS in January, 1997. NMFS signed the Implementing Agreement at that time as it did not have any listed species covered by the HCP; and then issued an incidental take permit in June, 1999 for recently listed salmon and steelhead. The HCP area covers 1.4 million acres of forest land in western WA and includes more than 133,000 acres of streamsides and unstable slopes around small headwater streams. The HCP employs a multi-disciplinary approach to forest landscape management. A Science Team, drawn from research and management scientists, was appointed by WDNR to assess conservation options for key species of fish and wildlife. The scientific record includes descriptive sections on species, habitats and potential impacts in the HCP and related NEPA documents (draft and final Environmental Impact Statements). In addition, there are published reports to the WDNR HCP Science Team that evaluated the likely effectiveness of a range of options for management of salmon, spotted owl, and marbeled murrelet habitats. The reports describe and rank various ways to meet, for example, the Science Team's objective to provide habitat that supports viable and well-distributed populations of

salmon. The WDNR HCP includes several innovative features designed to advance the science of forestry and landscape conservation. A large block of State forest lands (264,000 acres, or almost 20 percent of the total plan area) is set aside specifically for watershed-scale experimental forest management. Another feature is validation monitoring that goes beyond the required HCP monitoring for compliance and effectiveness. Key assumptions about management measures will be tested with a variety of methods, including long term paired-watershed studies.

Implementation of the Pacific Lumber HCP, issued in February, 1999 and covering 210,000 acres, has begun in earnest with review of timber harvest plans and formalization of watershed analysis and monitoring programs. The foundation of this plan rests upon watershed analysis, which is the process used to tailor site-specific prescriptions to conserve salmon on a watershed by watershed basis. This process entails detailed scientific analysis of each watershed's unique physical and biological characteristics and history of past natural and anthropogenic disturbance. The analysis will address how forest practices have resulted in changes in hydrology, riparian functions, or sediment input to streams that have resulted in adverse impacts to fish and fish habitat.

CHALLENGES AHEAD

We recognize the need to increase our science effort in support of recovery planning, section 7 consultations, and HCP development. NOAA's Pacific salmon expenditures in fiscal year 1999 are expected to be $23 million, but only approximately $8.3 million of this is being spent on science. Only $3.3 million is funding risk assessment wherein NOAA scientists do research on factors affecting survival of at-risk salmonids, work on evaluating conservation measures and habitat restoration efforts, and provide economic analyses. $3 million is funding habitat assessment wherein NOAA scientists do research on survival and productivity of salmon in freshwater, estuarine, and ocean habitats. $2 million is funding salmon population dynamics research, wherein NOAA scientists are analyzing stock abundance and distribution; and are undertaking life history modeling, genetic studies, population viability analyses, and population monitoring.

The NMFS fiscal year 2000 ESA salmon recovery budget initiative requested $24.7 million in new funding to strengthen our scientific capabilities. For example, $5 million of this funding would be used to increase our ability to partner with local agencies and private landowners in HCP development, and $4.45 million would be used to increase our ability to properly implement and monitor HCPs once they are developed. Related to this, $2.8 million would be used to improve our ability to analyze and assess the cumulative effects and risks to salmon populations caused by changes on a watershed scale. Also, $2.8 million would be used to develop recovery plans, and $2.2 million would be used for new research on the factors influencing ocean and estuarine survival of juvenile salmon. $1 million would be used to develop quantitative links between habitat, human impacts, and salmon stock productivity; and $1 million would allow NMFS scientists to work closely with the Department of Agriculture and EPA on water quality needs. Without these increased resources, the pace and scope of HCP development will be greatly constrained.

CONCLUSION

In conclusion, NOAA's HCP program is showing many benefits for non-Federal landowners as well as Federal agencies; however, it is still a work in progress. We are monitoring sites and adapting our management to what we see occurring on the landscape. HCPs are one of the major actions we are taking to meet the challenge of recovering salmon and other endangered and threatened species. HCPs are not perfect, but are a less confrontational and adversarial than our only alternative—enforcing prohibitions on take under Section 9 of the ESA. We are doing what we can in the HCP arena to recover salmon, and ensure that future generations know of these magnificent fish.

Mr. Chairman, thank you for this opportunity to testify. I look forward to answering any questions you may have.

U.S. Fish & Wildlife Service / National Oceanic & Atmospheric Administration

Addendum to the HCP Handbook

Executive Summary

The draft addendum to the HCP handbook focuses on the expanded use and integration of five conservation tools that are already components of the Habitat Conservation Planning program, namely biological goals, adaptive management, monitoring, permit duration, and public participation. The purpose of this draft addendum is to promote nationwide efficiency, effectiveness, and consistency within and between the Services, and to enhance the HCP program nationwide. These new initiatives are based on new operating conservation programs the Services and permittees are incorporating into HCPs, lessons learned, recommendations received, and methods the Services are using to strengthen the HCP process to help ensure species conservation. The Services' new proposed guidance was published in the Federal Register on March 9, 1999 for a 60-day public comment period.

Biological Goals and Objectives

Even though the HCP Handbook does not specifically discuss measurable biological goals, the concept is well established. In the future, the Services will work with the applicant derive biological goals that are commensurate with the scope of the proposed action to ensure that they are consistent with conservation actions needed. Biological goals are the broad guiding principles for the operating conservation program; they are the rationale behind the minimization and mitigation strategies. Specific biological objectives are the measurable targets for achieving the biological goals.

The Services believe that HCPs will be strengthened if they have biological goals and objectives integrated into the operating conservation program. The practice of defining biological goals for HCPs facilitates the development of conservation strategies that ensure that the implementation of the HCP will succeed. These goals and objectives must be based on the best scientific information available and reflect the conservation needs of the covered species for an operating conservation program. An appropriate biological goal, for example, could be to secure a viable population in another geographic area, rather than establishing a specific number of individuals.

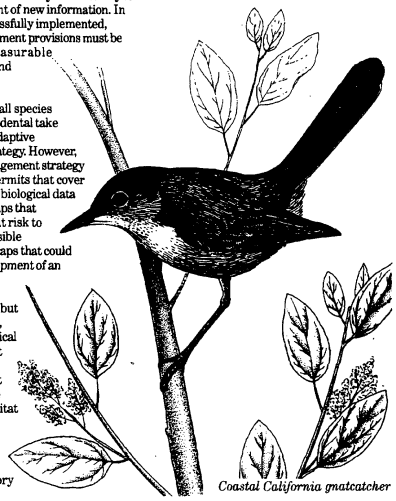
Adaptive Management

The Services are already incorporating adaptive management provisions into the operating conservation plans of many HCPs (See the Services' HCP Handbook, Chapter 3, section B.3). An adaptive management approach allows for up-front mutually agreed-upon changes in an HCP's operating conservation plan that may be necessary for the species in light of new information. In order to be successfully implemented, adaptive management provisions must be linked to measurable biological goals and monitoring.

Not all HCPs or all species covered in an incidental take permit need an adaptive management strategy. However, an adaptive management strategy is essential for permits that cover species that have biological data or information gaps that incur a significant risk to that species. Possible significant data gaps that could lead to the development of an adaptive management strategy include, but are not limited to, significant biological uncertainty about specific information about the ecology of the species or its habitat (e.g., food preferences, relative importance of predators, territory size), habitat or species management techniques, or the degree of potential effects of the activity on the species covered in the incidental take permit.

Monitoring

Monitoring serves not only to ensure compliance and gauge the effect and effectiveness of HCPs, it also informs choices under adaptive management provisions, assists in redefining biological goals, and provides the Services with an important part of the information used to conduct range-wide assessments of species status and baseline conditions.



Coastal California gnatcatcher

There are at least two types of monitoring that are useful to conduct for HCPs: (1) compliance monitoring, which monitors the permittee's implementation of the requirements of the HCP, permit, and/or IA; and (2) effects and effectiveness monitoring, which investigates the impacts of the authorized take and the operating conservation program implemented to verify progress toward the biological goals and objectives. A monitoring program should incorporate both types in order to effectively examine all aspects of an HCP, and ensure the ultimate success of the HCP. The Services' National and Regional offices will develop a database to track incidental take permit issuance and compliance.

Monitoring measures should be commensurate with the scope and duration of the project and the biological significance of its effects. The monitoring program should be flexible so that it can be modified, if necessary, based on the need for additional information. In order to obtain meaningful information, the applicant and the Services should structure monitoring methods and standards so that the results from one reporting period and area to another are comparable, and the monitoring protocol responds to the question(s) asked. Credible monitored units should reflect the biological objective's measurable units (e.g., if the biological objective is in terms of numbers of individuals, the monitoring program should measure the number of individuals). The monitoring program must be based on sound science and standard survey or other protocols previously established should be used.

Permit Duration

To date, the Services have issued more than 200 permits, with varying lengths in permit duration. Having a range of permit durations is important, as it takes into account both the biological impacts resulting from the proposed land use (e.g., variations in the length of timber rotations and treatments) and economic developmental differences (e.g., housing development HCPs versus forestry-related HCPs).

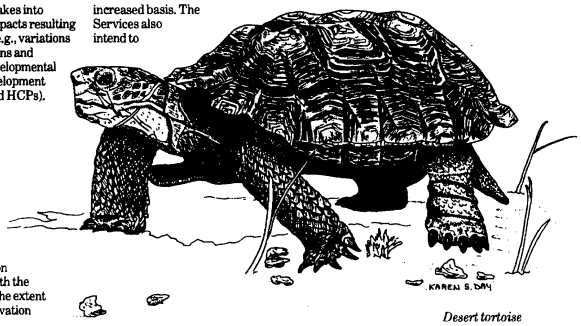
Both FWS and NMFS regulations for incidental take permits outline factors to consider when determining incidental take permit duration (50 CFR §§17.32 and 222.22). These factors include duration of the applicant's proposed activities and the expected positive and negative effects on covered species associated with the proposed duration including the extent to which the operating conservation program will increase the survivability of the listed species and/or enhance its habitat. In determining the duration of an incidental take permit, the Services will also consider the extent of scientific and commercial data underlying the proposed operating conservation program for the HCP, the length of time necessary to implement and achieve the benefits of the operating conservation program, and the extent to which the program incorporates adaptive management strategies.

Public Participation

The Services intend to expand public participation in the HCP process in order to provide the public with a greater opportunity to assess, review, and critique plans as they are being developed. The Services currently require a 30-day public comment period for all formal HCP applications, however, the Services recognize the concern of the general public regarding the length of the public comment period, especially for large-scale HCPs. The Services will provide a 60-day public comment period for most HCPs. The exceptions to a 60-day comment period would be those for low-effect HCPs and large scale regional, or exceptionally complex HCPs. The Services believe the current 30-day public comment period provides enough time to review low-effect HCPs, which have a categorical exclusion from NEPA. In addition, the minimum comment period for these HCPs is proposed to be 90 days, unless significant public participation occurs during HCP development.

In addition to extending the public comment period, the Services will also seek to announce the availability of HCPs in local newspapers of general circulation and in electronic format on an increased basis. The Services also intend to expand the use of informational meetings to provide a forum for answering questions that members of the public may have regarding HCPs that are large-scale regional plans and/or may be controversial. Although the development of an HCP is the applicant's responsibility, the Services will encourage applicants for most large-scale, regional HCP efforts to provide extensive opportunities for public involvement during the planning and implementation process.

The Services are soliciting comments and suggestions from the public or other interested parties about this draft addendum. Copies of the draft addendum may be viewed and printed from the HCP website at *http://www.fws.gov/r9endspp/hcp/hcp.html*. Copies may also be obtained by calling the FWS Division of Endangered Species at 703/358 2171 or the NMFS Office of Protected Resources at 301/713 1401.



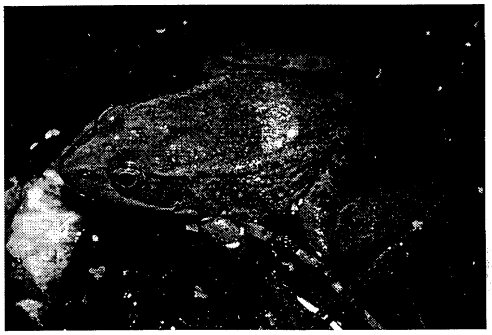
Desert tortoise

U.S. Fish & Wildlife Service / National Oceanic & Atmospheric Administration

Addendum to the HCP Handbook

Questions and Answers

What is the draft addendum to the HCP Handbook?
The Fish and Wildlife Service and National Marine Fisheries Service are providing for public comment a Draft Addendum to the final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process (otherwise known as the 5-point policy). The Services intend to incorporate the 5-point policy initiative into the HCP Handbook as an addendum that will provide additional guidance on HCPs. Some of this guidance is derived from approaches we currently apply to the HCP process. In particular, we will use this guidance to establish biological goals for the HCPs, to clarify and expand the use of adaptive management, to clarify the use of monitoring, to provide criteria to be considered by the Services in determining incidental take permit duration, and to expand the use of public participation.



California red-legged frog. Photo by Mark R. Jennings/USFWS

Why was the draft addendum developed?
The Habitat Conservation Planning process was designed to provide the Services flexibility in resolving conflicts between economic development and species conservation. The Services continue to learn as we implement the HCP program, resulting in better HCPs and species conservation. Because of comments received from the public through a variety of circumstances (workshops, meetings, training sessions, scientific studies, participation in the development and implementation of HCPs, and during comment periods on various ESA regulations and policies) as well as deliberations within the Services, we announced, on February 17, 1998, our intention to provide the draft 5-point policy initiative for public review and comment.

How will identifying biological goals and objectives affect the HCP development process?
A concern frequently expressed by applicants is that there is little guidance to assist them in determining what actions should be taken to provide the necessary species conservation. Developing biological goals and objectives for HCPs will help to provide applicants with a clear concept of what an operating conservation program is trying to accomplish. This will not only assist applicants by providing information regarding species conservation needs, but also in understanding why these actions are necessary.

How will the development of biological goals and objectives affect species conservation?
Developing biological goals and objectives for individual HCPs, will help to focus the conservation programs of HCPs on cumulatively achieving landscape level conservation. Applicants will better be able to tailor their conservation programs to take advantage of the activities of other programs, such as recovery activities and on-going research. This should increase the effectiveness of individual HCPs' operating conservation program by ensuring that conservation activities are implemented in a more coordinated manner.

How will biological goals and objectives be developed?
How the Services and applicants will develop biological goals and objectives will be dependent on: 1) the biology of the species; 2) the threats to the species; 3) the effect of the proposed activity; and 4) the scope of the HCP For example, a proposed action may increase a species' vulnerability to predation. A biological goal for an HCP developed for that proposed action would be to reduce the predation of the affected population. The mitigation or minimization measures would be designed to achieve that goal. Although a landowner may not be able to completely remove the threat of predation for the entire species, his/her HCP may contribute to that conservation need. Biological goals and objectives can be described in terms of habitat or the species but it should be clear which goals and objectives apply to which species.

When is it appropriate to use adaptive management?
Adaptive management is an essential component of HCPs when there is significant uncertainty or an information gap that poses a significant risk to the species. Note that this is not limited simply to biological information, but also can include uncertainty in the mitigation or management techniques, effects of the action, or any other information gap that poses a significant risk.

How can adaptive management assist the HCP development process?
Rather than delay the process while sufficient information is gathered to predict the outcome accurately, the Services and applicants jointly develop the adaptive management strategy. Thus, all parties are assured of a suitable outcome. However, adaptive management should not be used as an excuse for not crafting and implementing appropriate conservation measures up-front.

What incentives are there for HCP applicants to incorporate adaptive management into HCPs?
Adaptive management allows for flexibility over time during implementation of the HCP's operating conservation program. For example, a cautious management strategy could be implemented initially. Through exploration of alternate strategies with an appropriate monitoring program and feedback, the permittee could demonstrate that a more relaxed overall management strategy is allowable.

Do biological goals and adaptive management conflict with "No Surprises" assurances?
No; the premise of adaptive management is that in the face of uncertainty, the applicant and the Services will jointly identify the range of possible outcomes and the appropriate changes in the Operating Conservation Plan. The principle behind the "No Surprises" assurances is that the permittee will be provided with long-term predictability regarding the actions that will be needed to fulfill their permit responsibilities. By implementing adaptive management and identifying the range of potential actions that may be expected, the applicant is provided with the assurance that actions outside the scope of those agreed upon will not be required of them.

With or without adaptive management, as long as the permittee is implementing the operating conservation program, intended to meet biological goals, no additional mitigation would be required. If there is significant uncertainty that the operating conservation program will meet the biological goals and objectives, then an adaptive management strategy would be devised to increase the likelihood of meeting the biological goals and objectives.

How extensive does a monitoring program need to be?
Monitoring is a mandatory element of all HCPs and is part of the permittee's implementation obligation. The scope of a monitoring plan is directly related to the significance of the biological impacts. For instance, an HCP that will impact a relatively small amount of habitat for a wide-ranging species, may require no more monitoring than to ensure that any agreed upon habitat protection and/or restoration activities are successfully implemented. However, a regional HCP that affects a large amount of habitat or a significant portion of a species' range, may require more extensive monitoring that examines the species' status (e.g., population levels, reproductive rates, etc.). Applicants should work with the Services to determine the level of monitoring appropriate for their specific HCP.

What factors should be included in a monitoring plan?
The factors that should be monitored are dependent on information needed to determine compliance, the biological goals and objectives, and the needs of any adaptive management implemented as part of the HCP. For example, an HCP requiring habitat restoration should incorporate monitoring that sets and examines restoration success criteria; an HCP requiring the maintenance of a certain population level within the HCP area should incorporate population counts. If an adaptive management strategy is incorporated into the HCP, then the monitoring program must include the feedback loops of that strategy.

How do the Services determine the duration of the incidental take permit?
Factors that the Services consider when determining permit duration include the duration of the applicant's proposed activities and the duration of expected positive or negative effects on the covered species. For instance, if the permittee's action or the effects to the species occur over a long period of time, such as timber harvest, the permit would need to encompass that time period.

The Services also will consider the extent of information underlying the HCP, the length of time necessary to implement and achieve the benefits of the operating conservation program, and the extent to which the program incorporates adaptive management strategies. Significant biological uncertainty may necessitate an adaptive management strategy. The gathering of new information through the monitoring program requires the appropriate period of time for interpretation of new information and subsequent changes in management; this could necessitate a permit with a longer duration. However, if an adaptive management strategy that significantly reduces the risk of the HCP to that species cannot be devised and implemented, then a shorter duration may be appropriate.

How has the public comment period changed?
The ESA requires that all HCPs have a minimum 30 day public comment period. Because of the concern that this does not provide enough time for members of the public to review and provide meaningful comments, the Services are proposing to extend the minimum comment period for most HCPs to 60 days. Low effect HCPs are not proposed to change from the 30 day comment period. Large HCPs are proposed to have a 90 day minimum comment period, unless there has been significant public involvement during development.

What other means of public participation exists in the HCP process?
The Services are committed to providing opportunities for increased public involvement wherever possible. When practicable, the Services will seek to announce the availability of HCPs in local newspapers of general circulation and in electronic format. Additionally, we will provide assistance to the applicants in developing options for including the public in development of their HCPs, such as holding informational meetings and establishing steering committees.

What are the incentives to applicants to include the public in the development of their HCPs?
Overall, it provides opportunities for education and input in the development of the HCP, leading to less controversy for the permittee and more partnerships in the implementation of the HCP. By informing and involving the public during HCP development, the applicant is more likely to receive educated and meaningful input during the public comment period, thereby improving their HCPs.

STATEMENT OF LORIN L. HICKS, PLUM CREEK TIMBER COMPANY, INC.

Good Morning Mr. Chairman and members of the Committee. I am Dr. Lorin L. Hicks, Director of Fish and Wildlife Resources for Plum Creek Timber Company, Inc. Plum Creek is the fifth largest private timberland owner in the United States, with over 3.3 million acres in six states. Owning this vast resource base of some of the world's most productive timberlands allows our 2,400 employees to produce value-added forest products to a variety of specialty markets. I have been a biologist for Plum Creek and its predecessor companies for over 20 years.

But I am here today to talk about how important habitat conservation planning is to our leadership in environmental forestry. Habitat conservation planning promises to be the most exciting and progressive conservation initiative attempted on nonFederal lands in this country.

Plum Creek is no stranger to habitat conservation planning. Plum Creek's Central Cascades HCP, a 50 year plan covering 285 species on 170,000 acres, was approved

in 1996. We are currently working on another, called the Native Fish HCP, covering I.7 million acres in three northwest states. A third HCP, for red-cockaded woodpeckers in the south, is under development with the USFWS. In 1995, we initiated an 83,000-acre Grizzly Bear Conservation Agreement in Montana's Swan Valley.

Since 1974, few issues have been surrounded with more controversy than the Endangered Species Act. It is often criticized as unworkable and characterized as "iron fisted". Regardless of its image, its impact on landowners has been profound. My company, Plum Creek, is no exception—our 3.3 million acres supports no less than 12 federally listed species, and others such as salmon and lynx which have been proposed for listing.

Ironically, the history of the ESA and Plum Creek have been intertwined for many years. The listing of the grizzly bear in 1975 affected 1.1 million acres of Plum Creek land in the northern Rockies and confused or confounded access across Federal lands to company property for over a decade. The listing of the northern spotted owl in 1990 and subsequent Federal "guidelines" trapped over 77 percent of Plum Creek's Cascade Region in 108 owl "circles". Indeed, with every new listing, Plum Creek was skidding closer to becoming the "poster child" for the taking of private lands. To quote Charles Beard, "When it is dark enough-you can see the stars". For us the answer came with Habitat Conservation Plans. With the advent and incentives of habitat conservation plans, Plum Creek and the Federal Government have accomplished a stunning turnaround and made a concrete contribution to the conservation of endangered species.

This committee faces a critical question: Can HCPs continue to work for landowners and for endangered species into the future? This hearing hopefully will give the committee insights into the underlying science and principles that drive HCPs.

Two of the fundamental foundations of HCPs are under great pressure.

First the "No Surprises" policy, which is critical for landowners to undertake an HCP, is being challenged. It provides the necessary incentives for landowners to undertake the costly and resource intensive process to complete a habitat plan. To ensure that the program remains strong, we believe it should be codified.

Second, pressures mount to "standardize" HCPs, and compare them to each other, with a tendency to use each one to "raise the bar" for those which follow. In my opinion, this "one size fits all" approach is precisely what has challenged the ESA since its inception and could be the most important deterrent to the inclusion of small landowners to the HCP program.

It's important to understand that HCPs are as different from one another as landowners and land uses. They are as small as one home site and as large as 7-million acres. They are as short in duration as one construction season and as long as 100 years. They are as focused as a single species and as expansive as hundreds of species. And importantly, each landowner has a different incentive for entering this voluntary process.

To help demonstrate this I have attached a new booklet just produced by the Foundation for Habitat Conservation providing brief case studies of 13 HCPs from around the country. These case studies give better definition to my point that HCPs vary widely in scope and intent, and I recommend this document to you for review. These examples give credence to the notion that HCPs can be an effective tool for conservation.

Plum Creek is a founding member of the Foundation for Habitat Conservation. The nonprofit Foundation supports habitat conservation plans and related voluntary private conservation efforts through research, education and communication. The Foundation is committed to "conservation that works," and to that end, brings together advocates, experts and policymakers to work for creative, balanced and effective approaches to habitat conservation. Current Foundation members have HCPs conserving hundreds of species of animals and plants on more than 800,000 acres of land.

Let's dispel the myth that HCPs are not based on science. When my company, Plum Creek, created its first HCP, we took on a very complex challenge. Not only did we have 4 listed species in our 170,000 acre Cascades project area, but 281 other vertebrate species, some of which would likely be listed within the next few years. Combine this with the challenges of checkerboard ownership where every even-numbered square mile section is managed by the Federal Government under their new Northwest Forest Plan and you have a planning challenge of landscape proportions. To meet this challenge, we assembled a team of scientists representing company staff, independent consultants and academic experts. We authored 13 technical reports covering every scientific aspect from spotted owl biology to watershed analysis. We sought the peer reviews of 47 outside scientists as well as State and Federal agency inputs. As a result of these inputs, we made technical and tactical changes

to the plan. And additionally, we developed working relationships with outside professionals that were invaluable and have been maintained to this date.

Let's also dispel the myth that the public has no access or input to HCPs. During the preparation of the Cascades HCP which took 2 years and $2 million, we conducted over 50 briefings with outside groups and agencies to discuss our findings and obtain additional advice and input. During the public comment period, all HCP documents and scientific reports were placed in 8 public libraries across the planning area.

I have brought with me the major documents from Plum Creek's Cascades HCP, completed in 1996. These documents include the final HCP, the draft and final EIS, a compendium of the 13 peer-reviewed technical reports, and a binder of decision-making documents completed by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. We continue to publish our scientific work for the HCP in technical publications as this peer-reviewed article on spotted owl habitat in this month's *Journal of Forestry* attests.

Today Plum Creek is nearing completion of a new HCP. This new Plan focuses on 8 aquatic species, and covers 1.8 million acres of our lands in Montana, Idaho and Washington. The company and the Services have been working over 2 years on this plan, which will be the first HCP for the Rocky Mountain region. To provide the scientific foundation for this HCP, we assembled a team of 17 scientists that authored 13 technical reports spanning topics from fish biology to riparian habitat modeling. These technical reports were peer-reviewed by 30 outside scientists and agency specialists. We have made all the technical reports and white papers for the Native Fish HCP available to all interested parties on a CD, and have done so well in advance of the public release of the HCP, which is scheduled for September 1. The good news is that anyone can have access to the latest science and technology used in the development of this HCP.

My point here it is to emphasize that for Plum Creek and other applicants, the HCP process has been the principal catalyst for private landowners to undertake unprecedented levels of scientific research and public involvement. Each successful HCP is a scientific accomplishment. And the science immediately becomes part of the public domain.

Let me give you some specific examples of public benefits from our Cascades HCP which has been operating successfully for over 2 years. Since its inception, we have discovered the presence of 2 species of concern, the Larch Mountain Salamander and the marbled murrelet, which were previously thought to be absent from our area. Moreover, habitat management and research on the northern goshawk has been active in the HCP area, despite the fact that the Fish and Wildlife Service decided not to list the species last year. Additionally, Plum Creek is actively pursuing a plan to reintroduce the bull trout, a newly listed Federal species, to our lands in the HCP area, because the habitat is optimal, and the company no longer fears the presence of a listed species on its lands covered by the HCP.

Another aspect of good HCPs, essentially another way of relying on good science, is to incorporate effective monitoring and adaptive management. As a scientist, I always want more information. Adaptive management is a challenging blend of rigorous science and practical management designed to provide the basis for "learning by doing". Adaptive management is more easily discussed in the classroom than done on the ground.

Within the context of habitat conservation plans, adaptive management represents an agreement between the Services and the applicant whereby management actions will be modified in response to new information. Adaptive management can be used to address significant "leaps of faith" in HCPs where there is dependence on models or adoption of untested conservation measures. However, there is "dynamic tension" between the implementation of adaptive management in HCPs and adherence to the "No Surprises" policy that limits the amount of additional mitigation that can be required of an applicant, unless unforeseen circumstances occur. Adaptive management provides the flexibility to deal with uncertainty within the sideboards of the recently revised "No Surprises" policy.

Ultimately, good HCPs come from good science and good motives. Neither lofty policy objectives nor idealized public participation should overtake the science. Federal agencies must be encouraged and enabled to make sound, prompt, scientifically based decisions that allow land owners a fair, fast path to conservation, underlain by dependable safeguards for both the private and the public interest.

Mr. Chairman, these HCPs are not only science plans but also business plans which commit millions of dollars of a companies assets in a binding agreement with the Federal Government. In the Pacific Northwest, the stakes are high for both conservation and shareholder value in private timberlands. The consequences of failure are so ominous for both interests that careful evaluation of the economic and

ecologic ramifications are essential to successful completion of HCPs. "Guesswork" is not an acceptable alternative for either the Services or applicants.

Nor should we delay or defer essential conservation simply because we are afraid to try. Adaptive management provides the "safety net" for HCPs as well as the rules of the road for acceptably making "mid-course corrections" as new information and insight warrants.

As a major landowner and one committed to the highest possible environmental standards, we anticipate and try to lead in these areas. For example, we understood the concerns raised over the last several years that citizens and interest groups sought more access to the process of creating HCPs. We believe that landowners must remain in the driver's seat as to whether and how to build an HCP. In assembling our Native Fish HCP, we anticipated the Department of Interior's new 5-point plan setting new guidelines for HCPs, and have fully complied with it in advance, especially as it pertains to public involvement.

As enthusiastic as we are about HCPs, the process is not without its faults. Since our first foray into HCPs, we have noted some significant shifts in policy and practice. One downstream effect of the 5 points policy has been the requirement of the Services to more thoroughly analyze the "effects" of adding multiple species to the HCP, resulting in deletion of conservation measures for lesser known species because the Services lack the information needed to complete their new requirements. This creates a major obstacle for completion of multispecies plans.

There is a need for the Services to commit necessary resources and personnel to the development of HCPs from beginning to end, a period often as long as 2 years. Far too often, we experience shifts in key agency staff and biologists whereby professional experience is lost and continuity in plan development is broken.

Once the majority of the scientific content of the plan has been completed, we have also experienced an excessive focus on relatively minor technical details. These are often speculative or hypothetical issues that are unproven in the literature, but for which there are strong emotional concerns. In other words, with 95 percent of the scientific work completed, most the debate centers on the remaining 5 percent, creating unnecessary delays.

As we near completion of the Native Fish HCP, we are again reminded of the duplicative nature of the HCP and NEPA processes. The HCP is by definition a mitigation plan for the potential impact of lawful operations on listed species and their habitats. The NEPA process also requires a similar assessment of the HCP and management alternatives. Not only does this require the added expense and resources to duplicate work already done, but requires additional review and response by the Services.

As you are aware, many of the HCPs being completed in the west require both the US Fish and Wildlife Service and the National Marine Fisheries Service to work with the applicant and approve the final plan. Despite their efforts, these two agencies do not work in synch. The agencies provide varying levels of technical support to applicants. The combined effect of this lack of interagency coordination is further time delays to the applicant.

Mr. Chairman I thank you for the opportunity to testify before you today. The 2 days of testimony should provide the committee with a better understanding of the complexities of HCPs. I hope my testimony has given you an appreciation of the strategic value of HCPs for both the conservation of species and the protection of resource economies.

RESPONSES BY DR. LORIN HICKS TO ADDITIONAL QUESTIONS FROM SENATOR CHAFEE

Question 1. Several scientists have suggested that HCPs should be subject to peer review. Would you agree with that suggestion and, if so, how do you believe that peer review should be incorporated into the HCP process? Who should conduct the peer review?

Response. HCPs are too difficult to peer review in a traditional sense. This is because HCP's are usually specific to a particular applicant's landscape and methods of operation. Also, they are the result of negotiations between an applicant and agency and as such represent a "best fit" compromise balancing the economic concerns of the applicant and the ecological concerns of the agencies; the final result is, therefore, a policy document, based not only upon science but also upon management rationale and operational practicality. Consequently it is extremely difficult for an outside group of scientists to simply pick up an HCP and review it as they would a technical manuscript for publication.

I offer three suggestions for scientific review of HCPs. The first is to urge the applicant to designate a *science team* comprised of outside experts and internal staff

to develop a technical strategy for the HCP. This mix of external and internal expertise will result in a more balanced scientific perspective.

The second suggestion is to have the *scientific foundations* of the HCP reviewed by outside technical experts. This could be accomplished by having technical reports generated by the applicant and agency science teams reviewed during preparation, or conducting a technical workshop where the technical issues and approaches used to address them in the HCP can be discussed.

Finally, the HCP and attendant NEPA documents could be *distributed to several pertinent professional groups* (such as the Society of American Foresters, the American Fisheries Society, Society for Soil and Water Conservation, Society for Range Management) with a request for them to review the document and provide comments during the NEPA comment period.

Question 2. Several scientists have suggested that a national data base of all HCPs and scientific information about listed species be developed to help inform future HCPs. The data base would presumably keep track of the numbers of individual species populations, habitat, monitoring data, and conservation measures. How useful would such a data base have been for Plum Creek in developing its HCPs? Do you believe that a data base of this kind would be useful to other HCP applicants?

Response. If such a data base existed, it would be foolish of an HCP applicant to ignore such a resource in the preparation of their plan. It should be noted however, that the most recent HCPs in the Northwest that I am familiar with have included extensive reviews of the literature and technical information that is available and pertinent to the planning area. Consequently, I would expect that most of the references and resources the data base would offer to these previous efforts would already have been tapped by the applicants.

Another concern is the effort required to update a data base of this magnitude. I am aware of several other efforts to "catalog" HCPs, most notably the US Fish and Wildlife Service and The National Center for Environmental Decision Making Research (see *http://www.ncedr.org*). One beneficial side effect of creating such a data base may be to help orient agency biologists who are pressed into service as HCP staff but may not be familiar with the literature and approaches used in the plans to date.

A final concern with the data base approach. Care must be given to correctly characterize the content and approaches used in other HCPs. The Washington DNR contracted out a comparison of HCPs in the Pacific Northwest as part of the development of their HCP. It contained numerous errors and misconceptions about the plans completed and implemented by other HCP applicants.

Question 3. Plum Creek's HCP includes a substantial monitoring program. Can you please describe to us how Plum Creek developed the program, and in particular, how it defined the objectives of the monitoring component and how Plum Creek intends to use the results of the monitoring? Did you work with scientists outside of Plum Creek to develop this monitoring program or subject to external peer review?

Response. Plum Creek designed the monitoring program for its Cascades HCP using input from 3 different sources. The first was *input from scientists* who helped develop the scientific strategy for the HCP. Through their involvement and interaction, we were able to understand which elements of the HCP represented scientific "leap of faith" in the sense that hypothetical models were being used or new conservation measures were being implemented. We also had the opportunity to get their response to ideas and approaches we considered to address the monitoring issues that surfaced. This amounted to an "interactive peer review" from academic, independent and staff scientists that were involved in the construction of the HCP, or reviewed the technical reports prepared in advance of the HCP.

The second source of input for the monitoring program was the *State and Federal agencies* that were consulted in the development of the HCP. Having worked with these folks since the early stages of HCP development, we were able to develop a "ledger" of technical ideas and issues that needed to be addressed by monitoring and research. We turned to this "ledger" as one of the final stages of the HCP discussions. At this stage, the agencies were knowledgeable about the direction we were headed in the plan, and what opportunities we had to further our collective knowledge on the ecological issues and how well the HCP addressed them.

The third source of input for monitoring was *our own foresters and managers* who wanted to know that the effort and expense encountered in implementing the numerous HCP mitigation measures was justified by having the desired biological effect. They also wanted to evaluate the feasibility of developing alternative approaches or actions that might lower the cost or improve the efficiency of meeting

the HCP objectives. Last, they provided insight on the operational feasibility of the monitoring activity.

The 3 objectives of the Cascades HCP research and monitoring program can be summarized in the following 3 questions we repeatedly encountered in the preparation of the HCP:

1. What specific areas or issues in the HCP needed to be addressed by research and monitoring (e.g. spotted owl habitat models, the effectiveness of riparian buffers, etc)?
2. How could this work be done to maintain confidence and credibility in the answer and reduce costs to Plum Creek where possible (e.g. sponsoring work through universities, working with State / Federal monitoring programs)?
3. When was the information needed to meet specific HCP review targets specified in the HCP?

After 3 years of HCP implementation, our experience to date indicates that our selection of issues was accurate. Implementation of the actual monitoring studies and approaches has been benefited by discussing these projects closer to the actual time of putting them on the ground. Consequently, my advice is that applicants should "delay the details" of how all their monitoring projects would be implemented on the ground in order to provide flexibility to respond to additional input and site conditions.

Question 4. You stated in your testimony that you would like the "No Surprises" to be codified. Why is that?

Response. Our desire to have the "No Surprises" concept codified in the ESA stems from the belief that this is a very powerful incentive for landowners to come to the table with significant long term commitments for conservation of species that are currently listed or could potentially be listed under the Act in the near future. Private landowners whose businesses must take a long term perspective (e.g. 40 year forest rotations) are willing to make substantial commitments to go beyond current protection requirements if they believe that by doing so they can be protected from the vagaries of future restrictions emanating from new rules and regulations. This incentive seems to be even more powerful that other proposals that have been offered such as tax rebates and compensations to get landowners to voluntarily offer more protection for wildlife resources. Institutionalizing this incentive in the ESA along with the HCP process is a tangible demonstration by the Federal Government that the "No Surprises" concept is not subject to the interpretations and modifications of agencies and administrations. This seems even more appropriate, given the fact that some of the commitments made by HCP applicants span decades of investment and implementation.

Without codification in the ESA, it is thought that the "No Surprises" concept will be continuously challenged in the courts and could potentially become the "illusion of solution" whereby an assurance may be offered to an applicant to extract a conservation commitment, only to find out later that the applicant will be subject to more review and revision as policies, regulations and expectations change.

Question 5. Some landowners have expressed concerns that the concept of adaptive management undermines or negates the No Surprises assurances that are critical to HCPs. However, you have argued that adaptive management is simply a means for allowing for "mid-course corrections" in your plan. Can you describe how the adaptive management provisions and the No Surprises assurances work together in the context of Plum Creek's HCP?

Response. We consider the "dynamic tension" created by adaptive management and the "No Surprises" policy to be a positive "checks and balances" system to insure that HCPs are responsive to new information without unduly burdening an applicant with excessive monitoring costs and uncertainty about the government's commitment to the plan. Adaptive management provides the flexibility to deal with the uncertainty issue within the sideboards of the recently revised "No Surprises" policy. It also helps define a data-based decisionmaking system to which both the Services and the applicant can commit resources that will resolve differences while insulating the HCP from arbitrary decisions from either party.

As I mentioned earlier (response 3), HCPs can address areas of significant scientific uncertainty which can be addressed with adaptive management. The level of adaptive management (research and monitoring) needs to match the scientific complexity of the plan. In the Cascade HCP, Plum Creek used adaptive management to address specific areas of scientific uncertainty such as dependence on mathematical models or implementation of new conservation measures. The information obtained from adaptive management gives us a "report card" on how well the HCP is addressing the biological goals for the plan. The Cascades HCP describes a process by which Plum Creek and the Services identify and resolve plan revision issues

in a cooperative manner. If research and monitoring indicates that specific habitat goals are not being met and there is a risk of adverse impact to the permit species, then Plum Creek and the Services will meet to determine what changes may be necessary to construct a positive solution. This solution must start with the assumption that no additional land or money can be unilaterally extracted from the company unless unforeseen circumstances occur (such as a fire or other catastrophic event). Solutions in this area might include rearrangement of the network of spotted owl harvest deferrals to address a specific geographic concerns. The Services retain the option of "reopening" an HCP if monitoring data suggests that the permit species are likely to be jeopardized by the continued implementation of the HCP.

William Vogel (USFWS Habitat Conservation Planning Program, Olympia, Wash.) identified some desirable components of an HCP adaptive management strategy, from a "permitting agency" perspective:

- *Base strategy* [continuing]. A set of measures and prescriptions that are sufficiently robust so that the Services have a fair amount of confidence that they will be successful.
- *Feedback.*—Clearly defined levels that will trigger changes to the base strategy, linked to monitoring variables.
- *Implementation.*—Assurances to the Services that conservation measures will increase if needed. These assurances can be received if an applicant (1) waives the assurances policy with regard to the adaptive component of the HCP or (2) defines mitigation as achieving the objective rather than merely carrying out the prescription. The latter scenario is preferred by the Services.
- *Limits to adjustment.*—It is acceptable for the Services to compromise with an applicant so that the investments made for conservation can be limited, establishing an upper limit beyond which the assurances policy would apply and applicant would not be required to provide additional mitigation, absent unforeseen circumstances.
- *Adjustment increments.*—Where possible, develop a mechanism whereby incremental adjustments can be made to a strategy (e.g., riparian management), based on monitoring information and continued testing. The timing of the change and how the parties work together to notify one another are important considerations. It is important to have these processes worked out in advance so the agencies and applicant can respond quickly when action is necessary.
- *External factors.*—It is possible for the Services to commit to the need for differentiating between cause and effect, but they must ensure that they will be able to differentiate external factors (e.g., land management actions by others). Where possible, experimental design for adaptive management projects should be robust enough to differentiate treatment effects related to management strategies from external effects independent of land management actions. For example many factors may affect fish densities in streams (e.g., angling pressure) independent of habitat-related components such as large woody debris loading in streams.
- *Direction of change.*—As a result of adaptive management, some conservation measures may become either more conservative (e.g., setting aside more habitat) or more aggressive (e.g., actively managing more habitat) compared to actions originally agreed upon with the Services. If the change desired is to become more conservative, the Services should document that change in cooperation with the applicant. However, if the change would be to become more aggressive in management, the Services should perform an assessment of other impacts that may result, particularly when dealing with multiple species. If the amount of "take" were to increase, then a permit amendment might likely be necessary. Similarly, for a landowner to be motivated to offer meaningful adaptive management projects under an HCP, there has to be a high level of confidence that changes in protection levels can go either way under the guidance of better science. Incentive is preserved when acceptable levels of change are predetermined and well-defined contingencies and sideboards to the extent of changes are developed. This is a particular concern, which must be addressed in the design of monitoring programs to allow some inference into which factors are influencing response variables.

Habitat Conservation Planning is effective when a landowner is motivated to offer meaningful conservation through management prescriptions in order to receive greater certainty for management over the long term. However, when incomplete science creates uncertainty, assurances through simple prescriptions may be inadequate. While the permitting agencies need the confidence that improved science will be taken into consideration into the future, the landowner needs to be confident that conservation dollars expended will be cost effective and will benefit the resource. *Since it is in both parties' interest not to postpone conservation to pursue more complete science. adaptive management becomes the tool to begin implementing conservation measures and improving certainty while science becomes more complete.*

STATEMENT OF STEVEN P. COURTNEY PH.D., SUSTAINABLE ECOSYSTEMS INSTITUTE

Good Morning. I am Steven Courtney, a biologist, and Vice-President of Sustainable Ecosystems Institute. SEI is a non-profit organization, dedicated to using science to solve environmental problems. We are not an advocacy group, and our charter states that we will not engage in litigation. Instead we believe that cooperative programs, using good science, can find lasting solutions. My testimony will focus on the positive lessons that can be learnt about Habitat Conservation Plans. I will also make suggestions for improving the process.

SEI has a staff of 20 scientists, including wildlife biologists, foresters, and marine ecologists. We are active in many ESA issues, advising on listing decisions and conservation measures, carrying out research, sitting on Recovery Teams, and helping with HCPs. Most of our work is for government, but we also work closely with both industry and environmental groups. I have personally been involved with six HCPs, and was advisor to Dr. Kareiva on the AIBS project. I will report on two issues: the recently completed Pacific Lumber HCP, and the SEI Santa Barbara meeting on integrating science into HCPs.

HCPs are important to conservation. Without HCPs there would be few options for management of endangered species on non-Federal lands. Rigorous scientific analyses are crucial to these plans. However science is just part of any HCP. Ultimately the Plan is the result of negotiation, and of decisions made by landowners and regulatory agencies. Science can help in this process, but it is not a magic bullet. Scientists can provide information on planning objectives and options, and on the biological consequences and risks of these options. The better the information provided by scientists, the more likely that planners will make good decisions.

In the Pacific Lumber HCP, we used science to defuse a controversial situation. We coordinated a large scientific program on the threatened Marbled Murrelet. Federal, State and private scientists cooperated to determine the effects of different management options. Ultimately the program was successful, in that it provided clear guidance to decisionmakers. Several items stand out: Firstly, the program was well-funded by the company, which invested heavily in obtaining good scientific information. Second, the quality of the scientific work was improved by an independent advisory or "peer review" panel. In the accompanying chart, I show the results of an independent audit of the PalCo HCP, using the same techniques as used in the AIBS study. You will see that the quality of the HCP improved dramatically from the early (1997) to the final draft, under panel guidance. Note also that the final plan outperforms other Murrelet HCPs that did not have such guidance.

A third important point on the Pacific Lumber HCP was that the scientists were not asked to make management decisions. This separation of roles is key. The use of good science can build trust between parties, precisely to the extent that scientists avoid becoming advocates.

I am pleased that Dr. Kareiva, in his discussion of the AIBS study, agrees that the PalCo Murrelet monitoring plan uses good science. This monitoring program was developed using the most advanced analytical techniques available. The AIBS study was useful in pointing out that not all HCPs do use such methods, or even information that already exists. However the AIBS investigation was essentially a research study—it did not address important practical considerations and limitations, or how to best improve the process.

In April of this year, SEI (with NCEAS and other support) brought together leading decisionmakers and scientists to develop practical improvements. Participants included academics, representatives of environmental and industry groups, and of Federal and State agencies. Working by consensus, we identified numerous ways to strengthen and improve the process (as outlined in the minutes of the meeting). There was for instance general recognition that the regulatory agencies, and many HCP applicants lack sufficient resources for the technically demanding tasks they face. Academic and other scientists can help to bridge these gaps, but often lack incentives or opportunities to do so. Most importantly there are significant barriers to making more effective use of science. We need new infrastructure to make this happen.

The SEI Santa Barbara group initiated development of a national peer review program for HCPs. We are now working to make this a reality, and have expanded our group to include leaders from professional societies, and other partners. By this consensus approach, we are seeking voluntary improvements to HCPs. By improving the science in their plans, permit applicants will smooth the negotiation process, save time and money, and gain certainty that their plans will be approved. The general public also wants to see better science in HCPs—an open peer review process will improve public confidence in ESA decisions.

ACTION ITEMS FROM THE SEI SANTA BARBARA GROUP

1. *Publication of conclusions.*—The minutes have been distributed. Brosnan will take the lead in writing up the discussions in a format suitable for dissemination or publication.

2. *Peer review and Involvement of independent scientists.*—SEI will coordinate a group (including those present) who will develop the new infrastructure for such involvement. The group will identify strategies for dealing with issues of impartiality, training, funding, etc.

3. *Production of a document on 'how to make a good HCP'.*—This will not be an advocacy document, but a roadmap for applicants who want to do a good job. SEI will discuss with the various parties whether they wish to participate in production of such a document.

4. *Biological goals.*—The Group recommended that scientists engage with the USFWS and help in the delineation of biological goals, generally, and at the species level. Scientists need to play a role in large scale analysis of species and conservation efforts, and "conservation blueprints," or master plans, should be developed as early as during the listing process in order to guide the biological goals and objectives of HCPs and, ideally, to create closer links between HCPs and recovery. USFWS will seek help when appropriate, but proactive involvement of the scientific community in this process would be highly desirable.

5. *Monitoring.*—The Group recommended that scientists provide guidance to the Services on setting general monitoring standards and objectives. This might include explicit statistical treatment of, for instance, Type 11 errors, and the appropriate level of confidence for making decisions under the precautionary principle. The professional societies might help here.

6. *Uncertainty and risk.*—An explicit treatment of uncertainty should be a part of any HCP. It is important to keep a complete administrative record that acknowledges risks, and how these are assessed and dealt with. Decision-makers (agency and applicant) will make the call, but scientists need to provide clear statements where possible. HCPs should articulate information gaps. These should not be seen as liabilities, or targets for litigation, but as real needs, which have to be dealt with. The precautionary principle, adaptive management, and well-designed monitoring can all be appropriate ways of dealing with uncertainty.

Population Viability Analyses are favored by some, but are not always useful in resolving problems. Sometimes PVA is most useful in telling you what you don't know (this can guide decisionmakers, and help identify where additional research is necessary). PVA is not a blanket solution, and decisionmakers should be aware of its limitations.

Most of the tools for dealing with uncertainty are already available. However they are brought piecemeal to HCPs, depending on the experience of those preparing the plans. We need a more consistent approach, which might be fostered by a "guidance document."

7. *Further analyses.*—The Group noted that the AIBS/NCEAS study could be taken further, with additional work on, for instance, the context of the individual HCPs (is good science correlated with a good HCP?), how uncertainty was dealt with, the adequacy of peer review, etc. There might be value in including other conservation plans (e.g. Federal plans) in the analysis, to determine whether HCPs fare well or poorly in comparative terms. The existing study group members were encouraged to pursue these lines, which would make the study results more useful to managers.

RESPONSES BY STEVE P. COURTNEY TO ADDITIONAL QUESTIONS FROM SENATOR CHAFEE

Question 1. What is the role of the scientist in the development of an HCP?

Response. Scientists are trained in science, but not typically in decisionmaking or resource management. In the HCP process they are best employed in a technical role, providing the necessary data for a manager to make decisions. It is important to emphasize that scientists should have advisory roles. They are uniquely qualified to evaluate probabilities of success, and risks of failure. Scientists should however normally be restricted to this advisory role. Managers, who are trained in balancing such risks against other concerns, must be the decisionmakers. Problems arise when scientists or managers attempt to take other's roles (Brosnan and Manasse 1999)

HCPs are complex management documents. Although some independent scientists (typically consultants) are engaged in HCP work, most scientists working on HCPs are (and will continue to be) based in academia. While this is an excellent way to ensure independent science, academics are often inexperienced in advising manage-

ment decisions. Because academics are highly trained professionals in their field, they may be tempted to insert themselves into the management arena. This temptation needs to be resisted. Scientists, with some exceptions, should be restricted to their area of expertise. The AIBS report, for instance, is an excellent *scientific* study of HCPs; the recommendations of this report for *science* are to the point. For instance, data base management and use of peer review are both standard scientific techniques that have been sadly lacking in HCP science. Most of the AIBS study participants however lacked any in-depth experience of working HCPs (or indeed management decisions). Hence the report's statements on (for instance) adequacy of information for decisionmaking have drawn extensive criticism by managers and the administration (statement by USFWS; testimony of D.Barry).

One of the most important tasks of a scientist in the HCP arena is to describe the risks and uncertainty inherent in any action. Conservation planning is a difficult task, with many interacting factors (Noss et al 1997). It is essential that we deal honestly with the uncertainties in such processes. Managers may be tempted to avoid statements of uncertainty, believing that this will increase the vulnerability of a plan to scientific or legal challenge. This temptation must also be resisted. Explicit statements of uncertainty are essential to any evaluation of an HCP. Management provisions for dealing with such risks (precautionary measures, adaptive management etc.), as well as the final decision on what constitutes acceptable risk, are the purview of the manager.

HCPs are collaborative documents. They should reflect an exchange of ideas between managers and scientists, regulators and applicants. Scientists may have a role in suggesting management alternatives, and in helping managers identify options. However scientists should not become advocates for particular options.

Scientists can also be used as reviewers (either before or after management options are fully developed). For instance, scientists can examine management decisions or options and determine whether such options are based on scientific evidence, and are "consistent" with scientific information. This information can then be used to help guide final decisions, and may also be useful to the interested public. The US Forest Service has recently attempted such a "science consistency check" for the Tongass National Forest (US Forest Service PNW GTR 1998; Brosnan 1999).

An important and underestimated role in the HCP process is "interpreter". An individual HCP may involve several different technical specialists, as well as applicants and regulators who are unfamiliar with these disciplines. Some large HCPs for instance employ economists, population demographic modelers, wildlife biologists, hydrologists, soil scientists and others. It is unlikely that either the regulatory agencies or the applicant (or indeed the public) have much understanding of all these fields. A science manager who can interpret across these fields, and between the different parties, can greatly ease the HCP development process. In some HCPs, scientists with management experience have filled this role. As large-scale, multispecies HCPs become more common, the need for technically proficient interpreters will increase.

Question 2. Several scientists have suggested that HCPs should be subject to a rigorous peer review process. Do you agree with that suggestion? How should peer review be incorporated into the HCP planning process?

Response. Peer review of HCPs has been advocated by a wide diversity of groups, including many scientists. Brosnan (1999) provides a summary table showing how strong is the consensus for incorporating peer review. Non-scientists and scientists alike believe that peer-review is essential to strengthening the science used in ESA actions. Important scientific voices for peer review include an expert panel of conservation biologists (Meffe et al. 1998), the authors of the AIBS report (Kareiva et al. 1999), and the broad coalition of the SEI Santa Barbara group (SEI 1999).

Peer review is a normal component of science. It is a means whereby scientists maintain standards in their discipline, and ensure that poor quality work is exposed as such. The science used in HCPs should be subject to quality control. Well-crafted HCPs have typically been open to such review, and have incorporated suggested changes. HCPs that are less well developed have often lacked such review. In one case (Fort Morgan HCP for the Alabama Beach Mouse) a court has determined that the science failed to meet acceptable standards (As a scientist, I concur with this opinion). Review would ensure that HCPs are complete and incorporate reasonable science. Moreover, review *early* in the process would ensure that applicants do not expend resources on scientifically unsupported options. Laura Hood (Defenders of Wildlife) in her testimony before this subcommittee makes these points well.

HCPs are however not just scientific documents, and cannot be reviewed as such. Peer review will be useful in the HCP process *only* if the current review practices are adapted to management-oriented documents. The SEI Santa Barbara group

(1999) has warned that applying "academic" peer review to HCPs may cause unexpected problems. The following points are developed from the report of this consensus group, which included scientists, and representatives from HCP applicants, environmental groups, and government agencies.

Peer-review must be voluntary not mandatory. Since the HCP process is applicant driven, the regulatory agencies cannot require that applicants obtain the early involvement of independent scientists. The agencies can of course encourage applicants to incorporate early scientific review. There are many incentives to applicants to do this. By using good science, applicants will get a better plan, which is less likely to change, and is more immune to challenge. The report of the SEI Santa Barbara group sets out in detail the many incentives for an applicant to voluntarily adopt independent peer review.

Scientists need training in how to review HCPs. Typical "academic" peer review are anonymous, proceed at a leisurely pace (up to 6 months) and are concerned with whether the science meets certain standards. HCPs need immediate review, often by scientists who are willing to remain involved and develop new options. Also it is important to recognize that the regulatory agency cannot defer-decisions until such time as scientific evidence is "complete". Again, the SEI Santa Barbara group has detailed the differences inherent in reviews of applied science, and indicated how scientists typically need to be trained to understand such differences.

Peer review needs independent oversight. The existing mechanisms for peer review (administered by scientific societies, the National Academy, applicants, agencies or interest groups) all have problems. Parties to the HCP cannot administer an *independent* process of peer review. Similarly, critics of HCPs (such as environmental groups and their allies) will not be seen as independent. Conversely, existing independent scientific groups lack understanding and experience of on-the-ground HCP management. The SEI Santa Barbara group emphasized that new infrastructure was needed, and that this should be developed from a consensus of all affected parties (including HCP applicants, environmentalists, and regulatory agencies). This group is now developing a nation-wide program for involvement and oversight of independent science in HCPs. In 1999, we anticipate two demonstration HCPs, whereby landowners will *voluntarily* open their planning and application process to independent scientific advice.

Not all HCPs need peer review. Neither do all HCPs need the same type of peer review. Laura Hood in her testimony to this subcommittee suggests that some HCPs may not need review. I concur, in that small HCPs of minimal effect may not involve detailed scientific analysis. Large HCPs, or those affecting many species, or large numbers of particular species, should be subject to closer scrutiny. In some cases, this will require a team of reviewers; in other cases a much smaller group will be needed. Similarly, in some cases, scientists will be needed to advise over a period of years, through both development and implementation of the plan. In other cases, a simple science consistency check may be sufficient. There should be no "one size fits all" approach, but a recognition that different circumstances will require a flexible review process.

Question 3. Can you expand on the thought that there are significant barriers to making more effective use of science? Do you feel that the barriers exist just in developing HCPs or do they also exist in the listing and recovery processes?

Response. There are many barriers to making more effective use of science. Such barriers, deliberate or inadvertent, occur in all organizations that are involved with HCPs. For instance, the regulatory agencies are woefully understaffed and underfunded. This significantly impairs the ability of the USFWS and NMFS to respond in a timely manner to endangered species issues. Preparing a regulatory decision with such minimal staffing is a poor recipe for success. Very often, important land management decisions are made under a mandated timeframe, by staff who lack first-hand experience and training in advanced scientific tools. Only significant increases in the agencies' budgets can change this situation, so that adequate staffing and training is available.

Scientists also lack incentives to be involved in endangered species actions (and experience many disincentives). An academic, for instance, must answer to the priorities of his or her host institution—typically grant support, scientific publication, and cutting-edge research. A scientist that engages in extensive applied work for the public benefit will probably suffer when considered for tenure and promotion. Similarly, attracting public comment, through involvement with endangered species debates, is probably not a good career move. SEI is now working with the USFWS to establish stronger incentives for scientists to engage with ESA issues.

Science, by its very nature is a public process; an HOP application is often a closed process. Landowners need to be encouraged to open up the HOP development

process to scientific involvement. Unfortunately, concerns about litigation may discourage landowners from seeking such input.

Science is costly, and follows its own tempo. Landowners are reluctant to take on heavy costs, and engage in a lengthy process. Cost-sharing, and streamlining measures (such as explicit statements of biological goals) would materially help this situation.

Listing decisions. Unfortunately, many high-profile listing decisions are made after litigation. Just some of the species that have been litigated in this way include: Northern Spotted Owl, Marbled Murrelet, Bull Trout, Canadian Lynx, Northern Goshawk, many anadromous fish. Science is often used in support of advocacy positions (for or against listing) but rarely is developed in a consensus approach. Several measures could change this situation. Most importantly the regulatory agencies need more resources, including sufficient support to seek help from outside scientists (through paid consultancies if necessary). The current staff of the agencies is overworked, undertrained in advanced demographic techniques (such as PVA) that are needed to make decisions, and increasingly engaged in defensive litigation.

Second, independent scientists (particularly in academia) have shown a very poor response to requests for assistance. Only one in six scientists, when asked by USFWS to review listing decisions, bothers to reply. Although there is a cogent "public good" argument for such involvement, the reality is that academics get little or no reward for helping the Service. SEI is currently working with USFWS to develop new incentives that will encourage active involvement of independent scientists with listing decisions. We expect these measures to be put in place in a matter of weeks.

Recovery is typically guided by a Recovery Plan, which is developed by a Recovery Team, subject to an EIS, and implemented by agency staff. Development and implementation of the plan is also subject to comment by different interest groups, who may advocate alternative solutions. In theory then, the recovery process is more open than listing or HOP actions, and should be guided by better science. In many cases, this is the case: Recovery Plans provide the best blueprint for making management decisions. Unfortunately, new problems may also arise at this stage. For instance, Recovery Team members are not selected in an open manner, following public input. This has led to widespread accusations of imbalance.

Recovery Team members may sometimes have their own agendas. One Recovery Team, for instance, includes three consultants and one academic who obtain direct personal benefit from the species in question. The Recovery Plan for this species includes a proposal for the Team to be engaged in all future research projects for the species. Another Plan was prepared by an outside consultant, who made recommendations for funding of his organization's research. Administrative changes should be adopted that limit the potential for conflicts of interest.

Recovery Plans take a long time to develop, and are complete for a minority of species. This is truly unfortunate, given that the species in question are acknowledged to be at risk. Science research cannot be made to run faster; however most Recovery Plans do not involve a research component, and are based on existing information. Hence increasing the resources to the agencies would be sufficient to reduce this backlog of work. Nevertheless the scientists on the Teams should be fully engaged in the task of preparing the plan, and not (as is typically the case) meet at a leisurely pace over the course of years.

Finally, there is no clear national standard for Recovery planning. Should, for instance, a species be recovered throughout its former range? (Not with Grizzlies, Wolves, Cougar, Red-Cockaded Woodpecker or many species, but it is the case for Northern Spotted Owls, and Marbled Murrelets). One recent USFWS proposal is for biological goals to be set at the time of listing. Such a statement may have real value, because it will set immediate guidelines for management, and presumably (because it is under direct agency control) follow a consistent format.

Question 4. You mentioned in your testimony that some HCP applicants are giving up on the process because of the frustrations with the existing mechanisms for developing, negotiating and obtaining final approval of HCPs. Who are they, and why are they unhappy with the process? What could be done to keep these applicants interested in participating in these conservation efforts?

Response. In answering this question, I have contacted several actual or potential applicants, only some of whom were willing to State their positions. For the most part, I am reporting on what these applicants state; where I have direct experience of a situation I have indicated so.

a. Some of the frustrations that are voiced by applicants:

i. During negotiation of the HCP, USFWS and NMFS do not provide clear goals or guidelines.

ii. There is no clear leadership during the negotiation process, so that the applicant cannot be assured that decisions made at one level will be adhered to at other levels. A frequent complaint is that an agreement reached at one level will be overturned later at a different level, or after "second thoughts".

iii. The regulatory agencies apply inconsistent standards. Different applicants are treated differently by the same staff; standards also differ between different staff, different offices, and different agencies.

iv. Some agency staff adopt negotiation stances, rather than approaching the HCP as cooperators. A common complaint is that agency staff State that a plan is insufficient, but give no further guidance. This is seen as a negotiating ploy, to extract concessions. Applicants are frustrated at the expense and delay of such protracted negotiations.

v. The regulatory agencies are so understaffed that applications take many years (5 or 6 years is common). This lack of resources also ensures that decisions are often made by junior staff that lack extensive scientific and management training.

vi. HCPs are so expensive in direct costs (HCP preparation), indirect costs (staff time) and lost opportunity costs, that they are not worth the investment. Simply selling the land at a fraction of value is a preferable option.

vii. Frequent staff turnover ensures that a lot of time is lost in negotiating with new agency staff. This problem is exacerbated later, during implementation, when the staff member who agreed to a measure is no longer available to guide implementation.

viii. Some applicants complain of the scale of the demands made by the agencies. These concerns may include the level of reserved land or mitigation, or the disproportionality of incidental take and proposed mitigation.

ix. Many applicants are concerned about the lack of certainty provided by an HCP and ITP, even under the "No Surprises" policy. The frequent litigation of HCPs, even after these have been agreed by the agencies, has led numerous applicants to withdraw from negotiations. Several applicants are concerned that overturn of the "No Surprises" policy will eliminate their existing HCPs.

x. After negotiation and approval of the HCP, the implementation process itself becomes another negotiation. Staff attempt to extract further concessions from an applicant who is anxious to recoup HCP development costs.

b. Examples

i. Stimson Lumber has put its HCP on hold. This HCP, which was for 31,000 acres of Redwood forest in Northern California, concerned Spotted Owls, Marbled Murrelets and fish. The main reasons cited for halting negotiations was frustration with the lack of leadership in the agencies. Different agencies, and staff at different levels within the same agency all had different positions. NMFS applied a standard geared to recovery, while USFWS applied a no jeopardy standard. After 2 years, and $2 Million in direct costs, the company decided that negotiations were unlikely to reach resolution until clear leadership was shown in an agency.

ii. Seaside Oregon, (through Scientific Resources). This HCP, which concerned 300 acres in coastal Oregon, concerned conservation of the Oregon Silverspot butterfly. A developer wished to develop part of the site for a golf course and housing. My students and I surveyed the site, and identified all areas where the hostplant (violets) occurred. Under the HCP, all habitat would have been preserved, and residents in the new housing would have paid yearly dues to improve the habitat. In this case, repeated requests for guidance to the responsible USFWS biologist went unanswered. Finally the applicant withdrew from the process (1993), stating that in a few years, invasion of scotch broom would eliminate the violets, and he would be free to develop the property.

iii. Presley Homes, Inc. This HCP application is currently the subject of litigation (see accompanying press releases and documentation). The HCP concerns 575 acres in suburban San Jose, slated for development as a golf-course, residences, and a nature reserve. The conservation plan concerns the Bay Checkerspot butterfly (which however has not been seen at the site for several years, and may no longer be present) and some plants. Butterflies were to have been reintroduced to the site under the HCP. The applicant states several frustrations, including lack of response from the USFWS, unreasonable demands (52 percent of the property is already set aside as reserve), and inconsistency between USFWS and the lead agency (Corps of Engineers). Butterfly surveys and development of HCP options have been guided by Dr. Dennis Murphy, who testified before this subcommittee.

iv. Sierra Pacific Industries. SPI has stopped its negotiation of an HCP for one and a half million acres of forest in California. A major frustration was stat-

ed to be a lack of consistency within and between agencies (notably the use of a "recovery" standard by NMFS, who requested "fully functioning habitat"). Currently the company is operating under no-take guidelines, and the State forest practices rules.

c. Keeping applicants at the table

i. Private lands are an important, even essential part of conservation of endangered species. Some species are found mainly or entirely on private lands. Hence it is imperative that we find a workable solution for such habitat. The Bay Checkerspot, and Oregon Silverspot (see ii and iii above) are both close to extinction, and loss of these HCPs is significant.

ii. Administrative changes that address some applicant complaints may be worthwhile. Clear decisionmaking processes, and designated lead negotiators may smooth the negotiation process. I have observed during several HCP negotiations the advantages of having one agency staffer who is both empowered to make decisions, and willing to do so. Confusion sets in when different standards are set by different agency staff.

iii. The regulatory agencies have proposed statements of *biological goals* at the time of listing. This is an entirely commendable change, that has the potential to address some applicants' concerns. To be effective, this policy should result in guidance for applicants as to how important different habitats are, and what are specific management goals. It may be useful to distinguish between recovery objectives, and actions that will avoid jeopardy. Soon after listing, the agencies should also issue species wide monitoring guidelines.

Other administrative actions that are proposed include streamlining the HCP process for plans of small effect. This will again meet the needs of some applicants (particularly small landowners). For this policy to be effective, a general species-wide guidance policy should be in place, so that "small effect" can be determined in advance, and also so that species are not subject to undue cumulative effects.

iv. HCPs are sometimes very costly. In some circumstances, it may be appropriate for agency or other public organizations to help defray these costs (e.g. small HCPs of little economic benefit, but major biological effect). These contributions might include purchase of property (in unusual circumstances), or help with the cost of scientific analysis and HCP preparation. SEI is developing such a program to cover HCP science costs for some small landowners.

v. Staff. Regulatory agencies need more staff, who are better trained in all the skills and technical aspects of plan development, and who can dedicate time to speedy resolution of a negotiation. This can only happen if the agencies are given the necessary budgets for staff and training. Resources could also be dedicated to outside contractors, who could advise agencies (in peer review, or on difficult technical issues, such as PVA), or could relieve agencies of some of their tasks (Recovery Plans are sometimes contracted out).

vi. Certainty. Many applicants are concerned that overturn of the "No Surprises" policy will remove a major incentive to development of an HCP. Crafting a policy that ensures the survival of both applicants and species would be a large contribution to ensuring applicants stay involved with HCPs.

Question 5. As a scientist, can you draw a distinction between actions that increase a species' chance of recovery and actions that do not affect extinction rates?

Response. Extinction rates affect collections of species, not individual species. I believe the thrust of this question addresses the effects of actions on extinction *risks*. The questions of Senators Crapo and Chafee for Monica Medina were crafted in this context.

Most biologists would state that there is a clear distinction between populations that are increasing, populations that are declining, and populations that are not changing in numbers. This is elementary material, to be found in any introductory ecology text. To a great extent, management actions can be interpreted simply in these terms. Cutting a tree down destroys habitat, growing a tree creates it, and doing nothing leaves the habitat unaltered. In this sense, recovery (growing a tree) would be easily distinguishable from neutral actions with no effect on extinction risks.

- NMFS (as in Ms. Medina's testimony) states that actions that promote recovery and actions that avoid jeopardy are indistinguishable. I have some difficulty with this statement. It could be that some actions have dual effects. For instance, actions that promote siltation (e.g. timber harvest) may well increase extinction risks (to the point of jeopardy); stopping such actions would not only avoid jeopardy, but might also contribute to recovery (as silt leaves the streams). In effect there would be no neutral action in this viewpoint. However actions that actively promote recovery

(e.g. addition of Coarse Woody Debris to streams, and other rehabilitation actions) seem to be recognizable as positive steps, that will promote recovery, not simply avoid jeopardy.

Question 6. Should improvements to the science of HCPs be mandatory?

Response. The science in an HCP should be *appropriate.* If the HCP is of small effect, major analyses are unnecessary. If the HCP will potentially affect an entire species, with possibly irrevocable effects, careful analysis is in order. This follows from the "precautionary principle", that is widely accepted in conservation biology (Noss et al. 1997, also see testimony of L.Hood). Hence there can be no simple mandated standard applied in a blanket fashion.

- It is the responsibility of the regulatory agencies to make a good decision on available information. Since the HCP process is applicant driven, improvements to science must be *voluntary* (in the hands of the applicant). However it is in the landowner's interest to provide good data to the agencies. This will generally result in a less conservative decision, which is both fair and swift.

Nevertheless, there are clearly deficiencies in some existing HCPs, such as the Fort Morgan HCP for the Alabama Beach Mouse. This HCP (17 pages in total length) depends on inconclusive trapping, and a statement from one person that he "knows where the mice really are". Most scientists would have trouble accepting this as a firm scientific basis for making decisions. That this HCP was approved may reflect lack of quality control by the local agency office—scientific peer review would have caught the problem. The AIBS study identified some other comparable situations, and similarly calls for peer review to establish a minimum scientific standard.

- Agencies could develop and enforce suitable scientific standards using existing policies (I see no need for changes to the ESA). However, it may well be in the interest of all parties for the agencies to work with outside entities, who could then advise on whether an HCP meets acceptable scientific standards. The SEI Santa Barbara group (involving agencies, environmentalists, applicants, and scientists) has begun development of such standards.

Some improvements to HCP *administration* should be made. Testimony before this subcommittee indicated the critical need for a national data base on HCPs. The agencies should also attempt greater coordination and consistency of standards. Inconsistency between staff, between offices, and across agencies is a frequent complaint from both HCP applicants and environmentalists.

- Most independent scientists agree that one aspect of HCP design needs nationwide improvement: monitoring. As shown by the AIBS study and other critiques of HCPs, monitoring is generally poorly designed, with few explicit links to adaptive management. Monitoring programs should be designed and coordinated at large scales (typically larger than the individual HCP) (SEI Santa Barbara group 1999). Monitoring design should therefore become an explicit responsibility of the regulatory agencies, with help from interested scientists.

Voluntary improvements to HCP science should be a common goal. The public is ill-served by mechanisms that promote closed negotiations, and allow only NEPA review. Similarly, HCP applicants should be encouraged to engage in good science as efficient business practice.

DRAFT: SCIENTIFIC PEER REVIEW IN HABITAT CONSERVATION PLANS

SCIENTIFIC INVOLVEMENT AND PEER REVIEW

SUMMARY OF PRESENTATION ON PEER REVIEW BY DEBORAH M. BROSNAN

1. Once only confined to academic profession, peer review is taking center stage as an important tool in natural resources planning and actions. Individuals and organizations on all sides of the debate are calling for peer review (Brosnan 1999), and 88 percent of Americans support peer review of ESA listings. However, it is clear that individuals and organizations differ in their definition, and expectations of peer review. Peer review is not peer approval, but rather a strict and rigorous evaluation.

2. Academic peer review and peer review for a management decision differ. Academic peer review had its origins in the learned societies of 17th and 18th centuries (e.g. Royal Society), where society officers determined which presentations and debates were published, and thus acted as gatekeepers of scientific standards. Over time and with greater specialization in science, this evolved into the editor and peer reviewer systems of today. Peer review evolved for science and was carried out by scientists, and thus all shared common training and goals (i.e. the advancement of science).

3. Unlike the participants in academic peer review, scientists and managers have different backgrounds, ask different questions and use information differently. They are not trained in each others disciplines, and decisionmakers may not know how to interpret detailed science analyses. Decision makers must make a decision regardless of the availability of science, and must often balance different factors including economic, social and legal concerns.

4. The difference among the groups can lead to a confusion of roles and expectations. It is essential that we understand the roles of each group, and what we expect and ask for in peer review.

5. Peer review should start early and be ongoing.

6. Critical issues in peer review are impartiality, independence, and experience of the reviewers. Because peer review in management situations is different, scientists often need training. Further a liaison who can communicate among the parties, and buffer the scientists from outside pressure is often essential.

7. All parties must have confidence in the peer reviewers, and it is thus essential that they all have a role in the choice of peer reviewers. There are different models of peer review depending on the circumstances.

OVERVIEW

There is widespread and strong support for scientific involvement and for peer review in natural resource and conservation actions including in the HCP process. Environmental groups (e.g. Defenders of Wildlife 1998), Department of Interior (Secretary Babbitt, 1994), State and local governments (e.g., National and Western Governors Association, 1998), the private sector (communiques issued by different stakeholders including American Farm Bureau Federation, Building Owners and Managers Association) and the scientific community (Meffe et al. 1997, Kareiva et al. 1998) have all called for and endorsed peer review. (See Brosnan 1999 for a more complete list of groups calling for peer review). The challenge now is to respond to the call and to develop the structure that meets this need. This new infrastructure should equally serve all constituents, and harness the talents of the scientific community who are ready to engage in conservation and natural resource issues.

Many individuals and organizations, including applicants, are concerned about "doing what's right" and are seeking help and assurances that their plans and actions will lead to the conservation of species and habitats. Often these groups are looking for the best available science, and are willing to make decisions based on the scientific evidence. There is recognition that the science can be the final arbitrator. Some applicants have already committed, or are willing to commit the resources necessary to ensure that plans and actions are consistent with the best scientific information.

Scientific involvement is critical to the HCP process; it should begin early and it should be iterative. To date scientific input and peer review has been sporadic, and carried out at the discretion of, and in accordance with the resources of the applicant. The HCP process is applicant driven, and there is no legal requirement for the involvement of scientists. The scientific community must bear some responsibility for articulating and communicating the need for science, and the benefits of engaging with the scientific community in HCP development. However it is not just the applicants that benefit from the involvement of scientists and peer review. Regulatory agencies and the public (including environmental groups) can have greater confidence in a plan that is science based. A plan that has passed rigorous scientific review is more likely to meet its objectives and the goals of the Endangered Species Act to conserve species and the ecosystems on which they depend. The benefits from greater scientific input in to the development of HCPs are many, and range from increased credibility to greater confidence that the best science has been appropriately incorporated into the plan. Box 1.

Box 1.

Why should applicants involve external scientists and scientific review in their HCP?

1. *It is the right thing to do.* Many HCP applicants are motivated to develop a conservation plan that makes a genuine contribution to the species' welfare. Some applicants (e.g. city or State governments) may have a public trust responsibility for wildlife resources. Engaging the scientific community provides greater assurance of meeting these goals. Some applicants are strong advocates for a scientific approach to planning. This may involve a commitment to initial research, and a full and open discussion of results. In many cases, scientific investments have resulted in new management opportunities. Simpson Timber Company for instance has carried out research on Northern Spotted Owls that has changed scientific understanding of this species requirements, and allowed less restrictive but effective management.

2. *It can resolve argument, speed up the process, and reduce cost.* The application and negotiation process can be lengthy. Discussions over several years may be necessary as participants determine options and their effects on listed species. Impartial scientific panels have arbitrated disagreements on the basis of scientific evidence, and identified research that resolved apparent conflicts. This approach has moved parties away from position based arguments and led to faster resolution. For instance in the PalCo HCP, a science advisory group identified data needs. These data were collected during the planning phase, eliminating much of the disagreement. Regulatory agencies tend to have greater confidence in plans that have a strong scientific backing, or are developed using consensus science planning. The added confidence can lead to swifter negotiations. The Irvine Company estimates that the NCCP cooperative scientific process saved significant amounts of time and money.

3. *It reduces the potential for litigation.* Citizen groups are often concerned over the credibility of an HCP. The greater the independence and expertise of the group developing the critical scientific data, the greater the confidence the public will have in the plan. This may then reduce the likelihood of legal challenges or other negative comment. When litigation does occur, an independent and credible consensus science process will be more likely to resist challenge. By contrast adversarial science where each group uses its own scientists to critique drafts promotes development of different viewpoints either of which may prevail. The very presence of a credible scientific framework to the plan, and a consensus science position may act as deterrents to litigation.

4. *It opens up lines of communication* among academia, applicants, regulatory agencies and the public. Scientists working for different parties are more likely to communicate effectively if there is an independent science facilitator or review team. The facilitator or scientists can often act as interpreters of science for the different groups thus reducing the risks of miscommunication. Communication between the different parties allows applicants to highlight the quality of their own internal research and can help to improve the credibility of "industry science" and scientists.

5. *It expands ownership of a plan.* An applicant who involves other parties in the development of an HCP is more likely to encourage ownership and subsequent support for the plan. External scientists should not be asked to advocate for the negotiated compromise, but those involved in the scientific input or peer review may be willing to defend the quality and scientific procedures used in the plan development.

6. *Increases public confidence and credibility in the HCP.* The public (including the scientific community) is more likely to have confidence in a plan that has been rigorously reviewed by the scientific community. Further involving external scientist may increase credibility after the ITP has been granted. HCP applicants, who are successful in obtaining a permit, still face implementation problems if the public opposes the plan. Consensus science planning is a positive move that may reassure the public.

7. *Assurance that the plan will work.* Applicants need to know that their plan will work. Mitigation is more likely to be successful when well designed. Further, conservation measures are more likely to preserve or improve a species' status when well crafted. A consensus scientific process is more likely to reach goals. This will in turn reduce the possibility that management changes will be triggered in the future, with additional costs to the applicant.

8. *Maintenance of continuity.* Agency staff often rotates through positions, so that those monitoring a plan's implementation and effectiveness may have little first hand experience of previous discussions. An outside scientific group may have greater continuity, providing longitudinal consistency. This may be important when plans and permits cover 50 years or more.

DISTINGUISHING BETWEEN SCIENTIFIC INVOLVEMENT AND PEER REVIEW

Many groups are calling for "peer review" in natural resource decisions, including in the HCP process. However, often these groups are looking for more than simply what academic scientists mean by peer review. Many seek scientific oversight and advice by a panel or group of independent and expert scientists. Thus, scientific involvement and peer review differs in the extent, nature of involvement, and responsibility of the scientists. Both are valuable, but it is important to understand the distinction, and to be clear on what each provides to the process.

Scientific involvement from an early stage is critical. Where early involvement has been sought it has sometimes taken the form of an independent scientific group or oversight panel convened from experts in the field (usually academic and government scientists). The role of this team is generally to provide frequent technical advice and input through the development stage, and often subsequently through the

monitoring and/or adaptive management phase. (For instance this type of scientific oversight was used in the development of the NCCP process, the Washington Department of Natural Resources HCP, Brevard County HCP, San Bruno Mountain HCP, and PalCo HCP) Where early and iterative input has been used, there is agreement by those involved that it has significantly helped the process, and ensured better science. For instance, independent scientific input has enabled the negotiators to reach agreement sooner, because the argument has been decided on the basis of scientific evidence rather than the differing positions of applicant and regulator: In the absence of scientific input, negotiations have been lengthier, and position based.

An independent scientific or oversight panel can dispense with criticisms while still early in the permitting process, and before the plans tenets have been "set in stone" They can help to form a strong scientific basis on which to build the plan, and provide credibility and assurances to concerned regulatory and public entities. For instance, a scientific oversight panel can assist with the scoping stage, the evaluation of existing data and analyses, indicate gaps in data, any needs for further research or information, and identify alternatives that might be considered. These can provide much benefit to an applicant. However, when the applicant already has a team of scientists, they may be less likely to see the benefits of outside help at the scoping stage, and view it as redundant and unnecessary, preferring to rely first on their own scientists to frame the initial document. Some applicants may be reluctant to seek outside assistance at the early phases of plan formation, simply because they do not want outside groups determining the core of their actions and business practices. It is therefore important to provide the distinction between biological input and business and management decisions.

Not all HCPs use external oversight or technical panels. For instance, the Seattle P.U.D. used consultancy with respected scientists to guide their process. Other HCPs e.g. Plum Creek Company HCP, used an internal team of scientists, who coordinated with researchers who had published relevant material. These approaches allow the applicant to retain greater control, but they place a heavier burden on the internal scientists and minimize the advantages of an external panel (e.g. arbitration) and possibly credibility with the public (including academics).

By contrast, an independent peer review tends to occur later in the development of the plan. Under this scenario expert scientists, who prior to this had no involvement in the HCP, are asked to review the science in a draft plan. The advantages of this method are that the scientists are clearly more independent of the plan, having had no role in its development. The disadvantage is that peer review often comes late in the plan, and scientists may often be perceived as advocates for the plan versus for the science. Further, it may be costly and less easy to alter a plan in the late stages of development. The recent draft of the Western Oregon HCP (Oregon Department of Forestry) uses this approach. A large review group critiqued the draft plan. On some issues all reviewers agreed, on others there was substantive disagreement with the burden for resolution of differences falling on the applicant. Scientific involvement and peer review are not mutually exclusive. For instance an applicant may chose to engage a scientific oversight panel and gain further review through an independent and external review of the draft stages.

Qualitative and initial quantitative evidence indicates that external scientific involvement and review does improve HCPs. For instance, plans involving independent scientific reviewers and panels e.g. San Bruno Mountain HCP, were highlighted as positive examples in recent reports (Defenders of Wildlife 1998), and the San Bruno Mountain HCP is still considered exemplar in the design of a monitoring program. By contrast one HCP that did not involve external and independent scientific panels was recently successfully challenged on the basis of scientific inadequacy. One study has attempted to quantify how input from an independent scientific panel changes the effectiveness of a plan. Bigger (1999) analyzed how early and later stages of the PalCo HCP differ for two species where a scientific oversight panel was engaged. He used identical methods to those of the AIBS study (Kareiva et al. 1998) for evaluating HCPs. Overall, on Marbled Murrelets (where the scientific panel was consistently engaged) the plan ranked highly compared to other HCPs in the AIBS analysis. There were also significant improvements from early to late drafts in the sections covering Marbled Murrelets, as compared to Spotted Owls. Improvement in Owl plans was greatest in the one area (monitoring) where panel oversight was sought.

SCIENTIFIC INVOLVEMENT AND PEER REVIEW IN THE HCP PROCESS

Scientific involvement and peer review in HCP process is not the same as involvement and peer review for academic journals or for academic grant proposals. In aca-

demic peer review scientists and reviewers share the same training and goals (the advancement of science) and peer reviewers make decisions on the standard of science. In HCP planning, science is one factor in a management decision that must also meet legal and other agency mandates.

To illustrate, a peer reviewer for a scientific journal might review two papers evaluating the level of endangerment of a particular species. The two papers reach the opposite conclusion because of subtle differences in sampling methods etc. A reviewer may judge that *both* papers are of high quality and sound in their methods, analysis and conclusions and recommend *both* for publication. From a scientific perspective, there is no inconsistency in this action. However, in an HCP and regulatory framework a decision must be made, and this type of perceived inconsistency is not possible.

However in the management arena, scientists must review scientific work that will be used to make a decision that affects economic and social values. Regulatory agencies will make decisions based on the science but also within the regulatory and legal framework. Further, scientists and decisionmakers do not share the same background or familiarity with each others disciplines, and this can often lead to miscommunication (e.g. Brosnan and Menasse). It is therefore critical to make the distinction between the role of managers and scientists, and to avoid confusion.

The role of independent scientists either in an advisory capacity or as peer reviewers must be understood, and clearly defined from the beginning. Scientists should only be asked to comment or advise on the science and not on the management actions. For instance in the development of an HCP scientists can evaluate data, suggest what other scientific actions are needed, who is best qualified to conduct other analyses, but they should never be asked to make management decisions. They should inform the negotiations, but not take sides in the negotiations. For peer reviewers, reviewing the adequacy of the science used in the development of an HCP is an appropriate role for a scientist, but reviewing the HCP itself is not. Further while it is appropriate for scientists to examine the adequacy of science in an HCP, it is unlikely to be appropriate for them to comment on the adequacy of overall management prescriptions. These are the prerogatives of the regulatory agencies.

It is essential that scientists who are involved in oversight and peer review serve equally all constituencies. All parties must have confidence in the expertise, integrity, and impartiality of the scientists engaged in the HCP process. To ensure this, all parties must agree on the identity of the reviewers or panel, and anonymous review should not be part of the process. While ongoing peer review can be organized by and for one group (e.g. an agency may set up a peer review process) and this may have merit in certain situations, in the HCP setting this group is likely to be regarded as biased. Further it may result in "dueling reviewers" as other groups establish their own panels. This is counter-productive to the process.

Impartiality, independence, and well established expertise are considered essential for the reviewers who serve either as peer reviewers or as part of a scientific panel. However, there is a perceived tension between an "independent" scientist and an "uninformed" one. Applicants and agencies are often concerned that a academic scientist may be unaware of the local environment, and have no knowledge of the management process and requirements and thus produce a review that may be technically accurate but useless or even counter productive for decisionmakers.

To safeguard the impartiality, independence of science, and to ensure some degree of experience and familiarity with the management arena a number of steps can be taken. These include (1) Training for scientists in what is involved in reviewing for management decisions, and how to ensure the integrity of science in the face of pressure. For instance scientists need to be aware that a decision must be made regardless of the availability of science, and that regulating agencies make decisions within their legal mandates. (2) Providing a liaison or "science manager" who acts as the communicator between the scientists and the applicants, agencies, and public. It is essential that the liaison be a qualified scientist and familiar with management and the HCP process.

The role of the science manager or liaison is critical but under-appreciated. This person must ensure that the expectations of all parties are appropriate. The liaison must ensure that the scientists comment only on scientific issues, and refrain from, or are not pressured for, value judgments. At one and the same time it is essential to screen scientists from inappropriate pressures (e.g. to favor particular actions) while encouraging scientists to be timely and to consider all necessary materials. The science manager/liaison must also take the recommendations and action items from scientists and ensure that decisionmakers understand the value of, for example, additional research or analyses. Often the liaison staff must help evaluate uncertainties in the science for decisionmakers. Similarly they must often interpret by taking a management need and phrasing it in a form that scientists can advise on.

Finally the science manager bridges the two cultures of science and management (Brosnan and Menasse 1999), and is responsible for reducing miscommunications and frustrations and for building trust among parties.

ACCESS TO SCIENTIFIC INVOLVEMENT AND PEER REVIEW

While some applicants have the resources to engage scientific advisory panels, this may not be true in all situations (e.g. small HCPs). But this does not take away the need for scientific input. Other constituencies (agencies, citizen groups etc.) will also want to use such scientists, but are unlikely to have the adequate resources to convene them. This need can only be met by developing news ways of providing scientific input so that it is equally available to all parties.

Timeliness is critical. Often reviews of management plans are submitted to reviewers who are already overworked and over-committed, and thus reviews are either late or do not arrive at all. Academic peer reviews are often completed over several months; this will not work in management situations. Depending on what is required (i.e. the nature of the involvement) and the timing it may be important to consider remuneration or other rewards for reviewers. This may take the form of freeing reviewers from other tasks and responsibilities.

THE NEXT STEP

There has been a loud and clear clarion call for greater scientific involvement in HCPs and the ESA in general. Now is the time to respond. To move forward we need a broad-based group to develop the structure that will provide scientific involvement and peer review to all constituencies. This group must begin to define the nature and terms of involvement of scientists in the HCP process and HCP science. Participants in the NCEAS workshop are now engaged in developing such a broad-based group and structure.

CONSULTING THE ORACLE: SCIENTIFIC PEER REVIEW AND NATURAL RESOURCE MANAGEMENT

"*I count the grains of the sand, and I measure out the sea's vastness, I understand the mute, and I hear the man who does not speak.*" (Reply of Delphic Oracle to King Croesus on whether to attack the Persians (he did and lost)).

Independent scientific peer review is touted as the new "oracle" for resolving natural resource conflicts. Once a topic of conservation only among scientists, it now has popular appeal. Congress, business, religious groups, environmentalists are all calling for expanded use of scientific review. Peer review is being incorporated into new Federal and State statutes, while a recent Market Strategies poll found that 88 percent of Americans support the use of scientific peer review in the listing of species under the Endangered Species Act.

Why are we suddenly seeing such an outpouring of interest in a particular scientific method? The answer is simple; those groups advocating peer review are unhappy with decisions on biodiversity issues. These range from a general dissatisfaction with agency actions, to specific complaints about the outcome of particular listing decisions or approval of individual Habitat Conservation Plans (HCPs). Such complaints are heard from all sides of an issue. Environmentalists and development interests alike want change in how biodiversity policy is set and applied. They all believe that science will support their own viewpoint. For example the California Farm Bureau Federation states that the U.S. Fish and Wildlife Service (USFWS) disregarded peer review in the listing of fairy tadpole shrimp, despite "overwhelming scientific evidence showing that listing was not warranted". In partial remedy, the foundation recommends peer review at all levels of ESA: they. believe that, if the agency uses peer review, unwarranted listings will be avoided. At the same time, environmental groups also call for peer review of agency actions, believing that USFWS does not list enough species.

Biodiversity policy can certainly benefit from independent scientific peer review. ESA and other natural resources laws (e.g. National Forest management Act) specify the use of best available science, but are largely silent on how "best" is defined. In some cases (e.g. Magnuson Act) peer review is incorporated as a means of ensuring high quality science. In other cases peer review is not mandated but has become agency policy (e.g. USFWS). Professional ecologists themselves have begun to respond to this call. For many years, ecologists have bemoaned the lack of good science in biodiversity policy, but have tended to maintain an academic distance from the issue. The explosive growth of conservation biology as a professional discipline has changed this. Ecologists are beginning to insist on high caliber science

in resource management issues. Indeed scientists are themselves calling for better application of science in ESA, and have identified peer review as a major quality control tool (e.g. reports of NRC, AIBS/NCEAS studies).

Enthusiasm for peer review is so general, some form is likely to be incorporated into any eventual reform of ESA. Each interest group is sure that peer review will fix problems that affect their constituency. Clearly they cannot all be right. Congress appears intent on an ESA that is fairer, effective and efficient. Peer review could be one component in such reform, but an ill-conceived process will add layers of problems. The legislative history of ESA is replete with unintended consequences of actions. Before peer review is incorporated into ESA, it will be wise to consider what it is we really want.

In academia, peer review sets the standard for scientific adequacy. It is appealing to think that we can use the same process to ensure that high quality and impartial science is used in management and policy decisions. However in the rush to adopt review standards, few groups (notably scientists themselves) have considered how the arenas of science and management differ. In the absence of such critical evaluation we may be on the way to creating a new Delphic Oracle: a source of profound but useless statements.

In this article, I will show what can go wrong with peer review, and how it could harm efforts at reform. These cautionary tales lead to specific recommendations. First though, we need to identify who wants peer review, why they think it will help them, and the extent to which existing review processes would meet such goals.

WHO CALLS FOR SCIENTIFIC PEER REVIEW, AND WHAT DO THEY REALLY WANT?

A non-exhaustive search shows that all sides to the biodiversity debate are calling for independent peer review. Table 1 shows a selection of organizations calling for incorporation of review into one or another part of ESA. Farmers, timber and building interests, water users and their political allies are all calling for formal scientific peer review of listing decisions. USFWS currently attempts to incorporate local review into such decisions. However the Ecological Society of America, a professional body, opposes peer review of listings, because this would delay the listing process. Cattlemen and a broad coalition of reform advocates also advocate review of critical habitat designations.

A more diverse group proposes review of individual HCPs. Environmental groups are particularly concerned about this provision, but others supporting review of HCPs include water and building interests, and some religious groups. Professional scientific organizations also argue for review of recovery plans, and that this should take place prior to implementation of new HCPs. Note that Defenders of Wildlife call for effective scientific involvement (including peer review) at an early stage in the HCP negotiation process.

Several common themes emerge from this survey. Firstly, that there is widespread distrust of the regulatory agencies (usually USFWS and National Marine Fisheries Service, NMFS), and dissatisfaction with their administration of the ESA. Litigation has often been the result of this dissatisfaction. Judges, not independent scientists, then make rulings on scientific merit. Most of the major western listing decisions were adopted only after lawsuits (e.g. Northern Spotted Owl, Marbled Murrelet, Bull Trout, other salmonids, Lynx, etc.). Similarly an approved HOP (Paradise Joint Venture project, HOP for the Alabama Beach Mouse) has been successfully challenged on the basis of inadequate science.

Some groups want to see less litigation in ESA issues, and greater use of impartial science to settle management questions. Several arguments underlie this stance. For instance, judges are not technicians—they may therefore make the "wrong" decision. The judicial process is also overtly political, with individual judges having well-known positions. Finally, court actions are incredibly costly—any means (such as better science) that can eliminate such costs is to be favored.

A third point from Table 1 is the striking difference between groups in which parts of ESA need review. Simply put, each group favors review of those provisions of the Act which they find unpalatable. Pro-development organizations want less listings of species, and favor review of listing decisions. Pro-environment groups are concerned about habitat loss under HCPs, and want them reviewed before approval.

In general then, a wide array of interests favors independent review, for essentially identical reasons. "Peer review" will mean less litigation, less agency control, more fairness and greater objectivity. It will also be a tool to overthrow particular "wrong" decisions (e.g. the Beach Mouse HOP, listing of fairy shrimps).

Interestingly, the agencies themselves share some of these goals, and wish to respond to the public's concerns. In addition, an open responsive process will be less vulnerable to litigation. Agency staff typically believe that they are doing a difficult

task with inadequate resources. Better scientific support would lead to better decisions, and better justification for any decision. Increasingly, agencies are seeing that "it is better to do it right than to do it over".

Some of these different goals are compatible: some are not. Peer review will probably lead to a more open process that is less vulnerable to litigation on issues of scientific merit. Early review might also prevent some bad decisions, eliminating the need for litigation; it will not overturn all unpopular decisions. ESA actions are not made solely on scientific data; indeed, sometimes scientific information is inadequate or even lacking.

Most of the groups in Table 1 make no recommendations on how peer review should be structured, other than that it be carried out by independent scientists. A few bills are more explicit. For instance Washington State House Bill 2505 uses an independent science panel to guide salmon management and recovery. In 1997 the proposed Endangered Species Recovery Act (Senate Bill 1108, Kempthorne) would have mandated peer review of listing petitions, and outlined a method for choosing reviewers. Individual plans may be quite specific: the Pacific Lumber HOP, for instance, sets up (at agency insistence) three review panels, each with a different makeup and selection process.

Again, the type of the review process envisaged reflects the goals of the framers. The Kempthorne bill was predicated on the assumption that regulatory agencies and the courts make poor decisions regarding listing, and that balanced review (including input from the private sector) would result in fewer listings. The Pacific Lumber HCP dictates academic scientific panels because of agency distrust of the applicant, and a belief that scientific oversight would ensure compliance, and effective conservation. In both cases then, peer review is seen as a means to enforce a particular viewpoint. The structure and format of the review process is then tailored to fit this enforcement goal. By contrast, USFWS and the US Forest Service select peer reviewers for their own actions, and a primary goal is to establish scientific legitimacy. The structure of the review (open format, use of agency staff as reviewers) is again tailored to a particular goal. This process departs significantly from the use of independent peer review in academic science.

WHAT IS PEER REVIEW?

Scientific peer review evolved over 300 years as a way of setting and maintaining scientific standards. While it is not without it's critics, peer review is widely regarded as an effective way of upholding the quality of scientific endeavors. Non-scientists, who are generally unaware of the methods or subtleties of peer review, generally believe that if an article has been published in a peer reviewed journal it is more likely to be true. This is evident from the respect accorded to peer reviewed science in the courtroom and even on expose TV shows.

Peer review has always been a closed system, confined within the scientific community. It has been practiced by scientists for science. It was not developed for use in a wider social political context. The beginnings of modem peer review date to the reamed Societies of the 17th and 18th Centuries. Many of these Societies published not only the text of a presented paper but also the text of the ensuing debate. (Charles Darwin's theories on evolution were presented in such a format). However Societies realized that standards were necessary, and that not all papers were worthy of publication. Society officers, and editors emerged as the initial guardians of scientific standards. Over time, as science expanded, and the breadth of knowledge increased, scientists specialized. Consequently editors became less able to judge the scientific merit of the diverse and focussed topics presented for publication. Editors came to rely on an army of reviewing scientists with different areas of expertise, and who were themselves known, published, and respected within the scientific community. Editors conferred anonymity on reviewers as a way of encouraging frankness.

Today's peer review is a rigorous and powerful activity. The most common types of peer review concern grant proposals or publications in scientific journals. In journal reviews, an editor sends a submitted manuscript to a number of scientists who are active in the authors' field. The accompanying letter generally asks the reviewer to comment on the quality of the data and conclusions, errors and omissions, appropriateness of the topic for the journal, and any editorial comments. The reviewer then recommends that the work be "published as is" "published with revisions" or"rejected" A reviewer of a grant application has two choices to recommend that the proposed work be "funded" or "not funded" on the basis of the science. Typically all these recommendations are written anonymously where the identity of the reviewer is concealed.

Being a reviewer confers power. A reviewer not only comments on the quality of the science under review, but also makes decisions on what happens to that work within the scientific community. A research program can disappear, or a manuscript fail to be published because reviewers judge it as scientifically inadequate. Clearly there are dangers here, when a scientific competitor can delay or even prevent publication of a rival's work. A good editor or grant program administrator recognizes these dangers and takes action to limit them. At the same time, it is essential to the process that reviewers are heeded, and their recommendations followed. A journal editor that consistently ignores review comments will quickly lose credibility, and probably their job.

There is no formal training as a peer reviewer. The main qualifications are to have already published in peer reviewed journals, and to be recognized as a scientist who carries out good work. Review skills are largely assimilated in graduate school, during debates, journal clubs, and in review of already published papers. Because reviews are limited to the academic arena, the process is generally successful. The contributing scientist, editor and reviewers share similar backgrounds and education, with a common understanding of what constitutes good science. Scientists, policymakers, managers, advocacy groups and the public lack this common culture.

THE MINEFIELD

The use of science in resource management decisions is strikingly different from academic science. Few scientists are trained or experienced in how policymakers or managers use or understand science. Simply putting academic peer review into a management context is a recipe for misunderstanding and frustration.

Some of the key differences:

1. *A decision will be made.* Scientists are trained to be cautious, and to make only statements that are well supported. Managers have a different task: to make a decision using whatever information is available. In the context of peer review, scientists usually send incomplete work back for further study; managers often cannot do this.

2. "*Best available versus adequate*". Managers and decisionmakers are instructed to use the best available science. Scientists may regard this same science as incomplete or inadequate. Decision-makers would like good science, but they must use what is available. Statements, in a peer review, that a piece of evidence does not meet normal scientific standards may not be relevant to a decisionmaker. Hence the burdens of proof in management decisions are likely to differ from academic science. The AIBS/NCEAS study of HCPs, and the USFWS response to it, clearly illustrates the pitfalls of using academic standards of adequacy.

3. "*Best available not all adequate*". In academic science, two competing ideas or theories may both be supported by data, and both may spawn publishable work. Management needs to know which is best—i.e. it may require a judgment between conflicting data. Scientists rarely make such calls.

4. *Decisions are based in more than science.* Ecology can only advise decisionmakers, who must also weigh legal concerns, public interest, economics, etc. Hence scientists should avoid making recommendations on decisions, and focus just on technical issues of science.

5. *Reviewers as advocates.* In academic science, it is assumed that a reviewer is impartial and attempts to set aside any personal biases. Indeed, reviewers are asked not to complete reviews if they have pre-formed opinions. In management situations, when reviewers are selected from a diversity of interests, it is assumed that, for instance, reviews solicited from environmental advocates, or development interests, will reflect the background of the reviewer. Hence the manager must balance the data against the source.

6. *Speed.* Academic scientific reviews are completed at a leisurely pace-weeks or even months. This is not acceptable in management situations. Often the only reviews that arrive will be from reviewers with a strong personal interest.

7. *Anonymity and retaliation.* Academic reviews are typically anonymous. This encourages frankness and discourages professional retaliation for a negative review. Reviews in management situations must usually be open. This will promote dialog, and perhaps ensure a fair review. However some scientists will be reluctant to make strong statements which are subject to public scrutiny.

8. "*Qualified versus independent*". Often the scientists best qualified to be reviewers have already been involved in a conservation issue. Many HOP applicants for instance are extremely reluctant to have "inexperienced" ecologists from the professional societies. They prefer "experienced" scientists who understand the rationale and techniques of an HOP (see Santa Barbara group report). This sets up a tension between demonstrable independence and necessary experience.

9. *Language.* Managers and decisionmakers may not be familiar with the language of science. Statistical issues are particularly likely to cause confusion.

10. *Reward structure.* In academic science, reviews are performed free of charge, for the common good. Hence they are typically given lower priority than other more pressing tasks. In management situations, this will not work. Rewards (financial and otherwise) have been necessary for reviews of HCPs etc.

WHAT CAN GO WRONG?

A key issue for peer review in biodiversity issues is clarity: both of information and of an individual's role. Some of the dangers of lack of clarity are shown in examples of reviews in practice.

The development of the management plan for the Tongass National Forest was a visible and controversial process. It provides a useful example of the confusion of roles that can occur. In order to incorporate the best available science, the USDA Forest Service set up an internal peer review scientific group that worked together with forest managers to develop a scientifically based management plan. To further ensure scientific quality, USDA Forest Service sent its drafts and plans to a respected group of external reviewers (mostly academic) as allowed under the Federal Advisory Committee Act. (This Act limits the type of outside review committees that agencies can use.) In reviewing the process, the USDA Forest Service scientists concluded that Forest Service managers and scientists had worked effectively together at all stages and that science had been effectively incorporated by managers into the plans and revisions. Indeed it had been a watershed event in bringing the two groups together. However, the interaction between the agency and external reviewers was not as cordial.

The external peer review committee members on the Tongass National Forest planning for old growth associated wildlife species independently issued a joint statement concerning the measures proposed to address protection of old growth associated wildlife species. In contrast to the internal reviews, this group was largely critical of the management proposed on the basis of the science. They concluded that, in some aspects of the plan, none of the proposed actions responded meaningfully to the conclusions reached by the peer reviewers. They further argued that "the USDA Forest Service must consider other alternatives that respond more directly to the consistent advice it has received from the scientific community before adopting a plan for the Tongass." It's clear that the scientists felt ignored. Further it is within the responsibility of the scientists to respond to the inconsistency of the science and the decision. In the same statement, scientists noted that there were specific actions that should be carried out immediately to protect critical habitat. These included, for instance, no road building in certain types of forest, and the protection of low elevation old growth through "lowgrading."

The Tongass experience illustrates several of the problems in applying scientific peer review to management. Firstly, independent and internal reviewers reached diametrically opposite opinions—the decisionmakers must now determine whether this difference was caused by inexperience or bias, and which set of opinions to follow. Whatever the eventual choice, the track record of dissent will increase vulnerability to legal challenges, and political interference. Second, the independent scientists feel ignored, and that their scientific opinions have not been integrated into management decisions. This again increases the vulnerability of those decisions. Third, the independent scientists make clear management recommendations—they feel that their science alone should drive management decisions. Most managers and decisionmakers will disagree with this point of view.

Far from strengthening management decisions, peer review at the Tongass raised new problems. Confusion of roles and objectives was a major cause of these difficulties. A well-trained science manager might have prevented some of the problems, by giving clearer directions (In fairness the "science consistency check" process is new to the Forest Service, and some initial problems are to be expected).

A different set of issues has arisen with peer review in Habitat Conservation Plans. Different approaches have been applied in different circumstances. The San Bruno Mountain and Pacific Lumber HCPs used academic scientific review panels who, from an early point in the process, guided the interpretation of science. These panels were advisory, and scrupulously avoided management recommendations, sometimes to the frustration of decisionmakers. The panels avoided setting levels of "acceptable risk", and tended to use conservative scientific standards. Rather than select the "best available science", the PL panel sometimes refused to express any opinion at all. Nevertheless the panel spoke with unanimity, and the marbled murrelet sections of the PL HCP appear well-crafted, when independently assessed.

By contrast, the State of Oregon Northwest Forest HOP negotiation) used a post-hoc review by 23 "independent" scientists of a largely completed plan. The 23 reviewers were selected to represent a range of interest groups and experience. The corresponding diversity of responses include diametrically opposite opinions on several issues. This will render the opinions difficult to apply without further arbitration.

As a final example of problems, the USFWS uses peer review of listing decisions. A few reviewers are selected at the local field office level, and are chosen from scientists "involved" in the issue. These reviews are unlikely to be independent, but may be more expert. Interestingly, the service reports a poor response from reviewers who are frequently late with reviews, or fail to respond at all. Reviewers are not rewarded in any way.

Clearly, many issues can determine the outcome of a peer review process: how it is structured, who runs it, who are the reviewers, how they are rewarded, and how they are instructed, etc. Lack of attention to these details, and blanket application of an "academic" model has already led to problems, and will continue to do so.

A MODEL FOR PEER REVIEW IN BIODIVERSITY POLICY

These past experiences can point the way to more effective integration of peer review into resource management. The following principles may be useful:

1. The goals of peer review must be clearly stated
2. Impartiality must be maintained to establish credibility
3. Clear roles for reviewers are essential
4. A balance must be sought between independence and expertise of reviewers
5. Training of reviewers may be necessary
6. A reward structure must be specified
7. Early involvement of scientists will give better results than post-hoc evaluations

Three other lessons can be deduced from past review efforts. First, academic scientists are rarely used to management oriented science. They may have roles as reviewers, but need careful instruction. The individual or organization that is coordinating the review needs to be experienced in both academic and applied science. Existing institutions lack the necessary experience (academia, professional bodies, academies, etc.), or are not seen as independent (e.g. branches of the regulatory agencies). There is a critical need for infrastructure to administer peer review, and for lists of trained and experienced reviewers.

Second, a mediator or interpreter can be highly effective. Successful reviews (e.g. PL, Oregon HCPs) have employed a dedicated mediator, who can clarify roles, and eliminate misunderstandings between scientists and managers. This role is essential, because few scientists understand the policymakers' framework. Scientists may need encouragement in some areas, and may need to be dissuaded at other times from attempting to become managers. At the same time, managers may lack advanced training in e.g. statistics, and may need help in interpreting scientific statements. The interpreter can also act as the gate-keeper, ensuring scientific integrity and that reviewers are not put under pressure to make inappropriate management recommendations, or to become advocates.

Third, a panel structure appears to give more consistently useful results. This is probably the result of continued involvement, and the opportunity of panelists to discuss issues among themselves. While panels sometimes produce conflicting opinions, they appear more likely to give unequivocal results than a collection of individual reviews.

CONCLUSION

There is enthusiasm for science and peer review, but little consensus on how to make the process work. Most notably, we lack the necessary infrastructure for developing peer review as a useful tool. Current institutions are either insufficiently experienced, or lack independence. Peer review cannot be guided by managers alone, nor by scientists alone. We need independent technical groups that have the necessary diverse skills, but are seen as impartial. The SEI Santa Barbara group, a consortium of diverse interests (environmental, business, agency and scientific) have begun development of a consensus program that will provide peer review as a public service.

For centuries, the oracle at Delphi provided answers to all comers. This popularity persisted despite the oracle's responses being completely unintelligible; even after "interpretation" by Apollo's priests, problems were rife. Self-deception, and willful ignorance of alternative explanations appear to have been with us for millennia. Scientific peer review may be more recent than decisionmaking by oracle, but it shares

some essential characteristics. Esoteric language of the priesthood (ecology) may be reassuring—whether we make good decisions will depend on how we interpret the advice.

EXAMPLES OF CALLS FOR PEER REVIEW

Organization	Where is Peer Review Desired?				How to Implement Peer Review?	Who Pays For It?
	General Peer Review	Listing	HCP	Other		
Steve Largent (Congressional Rep Oklahoma	X	X				
Society for Integrative and Comparative Biology	X		X		Independent scientist panel	Federal Government
Ecological Society of American Ad Hoc Committee on Endangered Species	X	no	X			
Fairy Shrimp Study Group (California businesses and farmers)		X				
American Farm Bureau Federation	X	X	X			
Defenders of Wildlife	X		X		Call for scientific and community review	
Inland Rivers, Ports, Terminals, Inc. BOD		X			Panel of scientific review	
Cattlemen's Association		X				
Audubon, Greenpeace, National Wildlife Federation, Environmental Information Center (in joint communication)	X		X		Independent Scientific Review	Imply Federal Government
State of Washington	X		X		Independent Scientific Review Board appointed by the Governor	
Governor Marc Racicot (MT) on behalf of the National and Western Governors Associations		X			Scientific review and cost/benefit analysis	Government task force finds way to fund process
Association of California Water Agencies		X			Scientific review and cost/benefit analysis	Federal Government
Building Owners and Managers Association		X	X		Scientists and affected community	
American Forest and Paper Association	X				Independent review cost benefit analysis	
Club 20	X				Independent cost/benefit analysis	Imply Federal Government

Organization	Where is Peer Review Desired?				How to Implement Peer Review?	Who Pays For It?
	General Peer Review	Listing	HCP	Other		
Cattle ranchers and environmental coalition in New Mexico	X				Scientific and public input	
National Jewish Community Relations Advisory Council	X	X			Scientific review	Federal Government
Multiple Grange, Forestry, Industry Associations					Public	
Boise Cascade Corporation		X			Scientific, economic and social review	Federal Government
NW Power Planning Council	X				Independent scientific review team appointed by NWPPC (Chair) and NMFS (Regional Director	Council
National Endangered Species Act Coalition	X	X	X		National Academy of Sciences nominates scientists	Federal and State Government
Western Governor's Association	X				Independent experts chosen by USFWS and the states	Task force to find funding
James McClure to NESARC	X	X	X	Habitat Designations	Peer scientists and affected parties	Federal Government
9 Current and Past Presidents of Ecological Societies				Recovery Plans		
SW Center for Biological Diversity					National Academy of Science Nominations	Federal taxes, permit fees, damages from ESA lawsuits
King County Navigation Bar			X		Independent Recovery	
NW Ecosystem Alliance			X		Critical Habitat	
NW Forest Resource Council	X		X		Double-blind peer review. Want affected party representation	Federal Government
California Women for Agriculture		X			Independent review	
National Association of Conservation Districts		X	X		Independent review from industry and university scientists on critical habitat	National land and Conservation Fund
Pulp and Paperworkers Resource Council		X	X			
Family Business Fund		X				
Southern Governors Association	X	X				
National Wilderness Institute		X				Imply Federal Government

Organization	Where is Peer Review Desired?				How to Implement Peer Review?	Who Pays For It?
	General Peer Review	Listing	HCP	Other		
Environmental Protection Information Center			X			
California Environmental Dialogue	X				Permanent program with standing committees	Government
Meridian Institute Workshop	X	X	X		Societies and services with database of experts	Services HCP applicants

DEVELOPER SEEKS TO PROTECT THE ENVIRONMENT FROM THE U.S. FISH AND WILDLIFE AGENCY

Presley has been granted a hearing date on its petition filed today in Santa Clara Superior Court. Presley's petition asks the Court to order a grading permit issued for Presley's residential project in Santa Clara County. The Court will hear the matter on August 23, 1999.

Presley Homes, the developer of The Ranch at Silver Creek, a residential community in the City on San Jose which would provide 538 homes in the heart of the Silicon Valley where there exists a severe housing shortage. Construction of the 538 homes will use only 15 percent of the 575 acres included in The Ranch at Silver. This is less than one house per acre. More than half of the property will be given to a non-profit environmental trust for use an conservation habitat. The developer would provide initial funding for the Trust of approximately $1.6 million and would arrange funding in perpetuity of $200,000 annually. Who could fault such a plan? None other than the United States Fish and Wildlife Service.

On July 26, 1999 Presley was informed that the city of San Jose could not issue a grading permit due solely to improper threats and interference by the U.S. Fish and Wildlife Service with the city's permitting process. The Service, which has threatened legal action against the city, is falsely representing that the Ranch at Silver Creek potentially endangers protected species, and is therefore within the Service's jurisdiction. In fact, there are no protected animals species on the site. Moreover, Presley's habitat conservation plan provides for the restoration and enhancement of protected species.

Since 1990, The Ranch at Silver Creek has undergone extensive environmental and planning review by local, State and Federal agencies—including the Army Corps, U.S. Environmental Protection Agency, the Regional Water Quality Control Board, the Santa Clara Valley Water Distinct, the city, the Service, and the California Department of Fish and Game. Presley has secured all of the necessary approvals and permits for each stage of the project to date. The U.S. Fish and Wildlife Service has actively participated in the regulatory review process for The Ranch at Silver Creek from its inception. At each stage of the process, the Service has objected to the issuance of permits and approvals. But, at each stage, except for the one at hand, the Service's objections have been rejected by the reviewing agency. By threats, false representations and innuendoes, the Service is now attempting to accomplish indirectly what it could not directly or lawfully. .

The Service falsely claims it is trying to protect the Bay Checkerspot Butterfly. In fact, all scientific evidence shows that there is no Bay Checkerspot Butterfly on this property and hasn't been one on the property since 1995. The Service has not produced one shred of evidence to the contrary. While an habitat conservation plan could not have been imposed upon Presley under Federal law, Presley has nevertheless agreed to a comprehensive habitat conservation plan as part of the environmental review process. The habit conservation plan includes a 71-acre Bay Checkerspot Butterfly restoration area, to be governed (along with other open acreage) by the non-profit environmental trust. The net effect of Presley's habitat conservation plan is that 298 acres (or approximately 52 percent of the site) is to be set aside as trust-funded restoration/preservation areas.

Presley environmental team has exercised avoidance of environmental impacts to these sensitive areas. When Presley bought the property, the site plan called for filling the degraded Hellyer Creek corridor. Presley redesigned the plan to preserve Hellyer Creek and over 90 percent of the site's wetlands and the riparian habitat will be preserved and enhanced. The entire lush riparian corridor of Silver Creek will be preserved and enhanced with oak trees grown from local seed. Presley has already built a wetland pond to provide a breeding habitat for the California tiger salamander, with translocation of adult tiger salamanders from existing residential neighborhoods, and successful breeding of these adults in the pond has been documented. The plan also avoids endangered plants such as the Metcalf Canyon jewelflower and dudleya, and the plant restoration part of the conservation plan calls for transplanting, propagating, seeding and enhancing habitat for these species. All of this is in jeopardy because of the actions of the U.S. Fish and Wildlife Service.

Presley had already begun clearing the property when the Service interfered. At this point grading needs to be completed to insure proper erosion control before the rainfalls begin this winter. The area graded drains into Silver Creek asked Coyote Creek, which in turn flow into the San Francisco Bay.

The Service's eleventh hour interference with the city's permitting process consists of false representations about its jurisdiction over the permitting process, and unwarranted threats of legal action against the city. The Service's interference is:

- Improper—because it exceeds its jurisdiction and/or is an abuse of its powers,
- Unfair—because it has had every opportunity to influence the environmental aspects of The Ranch at Silver Creek from its inception, but chose not to or was rejected; and
- Environmentally counterproductive—because Presley is unable to implement its voluntarily adopted, comprehensive habitat conservation plan, which includes a 71-acre area dedicated to the restoration of the same butterfly species which the Service improperly asserts needs protection.
- Environmentally counterproductive—Unless Presley obtains the grading permit forthwith, it will be unable to complete the grading necessary to secure the site against the imminent onset of seasonal rainfalls, with the inevitable result of substantial and irreparable damage to the environment, as well as to the economic interests of Presley, the city, and surrounding property owners.
- Economically harmful to the city and State—The Ranch at Silver Creek would provide much needed housing in the heart of the Silicon Valley which is an important part of California's economy.

THE PRESLEY COMPANIES FILES SUIT AGAINST THE CITY OF SAN JOSE TO PROCEED WITH HOUSING PROJECT

Newport Beach, CA—August 10, 1999—The Presley Companies (NYSE:PDC) and Cerro Plata Associates said today they have filed a lawsuit to obtain appropriate permits to allow their Ranch at Silver Creek housing development to move forward.

The Ranch at Silver Creek would provide 538 homes on approximately 15 percent of the total property. More than 50 percent of the total acreage will be a protected environmental habitat as part of a conservation plan established by Cerro Plata and the remaining 33 percent is dedicated to a golf course. Cerro Plata, of which Presley Homes is a member, is the developer of The Ranch at Silver Creek.

Presley pointed out that "Notwithstanding the eminently clear environmental mitigation actions we have taken with respect to this project and despite the fact that noted ecologists have embraced our plans and succinctly approved them, the U.S. Fish and Wildlife Commission has fought this project every step of the way and fought it on spurious grounds.

"For example," Presley continued, "The Commission claims that the Bay Checkerspot Butterfly, an endangered species, is on the property. All evidence is to the contrary and shows that this species has not been on the property for nearly 5 years, a fact that the Commissions disputes, but refuses to produce any evidence for its position. Moreover, the Ranch at Silver Creek development specifically establishes 71 acres as a Checkerspot Butterfly restoration area, as well as other open acreage. The habitat conservation plan Cerra Plata has established will have an initial finding of $1.6 million, of which $1.3 million will be applied to this restoration area. Moreover, this conservation plan is not just for 1 year, or 2, or 3. It is established in perpetuity with funding of $200,000 annually."

Presley stated that "The city of San Jose is in the heart of the Silicon Valley, an area that is undergoing California's worst housing shortage. We have taken every possible precaution to mitigate environmental damage to this area. And in fact, our plan will restore several endangered species. If we do not proceed on schedule, if we are prevented from doing so by the Fish and Wildlife Commission, that entity itself will be responsible for potential significant environmental damage."

The company said "if we are prevented by the Commission from moving forward with appropriate grading of the property and completing that grading before mid-October, seasonal rains will likely cause substantial amounts of exposed, unstable soils to wash into an adjacent creek basin resulting in severe environmental harm to not only the creek, but the San Francisco Bay into which it drains. This event will violate State and Federal clean water laws and clog nearby flood control channels, with the potential result of flooding, in existing residential areas."

STATEMENT OF MICHAEL A. O'CONNELL, SENIOR ADVISOR FOR SCIENCE AND POLICY OF THE NATURE CONSERVANCY OF CALIFORNIA

Mr. Chairman and members of the Committee, thank you for the opportunity to address this committee on the science of regional conservation planning under the Endangered Species Act (ESA).

The Nature Conservancy is an international non-profit conservation organization dedicated to preserving the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. We maintain offices in all 50 states and work with partner organizations in

17 countries. We have helped protect 10.5 million acres in the United States and Canada and ourselves own 1,600 preserves—the largest private system of nature sanctuaries in the world. Our efforts are supported by more than 1,000,000 individuals members and hundreds of corporate associates committed to reversing degradation of the biodiversity and natural resources on which our lives depend.

The Nature Conservancy has been involved in conservation planning under the ESA since Section 10(a) was authorized in 1982. We have played a major role in a number of Habitat Conservation Plan (HCP) processes, including Coachella Valley California, Clark County, Nevada, Balcones Canyonlands in Texas and the Natural Community Conservation Planning program in Southern California. Our organization has witnessed the evolution of habitat conservation planning from its beginnings on San Bruno Mountain to its current State of the art in Southern California with the NCCP program. The comments and observations I offer today reflect both the Conservancy's long experience and my own as a student and practitioner of conservation planning.

There are two key points in my testimony. The first is that habitat conservation planning as it has generally been practiced under the ESA, while an important tool in protecting endangered species, has not achieved the conservation gains that the ESA contemplates, namely the recovery and delisting of species. There are a number of reasons why this is so, and I will try to focus on the scientific ones. Second—the good news—is that there are some scientific and biological adjustments that can be made to the planning program to greatly increase conservation outcomes without undermining the other benefits the program provides. I want to use the example of the Southern California regional conservation planning program under NCCP to illustrate many of these points.

THE LIMITATIONS OF CURRENT PRACTICE

Before undertaking an examination of the science of HCPs, it is important that we look at what HCPs *are* as a conservation tool and what they *are not.* Section 10 of ESA provides a way for non-Federal project proponents to avoid the legal consequences of incidentally taking endangered species in the course of otherwise lawful activities. Almost all HCPs are begun when a proposed activity is likely to result in the take of a listed species, and the conservation provisions that arise from an HCP are generally intended to avoid or mitigate the take of some individuals of a species. Is that wrong? Probably not. Full mitigation for unavoidable impacts is arguably a fairly reasonable standard for private parties. But is that good conservation? I submit that it falls far short of conservation of biological diversity, nor is it the type that the Endangered Species Act intends—recovery of listed species.

Part of the problem is that HCPs as they have been practiced are initiated much too late from a scientific standpoint. Most are begun when a species is already listed, which means that it is almost at the brink of extinction. Many biological—and political and economic—options are foreclosed by that point.

Most HCPs are also the wrong biological scale. While there has been an increase recently in multiple-species conservation plans around the country and the Fish and Wildlife Service has promoted them, even these plans are still mostly focused on reacting to proposed effects on listed species on non-Federal land. They have rarely been used as a mechanism to create conservation solutions in advance of conflict on a broad scale for interconnected natural communities of species. And biologically, most HCPs miss an entire scale of conservation—that of ecosystem level process and function that sustains those species.

The U.S. Fish and Wildlife Service has been working hard to improve the habitat conservation planning program. They have done their best to try and make the HCP program more conservation oriented, both through practice and through policy. What's more, this issue is perhaps the most emotional, difficult and controversial issue in contemporary conservation policy and the Service is in the middle. Their solutions, however, are limited by a legislative policy weak on natural systems conservation and on incentives to participants. It is difficult to envision a broad-based, conservation-focused program arising from a statute that is largely based on prohibiting improper actions rather than enabling and encouraging constructive ones. The Service has done well, all things considered.

So, what is the answer to these issues from a scientific standpoint? Many have suggested that it lies in improving the recovery planning process. If we have good recovery plans, they say, then we'll be able to handle all of those other issues. I disagree. We believe that recovery planning is not the best solution for a couple of critical reasons. First, it is still species focused. While there are a few multiple species recovery plans in existence, they are generally still focused on the species themselves and not on natural communities and other critical scales of biological diver-

sity that are essential to craft a viable solution. Even if they were not, there's no regulatory handle for anything other than species. Second, recovery plans also come too late. They are only prepared when a species is listed. And Congress is unlikely to legislate recovery plans and enforcement authority for species that are not yet listed.

Others have suggested that the answer lies in new legislation to regulate ecosystems. While this is a good idea it is not very practical, because from both biological and regulatory perspectives species are the only reasonably definable unit. Besides, there will always be species that require specific, individual intervention to survive and should not be ignored. So directing all our attention at an ecosystem scale is also an incomplete solution. The key instead is how we focus our entire suite of conservation actions and how they are deployed.

SCIENTIFIC PRINCIPLES

There are some basic scientific principles that must be considered if we are to effectively achieve broad-scale, natural community conservation under the ESA (Noss et al. 1997).

A. *Biodiversity conservation must be concerned with many different spatial and temporal scales.* There is never one best scale for either research or action. The key is to find the most appropriate scale for the problem at hand and then integrate across scales in an overall conservation strategy. The problem with endangered species conservation to this point is that it frequently focuses exclusively on a scale that is too small, both geographically and biologically. It is appropriate to evaluate the impact of a housing project on a beach mouse colony, but we should also be evaluating how that decision integrates into the overall survival of both that species and the entire barrier island natural community.

B. *Ecosystems are more complex than we think.* There are many complexities at all levels of biological organization that cannot be measured, perceived, or even conceived of, that directly affect the viability of conservation solutions. Science can never provide all the answers to questions about conservation, so the response should be to exercise both caution and prudence when designing answers. Wise solutions don't necessarily try to compensate for factors that cannot be defined, but at the same time they leave room for them. A good example of this is true adaptive management, where the results of ongoing monitoring are used to adjust the conservation program based on new information and changes in circumstance.

C. *Nature is full of surprises.* Ecological systems are characterized by non-linear, non-equilibrium and often seemingly random dynamics. Both unexpected events and unanticipated consequences affect the long term viability of any conservation solution. This uncertainty is a given, and its runs directly counter to the political, social and economic desire for predictability in the outcome of conservation plans. It is better to be forthright in acknowledging that the issue of "No Surprises" is not a scientific question of predicting the future, but instead a social question of how to deal with those surprises.

D. *Conservation planning is interdisciplinary, but science is the foundation.* Creating a long-term solution for species and the ecosystems on which they depend is a complicated exercise in reconciling social, political, legal, economic and biological factors. But if science must be one of several competing interests in the negotiation instead of the method of evaluating how to reach specified objectives, then conservation outcomes will always be undermined. This raises the critical issue of how to integrate both scientific information and scientists themselves into the planning process.

POTENTIAL SOLUTIONS

Given these important principles and the limitations of current conservation planning practice and policy in crafting long lasting, broad-scale solutions to endangered species problems, what are some scientific improvements that can be made to the program? Fortunately, there is now a good example of how to break the mold to improve both the science and the policy of conservation planning.

The Natural Community Conservation Planning program in California is an attempt to move beyond the reactive conservation planning of tradition and to a more up-front, creative program that will provide greater biodiversity conservation gains while at the same time, enabling broader regulatory certainty than is possible under a single-species, project by project oriented program.

NCCP is a useful illustration of the science issues involved in regional conservation planning, from data use to addressing questions of scientific uncertainty. The features that make it different, both scientifically and politically, from HCPs (even other large scale plans) are the way the program addresses the scientific principles

listed earlier. Perhaps the most critical among them are the clear, regional scientific guidance that was developed early in the program, the habitat level of conservation action that emphasizes connectivity and landscape conservation, and how biological information has been brought to bear on the planning process.

The elements of Natural Community Conservation Planning (identified by the principle they address from above) that are relevant to today's testimony are:

1. *A Regional Framework for Habitat Conservation Planning, Analysis and Implementation (Principle A).* NCCPs are based on formally delineated geographic planning regions. These regions contain a biologically significant scale of the habitat-types that are the focus of the planning and implementation programs. This regional framework, both biological and political, allows for an emphasis on better long-term habitat protection system design (large core habitat areas, landscape connectivity, etc.) while providing planning flexibility to allow for appropriate development and growth.

2. *Habitat-based Conservation Planning and Action (Principles A and B).* Unlike traditional habitat conservation plans that generally focus on the needs of individual species, NCCPs are created for groups of species connected through one or more shared habitat-types or ''natural communities.'' This approach is less concerned with the occupied habitats of listed species than with creating a regional conservation system based on strong principles of reserve design. By formulating solutions and taking most conservation actions at a habitat scale, long-term issues such as habitat fragmentation and connectivity between significant habitat areas are generally much more effectively addressed than by project-by-project, species oriented plans. This does not mean that the needs of individual species were ignored in the process. Some of them require specific attention. But rather than focusing on all species as if they were separate, NCCPs directs conservation action at the habitat scale.

3. *Comprehensive Management and Monitoring (Principle C).* All land and water resources protected in NCCPs are managed strategically and adaptively to increase the habitat value of protected areas over time. Key features of adaptive management and implementation monitoring programs include:

- Feedback from a comprehensive research and monitoring program is used to modify land and water management actions and techniques as necessary over the life of the implementation program
- Comprehensive monitoring programs include monitoring of biological resources, assessing mitigation performance and monitoring implementation provisions such as funding and preserve assembly
- Periodic reporting is provided by the NCCP plan implementing agency to wildlife agencies and to the public (through workshops) to provide information and evaluate progress toward attaining program objectives

4. *Clear Scientific Guidance and Foundation (Principle D).* NCCPs are based on well-applied scientific and commercial information linked directly and factually to decisions made under the plan. Key features of the scientific basis for NCCPs include:

- Independent (i.e., non-wildlife agency) scientists developed regional conservation guidelines early in the process to provide the broader biological context and scientific premises for large-scale planning. These guidelines were applied to individual plans and local situations
- Wildlife agencies assured that species survey protocols, habitat mapping and adherence to State law and regional conservation guidelines are applied
- Subregional and subarea plans were formulated with scientific input from local biologists and species experts consistent with the regional scientific guidelines

CRITICAL SCIENTIFIC ISSUES ADDRESSED BY NCCP

When the California gnatcatcher was proposed for listing in the late 1980's, everyone recognized it was the tip of a very large iceberg. The consensus among all stakeholders, public and private, was that creating conservation plans for the entire range of the natural community and all its species was the only way to avoid the conflicts of dozens of future listings. To address this from a scientific perspective, the State of California assembled a panel of independent academic scientists to develop overall guidance for regional conservation plans. These regional guidelines were not a de-facto recovery plan, nor were they a prescription for local conservation solutions, but they provided a science-based framework and point of reference for the development of local plans, as well as way to measure the adequacy of those local plans from a regional natural community standpoint. The guidelines were, in a sense, the ''picture on the top of the puzzle box.''

Approaching the problem from a regional, natural community based perspective allowed a number of key scientific issues to be dealt with. First, regional conserva-

tion guidelines provided a scientific mechanism for ensuring consistency of locally developed conservation plans. They were highly credible because they were developed by independent scientists. By addressing the issue of ecosystem scale and providing guidance on how to approach it, the regional guidelines freed local planners to focus on the species and habitats within their jurisdiction, but also to integrate their efforts with an equally critical regional whole.

Second, by focusing conservation actions on a habitat level instead of exclusively on the individuals of a species and the habitat they currently occupied, NCCP did a much better job than most plans of minimizing further habitat fragmentation and even restoring habitat connectivity. Most HCPs seem pre-occupied with protecting the existing locations of species. For some species, this may neither be wise, nor even scientifically supportable. But NCCP concentrated instead on building a conservation system of the largest reserve areas possible of high quality habitat, connected throughout the landscape. This was obviously done with an eye to rare species locations, but these were one of several important factors rather than the driving force for reserve design. Some unoccupied habitat patches were protected at the expense of occupied ones because they provided better overall reserve design and long term viability for the natural community.

Finally, no conservation plan can eliminate scientific uncertainty. As I stated before, surprises are inherent in nature. The real issue is who assumes the risk. But, a legitimate scientific issue for conservation planning is how to minimize the effect of unknowns on the long-term conservation strategy. The best way to do this in addition to a good regional framework and habitat based action, is with a comprehensive adaptive management and monitoring program that provides feedback to inform adjustment of biological management (and even potentially reserve locations during the preserve assembly period) based on the results of targeted research. This element is even more important in conservation plans based in a "working landscape" like timber production or agriculture or water delivery because, unlike in urbanizing settings, both the reserves and the impact areas may not be irreversible. In urbanizing or development settings, as with many HCPs, most impacts are permanent. Over time, some may fall victim to manifestation of scientific unknowns. But the best way to decrease the potential for this occurrence is through strong, regional reserve design and comprehensive monitoring and adaptive management.

RECOMMENDATIONS ON POLICY AND FUNDING

Clearly, the best way to minimize endangered species problems is with a planning program that emphasizes preventative medicine, not emergency room care. It is essential to reiterate, however, that our current policy approach does not make this very easy.

Enabling a regional, habitat based conservation planning program is difficult under the current configuration and implementation of the ESA. It concentrates both our policy and our resources on responding to immediate crises. The State of California had to pass special enabling legislation in 1991 to authorize NCCP to "sustain and restore those species and their habitat which are necessary to maintain the continued viability of biological communities impacted by growth and development," and to "streamline the regulatory process and provide a structure for economic development planning that provides reasonable predictability and assurances for future projects." The Federal ESA, without benefit of any policy changes, had to be creatively stretched to fit around those broad goals.

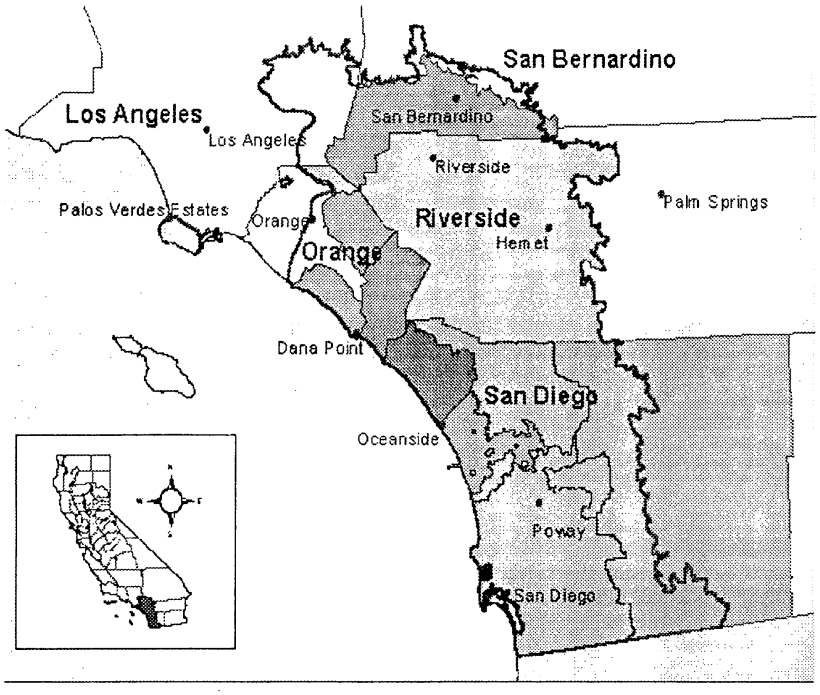
Of perhaps greatest importance is a source of funding to develop and implement these plans. One lesson that has become crystal clear in working on NCCP and other conservation plans on private lands is that there is a gap in outcome between the mitigation the ESA requires in exchange for incidental take and what is needed to achieve lasting conservation of biological diversity. As long as that gap remains unresolved, we will never reach the conservation goals for biological diversity that we aspire to and we will never resolve the political conflict around endangered species. Recovery of species will remain both a lofty dream and a battle for courtrooms and lawyers. We could argue endlessly over whose responsibility it is to fill the gap—for example, some believe that it should be filled by requiring greater mitigation and compensation by private parties for their impacts. But, as I tried to explain earlier, there are habitats and places that are important for regional conservation of biological diversity where the ESA doesn't even apply. And there are still other places where we simply can't allow enough impacts to listed species to generate enough mitigation to fill the gap, even if we were politically inclined to do so.

The real—and the most simple—answer lies in public funding to close the gap between what the law provides for and what long-term conservation of biodiversity requires. The current debate over re-authorizing the Land and Water Conservation

Fund seems to me to be the perfect opportunity to create an Endangered Species Problem Solving Fund that would allow regional, habitat-based conservation programs that are based in sound science and that create broad conservation solutions to receive the public funding needed to be successful. It would both allow habitat conservation plans to achieve much better conservation results and be a strong incentive to private landowners to participate in the objectives of the ESA.

The Nature Conservancy is committed to work with Congress, public agencies and private interests to help resolve the important scientific issues surrounding habitat conservation planning. We are also fully committed to helping ensure that funding is available for long-term conservation successes. We focus all our own resources on this goal, but that is not enough—we need increased public investment in conservation. We congratulate the Committee on its vision in discussing these issues, and I thank you very much for the opportunity to provide input on behalf of The Nature Conservancy.

FIGURE A. THE SOUTHERN CALIFORNIA NCCP PLANNING REGION



RESPONSES BY MICHAEL O'CONNELL TO ADDITIONAL QUESTIONS FROM SENATOR CHAFEE

Question 1. In your testimony, you suggested developing an Endangered Species Problem Solving Fund and that it would provide a strong incentive to private landowners to participate in the objectives of the ESA. Can you elaborate on this? How would the fund be used?

Response. As habitat conservation plans have evolved over the last two decades, they have moved toward more comprehensive, Multiple species solutions that cover large geographic areas. In many cases, plans have covered significant portions or even the entire range of some species. This evolution toward more comprehensive plans has been encouraged because it provides the opportunity to craft both broader regulatory benefits and a much more effective conservation outcome for both species and ecosystems. In other words, we can achieve better conservation while planning for a geographic region than we can project by project and species by species.

At the same time, HCPs are by definition a process to permit take and not truly a "conservation" program for endangered species as envisioned by the ESA. They do not need to recover species in order to be permitted, in fact, they must simply avoid jeopardy for the covered species. This can become a significant problem when a plan covers the entire range of a species and it may even undermine the goals of the ESA. This type of plan becomes the *de facto* recovery plan for those species, but based on avoiding jeopardy, not achieving recovery.

Some have suggested investing heavily in recovery planning as the way to avoid this problem. While this is one option, I believe that it is limited in two very important ways. First, recovery plans are species focused and generally don't provide real-world, practical solutions to the conservation problems faced by species. With a few notable exceptions, they don't confront the difficult choices faced by actually putting conservation on the ground, such as funding, capacity, program and data management, etc., that HCPs do. Second, recovery plans come far too late. They are only required for listed species. Another of the evolutionary outcomes of HCPs is that they have been conducted in earnest for species before they become listed; in many cases before their status is even known. This preventative medicine approach to conservation is a good one, but it needs to have a high standard, one not generally by HCPs.

The real dilemma behind all this, and one I believe an Endangered Species Problem Solving Fund would help address, is one of equity in responsibility for achieving conservation and recovery under the ESA. HCPs generally require that those who propose take of species avoid, minimize and mitigate their impacts. Arguably that is a fair standard, since they if they compensate fully for their impact, then they are doing their share of conservation. That is generally all they must do anyway in order to get a Section 10 HCP permit. [Note: some observers have suggested that those who propose take of species be responsible for the entire cost of conservation? but I don't believe that is practical or equitable].

The problem that the above discussion brings out is this: There is a big difference in conservation outcome between what endangered species need to persist or recover and what HCPs provide. At the same time, HCPs are getting bigger and more comprehensive and in some cases beginning to substitute for recovery planning. I believe this trend will continue. I also believe that HCPs are a generally good thing, because unlike many recovery plans, HCPs result in immediate, direct, conservation action. Their evolution toward a more multiple species and regional approach is also good, because it provides a significant opportunity to create broad-scale conservation benefits and the flexibility to balance it better with well-planned economic activity.

All this background leads me to the conclusion that the outcomes of HCPs and the goals of the ESA are getting closer to conflict. There is a significant "conservation gap" between what HCPs provide and what the ESA envisions. That gap is measured in acres of habitat protected and in management of habitat preserved, and the gap can only be filled by funding. It appears over and over in HCPs for the reason stated above: HCPs are a program to permit take, not a program to conserve species. It is generally impractical and inequitable to demand much more from HCP applicants than is already being done in terms of their "share" of the burden. The gap must be filled by public funding.

My own experience in Southern California with NCCP is that the landowners and regulated community are doing at least their share, often more, but there is still a great need for additional land protection and management in order to achieve conservation and recovery for many species in that region. Without it, many of our rarest species in Southern California will disappear. The conservation gap exists and is very real. As a public funding solution we are given small Federal appropriations annually—which we are grateful for—but these pale in comparison to the need.

An Endangered Species Problem Solving Fund—it could be administered by anyone, Interior or Congress—would allow regional, multiple species HCPs to tap into a source of public funding to help close the gap between the requirements of Section 10 and the ESA's goals. Based on experience, I and many others believe that this would significantly streamline the process of doing HCPs (providing benefits to landowners who often must wait years for plans to be approved) and do a great deal to quell the controversy over HCPs in the environmental community, who are acutely aware of the gap I have referred to. Without it, or some other source of funding to close the gap, I am afraid that HCPs will become more of a polarizing issue rather than the collaborative, solution building conservation program that they have the potential to be.

Question 2. You have been involved in the development and implementation of one of the few systems-based conservation plans. One of the fundamental differences between the California NCCP and other multiple species plans is that the NCCP does not focus on counting the numbers of each species covered. Instead, you use indicator species to measure the success of the plan. In your opinion, is this approach valid from a scientific point of view? In other words, are indicator species a reliable means of assessing the status of other populations of species? How are these indicator species selected? What are the scientific issues that need to be addressed if you focus on preserving ecosystems, instead of protecting individual species here and there?

Response. First, let me clear up what seems to be a little bit of confusion between using indicators from a planning perspective and using them from a regulatory perspective. The NCCP has effectively used both habitat-level and species level "target" species as a planning tool to make the scientific process of conservation planning more efficient. For example, three species, the orange-throated whiptail lizard, the California gnatcatcher and the coastal cactus wren, were determined by a scientific advisory panel to be effective target species for coastal sage scrub habitat (in other words, if the needs of these three species were provided for, that there was reasonable assurance that other species in the habitat would be conserved as well). This made the process of reserve design for that habitat type easier, because those three species could be "targeted" for conservation.

But NCCPs do not use these species as regulatory surrogates. Each permitted NCCP plan has a lengthy "covered species list" and regulatory coverage is provided for each species. At the same time, each species on that covered species list must be justified for coverage on its own based on biological and scientific factors. Those factors may include the fact that its known habitat needs are covered by coastal sage scrub and that coastal sage scrub habitat was protected using the three target species, but *each coverage decision is made on a species by species basis.*

Where the efficiency of a systems and target species based approach such as NCCP comes in is that the coverage decision can be made much more efficient. Because planning is done with respect to several ecological scales (natural communities, species, natural processes), species are much more efficiently conserved and evaluated for regulatory coverage than if they were being planned for one at a time. This is the real efficiency of a natural systems approach.

It is critical to note that the targets have to be very carefully evaluated, and may only be valid for some of the species desired for regulatory coverage, not all. The idea of "indicator species" is controversial and unproven in the scientific community, but the known associations and interrelationships of species in a habitat can nevertheless be used to make the process of planning and coverage determinations more straightforward. For example, in NCCP, the three target species are useful in conserving coastal sage scrub habitat, but there are several plant species found in coastal sage scrub that are highly localized in their distribution and are not "indicated" very well by those species. Likewise, there are several other habitat types that are not indicated well by those coastal sage scrub species.

Further, these same biological efficiencies can be used effectively during implementation of a regional habitat based plan. The best example I know of is the California gnatcatcher. Populations of this species are highly volatile, mostly due to climatic factors. Several experts on this species have stated publicly that perhaps the most inefficient way to gauge the status of gnatcatchers is to count the number of individuals, because the populations may change rapidly from year to year. Populations could rise or fall dramatically and we would have no way of knowing why if all we were doing was counting them. A much better way to monitor the status of gnatcatchers, in addition to occasional population counts, would be to develop a set of habitat indicators (called a habitat suitability model) and measure those. They might include anything that is known to be a factor in gnatcatcher survival such as—hypothetically—time since fire, percent ground cover, height of vegetation, etc.

Measuring those would give a better indication of the overall health of the habitat and therefore populations of gnatcatchers, and more importantly, help determine WHY changes were occurring, than simply population surveys alone.

So the ultimate answer to the question is both yes and no. In some cases, targets for both species and habitats can provide a good deal of biological and planning efficiency in achieving conservation outcomes. When they are valid, targets and indicators can make the process of reserve design more efficient and the process of implementation and adaptive management more accurate and cost effective. But at the same time, I would urge strong caution of using indicators as a regulatory surrogate for covering species. We know so little about how species and habitats interact that relying on such indicators as the sole tool for evaluating conservation action is guaranteed to be wrong. This is especially true when using habitat-types as indicators for species. In addition to habitats being difficult to define (certainly more difficult than species), they may work better for some than for others. For example, coastal sage scrub is a reasonable indicator for gnatcatchers, because if you have good quality coastal sage scrub, then you will most likely have gnatcatchers. But the same rule doesn't apply to many of the herpetofauna, insects and plants that have spotty distributions in coastal sage scrub or of the species that use coastal sage scrub as well as other habitat-types to survive. The indicator concept breaks down for those species.

In NCCP, we have learned that applying biological information well to the problem of designing and managing conservation systems means using a number of tools, including habitat indicators, target species, and species-by-species surveys if necessary. The ultimate result is a covered species list, and each of the species on that list receives an individual determination. The key is how the determination is made, whether based on habitat protected, number of individuals conserved or associations with other conserved species. Importantly, those same determinations may be the measures used to evaluate the success of the plan over the long term.

With all great respect then, the more accurate description of t]he fundamental differences between the NCCP and other multiple species plans is that NCCP doesn't ALWAYS focus on counting the numbers of each species covered. It doesn't have to, because planning is made more efficient through the use of a number of tools, including target or indicator species.

STATEMENT OF LAURA C. HOOD, CONSERVATION PLANNING PROGRAM MANAGER, DEFENDERS OF WILDLIFE

Thank you for inviting me to testify regarding the scientific aspects of habitat conservation plans (HCPs) under the Endangered Species Act (ESA). My name is Laura Hood and I am the Conservation Planning Program Manager at Defenders of Wildlife (Defenders), a non-profit conservation advocacy group consisting of over 300,000 members and supporters. Defenders is headquartered in Washington, DC., with field offices in Oregon, Washington, Florida, Montana, Alaska, Arizona, and New Mexico. Defenders' mission is to protect native animals and plants in their natural communities. As an organization that is committed to science-based management of endangered species on public and private land, Defenders has been heavily involved in individual HCPs and HCP policy at the national level.

SUMMARY

Defenders recognizes the potential for HCPs to encourage private landowners to actively conserve not only endangered species but multiple species and communities. Nevertheless, we have grave concerns over the way HCPs have been implemented in the past, both in terms of the lack of scientific content and overall loss of habitat. Multiple studies and reviews have concluded that major gaps exist between the HCPs that have been developed thus far and what would constitute a scientifically sound HCP.

The lack of information available for HCPs does not always imply that plans should not be developed; rather, we suggest policy changes that would encourage precautionary, scientifically based HCPs that reduce risk for endangered species.

- First, improve the amount of scientific information underlying HCPs through:
  - better recovery plans
  - designation of critical habitat
  - development of regional conservation strategies
  - increased involvement by independent scientists
- Second, scientific uncertainty will always exist, therefore HCPs must incorporate measures for reducing the risk to species that such uncertainty creates. HCPs must:

- be more precautionary in nature
- include adaptive management
- modify existing "No Surprises" assurances
- be consistent with the recovery of species

In two important ways, the Services have recognized the need for such improvements to HCPs. They have published a new rule that allows for revocation of a take permit if the HCP is shown to be jeopardizing an endangered species. Second, they have drafted an addendum to their HCP Handbook that encourages adaptive management, biological goals, and monitoring. Because the guidance does not impose requirements upon HCP applicants, we continue to advocate for assurances for species that are comparable to landowner assurances under the "No Surprises" Rule.

BACKGROUND

HCPs have been authorized under the ESA since 1982, but only 12 HCPs were approved between 1983 and 1992. Since 1992, however, there has been an explosion of such approvals—as of 25 March 1999, the Fish and Wildlife Service and the National Marine Fisheries Service ("the Services") approved 251 HCPs covering over 11 million acres, with over 200 in development. Part of the impetus for the increase in HCPs was the "No Surprises" policy, established in 1994. The policy gives assurances to landowners that they will not have to provide additional funding or land commitments beyond what is included in the HCP. Despite vehement opposition by conservation organizations and scientists, this policy became a rule in 1998. HCPs can last for an unlimited time, and the area of individual HCPs varies from less than one acre to 5 million acres. Indeed, HCPs have become one of the most prominent mechanisms employed by the Services to address the problem of threatened and endangered species on private lands.

Starting in 1996, Defenders formally started research that would culminate in our 1998 report on HCPs, entitled Frayed Safety Nets: Conservation Planning under the Endangered Species Act. In researching Frayed Safety Nets, we reviewed plans nationwide, then we selected a representative sample of 24 plans and evaluated them using criteria that should be satisfied in order for plans to lead to conservation benefits on private land. In the course of the research, we read each plan and associated documents, obtained any associated recovery plan for the species involved, and interviewed key plan officials. In this way, a detailed picture of the strengths and weaknesses of each plan emerged. The report itself summarized the plans and focused on the science, public participation, funding, and legal aspects of HCPs. Our objective was to point out the best and worst examples of these aspects of HCPs, and to examine national trends. Our findings showed that as they were being developed, many plans represented large risks to endangered species because often they lacked an adequate scientific basis, they were difficult to change over time if they resulted in unexpected harm to species, and they were inconsistent with species recovery. I will be discussing some of our findings and recommendations in more detail today in my testimony.

In January 1999, a team of 119 independent scientists issued its own report on the scientific basis of 43 HCPs from across the country. Defenders has been engaged in activities associated with that study of HCPs, which was sponsored by the National Center for Ecological Analysis and Synthesis (NCEAS) and the American Association of Biological Sciences (AIBS). We've also been involved in followup to that study's findings, in identifying methods that are palatable to scientists and landowners of improving scientific information for HCPs.

As a result of these studies and excellent research by other organizations such as the National Wildlife Federation, American Lands Alliance, National Audubon Society, and the Natural Heritage Institute, a disturbing picture of HCPs emerges. Put simply, it is far from certain that HCPs will be successful in stemming the further decline of rare species. Indeed, they often authorize the types of activities which have endangered habitat and destroyed ecological communities across the U.S. As they have been constructed so far, HCPs are not species protection plans leading to the recovery of species. They often result in a net loss of habitat, resulting in a hemorrhaging system of habitat across the country. Because these impacts are permitted under HCPs with large geographic scopes and long durations, HCPs pose great risks to endangered species. The risks to species are raised even higher when landowners receive "No Surprises" assurances that they will not have to pay for changes in HCPs if the plans are having unintended detrimental consequences for species. I do not believe that the solution to this problem is to abolish HCPs, but the key to improving the prospects of species' survival is to reduce the risk that current HCPs entail.

The Endangered Species Act

As a backdrop to my testimony today, I would like to first consider how the ESA is designed to orchestrate the protection and recovery of imperiled species. As currently constructed, the ESA has all of the building blocks for supporting management and restoration of endangered species according to ecological principles and information. At its core, the purpose of the ESA is to conserve species and the ecosystems upon which they depend. This recovery-oriented purpose underlies every action conducted under the authority of the Act. Recovery plans, in turn, are supposed to provide scientifically based blueprints for the conservation of species under the Act. Indeed, we expect that recovery plans of the future will contain the scientific information and comprehensive, range-wide strategies that will guide not only Federal activities but mitigation guidelines and private landowner incentives, as well. The designation of critical habitat should strengthen the scientific infrastructure for conserving a species by providing information and guidance for Federal agencies as well as private landowners. Indeed, it is arguably irresponsible to permit habitat destruction when critical habitat has not been identified and designated. We discuss the nexus between critical habitat and habitat conservation plans further, below.

Finally, habitat conservation plans and Federal agency consultations permit some degree of "take" of endangered species, provided actions are taken to offset that harm to the species. If a scientifically based recovery plan and critical habitat have been established for a species, such information and ecosystem-based strategies would provide an excellent infrastructure for constructing HCPs, with less of the "guesswork" that currently plagues landowners and the Services alike. Unfortunately, as the NCEAS/AIBS study revealed, basic information does not exist for many endangered species. Recovery planning has been underfunded and many plans do not have the amount of information or guidance that is necessary for them to be useful to private landowners. Despite the requirement for the Services to use the "best available science", this requirement does not demand that they acquire information when "available" science is insufficient. Not only must we build a better infrastructure of data using recovery plans, critical habitat designation, and "best available science", but we must reduce uncertainty and risk for species when that infrastructure falls short.

SCIENCE AND HCPS

The process of science enters into nearly every aspect of the HCP process. For example, in order to assess how much of a population will be "taken" under development or logging activities, a landowner must often employ biological surveys. Take may involve, as another example, land that is adjacent to an endangered bird's nest. In this case, it is necessary to have data on the expected home range of the bird pair and what habitat fledglings may use for dispersal. Beyond information on the amount of "take" under the HCP, the Services must determine the likely impact of that take on the species in question. This requires, among other information, scientific data on the global status and distribution of the species, what proportion of the species' range is affected by the HCP, and whether the HCP area contains excellent or poor habitat compared to other parts of the species' range.

In order to understand what activities would be most effective in minimizing that take and mitigating it, landowners must understand the primary threats to species, and employ protection and management techniques that are data intensive. For example, the Washington Department of Natural Resources (DNR) has constructed an HCP for Northern spotted owls on 1.6 million acres of forest. According to their basic conservation strategy, spotted owl nesting habitat that is isolated from federally protected areas can be harvested, while habitat that is adjacent to such protected areas will be preserved. In this case, sophisticated ecological information is required to determine whether a forest tract is sufficiently isolated from federally protected habitat. Finally, scientific and statistical methodologies are necessary for designing appropriate biological monitoring and adaptive management in HCPs.

Unfortunately, despite the critical importance of scientific data for HCPs, abundant evidence indicates that HCPs have fallen short of expectations for scientifically based plans. Much of the missing information concerns the status of the species addressed: according to the NCEAS/AIBS study, available data were insufficient to evaluate the current status for more than a third (36 percent) of species in HCPs. HCPs often involved mitigation strategies that have little data to indicate their probability of success. On a 4-point scale from 0 to 3, the quality of data underlying the choice of mitigation strategies was usually between 1 (very little, or quite unreliable) and 2 (moderately well-understood and reliable). This indicates that the selection of mitigation techniques was often little better than a guess. In *Frayed Safety*

Nets, we found examples of manipulative management techniques (e.g., translocation) that often were not supported by data, we found a general lack of biological monitoring, and we found an almost total lack of formal independent scientific review. These troubling results indicate that the system for species protection under the ESA, including recovery planning, critical habitat, and best available science, has not provided the data infrastructure that is necessary for adequate conservation planning.

As the NCEAS/AIBS study recommended, a much greater effort is needed to collect data on species and keep that information in centralized, readily accessible locations. Beyond the need for more information and better information management, however, HCPs must incorporate better ways of managing uncertainty and risk that results from insufficient data.

OPPORTUNITIES TO INCREASE SCIENTIFIC INFORMATION FOR HCPS

Recovery Plans and Regional Conservation Plans

To improve the scientific information underlying HCPs, planners must gather much better information about species and habitat distribution on property covered by the permit. Equally important, however, is organized, centrally accessible data on how populations on the HCP land "fit" within a larger picture of the status and distribution of the species throughout the larger region.

Recovery plans for individual or multiple species can serve as repositories of comprehensive information on the status and distribution of species addressed in HCPs. Most species have recovery plans, however, it is extremely important to strengthen and update the scientific information contained in them. Recovery plans can also contain guidance on mitigation and habitat management. Having information-rich, updated recovery plans to guide HCPs puts HCPs within the context that they belong: into the sphere of recovery.

Increasingly, institutions are developing regional or ecosystem-based conservation management plans to preserve viable populations of species and representative distributions of natural communities. These plans are developed through a process of gathering all of the geographically based information on those species and communities in the region, examining how well they are currently protected, and identifying vulnerable resources and critically important areas. Some examples of these conservation management plans are the gap analysis projects going on in many states, The Nature Conservancy's ecoregional planning, and Defenders of Wildlife's Oregon Biodiversity Project. Comprehensive, regional plans like these can provide the information and context for much better HCPs that take cumulative effects and "the big picture" into account.

Critical Habitat

Another essential plank in the platform underlying scientifically sound HCPs is the designation of critical habitat for endangered species. Once information is collected for recovery plans and regional conservation strategies, it should be obvious what areas are essential for the continued existence of endangered species. The vast majority of endangered species are primarily threatened by habitat loss, and identifying habitat that deserves special protection is one of the first steps toward stemming further population declines. The designation of critical habitat can aid the recovery of species by protecting occupied habitat as well as habitat that is necessary for dispersal, migration, or range expansion. With regard to HCPs, the Services must determine what habitat is critical for species' survival and recovery before permits are granted to destroy habitat. It is extremely risky to permit the destruction of habitat that may be critical to the species' survival and recovery.

In debates over the merits or disadvantages of designating critical habitat, the Fish and Wildlife Service has protested that often, there is insufficient information for delineating critical habitat. If there is insufficient information for designating and protecting key habitat, however, there is insufficient information for granting permits to destroy habitat through HCPs.

We are hopeful that the recent designation of critical habitat for the endangered cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) in Arizona will provide a good example of the utility of critical habitat designation for conservation planning. Pima County, Arizona is engaged in the preliminary stages of a regional, multiple-species HCP process, combined with a Sonoran Desert Conservation Plan (SDCP) for protecting sensitive habitat as well as other open space. These planning efforts (SDCP/HCP) were spurred by obligations for protecting the pygmy-owl. The bird's population in Arizona is extremely small (fewer than 75 known individuals based upon incomplete surveys), and the majority of individuals live in desertscrub habitat in a rapidly developing area to the northwest of Tucson. Because develop-

ment is occurring so quickly and land values are increasing, the critical habitat designation should provide a basis for spurring additional habitat acquisition from willing sellers and should provide guidance to private landowners in pygmy-owl country.

Involving Independent Scientists

The process of developing conservation plans always involves biologists from the Services and usually involves the landowner's biologists (either on staff or in a hired environmental consulting firm); involvement or review by outside experts occurs occasionally. In HCP development, independent scientists who have expertise in the species and habitats of concern can lend important data and advice on management and preserve design. In addition, review of plans by independent scientists can increase the quality and credibility of the biological information and conservation strategies. Independent review of monitoring and adaptive management programs can be particularly helpful, because such programs can be quite complex. We recommend that independent scientists be consulted much more often as HCPs are developed. While we do not necessarily advocate independent peer review of every HCP, independent scientific involvement should be more prevalent and it should start early in the HCP development process. Interested members of the public who will be affected by the HCP should also be involved early in HCP development.

RECOMMENDATIONS FOR MANAGING RISK IN HCPS

By improving independent scientific involvement, recovery plans, and critical habitat designations, the amount and use of scientific data for HCPs should improve. Because there will never be perfect information for making HCP decisions, however, it is essential to recognize scientific uncertainty in the HCP process and implement procedures for managing risk to endangered species and to landowners.

The U.S. Government has largely minimized uncertainty for landowners in HCPs through the "No Surprises" Rule, which provides that they will not have to commit more money or land in the HCP than what was delineated in the plan. Minimizing uncertainty associated with predicted effects on endangered species, however, remains to be done.

Incorporate Precautionary Measures and Adaptive Management

To ensure that impacts to imperiled species are indeed being minimized and offset as much as possible, HCPs must recognize and address scientific uncertainty. When data are sparse, as they are for most threatened and endangered species, it may be difficult or impossible to adequately assess the threats to and future prospects for population viability. This inadequacy does not override the importance of ensuring that such viability is not compromised. Instead, standardized protocols should be developed to recognize where uncertainty exists and take it into account while an HCP is still under development.

In the face of limited information to guide an HCP, planners can minimize uncertainty for species in two ways: incorporating precautionary measures and improving its effectiveness over time through adaptive management. When information is scarce, precautionary measures can be incorporated into HCPs in multiple ways, including intensively investigating alternatives to "take"; ensuring that mitigation is successful before take occurs (where possible); and limiting the duration of take permits and assurances.

Adaptive management, or mid-course changes in management based upon monitoring information, environmental fluctuations, or additional scientific information about the species, is an essential component of scientifically based HCPs. In particular, one would expect that when uncertainty about species is high, HCPs would have more adaptive management provisions (e.g., mid-course corrections). The NCEAS/AIBS report revealed, however, that when uncertainty about mitigation for species was high, HCPs were actually less likely to contain a discussion of future changes in management strategies: 45 percent of the 38 cases with insufficient data on mitigation included a discussion of changing management over time, whereas 77 percent of the 48 cases with sufficient data did so. In our analysis for *Frayed Safety Nets*, we found few examples of adaptive management. From that sample of 24 plans, the Washington Department of Natural Resources HCP was the only example in which the permittee would conduct research and adaptive management over time, AND it would waive "No Surprises" assurances if changes in management proved to be more costly than anticipated.

Modify the "No Surprises" Rule

Ever since the "No Surprises" policy was initiated in 1994, scientists have protested its inherent restriction on changing management of endangered species in re-

sponse to fluctuating environmental conditions or new scientific information. In 1996, a group of 167 scientists wrote: "In a nutshell, [No Surprises] does not reflect ecological reality and rejects the best scientific knowledge and judgment of our era. It proposes a world of certainty that does not, has not, and will never exist" (letter available with this testimony). Since then, "No Surprises" assurances have been expanded so that they apply for long time periods (up to 100 years), and landowners receive assurances for multiple species that may be listed in the future. This expansion of assurances exacerbates the scientific problems associated with "No Surprises". From an environmental policy perspective, the "No Surprises" Rule has no precedent in environmental regulations of any kind. Private interests have simply never been granted permits with such immunity from the repercussions of their actions.

Under "No Surprises", adaptive management is fundamentally restricted by the fact that no additional money or land can be required of permittees. Perhaps more importantly, under "No Surprises", landowners have a disincentive to incorporate adaptive management into their HCPs. Since "No Surprises" assurances are granted whether adaptive management is incorporated into an HCP or not, landowners have no reason to introduce uncertainty into their responsibilities under an HCP. A more rational policy would grant assurances to landowners based upon the likely benefit or impact to the species, the amount of information available, and the extent to which the landowners incorporate monitoring and adaptive management. H.R. 960, the Endangered Species Recovery Act, contains one solution to this problem because it would establish a Habitat Conservation Plan Fund and require performance bonds to cover the costs of implementing additional conservation measures.

Ensure That All HCPs Are Consistent with Species Recovery

Finally, risks to endangered species would be greatly reduced if HCPs were required to promote species' recovery. Indeed, the word "conservation" is defined in the ESA as efforts directed toward recovery and delisting. Currently, the Fish and Wildlife Service does not require such consistency, despite the fact that HCPs can cover such vast areas, including a high proportion of some species' entire ranges. If recovery does not occur under HCPs, some species will simply never recover. When an adequate recovery plan exists, it becomes easier to determine whether an HCP is consistent with overall recovery.

CONCLUSION

Although the analysis of HCPs by scientists and conservation organizations has painted a gloomy picture of the scientific basis for these plans, we see some hope in the future for improving HCPs. In two important ways, the Services have acknowledged the need for HCP improvement. They have published a new rule that allows for revocation of a take permit if the HCP is shown to be jeopardizing an endangered species. In addition, the "5-Point Plan" guidance that the services have drafted contains some of the solutions to the dilemma we face. The draft guidance contains encouragement for HCPs to include adaptive management, biological monitoring, and identification of biological goals. Because these measures are not required through regulations, we can only hope that landowners are willing to comply with this guidance. These measures to improve HCPs are costly, but consider the cost to the general public down the line and for future generations if HCPs fail to conserve species.

RESPONSES BY LAURA HOOD TO ADDITIONAL QUESTIONS FROM SENATOR CHAFEE

Question 1. You stated in your testimony that the amount of scientific information underlying HCPs can be improved through better recovery plans and designation of critical habitat. However, in practice, many HCPs are developed well before recovery plans have been drafted or critical habitat designated. In light of that, what can landowners reasonably do to ensure that they are using the best science that is readily available?

Response. As you are aware, this is a valid and important concern for many private landowners. It is unfortunate that recovery plans often require years to develop after a species is listed, and many private landowners wish to move ahead with HCPs before the U.S. Fish and Wildlife Service and the National Marine Fisheries Service ("the Services") finalize the relevant recovery plan. For species that have been listed for many years, the relevant recovery plans may be so out of date that they do not contain the best available science upon which to base an HCP. As for critical habitat, U.S. Fish and Wildlife Service has designated critical habitat for

only approximately 9 percent of listed species, therefore, many HCPs must go forward without the benefit of designated critical habitat for guidance.

In some cases, it may be impractical to delay HCP approval until the Services have developed a recovery plan and designated critical habitat. Of course, this in no way relieves the applicant and the Services from developing a plan that is consistent with species recovery and uses the best available scientific information. One way to address this dilemma is for the Services to develop a conservation assessment in the listing notice or immediately upon listing. This assessment would contain mitigation guidance for nonFederal landowners. Since the best available scientific information should go into a listing determination, the determination provides an opportunity to provide preliminary guidance on what measures might be most effective in mitigating the species' most important threats.

More importantly, HCPs that are being developed without the benefit of recovery plan and critical habitat information must include additional steps to include available information and minimize risk for species when information is lacking. In my testimony, I recommended that HCP developers involve independent scientists, particularly when information is missing. Involving independent reviewers allows all parties to know whether all available information is being used, to identify gaps of information that must be filled immediately, to evaluate risks of different HCP alternatives, and to give all parties greater confidence in the likely effectiveness of the HCP. In addition to independent scientists, it may also be appropriate to involve recovery team members, to ensure that the nascent recovery plan and HCP are consistent.

In my testimony, I also suggested a number of different measures that should be undertaken in the face of insufficient information for HCPs. These measures are all the more crucial when a recovery plan and critical habitat designation are missing. If HCP developers can incorporate precautionary measures and adaptive management, then the lack information will not result in irreversible mistakes that pose unacceptable risks for threatened and endangered species.

Question 2. How should the ESA be changed to provide for greater public involvement in the HCP process?

Response. This question is also extremely important because HCPs are management plans that affect large areas for long periods of time. They affect not only endangered species but often open space availability, air quality, and water quality. Unfortunately, effective, meaningful input from the full variety of stakeholders is extremely rare for HCPs. In part, this stems from current government policy that when single landowners develop HCPs, they can choose whether outside parties get involved.

Nevertheless, citizens need to be able to be involved in all stages of the HCP process, from scoping to plan development to biological monitoring. This is especially important for any large-scale, multiple-species HCP. Many large, multi-landowner HCPs already have public involvement because local governments take the lead on plan development. But this needs to be more common in all large HCPs, regardless of whether a government agency leads plan development or not. One solution is for the Services to adopt regulations that lay out public participation requirements that depend upon the scale and duration of plans. In a variety of situations, the Services have considerable experience in creating steering committees or other groups to facilitate public involvement, and this experience can help the Services craft regulations that would provide for more consistent public participation.

Finally, a simple step to increase public input for HCPs is to require a minimum of 60 days for public comment on draft HCPs. The 30 days currently provided for public comment is inadequate for citizens to become aware of a draft HCP, receive the documents, and provide meaningful comments.

Question 3. Should improvements to the science of HCPs be mandatory? In other words, should all HCP applicants be required to undertake measures to improve the scientific basis of their individual HCPs?

Response. To answer your third question, I do believe that some scientific improvements for HCPs ought to be required. Recently, the Services published a draft "Five-point Plan", addendum to their HCP Handbook which contained several necessary improvements for science in HCPs. The draft addendum recommended that each HCP have explicit biological goals, that biological monitoring become standard for HCPs, that adaptive management be incorporated for HCPs that lack adequate scientific information, and that the duration of HCPs be limited when information underlying the HCP is scarce. The draft addendum is an example of how principles and procedures can be adopted for HCPs without imposing specific requirements that may not be appropriate for every HCP. For example, it is obvious that a large, multiple-species HCP would require a larger investment in biological monitoring

than a small HCP. It would be counterproductive, however, to require that every HCP, regardless of size, monitor a certain number of habitat characteristics according to a certain sampling scheme.

Although the guidelines in the draft addendum will result in improvements in many HCPs, they will not be incorporated into the Services' regulations governing the approval of HCPs and issuance of incidental take permits. I see no legal or policy reason for why they are being proposed as guidance only. As I said in my testimony, not all HCPs are bad for species, but regulations are necessary for preventing HCPs that are scientifically bankrupt or inconsistent with species recovery. In fact, currently, landowners arguably have a disincentive to develop effective adaptive management for HCPs. When all landowners automatically receive "No Surprises" assurances that they will not have to pay for costly changes that may become necessary under HCPs, they are unlikely to voluntarily include adaptive management provisions that would introduce uncertainty into their HCP obligations. Instead, it is entirely appropriate to require improvements to the HCP process in order to facilitate the incorporation of good scientific information and the scientific process.

ATTACHMENTS SUBMITTED BY LAURA HOOD, DEFENDERS OF WILDLIFE

STATEMENT ON PROPOSED PRIVATE LANDS INITIATIVES AND REAUTHORIZATION OF THE ENDANGERED SPECIES ACT FROM THE MEETING OF SCIENTISTS AT STANFORD UNIVERSITY

When the Endangered Species Act was authorized in 1973, Congress charged the Departments of the Interior and Commerce to conserve the ecosystems upon which threatened and endangered species depend, and to do so "using the best available scientific and commercial data." Despite remarkable growth in our scientific understanding of the conservation needs of threatened and endangered species during the past two decades, controversy continues to surround the Act, especially as it affects the use of private land. The Act's provisions for the treatment of imperiled species on private land are of major conservation concern both because, according to some estimates, more than half of all listed species occur wholly on private land, and because listed species on private land are faring worse in general than those on Federal lands.

Various bills recently introduced in Congress propose changes in the Act's provisions for treating listed species on private land. The private lands provisions proposed in draft legislation would modify the habitat conservation planning (HCP) language of Section 10(a) of the Act. The HCP process was designed to mitigate substantially the impacts of otherwise legal activities on listed species. However, many recent HCPs have been developed without adequate scientific guidance and there is growing criticism from the scientific community that HCPs have the potential to become habitat giveaways that contribute to, rather than alleviate, threats to listed species and their habitats.

The proposed new provisions have the potential to either improve or worsen the conditions of listed species on private lands, depending on whether or not habitat conservation planning and management are based on objective scientific evidence and methods. To provide guidance on the scientific implications of proposed private lands provisions, a group of nationally respected conservation biologists met at Stanford University in February. Among the undersigned are ecologists and geneticists with extensive experience in conservation planning for imperiled species. Our group includes individuals with widely differing positions on how best to achieve the goals of the Endangered Species Act. The diverse composition of our group should give weight to our conclusions.

In considering private land conservation planning initiatives, we restricted ourselves to five agenda items that recur in draft bills and ongoing discussions in congressional and conservation circles: (1) the "No Surprises" policy, (2) multiple species conservation planning, (3) "safe harbor" initiatives, (4) prelisting agreements, and (5) small-parcel landowner initiatives. We understand that this is not an exhaustive list of potential private lands policies and programs. We also recognize that there is overlap among many of the proposed provisions, for example, the No Surprises policy is often viewed as an obligatory component of the other proposed provisions.

As the following discussion makes clear, we believe that the current proposed private lands amendments to the Endangered Species Act will not further the Act's goals unless those measures are implemented in a scientifically sound manner. However, our group believes that with essential stipulations, "landowner-friendly"

initiatives can assist in meeting our nation's goal of protecting its unique and valuable natural heritage.

NO SURPRISES

More aptly labeled "fair assurances" to landowners, "No Surprises" policy promises that if private landowners protect targeted species under a Habitat Conservation Plan or the equivalent, they then will not have to underwrite future conservation requirements that may develop due to new information or changed circumstances. Should the species require further conservation efforts, the costs would be largely borne by the public rather than the landowners.

A "No Surprises" policy is troubling to scientists because it runs counter to the natural world, which is full of surprises. Nature frequently produces surprises, such as new diseases, droughts, storms, floods, and fire. The inherent dynamic complexity of natural biological systems precludes accurate, specific prediction most situations; and human activities greatly add to and compound this complexity. Surprises will occur in the future; it is only the nature and timing of surprises that are unpredictable. Furthermore, scientific research produces surprises the form of new information regarding species, habitats, and natural processes. Habitat Conservation Plans, therefore, are inevitably developed and authorized under conditions of substantial uncertainty and may ultimately prove inadequate. Unless conservation plans can be amended, habitats and species certainly will be lost.

We appreciate that "No Surprises" policy is not a guarantee that conservation plans will not change, but a contractual commitment to shift some of the financial burden of future changes in agreements to the public. In that light, the following features should constitute minimum standards for HCPs with "No Surprises" assurances. First, it must be possible to amend HCPs based on new information, and it should not require "extraordinary circumstances" to do so. Second, to underwrite program changes when parties other than the landowner request and justify them, there must be a source of adequate, assured funding that is not subject to the vagaries of the normal appropriation processes. We expect that the costs of fixing inadequate HCPs may be substantial. Third, mechanisms to ensure that long-term conservation plans will be monitored adequately are essential. Monitoring habitat changes or ecosystem functions cannot substitute for the monitoring of target species. Moreover, new scientific information from monitoring should be incorporated into management as that information becomes available. Fourth, HCPs must clearly articulate measurable biological goals and demonstrate how those goals will be attained under the plans. Plans should not undermine the recovery of listed or vulnerable species. Fifth, assurances to landowners should only be extended for those targeted species for which the plan articulates species-specific goals that further conservation in a regional context, rather than in a local, piecemeal fashion.

MULTIPLE SPECIES HCPS

Although Habitat Conservation Plans originally focused on individual species in local areas, today many planners are finding it preferable (biologically and often economically) to plan for multiple species over entire regions. In the absence of scientifically credible recovery plans, multiple-species HCPs should clearly articulate conservation goals and must demonstrate their contribution to the conservation or recovery of targeted species. In addition, muitiple-species HCPs should assume an extra burden of rigor, requiring independent scientific review of goals, design, management, and monitoring. There should be a standing body of independent scientists to establish minimum scientific and management standards for multiple-species HCPs. The comprehensiveness of independent scientific review should be appropriate to the size and duration of the plan.

Muitiple-species Habitat Conservation Plans cannot be based solely on the distribution and extent of different habitat types because this information does not yield effective predictions of the distribution and abundance of individual species. Such HCPs, therefore, must focus on specific target species, such as endemic, listed, indicator, and keystone species. If one species is chosen as an indicator of the status of another species of conservation concern, the plan should validate the connection between them. Species that are critical for ecosystem integrity, whether or not they are listed as endangered or threatened, should be among the indicators chosen. In addition, the viability of all target species "covered" by a plan must be considered in a greater regional context, often well beyond the boundaries of the planning area itself. Adequate distributional and ecological information should be made available to assess the plan's impacts on all covered species.

Multiple-species Habitat Conservation Plans must include adequate research and monitoring programs. The target species covered by the plan, such as endemic, list-

ed, indicator. and keystone species, must be monitored individually. Plans also must include an adaptive management program, so that management can be improved in the light of new information obtained by monitoring or other means. As is the case for "No Surprises," besides being amendable, multiple-species HCPs must have an assured source of funds to support potential amendments.

SAFE HARBOR INITIATIVES

Safe harbor initiatives encourage private landowners to increase the amount of habitat available to endangered species. In the past, many landowners have been reluctant to restore or enhance habitat for fear of incurring added regulatory burdens that will curtail future use of their property. Under safe harbor policy, the landowner is obligated to maintain only the baseline utilization of the property by the species prior to habitat improvements, which means that the landowner will be free to undo those improvements at a later date.

Most of our group believes that deleterious consequences to protected species from safe harbor initiatives will be infrequent and that safe harbors could prove to be an important inducement to overcoming landowner unwillingness to take actions beneficial to imperiled species. Nonetheless, two concerns should be addressed in safe harbor agreements. First, the concepts of "baseline population" and "utilization" require a clear definition. Sources of scientific uncertainty should be addressed in defining the baseline status of species, just as for the No Surprises policy. The determination of the safe harbor baseline depends on reliable survey techniques and scientific interpretation. Second, some species may be better candidates for safe harbor agreements than others as a result of their distribution, resource needs, and habitat area requirements. Species are distributed across diverse landscapes with habitat areas of varying quality. In addition, species vary widely in their ability to move from one area of habitat to a neighboring one. Thus, we believe that the value of safe harbor agreements must be evaluated on a species-by-species basis. In the absence of scientifically credible recovery plans, safe harbor agreements should document their potential contributions to the conservation or recovery of target species within an entire region rather than on a single piece of private property.

PRELISTING AGREEMENTS

Under a prelisting agreement, a landowner would take actions to benefit an unlisted rare or declining species before it is listed. This has the potential to benefit species conservation because a species is afforded no protection on private land under the Endangered Species Act until it is listed. Nevertheless, prelisting agreements must not become an easy substitute for necessary listings.

Prelisting agreements often will be negotiated in the face of significant levels of scientific uncertainty—we know little about many of our listed species, less yet about many unlisted species. Because prelisting agreements should benefit species, we recommend an enhanced level of attention and critical review of the biological circumstances under consideration in proposed prelisting agreements. The Federal Government will have to deal with an inevitable shortfall of information; that situation can be partially corrected by (1) developing the most complete data base possible to inform the decision, (2) clearly articulating how the prelisting agreement will benefit the targeted species, and (3) applying the necessary concomitants of the "No Surprises" policy. The latter should include an ability to amend agreements, the availability of funding to support amendments, adaptive management with effective program monitoring, sufficient consideration of the regional planning context, and independent scientific review.

SMALL-PARCEL LANDOWNER INITIATIVES

Considering the cost, complexity, and time required to complete Habitat Conservation Plans and implement them, the idea of expediting the permitting process for small landowners is attractive. But we note that in many areas with imperiled species, private landholdings consist almost entirely of small parcels. When both large and small parcels are interspersed, the small parcels may contain most of the key habitat. Either way, the cumulative impacts of many small projects on imperiled species may be substantial. In addition, me relative impacts of small landowner activities vary greatly depending upon which endangered or threatened species live on their land. The loss of but five acres of remnant habitat could doom to extinction more than a few listed species. We are concerned that expediting the permitting process could come at a significant cost to species persistence.

Our group believes that any policy that allows for expedited HCPs should also require that such agreements not compromise the viability of targeted species within the planning region, and should explicitly consider and limit cumulative deleterious

effects from incremental habitat losses. If a recovery plan exists, expedited HCPs must be consistent with the plan. Otherwise, to ensure coordination of existing and future HCPs, a regional analysis of species status should be required before any expedited HCPs or exemptions are considered.

INDEPENDENT SCIENTIFIC REVIEW

While Habitat Conservation Plans and other conservation agreements that we have discussed above may offer promise for improved species protection on private and other nonFederal lands, serious questions remain about their effectiveness for long-term species conservation and recovery. Because many recovery plans and HCPs lack scientific validity, because the private lands proposals discussed above remain largely untested, and because endangered species protection and recovery must be based on the best available science, we believe that independent scientific review must become an essential step in the implementation of the Endangered Species Act. Such review should be carried out by scientists with no economic or other vested interests in the agreement. It is critical to start the review process early in the project, including the design phase.

CONCLUSION

Finally, while not strictly a "science" issue, we strongly agree that implementation of the Endangered Species Act would be immensely improved if funding were increased and agency staff were better trained. We agree that better enforcement of the Act's prohibitions by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service would benefit listed species. We also agree that the Act's goals are compromised by conflicting laws and regulations that encourage actions that directly and indirectly contribute to species endangerment. And we concur that a wide array of incentives and inducements for better Act compliance by private parties could serve to benefit species conservation greatly if implemented in a scientifically responsible manner.

We hope that these observations and our sciences recommendations above will help Congress to enact legislation that will make the Endangered Species Act more acceptable to private landowners while strengthening the protection of species and habitats on private lands.

July 23, 1996.

Hon. JOHN CHAFEE,
U.S. Senate,
Washington, DC.

Hon. JAMES SAXTON,
U.S. House of Representatives,
Washington, DC.

DEAR SENATOR CHAFEE AND CONGRESSMAN SAXTON: We are writing as a group of conservation scientists who all have professional experience with biodiversity protection and who are concerned about the U.S. Endangered Species Act and the future of environmental and human well-being in the United States. We wish to comment on the proposed Saxton bill, an amendment of the Endangered Species Act of 1973. We will limit our comments to the role and use of science in the ESA.

First, we wish to commend you for the tremendous time and effort you are expending on behalf of the ESA. We recognize and appreciate your commitment to this, our most important environmental law, which is so central to the conservation of biodiversity, and thus ultimately to the welfare of all Americans. As you know, complete, functioning ecosystems, with their great diversity of species and processes, are at the very heart of a functional and prosperous society. Degradation of nature has always led to societal decline and eventually its collapse. That you recognize the importance of addressing these difficult issues speaks well of you.

From a scientific perspective, the proposed amendments offer some very positive features, but there are also some troubling issues that we ask you to revisit. The most prominent of these is the "No Surprises" section of the legislation. In a nutshell, this section does not reflect ecological reality and rejects the best scientific knowledge and judgment of our era. It proposes a world of certainty that does not, has not, and will never exist.

Modern ecological paradigms, based on the best work of the day, all recognize change, uncertainty, dynamics, and flux as the best descriptors of ecological systems. Every ecosystem of which we are aware changes over time: in species composition and abundance, in structural complexity, in nutrient dynamics, in genetic com-

position, in virtually any parameter we choose to measure. The time scales of these changes vary among parameters, but you can always count on change. In fact, some of us like to say that the only thing certain about ecological systems is their uncertainty. Because we will always be surprised by ecological systems, the proposed "No Surprises" amendment flies in the face of scientifically based ecological knowledge, and in fact rejects that knowledge. The sources of this uncertainty are many, cannot be eliminated, and are illustrated by the following:

- Environmental uncertainty—unpredictable, localized environmental events such as fires, disease outbreaks, storms that alter forest structure, and the like.
- Natural catastrophes—Extreme and widespread events such as hurricanes, volcanic eruptions, or very widespread fires.
- Genetic uncertainties—losses or changes of genetic structure in small populations that affect their future adaptability.
- Demographic uncertainties—the influence of random events on survival of very small populations.
- Indirect effects—effects on species or parts of ecosystems as a result of a change elsewhere in the system.
- Nonindependent effects—synergisms between separate effects that reinforce one another.
- Cumulative space effects—non-independence of effects occurring in separate places, but which together buildup to a large effect.
- Insufficient knowledge—nature is more complex than we can even imagine, and we are always learning something new that revises our perspectives.

In short, nature is non-linear, dynamic, disturbance-driven, and affected by thresholds. We wish to make it clear that there is no scientific basis for claims of "No Surprises"; in fact, "surprise" is a good working view of natural systems. The "No Surprises" clause clearly is a political, not a scientific perspective.

There is another aspect of this approach that troubles us. The Nation is moving forward, and we feel in a very positive way, toward ecosystem approaches of natural resource management. One of the cornerstones of these new approaches is "adaptive management," which has at its heart the willingness to approach management as an experiment, to continually examine and test management options, and to change and improve over time. "No Surprises" seems to close the door to adaptive management by saying that, once an agreement is made, new and better scientific information will not alter it. This not only ignores all present scientific knowledge of ecological systems, as discussed above, but denies the ability to manage in an adaptive way that welcomes and incorporates new information and allows and encourages improvement.

We understand and sympathize with the motivations behind this amendment. We encourage working with and incorporating the views of private landowners, creating incentives for good land stewardship, and assuring landowners that their responsible behavior will not be met with new problems. But our collective scientific experience indicates that there will be many surprises in conservation planning. The real issues are: (1) the quality of Habitat Conservation Plans; and (2) at whose expense the surprises will occur, and how the risk will be allocated.

We suggest that some of the controversy over the "No Surprises" policy could be averted if: (1) the section were renamed "assurances to participants" or some such thing; (2) the standards for an approved HOP addressed ecosystem resilience rather than certainty; and (3) funding were included to help deal with surprises. Essentially, the bill would better reflect scientific understanding if its language explicitly recognized the centrality of surprises (unforeseen problems or new biological requirements) and the necessity to modify conservation plans as we learn more from research and monitoring. High quality HCPs would be worth public backing, so most importantly, the bill should authorize a funding mechanism for plan revision, which in some cases would need to include land acquisition. It is only fair that the costs of plan revision be shared by the public at large rather than borne solely by the private parties who in good faith have agreed to the plan, and that these parties should be compensated for expenses incurred as a consequence of modifications to plans. We stress that plans must remain flexible, responsive to new information, and adaptable because of the inherent uncertainty of nature; to do that, funding is critical.

There are two other points on which we wish to comment, though in much less depth because we know others will discuss them in greater detail. First, it appears as though Sections 7 and 9 of the existing law will be substantially weakened by the proposed amendments. Proposals pertaining to HCPs and NSCPs create new mechanisms for waiving the current portions of the ESA that prohibit injury to or killing of endangered species. The National Research Council report on the scientific basis for the ESA clearly noted that these section 7 and 9 provisions provide much

of the power of the ESA. This is where the Act can do some real good for biodiversity and provide effective species protection. Weakening of these sections can be disastrous to the intentions of the law.

Second, the amendment proposes that criteria for Relisting would be those outlined in recovery plans. However, those plans are negotiated documents, not necessarily based on scientific data; they are not, in fact, scientific documents. Presently, Relisting criteria are the same as listing criteria, which are based on the best scientific information available. We urge you to retain that delisting methodology.

We hope that these comments, based on current state-of-the-art scientific knowledge, will be of use to you as you continue to wrestle with the difficult questions of species and ecosystem protection. Please understand that the community of conservation scientists remains ready and willing to offer their knowledge and expertise to craft a scientifically sound and effective bill that will protect our natural resources and the needs of our citizens to the benefit of all.

Sincerely,

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STATEMENT OF GREGORY A. THOMAS, NATURAL HERITAGE INSTITUTE

Mr. Chairman and Members of the Subcommittee: I am Gregory A. Thomas, president of the Natural Heritage Institute, a San Francisco-based non-profit natural resource conservation organization comprised of lawyers, scientists, planners and economists. Our mission is to promote improvements in the institutions—governmental and non-governmental—that manage and regulate the world's depletable stock of natural resource, including biological diversity. Our work is both domestic and international in scope.

I am please to appear before the Subcommittee today to present some of the findings and conclusions of a technical workshop that we convened in June 1998 on "Optimizing Habitat Conservation for Non-Federal Lands and Waters: Harvesting Performance Reviews to Chart A Course for Improvement." This workshop synthesized the results of a number of recent empirical studies of the performance of HCPs that have been conducted by academic researchers, conservationists and practicing conservation biologists. The purpose of the workshop was to distill the lessons from the past 15 years of operating experience with HCPs. We sought to discover how and why the HCP process has failed to recover vulnerable and depleted species and what can be done to improve this conservation tool.

The findings and recommendations of this review process that are pertinent to the focus of this hearing are summarized in this testimony. The complete output of the workshop, and a roster of the participants and studies included in it, will be provided to the Subcommittee. We also tender with this document a 56-page Compendium of Empirical Reviews and Scholarly Analysis of the Experience with Habitat Conservation Planning Under Section 10 of the Endangered Species Act, dated June 18, 1998.

Habitat conservation planning is at once the most important and the most controversial arena in the ongoing effort to protect biodiversity on private lands in the United States. It is important to get it right because there is no realistic alternative. I am therefore pleased to summarize a few of the most salient recommendations from our work on the application of conservation science to the development, approval and implementation of HCPs.

RECOMMENDATION NO. 1.—SCALE HABITAT CONSERVATION PLANNING TO OVERCOME THE LIMITATIONS AND DEFICIENCIES ASSOCIATED WITH LANDHOLDING-SPECIFIC HCPS

The optimal planning unit for habitat conservation is not the individual land holding or water diversion, and the optimal focus is not individual listed species. Rather,

what is needed is landscape-level planning whereby habitat conservation planning occurs at a "bioregional" scale. At this scale, ecosystems and their species are more likely to be afforded effective conservation measures, and the conservation responsibilities are more likely to be properly allocated among land and water rights holders, both public and private.[1]

There can be major advantages to the non-Federal rights holders as well as to the achievement of the species conservation goals if landscape-level planning is applied:[2]

1. Landscape-scale planning can specify the overall conservation effort that will be needed for communities of species and provide a basis for determining what share of that burden an individual property owner should bear in an HCP. There is no mechanism at present for allocating that conservation burden as between private landowners or between them and the public lands. Instead, the burden allocation is made in a piecemeal fashion through the approval of HCPs, Sec. 7 consultations, and public land management plans and permit issuance. In theory, those who get their approvals earliest get the best deal, with larger burdens reserved for latecomers.

2. At the landscape level, it is more feasible to calibrate habitat conservation planning to a recovery standard for endangered species and to prevent threats to other vulnerable species. Landholding-specific HCPs tend to aim for mitigation or, at best, avoidance of impacts on listed species.

3. Landscape-level planning promotes economies of scale in data collection and monitoring. Good science is expensive. The burden of marshalling and interpreting the needed information is onerous for individual rightsholders seeking development permits. Resealing could shift an appreciable degree of this burden from individual property owners applying for incidental take permits to the public agencies and broader constellation of rights holders with responsibilities and interests in the ecoregion. At a landscape level of conservation, it is also easier to evaluate and allocate a "fair share" of the burden between public and private entities.

4. Adaptive management of conservation strategies and reserve design is facilitated and made more flexible on a larger scale. That is because adaptive management requires that some part of the development plan covered by an HCP remain contingent. It is more feasible to do this in larger scale habitat plans.

5. The quality and degree of public participation is generally more satisfactory at the broader scale of planning. This is especially true if a local government mediates the development of the HCP(s) because these entities already routinely include the public in local decisionmaking processes.[3]

Fitting the incidental take permitting program within a broader conservation framework governed by specified standards and goals has a parallel in the protection of watersheds under the Clean Water Act, or the protection of airsheds under the Clean Air Act. To obtain a permit to discharge regulated air pollutants into an airshed that is already impaired, the permittee must make a net positive contribution toward reducing overall emissions to help meet the ambient air quality standards. To do this, the permitted must offset its emissions by procuring reductions from other facilities. In the water quality arena, permittees must show that their contribution of contaminants will not violate basin-wide standards that are designed to assure conditions necessary to support "beneficial uses" of the watercourse. Likewise, the workshop suggested that individual HCPs should be calibrated to contribute toward achieving a bioregional conservation strategy that aims for long-term, sustainable conservation. This may sometimes entail more than avoiding or minimizing impacts on the subject landholding. It may also entail reducing the threat to the species on other lands through offsite mitigation via a mitigation fund. Mitigation funds can be used, for instance, to purchase the highest quality habitats to prevent their development.

There are several potential vehicles for resealing habitat conservation planning. One is to accelerate the development and improve the performance of recovery plans under the ESA. There are several problems with this vehicle, however:

- Too often today, recovery plans do not exist and therefore cannot serve as a guide to individual HCPs. Yet, it is not realistic for the Services to decline to ap-

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[1] Nothing in the ESA either requires or forbids landscape-level planning by either the Services or the applicants. Nonetheless, the tradition within the Services has been to implement the Act species by species and site by site. Such tradition is open difficult to overcome.

[2] This is not to say that larger, more complex HCPs have performed better than smaller and simpler plans. To the contrary, resealing is advantageous only to the extent that it opens the possibility of overcoming, not replicating, the limitations and deficiencies that have plagued landholding specific HCPs.

[3] An exception is where a single-landowner prepares a large landscape-level HCP as is true for many timber HCPs.

prove a proposed HCP until a recovery plan for the covered species is in place. One alternative is to make the approval of such HCPs conditional upon adoption of the recovery plan. This can work without undue risk to the permitted under the adaptive management strategy described later in this document so long as the Services are diligent in their recovery planning efforts.

- When recovery plans have been developed, they generally have not resulted in more adequate HCPs.[4] Historically, recovery plans have been of poor quality. Most are not biologically defensible.
- Recovery plans have often inappropriately subordinated the biological objective to economic considerations. Economics does count in apportioning the conservation burdens among the public and private landowners, but must not be allowed to dictate the biological requisites of the recovery plan.
- Recovery plans are not viewed as binding and enforceable because that would be tantamount to the Federal Government engaging in land use planning. That is more a political than a legal objection, however. In fact, the Federal Government needs to have a basis for deciding whether an HCP provides sufficient conservation benefit to be approvable. Recovery plans can provide that guidance.
- "Recovery" is a species-based concept and recovery plans do not necessarily accomplish much for ecosystems, their processes, or functions. However, there is no obvious reason why bioregional HCPs cannot adopt a "recovery" conservation goal for those species in the assemblage that are listed under the Act. Likewise, there is no reason why recovery plans cannot address multiple species and be habitat-based. Such an approach would further the goals of the Act, i.e., to preserve the ecosystems upon which threatened and endangered species depend.

A second promising vehicle is preparation of HCPs and administration of take allowances through sub-permits by units of State and local government that already have the predominant role in land use planning. One example is the California Natural Communities Conservation Program (NCCP) approach.

A third vehicle is the promulgation of programmatic standards or guidelines for multi-species conservation by Federal land and water managers and regulators. For example, the recent adoption of NMFS' programmatic guidelines for logging on anadromous fish-bearing streams in the Pacific Northwest may prove to be a useful model. Such programmatic guidelines can apply standards for riparian buffers and acceptable levels of sedimentation to entire watersheds or other ecologically significant planning units. Similarly, the Aquatic Conservation Strategy component of the President's Forest Plan provides a multi-layered planning approach intended to result in ecosystem-wide forest management.

RECOMMENDATION NO. 2.—CALIBRATE HABITAT CONSERVATION PLANNING TO BIOLOGICALLY DEFENSIBLE GOALS

Species recovery is the ultimate goal of the ESA and contribution to this goal is the yardstick by which the habitat conservation planning process should be measured. HCPs will be viewed as contributing to the problem rather than the solution unless they are designed to advance a restoration strategy, that is, unless they confer a return survival benefit to the species. Otherwise, the Services are running a hospital in which the patients will never be taken off life-support.[5]

The difference between "survival" and "recovery" can be understood as different levels of risk for the species. At present, the level of acceptable risk is left to the judgment of the applicants and the Services and is never made explicit. Often, there generally are not sufficient data to quantify these risks. Qualitative analysis of risk factors is possible, however. This type of risk analysis is familiar terrain in setting air and water quality criteria, for example. Thus, it would be feasible to assess the risk to species by identifying and addressing the factors that have the largest effect on survivability. Independent scientific peer review would be very beneficial in doing this.

Such higher conservation objectives may require greater landowner incentives. Indeed, it makes sense to correlate the extent of regulatory assurances to the extent of biological benefit conferred in an HCP. One way to do this is to link the duration of regulatory assurances to the degree of conservation effort embodied in the plan Plans that contribute to recovery would get longer term assurances than those that

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[4] See generally Kareiva et al, *Using Science in Habitat Conservation Plans*, National Center for Ecological Analysis and Synthesis, Univ. of California, Santa Barbara, and American Institute of Biological Sciences, Washington, DC. (1999).

[5] On heavily impaired lands, even a net benefit standard may not be enough to recover the species or prevent local extirpation. In these circumstances, the Federal Government's role in bioregional planning may need to include purchasing and restoring such lands. HCPs should not be counted on to solve all endangered species/private lands conflicts.

only avoid jeopardy. Similarly, plans based on highly adequate data and analysis would be entitled to longer term guarantees.

In advancing the ultimate biological goal, the share of conservation "costs" allocated to non-Federal landowners can be minimized by holding Federal agencies to a higher standard or performance. Stated another way, a consequence of managing public lands to a less exacting biodiversity conservation standard is a higher degree of burden assumed by the private rightsholders, or a compromise of the biological goals of the ESA. Unfortunately, prevention of jeopardy is the aiming point for most management decisions on Federal land. This low standard of management for the public lands should be of as much concern to the property rights community as it is to the conservation community. However, allocating conservation "costs" between Federal and non-Federal lands is not an option in many regions of the country since there is little or no Federal land, or existing Federal land is unsuitable to support the species in question.

Biological science should drive the development of both bioregional and individual landowner plans. Economics is relevant to the allocation of responsibilities among landowners—public and—private in achieving the conservation goals of the plan, but should not be allowed to intrude into the choice of conservation strategies. The performance reviews revealed, however, that the statutory command to "minimize and mitigate project impacts to the maximum extent practicable" has become an economic feasibility standard in practice. HCP negotiations often been driven by the applicant's assertions as to the effects of mitigation alternatives on profit margins, rather than by the biological imperatives.

RECOMMENDATION NO. 3.—ADAPTIVE MANAGEMENT AND BIOLOGICAL MONITORING SHOULD BE ROUTINELY REQUIRED IN HCPS

Every HCP should be regarded as a "learning laboratory" wherein the conservation arrangements are treated as working hypotheses. In that regard, the elements of adaptive management and the potential responses to changes should be built into the plan from the beginning. Another term for "adaptive management" is "contingency planning". In either, the core requirements are a program for evaluating the performance of the HCP and the specification of contingency arrangements (alternative conservation measures) that would be triggered automatically in the event the performance fails to meet the goals. This might entail the HCP permittee implementing the plan in phases so that permission to begin a later phase is contingent upon the Services verifying that the permitted has met the performance standards in the prior phase. This is more easily accomplished in large ecosystem-based plans that are implemented over time.

Workshop participants identified five elements or steps to develop an HCP with adaptive management and monitoring:

1. Identify explicit, measurable, biological goals;
2. Identify explicit human-induced and other stresses on the system;
3. Identify imaginative strategies to achieve the biological goals;
4. Monitor biological indices by developing a statistically valid sampling scheme or an analytic structure for interpreting data; and
5. Develop mechanisms to translate data into needed plan adjustments by the land managers and the oversight agencies.

These elements call for the rigorous application of the following scientific methods:

- System Assessment: systematic collection and statistical analysis of data on "healths of the important ecosystem components and on the factors that may influence health at several levels: population, species, community, habitat, and ecological processes.
- Experimental science: rigorous, controlled, empirical tests to confirm causal relationships, management hypotheses, and the incidental impacts of management.
- Risk analysis: statistical analysis of empirical results to identify levels of uncertainty and therefore ensure against "net harms. Risk assessment need not be quantifiable. We can start by identifying which activities will result in the largest impacts, then develop a conceptual monitoring approach. For example, employing such risk factors as habitat loss, birth rate, and migration barriers allows planners to get a better sense of whether risk levels are acceptable.
- Provision for uncertainty: discussed below.

All of the above methods require monitoring. Notably, the NCEAS study found that less than 50 percent of HCPs had clear monitoring plans in place, where "monitoring" meant more than just "counting" animals. Yet, monitoring will not necessarily reveal the changes that need to be made in time to make them. This argues for a margin of safety in the selection of the HCP conservation strategy. Rigorous

monitoring is worth doing even for HCPs that do not have an adaptive management feature because the rate of amendments to HCPs (at the landowner's request) tends to be high. Such amendments provide the opportunity for adjustments in conservation strategies.

Monitoring must also be time-scale sensitive. For example, short-lived species, e.g., listed mice species, must be monitored much more frequently than long-lived species, e.g., desert tortoises (with respect to generation time), and annual plants more frequently than redwood tress. In short, effective monitoring is keyed to the specific species.

Strategies for dealing with critical uncertainties are essential for adaptive management, and to make the HCP process work in general. An effective and acceptable strategy would detect possible fatal data deficiencies and deal with them in a manner that does not place the target species at risk due to irreversible development of habitat but also does not make development impossible. The first step is to make the adequacy of the data explicit. To assess the sufficiency of data for habitat conservation plans, an inventory of available data and acknowledgement of gaps should be a routine requirement.

When critical data are unavailable or inadequate for prudent planning, and it is not realistic to saddle the ITP applicant with the burden of undertaking original research and developing data, certain precautionary processes should accompany that ITP:

- The greater the impact of a plan, the fewer gaps in critical data should be tolerated. For example, the standard of data adequacy would be higher for irreversible activities such as are typical in urban development as opposed to activities whose impacts can be temporary, as is sometimes the case for water diversions.
- A scarcity of data on impacts of take should be handled by assuming a worst case-scenario in determining whether approval criteria have been satisfied.
- For large HCPs covering vast expanses of land, take needs to be quantitatively assessed.
- Where there is a scarcity of information to validate the effectiveness of mitigation, mitigation measures should be implemented and assessed before take occurs. This could become an explicit approval criteria for HCPs.
- Monitoring needs to be very well designed in those cases where mitigation is unproven.
- Adaptive management needs to be a part of every HCP judged to be predicated on substantial data shortages, not just to deal with "unforeseen circumstances". When faced with data shortages, there needs to be explicit measures for using the information from monitoring to alter management procedures. This means that a precise trigger for "mitigation failures" needs to be spelled out, as well as procedures for adjusting management when that signal of "failure" has been received. The key point here is that the mere existence of monitoring is not a solution to data shortage—there also has to be a quantitative decision-process that links monitoring data to adjustments in management.

In sum, where critical information is scarce or uncertain, the resulting plans should:

- be shorter in duration
- cover a smaller area
- avoid irreversible impacts
- require that mitigation measures be accomplished before take is allowed
- include contingencies
- have adequate monitoring

RECOMMENDATION NO. 4.—REGULATORY ASSURANCES SHOULD BE COMPATIBLE WITH ADAPTIVE MANAGEMENT AND COMMENSURATE WITH AN HCPS CONSERVATION PERFORMANCE

In HCP negotiations, the landowners typically want regulatory assurances that tend to shift the risks associated with complex biophysical systems to the species, which can ill afford them. The permit applicant wants to be absolved of further responsibility for the conservation of the species in exchange for the development concessions he/she makes in the HCP, irrespective of the future population trends for the covered species. That is what is effectively conferred by the "No Surprises" guarantee.

But biological systems are inherently fraught with uncertainty. They are not only more complex than we know; they are inherently more complex than we can know, in the words of one eminent workshop participant. Adaptive management responds to this reality. Under adaptive management, HCPs are acknowledged to be mare working hypotheses, predicated upon assumptions about how species and their eco-

logical processes and functions respond to changes in habitat size, location, configuration, quality, etc. Under adaptive management, these assumptions, uncertainties, and knowledge gaps are made explicit, and the conservation strategy includes a directed and funded program of hypothesis testing against specified and measurable performance goals, monitoring and, most important of all, adaptations of the initial conservation strategy in response to the results.

Adaptive management will also require a fundamental change in the way the regulatory assurances are structured, so that HCPs remain flexible and contingent, rather than immutable, as they are now. One solution lies in converting the assurance package from regulatory immunity to regulatory indemnity. That means that if adaptive management indicates that the species' prospects would be better served by additional restrictions on the use of land or other those could be accomplished without the consent of the landowner, but also without economic penalty to the landowner. The biological risks would, in effect, be absorbed by a compensation fund.

An analog to this is an insurance arrangement under which the issue of who shoulders the risks associated with HCPs converts to the issue of who funds the indemnity pool, and how the decisions on compensation will be made. The regulatory compensation could be funded from Premiums contributed by the beneficiaries, which include the HCP applicants as well as the taxpayer. There is also the potential to fund a portion of the compensation pool through reductions in the cost of debt service for covered development projects. An indemnity arrangement does reduce the risks to development under the ESA. Some share, perhaps most, would also need to be absorbed by the public. This is beginning to happen in the aquatic arena.[6]

Regulatory assurances should not be automatic. Rather, the Services can and should calibrate the regulatory assurance conferred (e.g., the scope or the duration) to the assurance of conservation performance provided by the HCP. Plans that contribute to recovery would get longer guarantees than those that simply maintain the current population level or allow some decrease. Similarly, plans where the underlying data and analysis are judged highly adequate, via objective, definable standards, would be entitled to longer term guarantees.

A recommended approach is to negotiate as a term of the HCP the circumstances that would trigger a requirement for changes in the HCP, the type of changes that could be required, the responsibility for implementing those changes and the contingencies that must be left open in the development plan to allow these changes to be made.

Stronger, more complete, or longer term assurances might be reserved for HCPs that have the following features:

1. plan-specified performance goals;
2. an effective monitoring program;
3. an adaptive management element which identifies the significant risks of the HCP not achieving the performance goals, a contingency plan that is triggered in that event, and a commitment of funds to carry out this element;
4. a commitment by the parties to effective enforcement of the HCP terms; and
5. third party enforcement provisions, should the commitment to abide by the terms of the HCP as described above fail.

RECOMMENDATION NO. 5.—INDEPENDENT SCIENCE SHOULD BE USED TO STRENGTHEN HCPS

Whether the conservation strategy adopted in an HCP is adequate to meet the biological goals requires the exercise of professional judgment and discretion. It is essential that these be specified explicitly and correctly. Even apart from the influence of economics and politics on these judgments, there may be a spectrum of responsible opinions among scientists and agency officials as to whether thresholds of data adequacy or standards for plan approval have been met. There are few bright lines and courts are ill equipped to arbitrate such technical disputes. We need an HCP process that reliably attains the biodiversity conservation objectives of the ESA (survival and recovery) in spite of potential differences in responsible scientific judgment. Independent scientific review may help fulfill that role.

Scientific review is also important because decisions on conservation strategy made apart from the view of the scientific community and the public will not have

[6] Solving the issue of how to determine compensable loss in a nanny that satisfies the private rightsholders is trickier in the terrestrial HCP context than in the aquatic HCP context (where lost water supply reliability is both relatively easy to measure and to compensate). Higher conservation objectives may require higher incentives.

the credibility that HCPs need. The Service negotiators also need the reinforcement that independent science can provide. Outside scientific scrutiny imposes a standard of scientific excellence that is difficult to counteract. The Services have the responsibility of ensuring that applicants use adequate scientific information to develop HCPs Conservation and permitting decisions made without a clear, factual basis and a demonstrable link to information will not result in credible and legally sustainable HCPs. Independent scientific involvement can reinforce the Services' decisions if conducted and managed properly. One way to approach this would be to enlist independent scientists in the development of general scientific principles or guidance for species or habitats on which HCPs can then be based, such as the regional conservation guidelines for coastal sage scrub in Southern California.[7]

The timing of scientific input is critical for shaping HCPs. It is important to get scientists involved as "scientists," providing data and analyses, not just as reviewers, reacting to someone else's data and analyses. The input must come at the formative stage when "first principles" of the application of conservation science are being established for the reserve design or other conservation strategy. These decisions are made as the HCP is negotiated, not at the stage where the Service issues the incidental take permit. At present, HCP applicants control access to the negotiations. The Services accord them this discretion because they view HCPs as applications for a regulatory permit, and therefore as the applicant's workproducts. But HCPs are really negotiated settlements of regulatory liabilities, not just applications for permits. The governmental action takes place in these negotiations. Permit issuance is a mere formality.

One way to interject independent science into HCPs is to bring independent qualified experts into the negotiations directly under the sponsorship of the local communities or interested conservation organizations. However, these potential participants often do not have access to such expertise or the means to procure it. An "HCP Resource Center" comprised of a nationwide network of conservation scientists, resource economists and legal experts with negotiation skills could meet this need. It could allow tailored expertise to be deployed to engage directly and effectively with the agency and applicant's team of negotiators.

CONCLUSION

The performance of habitat conservation planning on lands and waters subject to private property rights could clearly be upgraded through the better application of sound principles of conservation science. Much of this upgrade could be accomplished by the Services themselves, within their existing statutory authority—and with an increase in the needed financial resources. The proposed amendments to the Services' HCP Handbook are, in the main, steps in the right direction. We have provided the Services detailed comments on their proposed amendments, derived from the findings and conclusions of the HCP technical workshop.

Unquestionably, the statutory framework itself could also be improved, to create incentives, disincentives and approval criteria more conducive to effective habitat conservation planning. We also believe that this could be done in a manna that does not increase the burdens imposed on the private rights holders. Indeed, we believe, based on the technical analysis synthesized by the workshop, that statutory reforms could be coupled with more realistic Federal funding in manna that would alleviate some of those burdens and make the habitat planning process more palatable, predictable, effective and scientifically defensible.

The short time available for preparation of this testimony did not permit us to generate thoughtful recommendations for statutory reform. If the Subcommittee should determine to explore that course, however, the Natural Heritage Institute would be pleased to work with your staff to suggest reforms well-grounded in the performance reviews which we call to your attention in this testimony.

Thank you for the privilege of addressing the Subcommittee today.

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[7] A qualified independent reviewer is one who: (1) has little personal stake in the nature of the outcome of decisions or policies, in Arms of financial gain or loss, career advances, or personal or professional relationships; (2) can perform the review tasks flee of intimidation or forceful persuasion by others associated with the decision process; (3) has demonstrated competence in the subject as evidenced by formal tang or experience; (4) is willing to use her or his scientific expertise to reach objective conclusions that may be discordant with her or his value systems or personal biases; and (5) is willing and able to help identify internal and external costs and benefits—both social and ecological—of alternative decisions. Typically such a parson is associated with a recognized scientific society or is otherwise an established professional in a particular field.

RESPONSES BY GREGORY A. THOMAS TO ADDITIONAL QUESTIONS FROM SENATOR CHAFEE

Question 1. How should the ESA be changed to provide for greater public involvement in the HCP process?

Response. As you will recall, NHI's testimony was based on the findings and conclusions that emanated from a technical workshop of experts on "Optimizing Habitat Conservation Planning for Non-Federal Lands and Waters: Harvesting Performance Reviews to Chart a Course for Improvement". Incidentally, four of the institutions represented by witnesses at your hearings participated in that workshop. Among many other topics, that workshop synthesized recent critiques of the opportunities for public involvement afforded by the HCP process historically. The findings and conclusions in that regard are as follows:

Recommendation No. 5.—The Services should make every effort to encourage direct public participation beyond the minimum legally required.

- Public participation in the development of an HCP can enhance the quality of information on which HCP decisions are based, improve understanding and relationships among HCP stakeholders, heighten public and political support for an HCP, and enhance the long-term viability of an HCP. The public has a significant stake in the HCP process because wildlife is a public resource, both legally and politically. And, whatever conservation responsibilities or risks are not borne by and ITP applicant will be shifted to other landowners or the public lands, usually at public expense.
- A recent study by the University of Michigan revealed that the degree of public acceptance of an HCP is strongly related to the degree of public participation in the development of that plan. The more that interested parties are accorded a role in developing conservation plans, rather than merely commenting on completed plans—the more satisfied they tend to be with an HCP.
- The timing and short duration of the comment periods for HCP documents under NEPA and the ESA limit meaningful public involvement. Currently, HCP scoping occurs early in plan development while the project is poorly defined. The next commenting opportunity usually comes at the end, when most decisions are already locked in. At that point, there are no incentives to renegotiate these provisions to incorporate changes requested by the public even if the public provides significant new information. And, then, the comment periods tend to be too short for interested citizens to master the details of a given plan and compose and submit comments. The workshop determined that if the Services invited the public to comment on important issues as they arose or at "trigger points" throughout the planning process, the public would not be confined to participating only in the very early stages of embryonic plans, or after the key HCP provisions have already been negotiated.
- Another way to expand public involvement . . . is . . . to rescale habitat conservation planning [so that individual HCPs fit within a multi-species, ecosystem level conservation strategy] and involve local land use agencies. Public access and effective participation in the development of the conservation "deal" would be greatly enhanced where the HCP applicant is or includes units of local or State government. Local or State governmental agencies are likely to involve the public in much the same way the public participates in local land use decisions. This can occur because State laws often provide for open hearings and easy access to public documents. This allows citizens to directly address and interact with public officials in HCP development and implementation. This element supplements and often exceeds the minimal Federal requirements for notice and comment under NEPA.
- Fundamentally, the problem with public access to the process is that the Services have delegated the "gatekeeper" role to the permit applicant. The applicant exercises sole discretion as to who will and who will not be given a seat at the negotiating table. This reflects the Services' mistaken notion that an HCP is just a permit application over which the applicant should exercise final substantive control. But an HCP is much more than an application. It is for all intents and purposes a negotiated settlement of the terms and conditions under which a discretionary permit will be issued to engage in otherwise forbidden acts, namely the taking of protected species. An HCP is not just the applicant's work product. It is a compromise jointly produced by all parties to the HCP negotiations. Once its terms are approved by the Services, the "incidental take permit" or ;implementation agreement" is largely a formality.
- Functionally, the approved HCP is the permit to take protected species. As such, the process through which it is formulated, issued and approved should be as open to interested members of the public as is the issuance of land use permits in other contexts. For example, when the Department of Interior grants grazing per-

mits under the Federal Land Policy and Management Act, it allows for public participation so that all parties affected by the process will be fully represented.[1] NPDES permits and local building permits are similarly public processes. Those permit applicants are not allowed to control who can and who cannot participate in the permitting process. Likewise, the Services, not the applicants should determine who gets a seat at the HCP negotiation table.

• The issue of who sits at the table is crucial to the quality and acceptability of HCPs and the process itself. Upgrading the independent scientific bases for HCPs cannot be done solely after the fact, in the form of peer review. By then, the fundamental decisions regarding the design of the conservation strategy, the monitoring program, and the adaptive management arrangement will already have been settled in the negotiation process. If the science underlying HCPs needs to be improved—and most commentators believe that to be the case—this must be done by bringing these experts directly into the negotiations at the earliest stages. The current arrangement assumes that the agencies and applicants alone can be relied upon to marshal the needed expertise. But, in fact, the Services' internal expertise is spread very thin where literally hundreds of HCPs are in development simultaneously, and the applicant's experts may appear to be influenced by the understandable desire to minimize the costs of conservation measures.

• This is not to say that in acting as gatekeepers the Services must admit to the table everyone who knocks on the door. Demonstrated ability to contribute substantively to the issues on the table without undue delay may be made the price of admission. We simply urge that the Services themselves assume the role of making these decisions and not leave them to the permit applicant. Native fish and wildlife are public resources under both State and Federal jurisprudence, wherever they may be found. It is fundamentally wrong to treat permits to take endangered species on private lands as though the public does not have an interest in the substantive validity of the negotiated terms and conditions.

Incidentally, NHI called these deficiencies in the public involvement process to the attention of the Services in our comments on the proposed revisions to the HCP Handbook. In our view, the most significant problem with these proposed revisions is the failure of the Services to reserve to themselves the "gatekeeper" function, for the reasons set forth above. In the event that the Services do not make this change in the final version of the Handbook revisions, we strongly encourage this Committee to mandate that change when it reauthorizes the ESA.

Question 2. You have argued for the use of outside "review" teams consisting of wildlife biologists, lawyers, and other stakeholders to evaluate HCPs. The proposal would be to require landowners to include these teams at the outset in developing an ECP. Can you please describe what the role of these review teams would be? What additional expertise or resources do they contribute to the development of an HCP? How would their activities be funded?

Response. Specifically, NHI proposes to organize a nationwide network of specialized experts in the fields of conservation science, resource economics and wildlife law, drawn largely from the academic sphere. We envision drawing on this network to assemble specialized teams that could seek to participate in the negotiation of high-consequence HCPs on behalf of local communities and the general public. We envision that these independent experts would apply to the Services to be permitted to participate in the development of these HCPs, just as "public interest intervenors" now routinely seek to participate in many other environmental permitting processes. The Services would exercise their discretion to determine whether and how to involve the independent experts. Presumably, the Services would consider the value of the proffered expertise as well as the effects on administrative efficiency. In most cases, we believe, the Services would find that participation by these experts—particularly at the formative stages of HCPs—would significantly improve both their quality and their public acceptability. In those cases, the Services could urge or even require the permit applicant to provide technical information to the independent team for their review and comment, and to consider their suggestions and proposals in formulating the HCP. In cases where the Services are persuaded that the recommendations of the expert team should prevail, they could so condition their approval of the HCP.

The independent experts would expect to be admitted to the negotiations only upon a showing that they can provide a type or quality of expertise not otherwise

[1] Other Federal statutes allow stakeholders to help shape natural resource use and protection. The EPA convenes interested stakeholders in setting Federal water quality standards, and NMFS itself employs stakeholder groups under the Marine Mammal Protection Act in its efforts to reduce the harm commercial fishing has on imperiled fish species. Nothing in the ESA precludes the Services from employing similar measures to involve the public in the HCP context.

provided by either the applicant's consultants or the Services' internal staff. In the view of the several empirical reviews of HCPs synthesized at the NHI workshop, the type and quality of expertise brought to bear on HCPs can often be improved through the use of such "independent science".

We are currently exploring the options for funding. Ideally, the funding would come from a combination of sources, including:

(1) The local communities or conservation interests represented by the independent scientists might provide at least "earnest money" support;

(2) The scientists (and other experts) might be asked to discount their fees as a public interest gesture (NHI has had considerable success in negotiating such arrangements in the past); and,

(3) Support would be sought from private foundations with an interest in biodiversity on private lands.

Ideally, the Congress will also see substantial value in this initiative for improving the HCP process (without additional cost to the private rights holders) and provide some public funding, perhaps through the National Fish and Wildlife Foundation.

Question 3. Should improvements to the science of HCPs be mandatory? In other words, should all HCP applicants be required to undertake measures to improve the scientific basis of their individual HCPs?

Response. As the testimony (and the several performance reviews synthesized in the NHI workshop) reveal, the extent to which HCPs are scientifically defensible varies widely. To be sure, it may be possible to mandate a better level of "quality control" by improving the statutory criteria for approval of HCPs (many suggestions in this regard can be distilled from the attached workshop findings and conclusions), or the statutory process for making those approvals (such as requiring explicit findings of fact with respect to the approval criteria).

However, the science of HCPs could also be substantially upgraded through improvements in the process and incentives. If the Services themselves where given the resources to develop high-quality, ecosystem-scale, multi-species conservation strategies at the landscape scale, the scientific burdens associated with developing HCPs at the scale of the individual landholding would be greatly ameliorated, with a significant quality improvement. Options for doing this are discussed in the attached Findings and Conclusions. The intervention of independent conservation science at the formative stages of HCPs is another promising device, as discussed above. Upgrading and extending the use of "adaptive management" techniques in HCPs would also vastly improve their scientific credibility.

Responses by Gregory A. Thomas to Additional Questions from Senator Crapo

Question 1. Your paper calls for the development of an HCP team, including wildlife lawyers, which will be deployed at the request of conservationists to ply open the negotiating process between the Services and landowners. Don't you believe that such actions will act as a disincentive to landowners to participate in HCP development?

Response. How landowners would view the possibility of direct participation by independent scientists in the crafting of their HCP is certainly a legitimate issue. Since HCPs are the primary vehicle by which private rights holders make commitments to conserve biodiversity, we do not want to make them better at the expense of making them rarer. Properly done, opening up today's bilateral negotiations to broader scientific scrutiny can provide tangible benefits to all stakeholders. Failed HCPs leading to species extinctions is everyone's nightmare. Our discussions with landowners indicates that they do favor improving the prospects of success in habitat conservation planning, if that can be done without significantly increasing their costs or timelines. The Services freely admit that their internal scientific capacities are stretched very thin by the volume and complexity of HCPs, and by the narrowly specialized expertise that they require. Conservation interests and local communities are crying out for better access to a process that affects their interests greatly. The scientific community has expressed grave concerns about the defensibility of the current generation of HCPs. Surely we can find a way to do better by all these stakeholders.

To clarify, the better way proposed by NHI is to convene interdisciplinary teams of experts to directly engage in the crafting of HCPs. To be sure, wildlife law experts may be useful in this endeavor—perhaps to act as the actual negotiators. But, the conservation scientists are the core capability that needs to be organized and "deployed". We believe this can be done without additional expense to the landowners.

We do not propose that the landowners would be required to pay for this dose of independent science. We also do not accept the premise that better science will lead to more expensive conservation measures. The most expensive type of conservation measures are those that fail in their intended purpose, although the additional costs may be visited on the next landowner who seeks a take permit covering the subject species. In the end, the team of independent scientists that might participate in the negotiations has no power to dictate terms and conditions. They can only critique and recommend. In the end, the power to approve will continue to lie where it does today, with the Services who can issue or withhold incidental take permits.

We also do not propose that the intervention of independent scientists in the HCP process would be automatic. Rather, we propose that their participation lie within the discretion of the Services, who can best determine whether they will make a positive contribution in a particular circumstance.

Question 2. Does NHI engage in litigation on environmental issues? Would NHI lawyers "pry open" the doors to the negotiating process and then file an action if they didn't get everything they wanted out of negotiations? How would that affect the willingness of applicants and agencies to cooperate on HCPs?

Response. NHI is an organization of lawyers, scientists and economists. We do have litigation capability, which we use judiciously, preferring to find solution opportunities beyond the pale of existing law where we can. The prospect of legal challenges to HCPs exists whether or not independent scientists are involved in their crafting, and it exists quite apart from NHI. The important point here is that litigation by anyone is much less likely if there is higher confidence in the eff1cacy of the HCP that emerges from the negotiations. One of the chief benefits of outside scrutiny is the higher level of public satisfaction with the HCP process. Thus, if the interest of the Senator in posing this question is to insulate the HCP process from litigation challenges, the best strategic move he could make would be to open the process to public involvement through highly qualified experts not otherwise available to the applicant or the Services. Indeed, this insulation should be highly attractive to the permit applicants who are willing to go to the time and expense of developing an HCP.

We believe that it is time to put unproductive rhetoric aside and get on with the business of crafting a high-confidence process for the development of private property without driving species to extinction. Better science is part of the solution for landowners and species alike. We are trying to help marshal it. We hope we can be useful to the leadership of the U.S. Senate in doing likewise.

Thank you for the opportunity to present our views, and those of the workshop participants, both at the hearing and in these responses. A copy of the workshop "Findings and Conclusions" is attached to amplify on these points. I reiterate our desire to serve as a resource to the Committee as it considers how to improve the statutory framework for habitat conservation planning on non-Federal lands and waters.

A SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS OF THE PARTICIPANTS OF THE WORKSHOP

OPTIMIZING HABITAT CONSERVATION PLANNING FOR NON-FEDERAL LANDS AND WATERS: HARVESTING PERFORMANCE REVIEWS TO CHART—A COURSE FOR IMPROVEMENT

I. INTRODUCTION

Habitat conservation planning is at once the most important and the most controversial arena in the ongoing effort to protect biodiversity on private lands in the United States. In June 1998, as part of its project: "Improving Endangered Species Habitat on Private Lands," the Natural Heritage Institute (NHI) convened HCP experts from the fields of conservation biology, land-use planning, natural resource economics, and law for a 2-day workshop. The purpose of the workshop was to synthesize the results of a number of empirical studies of the performance of HCPs in which these experts had been involved, with a view toward distilling the endemic deficiencies and identifying achievable solutions. This document reports the principal findings and recommendations from the workshop as an agenda for action to improve this vehicle for accomplishing commitments to habitat conservation on lands and in water subject to private property rights.

II. KEY RECOMMENDATIONS FROM THE WORKSHOP

Recommendation No. 1.—Scale habitat conservation planning to overcome the limitations and deficiencies associated with landholding-specific HCPs

A principal and recurring issue was the appropriate planning unit for habitat conservation. Repeatedly, the discussion confirmed that the optimal unit is not the individual land holding or water diversion, and the optimal focus is not individual listed species. Rather, there are benefits for both biological resources and property rights holders in a landscape level of planning wherein habitat conservation strategies are developed at a "bioregional" scale, which covers entire ecosystems, and their community of species. At this scale, ecosystems and their species are more likely to be afforded effective conservation measures, and the conservation responsibilities are more likely to be properly allocated among land and water rights holders, both public and private.

Nothing in the ESA either requires or forbids landscape-level planning by either the Services or the applicants. Nonetheless, the tradition within the Services has been to implement the Act species by species and site by site. Such tradition is often difficult to overcome.

There can be major advantages to the non-Federal rights holders as will as to the achievement of the species conservation goals if landscape-level planning is applied. Concentrating on large landscape units for conservation planning and permitting can address many of the perceived problems with HCPs. This is not to say that larger, more complex HCPs have performed better than smaller and simpler plans. To the contrary, rescaling is advantageous only to the extent that it opens the possibility of overcoming, not replicating, the limitations and deficiencies that have plagued landholding-specific HCPs. The potential advantages of landscape-scale HCPs identified in the workshop are the following:

A. Landscape-scale planning can specify the overall conservation effort that will be needed for communities of species and provide a basis for determining what share of that burden an individual property owner should bear in an HCP. There is no mechanism at present for allocating that conservation burden as between private landowners or between them and the public lands, Instead, the burden allocation is made in a piecemeal fashion through the approval of HCPs, § 7 consultations, and public land management plans and permit issuance. In theory, those who get their approvals earliest get the best deal, with larger burdens reserved for latecomers.[1]

B. At the landscape level, it is possible to calibrate habitat conservation planning to a recovery standard for endangered species and to prevent threats to other vulnerable species. Landholding-specific HCPs tend to aim for mitigation or at best, avoidance of impacts on listed species whereas the only biologically defensible aiming point for habitat conservation is a net improvement in the prospects or survival and prevention of further losses to unlisted species in decline. A conservation or "recovery" standard would be much easier to accomplish if HCPs were oriented toward restoring entire landscapes rather than simply limiting wildlife losses.

C. Landscape-level planning promotes economies of scale in data collection and monitoring. Good science is expensive. The burden of marshalling and interpreting the needed information is onerous for individual rightsholders seeking development permits. Rescaling shifts an appreciable degree of this burden from individual property owners applying for incidental take permits to the public agencies and the broader constellation of rightsholders that have interests and responsibilities in the eco-region. At a landscape level of conservation, it is also easier to evaluate and allocate a "fair share" of the burden among all public and private entities.

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[1] This burden allocation problem is not susceptible to a simple or uniform principle. In some cases, the private land's share of the burden, in the aggregate, should be "no net loss" of habitat values. But, "no net loss" of habitat does not necessarily ensure the conservation of species. For example, most listed species require some form of active management (e.g. prescribed fire, exotic species control, etc.). Theoretically, an HCP could result in a net loss of habitat, but in providing needed management for such species, provide a net conservation benefit for that species. Furthermore, not all habitat has the same value. For example, conservationists may be willing to trade two groups of red-cockaded woodpeckers in highly fragmented habitat for creation of a single group that is in a critical linkage zone in a designated recovery population. Moreover, HCPs should not be called on to solve all endangered species conservation conflicts. Sometimes the government will have to bear a greater burden, such as where the only ecologically justified mitigation is just too expensive for an HCP to bear because, for example, a species is critically endangered and cannot suffer any further habitat loss. In these situations, the Federal Government may have to purchase the critical private land holdings. Then there is the question whether the public lands share of the burden be set as national policy or negotiated among the affected stakeholders as part of a recovery plan or other bioregional plan.

D. Adaptive management of conservation strategies and reserve design is facilitated and made more flexible at a larger planning scale. That is because adaptive management requires that some part of the development plan covered by an HCP remain contingent. It is more feasible to do this in larger scale habitat plans. However, adaptive management is still often feasible with smaller plans as well.

E. The quality and degree of public participation is generally better at a broader scale of planning. This is especially true if a local government mediates the habitat conservation planning process by applying for the Federal permit and then issuing subpermits to individual landholders. Such local agencies generally include the public routinely in such land use planning processes. The empirical evidence does not support the conclusion that public participation has been superior where a single-landowner prepares a large landscape-level HCP as is true for many timber HCPs.

If landscape-level planning offers the best prospects for species conservation, then it is necessary to ask what kinds of incentives, inducements and cost-sharing arrangements would cause habitat conservation planning to (1) occur at the landscape level, (2) achieve a recovery level of performance (3) encourage local governmental participation. This will require a reorientation by the Services, whose historic ESA implementation has fostered the choice of inappropriate planning units. Instead, the Services should view incidental take permits as fitting within a broader conservation framework governed by specified standards and goals, such as one finds for other environmental permitting regimes which are structured to achieve area wide environmental quality goals. For instance, under the Clean Air Act, an applicant for a permit to discharge regulated air pollutants into an airshed that is already impaired must demonstrate a *net positive contribution* toward the goal of reducing the overall level of emissions in order to help meet the ambient air quality standards. To do this, the permittee must offset (i.e. do more than just mitigate) its emissions by procuring reductions from other facilities. In the water quality arena, NPDES permittees must show that their contribution of contaminants will not violate basin-wide standards that are designed to assure conditions necessary to support "beneficial uses" of the watercourse.

Likewise, the workshop suggested that individual HCPs should be calibrated to contribute toward achieving a bioregional conservation strategy that aims for long-term, sustainable conservation. This may sometimes entail more than avoiding or minimizing impacts on the subject landholding. It may also entail reducing the threat to the species on other lands through offsite mitigation via a mitigation fund. Mitigation funds can be used, for instance, to purchase the highest-quality habitats to prevent their development. A development exaction of this sort is often best administered by local agencies of government that are charged with regional land use planning. This is an additional reason to utilize local jurisdictions as the vehicle for bioregional habitat conservation planning. However, since bioregions often cross local (e.g., county and even state) jurisdictional boundaries, coordination by a higher-level jurisdiction may be necessary.

Several potential vehicles emerged in the workshop discussions for rescaling habitat conservation planning. One is to accelerate the development and improve the performance of recovery plans under the ESA. There are several potential vehicles for rescaling habitat conservation planning. One is to accelerate the development and improve the performance of recovery plans under the ESA. There are several problems with this vehicle, however:

- Too often today, recovery plans do not exist and therefore cannot serve as a guide to individual HCPs. Yet, it is not realistic for the Services to decline to approve a proposed HCP until a recovery plan for the covered species is in place. One alternative is to make the approval of such HCPs conditional upon adoption of the recovery plan. This can work without undue risk to the permittee under the adaptive management strategy described later in this document so long as the Services are diligent in their recovery planning efforts.
- When recovery plans have been developed, they generally have not resulted in more adequate HCPs.[2] Historically, recovery plans have been of poor quality. Most are not biologically defensible.
- Recovery plans have often inappropriately subordinated the biological objective to economic considerations. Economics does count in apportioning the conservation burdens among the public and private landowners, but must not be allowed to dictate the biological requisites of the recovery plan.
- Recovery plans are not viewed as binding and enforceable because that would be tantamount to the Federal Government engaging in land use planning. That is

[2] See generally Kareiva et. al, *Using Science in Habitat Conservation Plans*, National Center for Ecological Analysis and Synthesis, Univ. of California, Santa Barbara, and American Institute of Biological Sciences. Washington, DC. (1999).

more a political than a legal objection, however. In fact, the Federal Government needs to have a basis for deciding whether an HCP provides sufficient conservation benefit to be approvable. Recovery plans can provide that guidance.

• Recovery is a species-based concept and recovery plans do not necessarily accomplish much for ecosystems, their processes, or functions. However, there is no obvious reason why bioregional HCPs cannot adopt a "recovery" conservation goal for those species in the assemblage that are listed under the Act. Likewise, there is no reason why recovery plans cannot address multiple species and be habitat-based. Such an approach would further the goals of the Act, i.e., to preserve the ecosystems upon which threatened and endangered species depend.

A second promising vehicle is preparation of HCPs and administration of take allowances through sub-permits by units of State and local government that already have the predominant role in land use planning. One example is the California Natural Communities Conservation Program (NCCP) approach.

A third vehicle is the promulgation of programmatic standards or guidelines for multi-species conservation by Federal land and water managers and regulators. For example, the recent adoption of NMFS' programmatic guidelines for logging on anadromous fish-bearing streams in the Pacific Northwest may prove to be a useful model in other contexts. Such programmatic guidelines can apply standards for riparian buffers and acceptable levels of sedimentation to entire watersheds or other ecologically significant planning units. Similarly, the Aquatic Conservation Strategy component of the President's Forest Plan provides a multi-layered planning approach intended to result in ecosystem-wide forest management.

Recommendation No. 2.—Calibrate Habitat Conservation Planning to Biologically Defensible Goals

Biological science should drive the development of both bioregional and individual landowner plans. Economics is relevant to the allocation of responsibilities among landowners—public and private—in achieving the conservation goals of the plan, but should not be allowed to intrude into the choice of conservation strategies. The performance reviews revealed, however, that the statutory command to "minimize and mitigate project impacts to the maximum extent practicable" has become an economic feasibility standard in practice. HCP negotiations have often been driven by the applicant's assertions as to the effects of mitigation alternatives on profit margins, rather than by the biological imperatives.

Species recovery is the ultimate goal of the ESA and contribution to this goal is the yardstick by which the habitat conservation planning process should be measured. HCPs will be viewed as contributing to the problem rather than the solution unless they are designed to advance a restoration strategy, that is, unless they confer a net survival benefit to the species. Otherwise, the Services are running a hospital in which the patients will never be taken off life support.[3]

The difference between "survival" and "recovery" can be understood as different levels of risk for the species. At present, the level of acceptable risk is left to the judgment of the applicants and the Services and is never made explicit. Often, there generally are not sufficient data to quantify these risks. Qualitative analysis of risk factors is possible, however. This type of risk analysis is familiar terrain in setting air and water quality criteria, for example. Thus, it would be feasible to assess the risk to species by identifying and addressing the factors that have the largest effect on survivability. Independent scientific Peer review would be very beneficial in doing this.

Such higher conservation objectives may require greater landowner incentives. Indeed, it makes sense to correlate the extent of regulatory assurances to the extent of biological benefit conferred in an HCP. One way to do this is to link the duration of regulatory assurances to the degree of conservation effort embodied in the plan. Plans that contribute to recovery would get longer-term assurances than those that only avoid jeopardy. Similarly, plans based on highly adequate data and analysis would be entitled to longer-term guarantees.

Creating incentives to achieve a higher level of conservation performance may also entail shifting a larger share of the conservation "costs" from the non-Federal landowners to the Federal land management agencies by holding them to a higher standard of performance than prevention of jeopardy to individual species. Unfortunately, that is the aiming point for most management decisions on Federal land. This low standard of management for the public lands should concern to the prop-

[3] On heavily impaired lands, even a net benefit standard may not be enough to recover the species or prevent local extirpation. In these circumstances, the Federal Government's role in bioregional planning may need to include purchasing and restoring such lands. HCPs should not be counted on to solve all endangered species/private lands conflicts.

erty rights community as much as the conservation community because the consequence is to apportion a higher burden of species conservation on the private rightsholders (or a compromise of the biological goals of the ESA). Of course, allocating conservation "costs" between Federal and non-Federal lands is not an option in regions of the country where there is little or no Federal land, or where existing Federal land is unsuitable to support the species in question.

Getting the incentives right is essential to making the HCP program work. The workshop illuminated the tradeoffs. If the Services enforced the "take" prohibition under Section 9, it would create a strong incentive for private rights holders to seek incidental take permits, for which HCPs are a pre-requisite. Clearly, the more vigorous the take enforcement, the greater the incentive to develop approvable HCPs. As the incentives increase, so does the quality that can be demanded in HCPs. To be sure, the penalty needs to be sufficient to nullify any economic benefits of non-compliance; nominal penalties are likely to be absorbed as a cost of doing business rather than serve as a deterrent to taking species or destroying habitats. Because the Services are reluctant to enforce Section 9, the main negative incentive is the fear of citizen suits and the attendant insulation that an HCP can provide.

On the other hand, the larger the potential penalty, the greater the perverse incentive to destroy habitat before a listing occurs. The practical difficulties in enforcing take also limit its incentive value. Enforcement is often difficult because the Services cannot enter private lands without permission to survey for species. The Services do not have the budget to consistently enforce, and this is not likely to change. Increased enforcement of the take prohibition also mobilizes private property owners against the Act who believe that they are being required to pay for the conservation of a public good. And, for many species there will always be a low risk of enforcement, since we do not have the necessary data for these species, and thus do not know what constitutes take (e.g. mussels). For other species, the Services do not know where they occur on private lands.

These realities assure that the take prohibition cannot substitute for habitat conservation planning on non-Federal lands, but it is an essential incentive to HCP development. The fear of take enforcement and regulatory guarantees together must be incentives encouraging meaningful habitat conservation. That is the calculus of the Services' "No Surprises" rule. Some workshop participants confirmed that landowners are preparing HCPs because capital markets (banks) insist upon HCPs before they will lend project development funds. Capital markets place a high value on assurances that future restrictions will not impede development. This may not apply to "commodity" lands where take detection and enforcement is problematic.

Recommendation No. 3.—Adaptive management and biological monitoring should be required components of all HCPs.

Every HCP should be regarded as a "learning laboratory" wherein the conservation arrangements are treated as working hypotheses. In that regard, the elements of adaptive management and the potential responses to changes should be built into the plan from the beginning. Another term for "adaptive management" is "contingency planning". In either, the core requirements are a program for evaluating the performance of the HCP and the specification of contingency arrangements (alternative conservation measures) that would be triggered automatically in the event the performance fails to meet the goals. This might entail the plan implementer to implement in phases so that permission to begin a later phase is contingent upon the Services verifying that the permittee has met the performance standards in the prior phase. This is more easily accomplished in large ecosystem-based plans that are implemented over time.

Workshop participants identified five elements or steps to develop an HCP with adaptive management and monitoring:

1. Identify explicit quantifiable goals;
2. Identify imaginative policy options;
3. Identify explicit human-induced and other stresses on the system;
4. Monitor biological indices by developing a statistically valid sampling scheme or an analytic structure for interpreting data; and
5. Develop mechanisms to translate data into needed plan adjustments by the land managers and the oversight agencies.

These elements call for the rigorous application of the following scientific methods:

- System Assessment: systematic collection and statistical analysis of data on "health" of the important ecosystem components and on the factors that may influence health at several levels: population, species, community, habitat, and ecological processes.

- Experimental science: rigorous, controlled, empirical tests to confirm causal relationships, management hypotheses, and the incidental impacts of management.
- Risk analysis: statistical analysis of empirical results to identify levels of uncertainty and therefore ensure against "net harm". Risk assessment need not be quantifiable. We can start by identifying which activities will result in the largest impacts, then develop a conceptual monitoring approach. For example, employing such risk factors as habitat loss, birth rate, and migration barriers allows planners to ret a better sense of whether risk levels are acceptable.
- Provision for uncertainty: discussed below.

All of the above methods require monitoring. Notably, the NCEAS study found that less than 50 percent of HCPs had clear monitoring plans in place, where "monitoring" meant more than just "counting" animals. Yet, monitoring will not necessarily reveal the changes that need to be made in time to make them. This argues for a margin of safety in the selection of the HCP conservation strategy. Rigorous monitoring is worth doing even for HCPs that do not have an adaptive management feature because the rate of amendments to HCPs (at the landowner's request) tends to be high. Amendments provide the opportunity for adjustments in conservation strategies.

Monitoring must also be time-scale sensitive to the species or system monitored with respect to generation times. For example, short-lived species, e.g., listed mice species, must be monitored much more frequently than long-lived species, e.g., desert tortoises (with respect to generation time), and annual plants more frequently than redwood tress. In short, effective monitoring is keyed to the specific species.

Strategies for dealing with critical uncertainties are essential for adaptive management, and to make the HCP process work in general. An effective and acceptable strategy would detect possible fatal data deficiencies and deal with them in a manner that does not place the target species at risk due to irreversible development of habitat but also does not make development impossible. The first step is to make the adequacy of the data explicit. To assess the sufficiency of data for habitat conservation plans, an inventory of available data and acknowledgement of gaps should be a routine requirement.

When critical data are unavailable or inadequate for prudent planning, and it is not realistic to saddle the ITP applicant with the burden of undertaking original research and developing data, certain precautionary processes should accompany that ITP:

- The greater the impact of a plan, the fewer gaps in critical data should be tolerated. For example, the standard of data adequacy would be higher for irreversible activities such as are typical in urban development as opposed to activities whose impacts can be temporary, as is sometimes the case for water diversions.
- A scarcity of data on impacts of take should be handled by assuming a worst case-scenario in determining whether approval criteria have been satisfied.
- For large HCPs covering vast expanses of land, take needs to be quantitatively assessed.
- Where there is a scarcity of information to validate the effectiveness of mitigation, mitigation measures should be implemented and assessed before take occurs. This could become an explicit approval criteria for HCPs.
- Monitoring needs to be very well designed in those cases where mitigation is unproven.
- Adaptive management needs to be a part of every HCP judged to be predicated on substantial data shortages, not just to deal with "unforeseen circumstances".

When faced with data shortages, there needs to be explicit measures for using the information from monitoring to alter management procedures. This means that a precise trigger for "mitigation failures" needs to be spelled out, as well as procedures for adjusting management when that signal of "failure" has been received. The key point here is that the mere existence of monitoring is not a solution to data shortage there also has to be a quantitative decision-process that links monitoring data to adjustments in management.

In sum, where critical information is scarce or uncertain, the resulting plans should:

- be shorter in duration
- cover a smaller area
- avoid irreversible impacts
- require that mitigation measures be accomplished before take is allowed
- include contingencies
- have adequate monitoring

Recommendation No. 4.—Regulatory assurances should be compatible with adaptive management and commensurate with an HCP's conservation performance

In HCP negotiations, the landowners typically want regulatory assurances that tend to shift the risks associated with complex biophysical systems to the species, which can ill afford them. The permit applicant wants to be absolved of further responsibility for the conservation of the species in exchange for the development concessions he/she makes in the HCP, irrespective of the future population trends for the covered species. That is what is effectively conferred by the "No Surprises" guarantee.

But biological systems are inherently fraught with uncertainty. They are not only more complex than we know; they are inherently more complex than we can know, in the words of one eminent workshop participant. Adaptive management responds to this reality. Under adaptive management, HCPs are acknowledged to be mere working hypotheses, predicated upon assumptions about how species and their ecological processes and functions respond to changes in habitat size, location, configuration, quality, etc. Under adaptive management, these assumptions, uncertainties, and knowledge gaps are made explicit, and the conservation strategy includes a directed and funded program of hypothesis testing against specified and measurable performance goals, monitoring and, most important of all, adaptations of the initial conservation strategy in response to the results.

Adaptive management will also require a fundamental change in the way the regulatory assurances are structured, so that HCPs remain flexible and contingent, rather than immutable, as they are now. One solution lies in converting the assurance package from regulatory immunity to regulatory indemnity. That means that if adaptive management indicates that the species' prospects would be better served by additional restrictions on the use of land or other mitigations, those could be accomplished without the consent of the landowner, but also without economic penalty to the landowner. The biological risks would, in effect, be absorbed by a compensation fund.

An analog to this is an insurance arrangement under which the issue of who shoulders the risks associated with HCPs converts to the issue of who funds the indemnity pool, and how the decisions on compensation will be made. The regulatory compensation could be funded from "premiums" contributed by the beneficiaries, which include the HCP applicants as well as the taxpayer. There is also the potential to fund a portion of the compensation pool through reductions in the cost of debt service for covered development projects. An indemnity arrangement does reduce the risks to development under the ESA. Some share, perhaps most, would also need to be absorbed by the public. This is beginning to happen in the aquatic arena.[4]

Regulatory assurances should not be automatic. Rather, the Services can and should calibrate the regulatory assurance conferred (e.g., the scope or the duration) to the assurance of conservation performance provided by the HCP. Plans that contribute to recovery would get longer guarantees than those that simply maintain the current population level or allow some decrease. Similarly, plans where the underlying data and analysis are judged highly adequate, via objective, definable standards, would be entitled to longer-term guarantees.

A recommended approach is to negotiate as a term of the HCP the circumstances that would trigger a requirement for changes in the HCP, the type of changes that could be required, the responsibility for implementing those changes and the contingencies that must be left open in the development plan to allow these changes to be made.

Stronger, more complete, or longer term assurances might be reserved for HCPs that have the following features:

1. plan-specified performance goals;
2. an effective monitoring program;
3. an adaptive management element which identifies the significant risks of the HCP not achieving the performance goals, a contingency plan that is triggered in that event, and a commitment of funds to carry out this element;
4. a commitment by the parties to effective enforcement of the HCP terms; and
5. third party enforcement provisions, should the commitment to abide by the terms of the HCP as described above fail.

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[4] Solving the issue of how to determine compensable loss in a manner that satisfies the private rightsholders is trickier in the terrestrial HCP context than in the aquatic HCP context (where lost water supply reliability is both relatively easy to measure and to compensate). Higher conservation objectives may require higher incentives.

Recommendation No. 5.—The Services should make every effort to encourage direct public participation beyond the minimum legally required.

Public participation in the development of an HCP can enhance the quality of information on which HCP decisions are based, improve understanding and relationships among HCP stakeholders, heighten public and political support for an HCP, and enhance the long-term viability of an HCP. The public has a significant stake in the HCP process because wildlife is a public resource, both legally and politically. And, whatever conservation responsibilities or risks are not borne by and ITP applicant will be shifted to other landowners or the public lands, usually at public expense.

A recent study by the University of Michigan revealed that the degree of public acceptance of an HCP is strongly related to the degree of public participation in the development of that plan. The more that interested parties are accorded a role in developing conservation plans, rather than merely commenting on completed plans—the more satisfied they tend to be with an HCP.

The timing and short duration of the comment periods for HCP documents under NEPA and the ESA limit meaningful public involvement. Currently, HCP scoping occurs early in plan development while the project is poorly defined. The next commenting opportunity usually comes at the end, when most decisions are already locked in. At that point, there are no incentives to renegotiate these provisions to incorporate changes requested by the public even if the public provides significant new information. And, then, the comment periods tend to be too short for interested citizens to master the details of a given plan and compose and submit comments. The workshop determined that if the Services invited the public to comment on important issues as they arose or at "trigger points" throughout the planning process, the public would not be confined to participating only in the very early stages of embryonic plans, or after the key HCP provisions have already been negotiated.

Another way to expand public involvement has already been mentioned. That is the workshop's overarching recommendation to rescale habitat conservation planning and involve local land use agencies. Public access and effective participation in the development of the conservation "deal" would be greatly enhanced where the HCP applicant is or includes units of local or State government. Local or State governmental agencies are likely to involve the public in much the same way the public participates in local land use decisions. This can occur because State laws often provide for open hearings and easy access to public documents. This allows citizens to directly address and interact with public officials in HCP development and implementation. This element supplements and often exceeds the minimal Federal requirements for notice and comment under NEPA.

Fundamentally, the problem with public access to the process is that the Services have delegated the "gatekeeper" role to the permit applicant. The applicant exercises sole discretion as to who will and who will not be given a seat at the negotiating table. This reflects the Services' mistaken notion that an HCP is just a permit application over which the applicant should exercise final substantive control. But an HCP is much more than an application. It is for all intents and purposes a negotiated settlement of the terms and conditions under which a discretionary permit will be issued to engage in otherwise forbidden acts, namely the taking of protected species. An HCP is not just the applicant's work product. It is a compromise jointly produced by all parties to the HCP negotiations. Once its terms are approved by the Services, the "incidental take permit" or "implementation agreement" is largely a formality.

Functionally, the approved HCP is the permit to take protected species. As such, the process through which it is formulated, issued and approved should be as open to interested members of the public as is the issuance of land use permits in other contexts. For example, when the Department of Interior grants grazing permits under the Federal Land Policy and Management Act, it allows for public participation so that all parties affected by the process will be fully represented.[5] NPDES permits and local building permits are similarly public processes. Those permit applicants are not allowed to control who can and who cannot participate in the permitting process. Likewise, the Services, not the applicants should determine who gets a seat at the HCP negotiation table.

The issue of who sits at the table is crucial to the quality and acceptability of HCPs and the process itself. Upgrading the independent scientific bases for HCPs

[5] Other Federal statutes allow stakeholders to help shape natural resource use and protection. The EPA convenes interested stakeholders in setting Federal water quality standards, and NMFS itself employs stakeholder groups under the Marine Mammal Protection Act in its efforts to reduce the harm commercial fishing has on imperiled fish species. Nothing in the ESA precludes the Services from employing similar measures to involve the public in the HCP context.

cannot be done solely after the fact, in the form of peer review. By then, the fundamental decisions regarding the design of the conservation strategy, the monitoring program, and the adaptive management arrangement will already have been settled in the negotiation process. If the science underlying HCPs needs to be improved—and most commentators believe that to be the case—this must be done by bringing these experts directly into the negotiations at the earliest stages. The current arrangement assumes that the agencies and applicants alone can be relied upon to marshal the needed expertise. But, in fact, the Services' internal expertise is spread very thin where literally hundreds of HCPs are in development simultaneously, and the applicant's experts may appear to be influenced by the understandable desire to minimize the costs of conservation measures.

This is not to say that in acting as gatekeepers the Services must admit to the table everyone who knocks on the door. Demonstrated ability to contribute substantively to the issues on the table without undue delay may be made the price of admission. We simply urge that the Services themselves assume the role of making these decisions and not leave them to the permit applicant. Native fish and wildlife are public resources under both State and Federal jurisprudence, wherever they may be found. It is fundamentally wrong to treat permits to take endangered species on private lands as though the public does not have an interest in the substantive validity of the negotiated terms and conditions.

Recommendation No. 6.—Independent scientists and scientific information should be used to strengthen HCPs.

Whether the conservation strategy adopted in an HCP is adequate to meet the biological goals requires the exercise of professional judgment and discretion. It is essential that these be specified explicitly and correctly. Even apart from the influence of economics and politics on these judgments, there may be a spectrum of responsible opinions among scientists and agency officials as to whether thresholds of data adequacy or standards for plan approval have been met. There are few bright lines and courts are ill equipped to arbitrate such technical disputes. We need an HCP process that reliably attains the biodiversity conservation objectives of the ESA (survival and recovery) in spite of potential differences in responsible scientific judgment. Independent scientific review may help fulfill that role.

Scientific review is also important because decisions on conservation strategy made apart from the view of the scientific community and the public will not have the credibility that HCPs need. The Service negotiators also need the reinforcement that independent science can provide. Outside scientific scrutiny imposes a standard of scientific excellence that is difficult to counteract. The Services have the responsibility of ensuring that applicants use adequate scientific information to develop HCPs. Conservation and permitting decisions made without a clear, factual basis and a demonstrable link to information will not result in credible and legally sustainable HCPs. Independent scientific involvement can reinforce the Services' decisions if conducted and managed properly. One way to approach this would be to enlist independent scientists in the development of general scientific principles or guidance for species or habitats on which HCPs can then be based, such as the regional conservation guidelines for coastal sage scrub in Southern California.[6]

The timing of scientific input is critical for shaping HCPs. It is important to get scientists involved as "scientists," providing data and analyses, not just as reviewers, reacting to someone else's data and analyses. The input must come at the formative stage when "first principles" of the application of conservation science are being established for the reserve design or other conservation strategy. These decisions are made as the HCP is negotiated, not at the stage where the Service issues the incidental take permit. At present, HCP applicants control access to the negotiations. The Services accord them this discretion because they view HCPs as applications for a regulatory permit, and therefore as the applicant's workproducts. But HCPs are really negotiated settlements of regulatory liabilities, not just applications for permits. The governmental action takes place in these negotiations. Permit issuance is a mere formality.

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[6] A qualified independent reviewer is one who: (1) has little personal stake in the nature of the outcome of decisions or policies, in terms of financial gain or loss, career advancement, or personal or professional relationships; (2) can perform the review tasks free of intimidation or forceful persuasion by others associated with the decision process; (3) has demonstrated competence in the subject as evidenced by formal training or experience; (4) is willing to use her or his scientific expertise to reach objective conclusions that may be discordant with her or his value systems or personal biases; and (5) is willing and able to help identify internal and external costs and benefits—both social and ecological—of alternative decisions. Typically such a person is associated with a recognized scientific society or is otherwise an established professional in a particular field.

One way to interject independent science into HCPs is to bring independent qualified experts into the negotiations directly under the sponsorship of the local communities or interested conservation organizations. However, these potential participants often do not have access to such expertise or the means to procure it. An "HCP Resource Center" comprised of a nationwide network of conservation scientists, resource economists and legal experts with negotiation skills could meet this need. It could allow tailored expertise to be deployed to engage directly and effectively with the agency and applicant's team of negotiators. This will not be easy to do. Cost is not the only barrier to incorporating independent science. For most species, the pool of scientific expertise will be very small.

[From the Natural Heritage Institute]

WHERE PROPERTY RIGHTS AND BIODIVERSITY CONVERGE: LESSONS FROM EXPERIENCE IN HABITAT CONSERVATION PLANNING

(Submitted by Gregory A. Thomas)

INTRODUCTION

The Conflict between Biodiversity Protection and Private Property Rights

Harvard professor Edward O. Wilson predicts that at current extinction rates, our world could lose, forever, a fifth or more of its plant and animal species by the year 2020.[1] That is 1,000 to 10,000 times the natural extinction rate. The consequences are real: for example, in the United States, 16 percent of mammals, 14 percent of birds, and an alarming 37 percent of freshwater fishes are either extinct, imperiled or vulnerable.[2] Each of these species is a unique adaptive experiment never to be repeated while this planet endures, a once-only chemical laboratory, a bit of wonder and learning never again to emerge. We are, in effect, throwing away the science books before they can be written. The overwhelming cause is loss of habitat.

The overarching goal of the Federal Endangered Species Act (ESA) is to conserve species and the ecosystems upon which they depend.[3] For a quarter century, the ESA has served as the safety net between peril and extinction for the thousands of species that have been listed for protection. However, during that time, the ESA has not kept pace with the emerging biodiversity crisis.[4] In the years since the Act's passage, only a handful of species of have been delisted, signaling the recovery of the species to a stable population level.[5] Less than a tenth of all listed species are actually improving in status, while nearly four times that number is declining.[6]

Among the daunting challenges that conservationists will face in the next era of biodiversity protection, the potential conflict between private property rights and the public interest in preserving biodiversity is posed to become an increasingly contentious issue. According to the U.S. Fish and Wildlife Service, half of all federally listed species do not occur on Federal lands, and more than half of listed species have at least 80 percent of their habitat on nonFederal land.[7] The only hope for preserving species over time is by maintaining or restoring viable populations of species that are adequately distributed in healthy ecosystems.[8] Yet, for those species whose habitat is mainly or exclusively on private lands, intact ecosystems are increasingly rare.

The potential conflict between habitat conservation and private development rights has several dimensions. There is a practical consideration: Because property

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[1] Edward O. Wilson. The Diversity of Life. W.W. Norton & Co., New York. 346 (1992).

[2] The Nature Conservancy. 1997 Species Report Card: The State of U.S. Plants and Animals 10–11 (1997).

[3] 16 U.S.C. § 1531(b).

[4] Biodiversity is a shorthand expression for the "full richness of life on earth," and encompasses at least three levels of diversity: genetic diversity, species diversity, and community or ecosystem diversity. Noss, R.F., & A. Cooperrider, Saving Nature's Legacy: Protecting and Restoring Biodiversity. Defenders of Wildlife and Island Press, Washington DC. 3–13 (1994).

[5] Flaws in the ESA significantly contribute to its ineffectiveness in conserving biodiversity. Rohlf, Daniel J. Six Biological Reasons Why the Endangered Species Act Doesn't Work—And What To Do About It. 5 Conservation Biology 273, 274 (1991).

[6] U.S. Fish and Wildlife Service. Report to Congress: Recovery Program, Endangered and Threatened Species. Washington, D.C. (1994) as quoted in Environmental Defense Fund. Rebuilding the Ark: Toward a More Effective Endangered Species Act for Private Land 1 (1996).

[7] Defenders of Wildlife. Frayed Safety Nets: Conservation Planning Under the Endangered Species Act 1 (1998).

[8] Cheever, Federico. The Road to Recovery: A New Way of Thinking About the Endangered Species Act. 23 Ecology Law Quarterly 1, 4 (1996).

rights include the right to restrict access, destruction of habitat—even if illegal—is difficult to monitor and enforce. There is a federalism consideration: Land (and water) use planning has long been regarded as the province of local units of government rather than the national government which administers the ESA. And there is an equity consideration: Where other areas of environmental protection require those who cause the problem to pay for the solution, endangered habitat protection visits the conservation burden on the hapless few who happen to own the remnant tracts while those who have destroyed the original habitat are by that very act immune to regulation. For all of these reasons, conservation of habitats subject to private rights requires a degree of cooperation by those property owners, which is uncommon in the field of environmental law.

Habitat Conservation Plans: A Possible Solution

When it was enacted in 1973, the ESA simply prohibited any "take" of endangered species, and that prohibition has since been extended by the U.S. Supreme Court to include destruction of a species' critical habitat.[9] However, an absolute ban on the development of endangered species habitat proved unworkable. "Habitat conservation plans" (HCPs) are Congress' solution. The Act was amended in 1982 to authorize the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (the "Services") to permit take incidental to development when approved as part of a habitat conservation plan prepared by the land or water rights holder.[10] These HCPs are essentially negotiated settlements of regulatory liabilities, designed to foster economic development free of the risks associated with the occurrence of endangered species on private lands. HCPs must include species conservation and mitigation measures sufficient for the Services to find that the take will not appreciably reduce the likelihood of survival or recovery of the species.[11] The landowner then receives an assurance—called the "No Surprises" guarantee—that the Services will not increase the conservation measures or other requirements without the landowner's consent, no matter how successful or unsuccessful these may ultimately prove to be. The No Surprises arrangement has ignited a veritable explosion in HCPs. As of this writing, some 400 such plans are in various stages of development, approval or implementation nationwide.

Controversial Features and Imperatives for Reform

Several features of HCPs have stirred controversy. First, HCPs allow the Services to permit development activities that will have some measure of adverse impact species and habitats that are already severely depleted, as long as these activities do not appreciably reduce the prospects for the survival and recovery of the species. What these species need, however, is a net improvement in their survival prospects. They need a recovery strategy. Indications of this mismatch between statutory and conservation requirements can be seen on the ground: 62 percent of listed species are declining in areas where they are covered by an HCP and 4 percent of these species are declining so rapidly that extinction is possible within the next 20 years.[12] As long as HCPs are seen as instruments to "nickel-and-dime" species toward extinction, the HCP process will never be satisfactory to conservation interests, just as it will never be satisfactory to private rights holders as long as habitat conservation represents a permanent cloud over the exercise of development rights.

Second, the "No Surprises" regulatory assurance provides landowners with important incentives to participate in the development and implementation of HCPs. But it does so by shifting to the vulnerable species the risks incident to incomplete and uncertain understanding of how abundance levels will respond to particular conservation strategies. Neither investments in private development nor the survival of species are secure under this arrangement. The regulatory exemption is a gamble because HCPs tend to freight more on the current state of conservation science than it can deliver. Ecological dynamics are inherently fraught with uncertainty, and

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[9] *Babbitt* v. *Sweet Home Chapter of Communities*, 115 S.Ct. 2407 (1995).

[10] 16 U.S.C. § 1539.

[11] According to the ESA, the Services are required to base approval of an HCP on whether:
(1) the taking will be incidental to the carrying out of an otherwise lawful activity;
(2) the impacts of the taking will be minimized and mitigated to the maximum extent practicable;
(3) the applicant will ensure that adequate funding for the plan will be provided;
(4) the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild, and;
(5) the landowner agrees to include other measures that the Services may require.
16 U.S.C. § 1539(a)(2)(B).

[12] Kareiva, Peter, et al. Using Science in Habitat Conservation Plans. National Center for Ecological Analysis and Synthesis (NCEAS), Univ. of California, Santa Barbara, and American Institute of Biological Sciences, Washington, D.C. (1999) (hereinafter cited as "NCEAS").

often there is no certain answer to the key questions that are posed in an HCPs. As three respected experts have stated, "Biological systems are not only more complex than we know; they are inherently more complex than we can know."[13] For many years, the dominant scientific paradigm assumed that ecosystems were stable, closed, internally regulated and behaved in a deterministic manner. However, the modern understanding is that ecosystems are in a constant state of flux, usually without long-term stability, affected by a series of human and other, often stochastic factors, many originating outside the ecosystems themselves.[14] Biologists worry that the "No Surprises" guarantee does not take into account this new understanding. As 150 prominent conservation scientists stated to the U.S. Congress, assurances to landowners that the conservation obligations in their HCP will remain immutable "does not reflect ecological reality and rejects the best scientific judgment of our era. It proposes a world of certainty that does not, has not, and will never exist."[15] Should the rigidity of the "No Surprises" guarantee so hobble the ability of the Services to take action that a listed species is extirpated, this entire artifice is likely to crash in the political firestorm that would ensue.

Finally, conservation interests and local communities are often excluded from the balancing of biodiversity protection and local economic development that occurs in the HCP negotiations. As a consequence, the process often does not garner the support of these interests or generate confidence in the scientific bases of the resulting conservation program.

Yet, some vehicle is needed to conserve habitats affected by development rights on lands and waters beyond the Federal domain. In order to be effective, the tool must provide incentives for private rights holders to work with regulatory agencies. The challenge is to set up a conservation arrangement that truly advances the survival and ultimate recovery of the species while limiting the financial burdens and biological risks imposed on private enterprises.

Guidelines for HCP Reform

Nearly 250 HCPs are now in operation with another batch of similar size in gestation. There can be no clearer guide to what is working and what is not in HCPs than a critical, empirical review of the performance of these plans against the goals of the national endangered species program. This paper synthesizes the several empirically based performance reviews that have been conducted by academic researchers, conservationists and practicing conservation biologists. It also reflects scholarly analyses by a wide range of commentators and the findings and conclusions of a structured workshop of many of these performance reviewers.[16] The objective of this paper is to distill from these sources the essential factors that explain why the HCP process has failed to recover vulnerable and depleted species over the past 15 years and what can be done to improve the performance of this conservation tool. This

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[13] Noss, Reed; Michael A. O'Connell, & Dennis Murphy. The Science of Conservation Planning: Habitat Conservation Under the Endangered Species Act 76. Island Press: Washington, D.C. (1997).

[14] Williams, John G. Notes on Adaptive Management, Prepared for the Ag-Urban Ecosystem Restoration Team 3, reprinted in Comments Of The Natural Heritage Institute Regarding The CALFED Bay-Delta Program Draft Ecosystem Restoration Plan (Nov. 1997).

[15] Meffe, Gary K, and 78 other scientists. Letter to U.S. Senator John Chafee and Congressman James Saxton (July 23, 1996).

[16] The workshop was convened by the Natural Heritage Institute in San Francisco in June 1998, and included representatives of an eight-campus study by the American Institute of Biological Science (AIBS) and the National Center for Ecological Analysis and Synthesis (NCEAS), several of the most prominent conservation biologists that have been involved in crafting HCPs, and the following conservation organizations and university faculties:

Defenders of Wildlife, University of California at Santa Barbara
Environmental Defense Fund, University of Denver
Lewis and Clark College, University of Michigan
National Wildlife Federation, University of Tennessee
The Nature Conservancy, University of Washington
Pacific Rivers Council, Western Ancient Forest Campaign, University of California at Berkeley

The workshop findings and recommendations reflected herein subsequently received the peer review and concurrence of Dr. Gary Meffe of the Journal of Conservation Biology and Dr. Reed Noss of the Conservation Biology Institute. Natural Heritage Institute. A Summary of Key Findings and Conclusions of the Participants of the Workshop—Optimizing Habitat Conservation Planning for Non-Federal Lands and Waters: Harvesting Performance Reviews to Chart a Course for Improvement 13 (June 1998) (hereinafter cited as "Workshop Findings & Conclusions").

evaluation necessarily considers the regulatory and economic environment in which HCPs operate.[17]

The performance reviews inspire confidence that we can do better in the future than in the past—if only we are willing to learn as we go. That requires grafting onto the ESA the emerging principals of conservation biology, which have matured greatly since it was enacted a quarter century ago. Simultaneously, we must find a way to satisfy the legitimate expectations of the nonFederal property interests that they will not be required to shoulder the entire expense of protecting depleted species on the grounds that wildlife conservation benefits the public of today and tomorrow.

This paper will present the major conclusions from these performance reviews and the recommendations for reform, which emerge from them.

RECOMMENDATIONS FOR IMPROVEMENT: HCPS MUST BE DEVELOPED WITHIN THE CONTEXT OF LANDSCAPE-SCALE CONSERVATION STRATEGIES

The Choice of Planning Scales

Habitat conservation plans are the vehicle through which developers of non-Federal lands and waters obtain permits from the Federal Government for activities that may adversely impact endangered species habitat. As such, individual property owners have historically prepared these plans to cover activities within their parcel that will effect one or more listed species found thereon. The sizes of these land or water right-specific HCPs are extraordinarily diverse, spanning six orders of magnitude. The smallest approved plan protects the Florida scrub jay on just 0.4 acres. The largest plan to date covers over 1.6 million acres of forest managed by the Washington Department of Natural Resources. Despite this extraordinary range of sizes, most HCPs are relatively small. The medium size is less than 24 acres, and 74 percent of HCPs cover fewer than 240 acres.[18] The Services encourage a planning area that is as comprehensive as is feasible and that encompasses the applicant's entire area of activity. The Services also seek HCP boundaries that are exact enough to avoid future uncertainty about where permittees have responsibility under the HCP.[19] In general, the Services find that bigger is better. Neither the ESA nor its regulations limit the size of an HCP.

Although the fundamental purpose of biodiversity conservation is the protection of ecosystems, the ESA's regulatory mechanisms are species-specific and are only triggered by the listing of individual species.[20] Conservation biologists argue that the single-species focus of the [ESA] has not been especially successful in protecting functioning ecosystems and is imprudent because species do not exist independently from one another and the broader landscape context.[21] Because the needs of species are "specific", single-species plans for the same area can conflict if not closely coordinated. The extent to which HCPs take into account multiple species and the ecosystem as a whole is important to their ultimate success.[22]

Only recently has multi-parcel, multi-species habitat conservation planning emerged. Units of local government generally conduct these plans, covering a community of both currently listed and potentially listable species. Multi-species, multi-parcel conservation planning is a promising evolutionary step, for reasons discussed in subsequent sections of this paper. Yet, the Services are concerned that attempts to cover many land uses or species in a single plan can be frustrated by gaps in

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[17] Admittedly, the resulting portrait of how to improve habitat conservation planning is somewhat idealized in that it is unalloyed by the practical realities that drive the process from the viewpoint of the actual negotiators—the Services, HCP applicants and, to a lesser extent, units of local government that have been involved. These perspectives are also valid and important.

[18] The duration of HCPs is also diverse. The length of time that an HCP is to be maintained is tied to the duration of the ITP for which the plan was developed. Plan duration ranges from 7 months for a plan in Travis County, Texas, to 100 years for an HCP implemented by Murray Pacific Company in Washington. Two plans, developed for private properties in Texas, are to be maintained in perpetuity. Excluding those two plans, the median duration of HCPs is 10 years, and 60 percent of HCPs will be maintained for 20 or fewer years. Over time, the duration of approved HCPs has exhibited no significant directional trend. NCEAS, supra note 12, pp. 14–15.

[19] U.S. Fish & Wildlife Service and National Marine Fisheries Service. Endangered Species: Habitat Conservation Planning Handbook 3–11 (1996) (hereinafter cited as "FWS & NMFS").

[20] For example, the obligations of Federal agencies under Sections 7(a)(1) and 7(a)(2) of the ESA are not triggered until a species is listed; similarly, the ban on takings in Section 9 does not apply until a species is listed. Section 10 fails to encourage development of HCPs that protect multiple species unless all species under a plan are listed. Thornton, Robert D. Searching for consensus and predictability: Habitat conservation planning under the Endangered Species Act of 1973. 21 Environmental Law 605, 642 (1991).

[21] Noss, et al., supra note 13, pg. 127.

[22] Ibid.

biological information and lack of consensus among HCP participants.[23] Indeed, the empirical reviews do not support the notion that larger plans are better plans. Neither the HCPs covering very large areas nor those covering very small areas perform best.[24] Instead, the intermediate-sized planning areas have produced the best plans. It seems that planning at a small scale is impaired by limited resources to conduct careful analyses of the impacts of development (particularly cumulative impacts) or of conservation alternatives. Conversely, very large HCPs also appear to result in relatively poor analyses, probably due to the difficulty of forecasting impacts and planning mitigation and monitoring over very large areas.

The Preference for Bio-Regional Planning

Consensus is emerging among conservation scientists and commentators that the optimal planning unit for habitat conservation is not the individual land holding or water diversion, and the optimal focus is not individual listed species. Rather, there are benefits for both ecosystems and property rights holders when planning is conducted at a landscape scale, where habitat conservation strategies are developed for a "bioregion" covering entire ecosystems and their communities of species.[25] Furthermore, there is indirect evidence that multi-species plans are scientifically superior to single-species plans, especially with respect to mitigation and monitoring.[26]

At the landscape scale of planning, conservation measures for ecosystems and their species are more likely to be effective and the conservation responsibilities are more likely to be properly allocated among both public and private property rights holders. Currently the burden of protecting biodiversity on nonFederal lands and waters falls on the owners of the remaining undeveloped habitat, even though the species at issue became endangered due to consumption decisions made by society as a whole.[27] Landscape-scale planning provides a mechanism for the public to shoulder some of the burden of conservation. Thus, rights holders and protected species can both benefit from landscape-scale planning.

Rescaling conservation planning and permitting in this manner can address many of the perceived problems with HCPs. Potential advantages of landscape-scale, multi-party HCPs include the following points identified by experts in the June 1998 workshop:

(1) *Providing a biological basis for allocating responsibility among rights holders.* Landscape scale planning can specify the overall conservation effort that is needed to protect communities of species, thereby providing a basis for determining what share of the burden an individual property owner should bear in an HCP. Currently, the ESA affords no mechanism for allocating the conservation burden between multiple private landowners or between private rights holders and public lands. Instead, the burden is allocated in a piecemeal fashion through the approval of HCPs, Section 7 consultations, and public land management planning and permitting. In theory, those who get their approvals earliest get the best deal, with larger burdens reserved for latecomers.

(2) *Fostering species recovery.* At the landscape scale, it is possible to calibrate habitat conservation planning to the objective of recovering the listed species and preventing harm to other vulnerable species. The only biologically defensible aiming point for habitat conservation planning is a net improvement in the prospects for survival for listed species and prevention of further declines in unlisted species. This objective is harder to advance at the level of landholding-specific HCPs, which tend to aim for mitigation or, at best, avoidance of impacts on listed species.

(3) *Promoting economies of scale.* Since good science is expensive, gathering and interpreting the necessary data can be an onerous burden for individual rights holders seeking development permits. Rescaling shifts an appreciable degree of this burden from individual property owners applying for incidental take permits to the public agencies and the broader constellation of rights holders that have interests and responsibilities in the eco-region.

(4) *Facilitating adaptive management.* Because adaptive management requires that some part of the development plan covered by an HCP remain contingent, it is more feasible to engage in adaptive management at the landscape scale. While adaptive management is feasible for smaller plans as well, it is facilitated and made more effective with a larger planning scale.

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[23] Id.

[24] NCEAS, supra note 12, pg. 29.

[25] All HCPs affect multiple species, whether they result in incidental take permits for multiple species or not. Defenders of Wildlife, supra note 7, pg. 20.

[26] NCEAS, supra note 12, pp. 36–38.

[27] Thornton, Robert D. The No Surprises Policy is Essential to Attract Private Dollars for the Protection of Biodiversity. Endangered Species Update: Habitat Conservation Planning 65 University of Michigan (July/Aug. 1997).

(5) *Strengthening public participation.* The degree and quality of public participation is generally higher with a broader scale of planning that includes multiple parties. This correlation is especially evident if a unit of local government mediates the HCP process by applying for the Federal permit and then issuing sub-permits to individual landholders. Such local agencies routinely include the public in similar land use planning processes. By contrast, case studies show that public participation has not been superior in cases where a single landowner prepares a large landscape-scale HCP, as is exemplified by many HCPs developed by timber companies.

The idea that landholding-specific or water right-specific conservation requirements should be determined by reference to broader conservation objectives is hardly radical. It is rather analogous to the way permits are issued for new major emitting facilities within airsheds that are already violating national ambient air quality standards. A zero growth policy is unacceptable, yet growth cannot be allowed to occur at the expense of exacerbating pollution levels that are already harmful to human health. The solution under the Clean Air Act is to condition permits for such new facilities upon achieving a net reduction in emissions of the subject pollutants. Similarly, in the water pollution field, discharger-specific effluent allowances are determined by reference to basin-wide water quality criteria. In the biodiversity arena, new incursions on critical habitat should be subject to a similar condition of achieving a net contribution to the landscape scale objective of recovery of the imperiled species.

Individual HCPs should be designed to contribute to the achievement of a bioregional conservation strategy that aims for long-term, sustainable conservation. Reaching this goal may entail more rigorous activities than simply avoiding or minimizing impacts on the subject landholding. In some cases, offsite mitigation may be required to reduce the threat to the species, which can often best be accomplished by requiring contributions to a mitigation fund as a condition of permit issuance.[28]

If landscape-scale planning offers superior prospects for species conservation and, ultimately recovery, then it is necessary to ask what kinds of incentives, inducements and cost-sharing arrangements will encourage the development of HCPs at this level. Part of the answer lies in reallocating a portion of the habitat conservation burden that now falls to private rights holders onto the Federal land and water managers. Under a landscape-scale approach to conservation, Federal agencies that manage public lands and waters (and their commodity users) may shoulder a larger share of the conservation burden and may be held to the higher standard of recovery of the protected species. If private lands are managed to the ESA's "jeopardy" standard,[29] there is no margin of safety left for vulnerable species. It is especially critical that Federal resource managers undertake a "fair share" of the conservation burden in areas within a matrix of Federal and private lands, for example, lands included in the checkerboard pattern of private and Federal land found in many western states.

Recovery Plans as Vehicles for Bio-Regional Planning

One potential vehicle for landscape scale planning could be the recovery plans that the Services are required to develop for listed species. Recovery plans can provide much-needed scientific background on a species as well as an ecosystemic context for the activities proposed under a landholding-specific HCP.[30] Studies show that, when recovery plans exist, HCPs do rely on them extensively. In several cases, HCPs have borrowed language and specific mitigation techniques directly from recovery plans.[31] However, there are several problems with using recovery plans as a basis for the development of HCPs:

- Recovery plans currently lag years behind the listing of a species. The Services have completed recovery plans for only 40 percent of listed species.[32] And, the Serv-

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[28] Mitigation funds can be used to purchase the highest quality habitats to prevent their development. A development exaction of this sort is often best administered by local agencies of government that are charged with regional land use planning, an additional reason to utilize local jurisdictions as the vehicle for bioregional habitat conservation planning. However, since bio-regions often cross local (e.g., county and even state) jurisdictional boundaries, coordination by a higher-level jurisdiction may be necessary.

[29] The jeopardy standard means avoiding actions that could directly or indirectly reduce the likelihood that a species will survive and recover in the wild. 50 C.F.R. § 404.02.

[30] NCEAS, supra note 12, pg. 33 citing FWS & NMFS, supra note 19.

[31] NCEAS, supra note 12, pp. 35–36.

[32] As of January, 1997, FWS was responsible for 1,071 domestically listed species, but only 644 of those species had approved recovery plans. The Services are currently authorizing HCPs for numerous species without recovery plans such as the marbled murrelet, Mexican spotted owl, western snowy plover, giant kangaroo rat, and razorback sucker. None of these species has

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ices are not authorized to disapprove a proposed HCP because a recovery plan for the covered species is in not place.[33]

- Historically, recovery plans have been of poor quality and often are not biologically defensible. Hence, even when recovery plans have been developed, they generally have not resulted in more adequate HCPs.[34]
- Recovery plans have often inappropriately subordinated the biological objective to economic considerations. Economics is important in apportioning the conservation burdens among the public and private landowners but must not be allowed to dictate the biological requisites of the recovery plan.
- Recovery plans are not intended to be binding on or enforceable against the non-Federal lands that are encompassed in the range of a species. Efforts to make them binding or enforceable would be viewed in the political sphere as tantamount to land use planning by the Federal Government, which is historically a state and local prerogative. Still, recovery plans can provide an objective basis for determining whether an HCP represents progress toward species recovery. While a negative determination may not preclude approval of the HCP, that would allow the Service to know what supplemental efforts will be needed within the planning area—perhaps at Federal expense—to achieve the recovery goal.
- Recovery is a species-based concept and, thus, recovery plans do not necessarily improve the health of the ecosystem as a whole, or its processes or functions. However, there is no obvious reason why recovery plans could not also be written as bio-regional, multi-species conservation strategies. Indeed, such an approach would further the goals of the ESA to preserve the ecosystems upon which threatened and endangered species depend.[35]

Natural Communities Conservation Plans as Vehicles for Bio-Regional Planning

The land use planning functions of state and local governments can also be harnessed to undertake the type of bio-regional conservation planning that could improve landholding-specific HCPs. Since these entities already play the predominant role in local land use planning, economies of scale and consistency of conservation objectives can be achieved by using them for HCP development. In the model that is emerging, units of state and local government prepare regional conservation plans, submit them to the Services for approval as master HCPs under a special rule under § 4(d) of the ESA and administer take allowances to individual property owners through sub-permits. An outstanding example of such a bio-regional planning program is the California Natural Communities Conservation Program (NCCP).[36] The NCCP is a regional, ecosystem-wide, multi-species program that encourages landowners to voluntarily plan for habitat protection before species are listed. A typical plan might cover a mix of listed and unlisted but declining species and their shared habitats, while still accommodating development outside the areas set aside as preserves. A particular virtue of NCCPs is their potential to address the conservation requirements of unlisted species before they decline to a level requiring ESA protection. Preventative strategies will invariably provide more options for habitat protection than reactive measures that become necessary when the decline of a species reaches a crisis and can halt and reverse the trend toward extinc-

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a completed recovery plan even though final recovery plans would give guidance to the Services in reviewing permits for approval. Sher, Victor M, and Heather L. Weiner. Why HCPs Must Not Undermine Recovery. Endangered Species Update: Habitat Conservation Planning. 67 University of Michigan (July/August 1997).

[33] One alternative is to give conditional approvals to HCPs until a recovery plan is adopted. This strategy could work without undue risk to the permittee under an adaptive management strategy (described later in this document) so long as the potential costs of plan revision are indemnified under the insurance scheme (described in the section on regulatory guarantees and assurances).

[34] In fact, the NCEAS study showed evidence that a species was more likely to have adequate HCPs developed for its conservation if it did not have a recovery plan. The study found that, where a recovery plan existed for a covered species, subsequent HCPs were generally of poorer quality in their analysis of the current status of the species and in monitoring plans. NCEAS, supra note 12, pp. 35–36.

[35] If the focus must remain on individual species, Thornton recommends giving the Services discretion to formulate recovery plans around species that serve particular functions in an ecosystem such as keystone species whose roles in ecosystems are so important that their loss could precipitate an avalanche of extinctions, or indicator species which should be monitored to indicate the condition of other species in the same habitat. Thornton, supra note 20, pg. 642.

[36] California encourages regional/ecosystem-based conservation planning since its 1991 adoption of the Natural Community Conservation Planning (NCCP) Act. Silver, Dan. Natural Community Conservation Planning: 1997 Interim Report. 14 Endangered Species Update: Habitat Conservation Planning 22. University of Michigan (July/August 1997).

tion.[37] Therefore, community-level HCPs—as opposed to species-based prescriptions—benefit species at all levels of abundance, thereby addressing management needs most comprehensively.[38] Also, NCCPs can protect habitat currently unoccupied by listed species but important for its survival. In southern California, for instance, species that depend on the coastal sage scrub for breeding may also utilize neighboring habitats for sustenance. It is often difficult to protect this kind of secondary habitat under the ESA.

The NCCP is meant to be a voluntary program, but the local landowners did not view it as such in the case of the California gnatcatcher. With the 1993 listing of the gnatcatcher, Secretary of State Bruce Babbitt proposed a "special rule" under Section 4(d) of the ESA that would exempt landowners participating in the state NCCP program from the ESA's prohibition on the incidental take of a threatened species.[39] The special rule expanded the bounds of the ESA's incidental take exemption to all areas covered by a NCCP plan. The agency thereby had a means to encourage participation in the NCCP. At the same time, the rule retained the ESA's prohibition against take for developers who elected not to participate. Those landowners had to negotiate their own HCP with the Fish and Wildlife Service, aware that the agency did not intend to approve any HCPs that did not conform to the NCCP guidelines.[40]

These dynamics help explain why the NCCP process was, in general, favorably received in Southern California. For conservationists, comprehensive state planning based upon Federal ESA standards appeared to offer the best hope for rescuing devastated coastal sage ecosystems. Developers valued the regulatory assurances they were provided in the event of future listings. Local governments were pleased to retain autonomy over land use decisions in the face of Federal listings and the prerogative to strike the appropriate balance between development and open space in their communities. The state and Federal wildlife agencies saw the NCCP process as a means to transcend the limitations on project-by-project mitigation. Although each stakeholder perceived the benefits of participating in the NCCP process differently, enough mutual benefits and common ground were found to advance a politically difficult process.[41]

The NCCP process is specifically authorized in California by an act of the legislature.[42] This type of vehicle could be propagated in other jurisdictions to serve as a nationwide vehicle for bioregional planning either through state-by-state enactments or through Federal authorization in a reauthorized Endangered Species Act.

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[37] Bosselman, Fred P. The Statutory and Constitutional Mandate for a No Surprises Policy. 24 Ecology Law Quarterly 707, 711 (1997).

[38] The Services encourage NCCP-type plans because they:

Avoid the huge backlog created by species-by-species management;

(1) Save money and better protect species by getting at what is often the root cause of their decline—loss of habitat;

(2) Reduce the need for last-minute "emergency room" measures;

(3) Prevent economic "train wrecks" by involving landowners in long-term planning rather than last-ditch efforts at preservation.

(4) Allow for the use of "good science" since ecosystem management would begin well before the species are on the verge of extinction;

(5) Maximize flexibility and available options in developing mitigation programs;

(6) Reduce the economic and logistic burden of HCPs on individual landowners by distributing their impacts;

(7) Reduce uncoordinated decisionmaking, which can result in incremental habitat loss and inefficient project review;

(8) Provide the permittee with long-term planning assurances and increase the number of species for which such assurances can be given;

(9) Bring a broad range of activities under the permit's legal protection; and

(10) Reduce the regulatory burdens of ESA compliance for all affected participants.

FWS & NMFS, supra note 19, pp. 1–14, 1–15. Welner, Jon. Natural communities conservation planning: An ecosystem approach to protecting endangered species. 47 Stanford Law Review 319, 338 (1995). Silver, supra note 36, pg. 22.

[39] Under the special rule, local communities in the Coastal Sage Scrub Planning Area are invited to develop subregional NCCP plans. The plans must conform to detailed Process and Conservation Guidelines issued by CDFG in 1993. The Guidelines provide that the Planning Area will be divided into ten to 15 subregions; local communities will be allowed to define the size and shape of their own subregions, subject to USFW and CDFG approval. Each subregion must designate a local "lead agency" to coordinate its planning effort. Before taking effect, subregional plans must be approved by both the CDFG and USFW. Welner, supra note 38, pp. 343–344. Special Rule Concerning Take of the Threatened Coastal California Gnatcatcher, 58 Fed. Reg. 65,088 (1993).

[40] Welner, supra note 38, pp. 344–345.

[41] Silver, supra note 36, pg. 22.

[42] Natural Communities Conservation Planning Act, Cal. Fish and Game Code § 2800 et seq. (1991).

Through either avenue, lessons can be drawn from California's early experimentation with NCCP that could lead to an improved nationwide model. One thoughtful commentator[43] provides the following list:

(1) *Listing plays an essential role.* Standing alone, the NCCP provides no protection for ecosystems or species; it merely authorizes a collaborative, voluntary process to provide some protection through agreements among agencies, landowners, and local governments. In order to bring developers to the table, an incentive, such as the threat of listing under the ESA, is indispensable. The listing of the gnatcatcher provided the motive force for the NCCP plans.

(2) *Public participation is useful,* as evidenced by the numerous stakeholder groups in the NCCP process that have made many valuable contributions.

(3) *Partnerships with local government are powerful.* The key advantage of an NCCP approach over conventional HCPs is that local governments are an active partner. Local land use laws can sometimes accomplish what state and Federal agencies alone can not achieve.

(4) *Assurances are part of the equation.* The reward to landowners for engaging in the NCCP process is the regulatory assurance that, in the event a species covered by the plan subsequently becomes listed or declines, additional mitigation will not be required of that landowner.

(5) *There is a "spill-over" into better planning in general.* The NCCP efforts have allowed local governments to understand the many benefits of natural open space preserves for their communities.

(6) *Scientific accountability must be sufficient.* Given the program's extraordinary complexity and its susceptibility to political and economic pressure, its scientific bases must be beyond debate. Yet, in the NCCP experiment, the initial scientific panel was dissolved after it had prepared a set of conservation guidelines, and the NCCP statute makes no provision for independent scientific consultation or review. While it should not be inferred that the plans are unsound as a result, neither are they fully credible.[44]

(7) *Recovery objectives are paramount.* Appropriate standards are a critical unresolved issue. Since these plans are de facto recovery plans, they must ensure healthy populations across species' ranges. The failure to explicitly address recovery in the NCCP is a glaring deficiency.

(8) *Local land use factors limit program effectiveness.* Specific deficiencies in plans are often due to zoning constraints or project authorizations issued by local government. These need to be reconciled with the conservation objectives and strategies pursued by the NCCP program.

(9) *A secure source of funding for land acquisition and management is necessary.* Usually, innovative sources will need to be explored, such as loan funds, funds from the Land and Water Conservation Fund, mitigation banks, or dedicating that portion of the local property tax that corresponds to the marginal increase in the value of adjacent real estate resulting from the open space that is set aside.[45]

A variation on the NCCP theme is arising in some states. So called "programmatic HCPs" are a relatively new concept, now primarily utilized by state and county governments.[46] They differ from NCCP-type or habitat-based HCPs in that their boundaries are based on jurisdictional rather than ecological parameters. For example, the US Fish and Wildlife Service and the State of Georgia have developed a programmatic "state-wide" HCP for the red-cockaded woodpecker, and Texas is currently embarking on a similar project for the same species.[47] The programmatic HCP allows numerous landowners to participate through "Certificates of Inclusion" or "Participation Certificates," which convey take authorizations. The Services support such plans on grounds that a programmatic HCP can be used to address a group of actions as a whole, rather than one action at a time in separate HCPs.[48]

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[43] Silver, supra note 36, pp. 24–25.

[44] A particular challenge in the use of scientific accountability has been the imperative to protect large blocks of habitat quickly, before they disappear, even in the absence of adequate scientific data on which to base a conservation strategy. This has forced the use of practical reserve design methodologies that seek to protect a suite of species through conservation measures designed for "umbrella" species. Such methodologies need more study and validation. Noss, et al., supra note 13, pp. 137–142.

[45] Natural Resources Defense Council. Leap of Faith: Southern California's Experiment in Natural Community Conservation Planning 33–35 (May 1997).

[46] FWS & NMFS, supra note 19, pg. 3–39.

[47] Bonnie, Robert. Strategies for Conservation of the Endangered Red-cockaded Woodpecker on Private Lands. Endangered Species Update: Habitat Conservation Planning 45 University of Michigan (July/Aug. 1997).

[48] FWS & NMFS, supra note 19, pg. 3–39.

And yet, the Services acknowledge that programmatic HCPs may pose problems.[49] First, biologists eschew political boundaries in favor of using watersheds or discrete ecosystems to delineate conservation planning areas. Second, applicants may lack sufficient information to determine and evaluate impacts when the specific number and scope of development actions is still undetermined. Such HCPs are more likely to succeed where the activities are well defined, similar in nature, and occur within a discrete geographical area and timeframe.[50] Despite their shortcomings, programmatic HCPs are likely to increase during the next era of biodiversity conservation.

Promulgation of Programmatic Conservation Standards as Vehicles for Bio-Regional Planning

A third potential vehicle for landscape-scale conservation planning is the promulgation of programmatic standards or guidelines for multi-species conservation by Federal land and water managers. For example, the recent adoption by NMFS of programmatic guidelines for logging on anadromous fish-bearing streams in the Pacific Northwest may prove to be a useful model in other contexts. Such programmatic guidelines can apply standards for riparian buffers and acceptable levels of sedimentation to entire watersheds or other ecologically significant planning units. Similarly, the Aquatic Conservation Strategy component of the President's Forest Plan provides a multi-layered planning approach intended to result in ecosystem-wide forest management.

Bio-Regional Conservation Planning Demands a Larger Governmental Role

Whatever the vehicle, it is clear that landscape scale habitat conservation planning will require either the Services, or state and local units of government in the case of NCCP-type plans, to play a more proactive role in marshalling the necessary biological information and developing conservation strategies that cover multiple parcels, both private and public. This will entail a sharp departure from their traditional roles and will require a substantial increase in resources both financial and professional.

The Services' role in HCP development is not well defined, but Congress apparently intended the Services to do more than just exercise regulatory oversight by also providing technical assistance to applicants.[51] The HCP Handbook states that large-scale HCPs should be developed jointly by the applicant, the Services, the private sector, and local, state, and Federal agencies, with the Services acting as technical advisors. In addition, the Handbook recommends that the Services be actively involved during HCP development in advising on mitigation measures, monitoring protocols and reserve designs; providing timely review of draft documents; helping find solutions to contentious issues; and generally assisting in HCP development.[52]

Notwithstanding these expectations, the Services simply do not have the resources to provide the degree of scientific and technical guidance that Congress intended in the ESA's 1982 amendments.[53] In practice, HCPs are often negotiated with only minimal guidance as to content or biological objectives.[54] This "hands off" attitude might also be due in part to the Services' policy of promoting plan flexibility and innovation. In any case, the Services have not translated the expectations of the Act into technical performance standards to which an HCP can be designed.[55]

This lack of guidance often results in HCP applicants simply following precedents established in earlier HCPs. Consequently, HCPs that were developed before principles of conservation biology were properly applied have nonetheless set a de facto standard of quality. The importance of precedent in light of unclear agency guidelines is illustrated by a comment from a participant in the development of the Clark County HCP: "[The preparers of HCPs that are] still in the early stages are going

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[49] Ibid.
[50] Id.
[51] Id. pg. 3–1 citing H.R. Conf. Rep. No. 835, 97th Cong., 2d Sess. 29, 1982 U.S.C.C.A.N. 2807.
[52] Id. pg. 6–24.
[53] NCEAS, supra note 12, pg. 48.
[54] For example, the Weyerhaeuser Willamette HCP applicants apparently felt the Services' guidance was vague regarding biological standards. The Riverside County HCP applicants were also apparently unclear regarding biological standards. Aengst, Peter, et al. Balancing Public Trust and Private Interest: An Investigation of Public Participation in Habitat Conservation Planning. University of Michigan (1998) (hereinafter cited as "Univ. of Michigan").
[55] Applicants find the ESA's legal standards such as "minimize and mitigate" take to the "maximum extent practicable", and authorized taking that will not "appreciably reduce the likelihood of survival and recovery of the species in the wild" too nebulous. Ibid. pg. 8–6.

to look out there for the weakest [HCP to use] as an example. We should be real concerned over setting precedents for the minimum standard."[56]

CALIBRATE HABITAT CONSERVATION PLANNING TO BIOLOGICALLY DEFENSIBLE GOALS

The Recovery Standard

There is an emerging consensus among conservation scientists that the only defensible biological goal for habitat conservation is the recovery of the species. Indeed, this precept is too obvious for serious debate unless the ESA and the HCP processes are to be taken as merely a set of procedures for slowing the process of extinction. Thus, species recovery must be taken as the ultimate goal of the ESA and contribution to this goal is the yardstick by which the habitat conservation planning process will ultimately be measured by the discerning public. HCPs will be viewed as contributing to the biodiversity problem rather than the solution unless they are designed to advance a restoration strategy, that is, unless they confer a net survival benefit to the species.[57] Otherwise, the Services are running a hospital in which the patients will never be taken off life support.

What constitutes biological recovery is far from straightforward, however, and a determination of whether a given HCP meets that standard is difficult for a number of reasons. As noted previously, many HCPs are approved before the Services have completed draft recovery plans for the species. Recovery planning is impeded by agency budget constraints and by the competing demands for agency resources to process the growing numbers of HCPs and designate "critical habitat". Where recovery plans do exist, they are often obsolete for current planning.[58] And, recovery planning itself is a highly politicized process wherein biological factors can be compromised by economic and social considerations.[59]

Notwithstanding these difficulties, the difference between survival and recovery can be understood as distinct levels of risk for the protected species. At present, the level of acceptable risk is left to the judgment of the applicants and the Services and is seldom made explicit. Often, the data to quantify these risks are not sufficient. Qualitative analysis of risk factors is possible, however. This type of risk analysis is familiar terrain in setting air and water quality criteria, for example. Under qualitative assessment, the risk to species can be identified and addressed by dealing with the factors that have the largest effect on survivability. Independent scientific peer review would be very beneficial in making such qualitative assessments.

The objectives of ecosystem conservation and recovery of species are explicit in the ESA,[60] but the means to achieve these goals are not made clear. Indeed, the approval standard for HCPs is not necessarily consistent with the statutory recovery goal.[61] Plans may be approved under the Section 10 criteria, as long they do not appreciably reduce the chance of survival and recovery of the covered species. This suggests that some degradation of habitat and loss of species is acceptable. Certainly, this criterion does not impose on permittees an obligation to improve the survival prospects for the listed species.[62] Thus, HCPs may and usually do degrade the status quo.

The approval of HCPs under this standard can only be squared with the ultimate objective of recovery and delisting under the assumption that some other custodian of actual or potential habitat will undertake countervailing measures. That is a heroic assumption where the Federal lands and waters are also managed to a "non-

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[56] Id. pg. 7–8.

[57] On heavily impaired lands, even a net benefit standard may not be enough to recover the species or prevent local extirpation. In these circumstances, the Federal Government's role in bioregional planning may need to include purchasing and restoring such lands. HCPs should not be counted on to solve all endangered species/private lands conflicts.

[58] Sher and Weiner, supra note 32, pg. 68.

[59] Defenders of Wildlife, supra note 7, pg. 54. Sher and Weiner point out that funds for recovery plans are often earmarked by Congress for high-profile species, leaving less charismatic species to decline. In addition, the Services are chronically constrained by inadequate budgets, limited staff, and political pressure. Sher and Weiner, supra note 32, pg. 67.

[60] 16 U.S.C. § 1531(b), 1532(3).

[61] Much of the criticism lodged against the HCP process stems from the Services' treatment of HCPs as a permitting process, rather than a conservation strategy. Noss, et al., supra note 13, pg. 111.

[62] According to conservationist Daniel Hall, the Services' policy only requires that an HCP not lead to the extinction of a listed species, rather than contributing to recovery. Hall, Daniel A. Using Habitat Conservation Plans to Implement the Endangered Species Act in Pacific Coast Forests: Common Problems and Promising Precedents, 27 Environmental Law 803, 809 (1997). While the HCP must not "appreciably reduce" the likelihood of the recovery of the species in the wild, the Services' HCP handbook states that this does not explicitly require an HCP to recover listed species, or contribute to their recovery objectives outlined in a recovery plan. FWS & NMFS, supra note 19, pg. 3–20.

jeopardy" standard, and where funds to purchase, preserve and restore high quality habitat are neither a precondition to the approval of HCPs nor generally available. The contrast between the statutory approval standard and a recovery standard is most apparent when an HCP covers most or all of the remaining habitat of a listed species. If the majority of a species' range occurs on nonFederal land, recovery cannot occur unless the HCP contributes to that objective.[63] This mismatch between biological objectives and statutory requirements is a serious problem for both developers and conservationists because it raises the stakes in the negotiation of HCPs and creates political fault lines that leave both development and conservation interests insecure.

Congress has so far shown reluctance to amend the ESA to recalibrate the HCP approval criteria to require a net benefit to listed species. Yet, nothing less will square HCPs with the explicit objective of the ESA or stem the impending biodiversity crisis. It may be possible to resolve this political impasse if the issue is restated so that it is not about biodiversity requisites but about how the financial burdens of meeting them will be allocated. The costs of avoidance, minimization and mitigation of adverse impacts on habitat are as much as the developers of non-Federal lands and waters are willing to shoulder to meet national biodiversity conservation goals, and more to the point as much as the political process has been willing to impose. The measures necessary to bridge the gap between survival and recovery, such as the purchase of habitat preserves and the rehabilitation of restorable habitats on non-Federal lands, can be defrayed by the public instead of land and water rightsholders if both developers and conservationists join in making that arrangement politically feasible.

The remaining issue is whether compensated conservation measures should be voluntary on the part of the private rights holder, as some recent ESA reauthorization bills would provide,[64] or mandatory at the behest of the Services. This issue is politically controversial because allowing the Services to mandate habitat conservation measures which bear no proportionate nexus to a development project, such as creating preserves, even on a compensated basis, is tantamount to conferring eminent domain authority on the Services. As discussed below, one solution might be to reward private rights holders who accept mandatory measures deemed necessary to achieve a recovery standard of performance with a higher level of regulatory assurances in their HCPs.

Incentives to Recover Species

Getting the incentives right is essential to making the HCP program work. Enforcement of the "take" prohibition under Section 9 creates an incentive for private rights holders to seek incidental take permits, for which HCPs are a prerequisite. As the enforcement of the take prohibition becomes more vigorous, the incentive to develop high-quality HCPs increases.[65] However, the practical difficulties in enforcing the take prohibition limit its value as an incentive. The Services find enforcement of the take prohibition difficult because they cannot enter private lands without permission and because they face budget limitations. For some species, the data are not sufficient to determine what actions constitute a take (e.g. mussels), while for other species, the Services do not know where they occur on private lands. Because the Services have shown reluctance to enforce the take prohibition, the main incentive for HCP development today is the fear of citizen suits and the attendant insulation from prosecution that an HCP can provide.[66] Under these realities, enforcement of the take prohibition, though an essential incentive for rights holders to develop HCPs. cannot substitute for habitat conservation planning.

The ESA does not mandate that HCPs confer a net survival benefit on species, but neither does the Act mandate that the Services issue guarantees to permittees against further "take" restrictions. It seems likely that the Services can induce HCP proponents to contribute to recovery of a listed species by correlating their regulatory assurances to the extent of biological benefit conferred in an HCP. For instance, plans that contribute to recovery might receive assurances for a longer term

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[63] Defenders of Wildlife, supra note 7, pg. 52.

[64] One example is the Chafee-Kempthorne bill, S. 1181, introduced in the 105th Congress.

[65] To be sure, the penalty needs to be sufficient to nullify any economic benefits of non-compliance; nominal penalties are likely to be absorbed as a cost of doing business rather than serve as a deterrent to taking species or destroying habitats. On the other hand, the larger the potential penalty, the greater the perverse incentive to destroy habitat before a listing occurs.

[66] Some commentators confirm that landowners are preparing HCPs because capital markets insist upon HCPs before they will lend project development funds. Capital markets place a high value on assurances that future restrictions will not impede development. This may not apply to "commodity" lands where take detection and enforcement is problematic.

than those that merely avoid jeopardy. Similarly, plans based on highly adequate data and analyses might be entitled to more extensive guarantees.

In some cases, shifting a larger share of the costs of conserving a listed species to the Federal land management agencies would also make recovery achievable without increasing the burdens on private rights holders. Yet, at present, the prevention of jeopardy of extinction is the aiming point for most management decisions on Federal land. This low standard of management for the public lands should concern the property rights community as much as the conservation community because the practical consequence is that a higher burden of species conservation may be apportioned to the private rights holders if recovery is to be achieved. [67]

INCORPORATING INDEPENDENT SCIENCE AND PUBLIC PARTICIPATION TO IMPROVE HCP CONSERVATION MEASURES

Many performance reviewers agree that HCPs would be improved if state-of-the-art, independent biological expertise was utilized and if meaningful opportunities were afforded local communities and conservation interests to participate in the development of HCPs. These two recommendations merge under the premise that the most efficacious way to advance the public's interest in effective conservation planning is for HCPs to be based on the best available science.

In a March 1997 letter to the Administration and Congress, a number of prominent conservation biologists warned that many HCPs "have been developed without adequate scientific guidance" [68] in the form of independent peer review. They argued that, as a consequence, these plans seem to contribute to, rather than alleviate, threats to listed species. [69] The scientists recommended that the data, analyses, and interpretations regarding species status, take, impact, mitigation, and monitoring should be reviewed to ensure that the scientific foundations of the plans are sound. [70]

Why There Is A Need for Independent Science in Habitat Conservation Planning

Independent science would be useful in the HCP process because neither the consultants retained by the HCP proponent not the Services staff scientists necessarily have the time, information, or incentive to represent the state-of-the-art.

In the general process of developing an HCP, biologists in the proponent's employ submit a plan to the Services, sometimes working informally with the Services' biologists in the process. [71] Typically, relatively little detailed information concerning a listed species' habitat exists at the time of listing, in which case, the first requisite in preparing an adequate HCP is to gather this information. [72] This process can be labor-intensive and expensive, which is one reason it is easier to prepare landholding-specific HCPs after a bioregional conservation plan has already been developed. As HCPs grow in geographic scope, last longer, and cover more species, the complexity of biological planning grows. These larger HCPs require Herculean efforts to assemble available data and conduct additional field surveys, utilize state-of-the-art tools for planning (e.g. GIS), and make sure that available ecological information and management techniques are used in the best way possible. [73]

Performance reviews of HCPs reveal that information pertinent to the design of HCP conservation strategies is frequently under-researched by the HCP preparers. Of particular concern are the data omissions regarding cumulative impacts of development activities on other parcels or river reaches. [74] Data omissions on such species characteristics as amount and quality of feeding, breeding, and migration habitat were also judged to be a serious problem in the development of mitigation or

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[67] Of course, holding the public lands to a higher standard of performance in habitat conservation would not be advance recovery in regions of the country where there is little or no Federal land, or where existing Federal land is unsuitable to support the species in question.

[68] Murphy, Dennis, et al. A Statement on Proposed Private Lands Initiatives and Reauthorization of the Endangered Species Act from the Meeting of Scientists at Stanford University (March 31, 1997).

[69] The scientists were particularly concerned about the inflexibility in conservation strategies associated with the "No Surprises" assurances, the coverage of species in multiple-species HCPs, level of protection afforded by safe harbor initiatives and prelisting agreements, and the lack of independent scientific review of these agreements. Ibid.

[70] Ibid.

[71] Defenders of Wildlife, supra note 7, pg. 37.

[72] FWS & NMFS, supra note 19, pg. 3–12.

[73] Hosack, Dennis A., Laura Hood, and Michael P. Senatore. Expanding the Participation of Academic Scientists in the HCP Planning Process. Endangered Species Conservation Planning 60 University of Michigan (July/August 1997).

[74] For example, in 23 percent of the cases surveyed, information on cumulative impacts suggested that a different assessment of status or impacts of take should have been made. NCEAS, supra note 12, pg. 38.

minimization efforts. Even when a fair amount of information is known about a species, it is still difficult to efficiently incorporate biological data into conservation strategy decisions because no well-accepted model exists.[75] Yet, all in all, the scientific quality of HCPs, especially in terms of mitigation analysis, has been improving.[76]

The Services have the responsibility to ensure that applicants use adequate scientific information to develop HCPs and the Services acknowledge that the availability of up-to-date biological information is crucial to any HCP. Yet, the Handbook leaves data collection exclusively to the applicant,[77] as well as the threshold decision whether the available biological information is adequate to proceed with planning. Only if the applicant conveys to the agencies that additional data is needed will the Services make recommendations on research and collection of biological information.[78] But, the applicant's have little motivation to activate the Services in this way. Their primary concern is for speedy, cost-efficient plan development and they loath to engage in resource-and time-intensive studies unless the Services require them for the approval of the HCP.

Conservation biology is the discipline implicated in designing optimal habitat conservation strategies. Yet, the performance reviews of HCPs revealed that the statutory command to "minimize and mitigate project impacts to the maximum extent practicable" has often caused HCP negotiations to be driven by considerations of economic feasibility. The operative facts have become the applicant's assertions regarding the effects of mitigation alternatives on profit margins, rather than the scientists' assertions regarding biological imperatives. This has led some scientists to criticize HCPs as discretionary measures based mainly on political and economic considerations rather than on empirical scientific data regarding the ecological requirements of a species.[79] While economics is certainly relevant to deciding on the allocation of responsibilities among property holders, both public and private, in achieving the conservation goals of the plan, economic considerations should not be allowed to intrude into the choice of conservation strategies.

The Role of Independent Scientists

Apart from the influence of economics and politics, a spectrum of scientific opinion may exist as to whether the conservation strategy adopted in an HCP is adequate to meet the biological objectives. Establishing an independent scientific review may help arbitrate the differences in professional judgment and help assure that survival and recovery of the species are attained. Independent review[80] is also important to foster public confidence in the process. The concurrence of the broader scientific community confers an imprimatur of technical excellence that can garner public acceptance for controversial HCPs.

Under current practice, independent scientists may become involved in the development of HCPs through informal consultation or by serving on a scientific review panel. However, these opportunities generally come only after the HCP has been de-

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[75] Thornton, supra note 20, pg. 651.

[76] The NCEAS researchers looked at the overall quality of HCPs over time, and found that, from the first HCP (San Bruno Mountain) until 1996–97, for several stages of planning and for overall quality, more recent plans are better than older ones. The most biologically important aspect of this improvement is in mitigation analysis: before 1995, only 10 percent of species covered had "adequate" analysis of mitigation, while from 1995–1997, 60 percent of species were adequately analyzed. Similar improvements have occurred in all other steps of analysis, indicating that HCPs—are—as their advocates have claimed becoming more rigorous scientific documents. Ibid.

[77] FWS & NMFS, supra note 19, pg. 3–12.

[78] Ibid.

[79] Bingham, B.B., and B.R. Noon. Mitigation of Habitat "Take": Application to Habitat Conservation Planning. 11 Conservation Biology 127–139 (1997).

[80] A qualified independent reviewer is one who:

(1) has little personal stake in the outcome of decisions or policies in terms of financial gain or loss, career advancement, or personal or professional relationships;

(2) can perform the review tasks free of intimidation by others associated with the decision process;

(3) has demonstrated competence in the subject as evidenced by formal training or experience;

(4) is willing to use her or his scientific expertise to reach objective conclusions that may be discordant with her or his value systems or personal biases; and

(5) is willing and able to help identify internal and external costs and benefits both social and ecological of alternative decisions. Typically such a person is associated with a recognized scientific society or is otherwise an established professional in a particular field.

Workshop Findings & Conclusions, supra note 16, pg. 13.

veloped or implemented.[81] In addition, even this limited involvement often arises only at the behest of the outside scientist, not as a result of solicited peer review. Thus, independent scientists are generally involved only and to the extent they volunteer their services, not as part of routine practice in the formulation of a habitat conservation plan.[82]

Such *post hoc* peer review of completed plans is not enough. Defensible science must be integrated from the beginning and at all phases of the planning process. It is important to get scientists involved as scientists, providing data and analyses, not just as reviewers reacting to someone else's data and analyses. The input must come at the formative stage when first principles of the application of conservation science are being established for the reserve design or mitigation strategy. These decisions are made as the HCP is negotiated, not at the final stage when the Service issues the incidental take permit. Assessments of completed plans during public commenting periods come at the least useful stage when the chances for changing elements of the plan are slim. Late scientific analysis relegates science to the role of an adversarial interest at the approval stage rather than a shaping influence at the foundational stage.[83]

Access Barriers for Independent Science

Notwithstanding the pivotal importance of state-of-the-art biological information, the Services defer to the applicant regarding admission of others to the HCP negotiation process. In the role of "gatekeeper", applicants typically do not wish to involve interested scientists who are not agency staff or part of the applicant's coterie of paid consultants. Applicants argue that they spend large sums of money to hire competent consulting firms and that the Services' reviews are already excessive.[84]

The Services' deference to the applicants on public participation reflects their view of the HCP as a permit application over which the applicant itself should exercise final substantive control. However, an HCP is for all intents and purposes a negotiated settlement of an applicant's regulatory liability under the ESA. The plan determines the terms and conditions under which a discretionary permit will be issued to engage in otherwise forbidden acts, namely the taking of protected species. Once its terms are approved by the Services, issuing the incidental take permit or implementation agreement is largely a formality.

Given these realities, the process through which an HCP is developed and approved should be as open to interested members of the public as is the issuance of land use permits in other contexts. For example, when the Department of Interior grants grazing permits under the Federal Land Policy and Management Act, it allows for public participation so that all parties affected by the process will be represented. NPDES permits and local building permits are similarly public processes.[85] Permit applicants in these processes are not allowed to control who can and who cannot participate in the permitting process. Likewise, the Services, not the applicants, should determine who gets a seat at the HCP negotiation table. Native fish and wildlife are public resources under both state and Federal juris-prudence, wherever they may be found. It is fundamentally wrong to treat the permitting process as a private, rather than a public, affair. The public does have a legitimate interest in the substantive validity of the negotiated terms and conditions for take of endangered species on private lands.

The recommendation that the Services, rather than the HCP applicants, act as the gatekeeper of HCP negotiations does not mean that the Services must admit to the table everyone whom knocks on the door. Demonstrated ability to contribute substantively to the issues on the table without undue delay may be made the price of admission. We simply urge that the Services themselves assume the role of making these decisions and not leave them to the permit applicant who has a vested

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[81] Defenders of Wildlife, supra note 7, pg. 37. Currently few professional or financial incentives exist for independent scientists to participate in HCP development, while many disincentives to their involvement exist. Univ. of Michigan, supra note 54, pg. 10–0.

[82] The University of Michigan study found that fewer than a third of applicants submitted all or portions of their HCP for peer-review to non-applicant and non-agency scientists, and the researchers were unsuccessful at finding a single HCP that had undergone formal peer review. Univ. of Michigan, supra note 54, pg. 10–3.

[83] Noss et al., supra note 13, pg. 124.

[84] Hosack, et al., supra note 78, pg. 60.

[85] Other Federal statutes allow stakeholders to help shape natural resource use and protection. The EPA convenes interested stakeholders in setting Federal water quality standards, and NMFS itself employs stakeholder groups in its efforts to reduce the harm commercial fishing has on imperiled fish species under the Marine Mammal Protection Act. Nothing in the ESA precludes the Services from employing similar measures to involve the public in the HCP development process.

interest in moving the negotiation process forward with a minimum of process and scrutiny.

The Value of Public Participation in Habitat Conservation Planning

It must be recognized that the public does have a significant stake in the HCP process because wildlife is a public resource, both legally and in the court of public opinion. And, whatever conservation responsibilities or risks are not borne by the HCP applicant will either be borne by the species or be shifted to other landowners or to the public lands, usually at public expense. An HCP that authorizes land disturbances that can cause flooding, mudslides or loss of fisheries directly affects the welfare of the local community.[86] Equally important, public participation in the development of an HCP can enhance the quality of information on which HCP decisions are based, improve understanding and relationships among stakeholders, heighten public and political support for an HCP, and enhance the plan's long-term viability. Indeed, the degree of public acceptance of an HCP is strongly related to the degree of public participation in the development of the plan. The larger the role that interested parties are accorded in developing conservation plans, rather than merely commenting on completed plans, the more satisfied they tend to be with the final result.

Where a unit of local government applies for the Federal approvals and then issues development permits, the process is easier to access by the local community and general public, and the participation issues largely dissipate. HCPs that include some form of public land, whether Federal, state, or local, tend to provide more public participation than HCPs that strictly involve private land. The public usually becomes involved earlier and more actively compared to HCPs on private land.[87]

However, public participation is usually extremely limited when private rights holders initiate the HCP process. And, the Services have offered little in the way of guidance on fostering public participation. HCP guidelines merely instruct the agencies to encourage applicants to involve appropriate parties and hold informational meetings during public comment periods.[88] The Services have taken a "satisfied customer" approach to HCPs wherein the agencies view the applicant rather than the public as the "customer" to satisfy.[89]

Public Participation Under The National Environmental Policy Act

Issuance of an incidental take permit is a Federal action subject to the National Environmental Policy Act (NEPA).[90] NEPA goes beyond Section 10 of the ESA in considering the impacts of a Federal action on non-wildlife resources.[91] But, like NEPA, the ESA requires a description of "alternative actions to such taking."[92] To satisfy this requirement, applicants commonly analyze just two alternatives[93] but

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[86] Kostyack, John. Habitat Conservation Planning: Time to Give Conservationists and Other Concerned Citizens a Seat at the Table. Endangered Species Update: Habitat Conservation Planning 51 University of Michigan (July/Aug. 1997).

[87] The University of Michigan study provides several explanations for these different levels of participation. First, the public may not have as much desire to participate in private HCPs as they do in public HCPs. Although both types of plans effect public wildlife resources, public HCPs likely have more impact on public finances, future development, recreational lands, and other activities in which the public has a stake. Another explanation is that public HCPs provide more opportunities for public involvement. State and local laws may compel applicants to hold public meetings or make more frequent disclosures concerning their evolving plans. Also, many of the applicants of public HCPs are themselves public institutions who likely have more experience, inclination, and avenues for including the public in a formal HCP process than do private entities. Similarly, plans that affect public resources usually require approval from at least one public body. This may provide an incentive for public applicants to involve the public as a means of increasing the legitimacy and political feasibility of the plan. Univ. of Michigan, supra note 54, pp. 5–18–5–20.

[88] FWS & NMFS, supra note 19, pg. 6–22.

[89] Univ. of Michigan, supra note 54, pg. 8–2.

[90] FWS & NMFS, supra note 19, pg. 1–6.

[91] Depending upon the scope and impact of an HCP, NEPA can be satisfied by one of three documents: (1) a categorical exclusion; (2) an environmental assessment (EA); or (3) an Environmental Impact Statement (EIS). An EIS is required when the proposed project or activity covered by the HCP is a major Federal action significantly affecting the quality of the human environment. An EA is prepared to ascertain whether an EIS is needed. An EA culminates in either a decision to prepare an EIS or a Finding of No Significant Impact. 42 U.S.C. § 4321 et seq (1969).

[92] 16 U.S.C. § 1539(a)(2)(A)(iii).

[93] The two alternatives commonly included in NEPA documents are:

(1) Any specific alternative, whether considered before or after the HCP process was begun, that would reduce such take below levels anticipated for the project proposal; and

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must explain why alternatives were rejected.[94] The Services do not have the authority to impose a choice among the alternatives analyzed in the HCP; their role during development is to simply advise the applicant in developing an acceptable plan.[95]

NEPA's comment periods and disclosure requirements often provide the only opportunity for the interested public to review and comment on an HCP before it is approved. But, NEPA's usefulness as a participation and communications device is limited because the HCP negotiations tend to solidify a particular approach before public environmental review can influence them.[96] The HCP process, like any planning effort, becomes less flexible as time goes on and more ground is covered. Therefore, effective public involvement requires access to the process before the draft impact statement is issued for review. Based on these considerations, performance reviewers have recommended that the Services implement "trigger points" or points between scoping and the comment period when negotiators would be required to disclose agreements in early drafts and seek public comments on those documents.[97]

Tools for Facilitating Effective Participation by Independent Scientists and Local Communities

The HCP Resource Center

Local communities and conservation organizations that are interested in upgrading the scientific competence of HCPs generally do not have access to the requisite expertise or the means to procure it. To meet this apparent need, the Natural Heritage Institute is working with other national conservation organizations to create a pool of resources—both intellectual and financial—to enable independent scientific expertise to be brought into HCP negotiations on behalf of conservation interests and local communities. The HCP Resource Center will be comprised of a nationwide network of conservation scientists representing the full range of relevant sub-specialties from universities, private consulting organizations and the non-profit sphere. It may also include resource economists and wildlife law experts with appropriate negotiation skills. Teams tailored to the requisites of particular HCPs will be assembled to engage directly and effectively with the agency's and the applicant's team of scientists and negotiators. Creation of the HCP Resource Center is currently in the planning and fundraising stages. Establishing the center will be a resource-intensive process. High quality, independent science comes with a price tag and, for most species, qualified experts are not numerous.

National Data bank for HCP Materials

As a means of facilitating public involvement in the preparation of HCPs, several experts have recommended that the Services maintain a comprehensive, publicly accessible data bank of HCPs.[98] The data bank should include sufficient details to assist landowners in matching their conditions to previously approved HCPs. This capacity would allow applicants to model their plans after the successful efforts of others and would allow the public and nonprofit conservation organizations to track and monitor the implementation of individual HCPs. Because there is currently no central repository of completed plans and no log of HCPs under development, the public has not been able to follow the implementation of the ESA through HCPs as

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(2) A "no action" alternative, which means that no permit would be issued and take would be avoided or that the project would not be constructed or implemented.

FWS & NMFS, supra note 19, pg. 3–35.

[94] The HCP Handbook allows applicants to cite economic considerations as reasons for rejecting an alternative. However, if economic considerations are the basis of rejection, applicants must provide data supporting this decision so long as the applicant believes that the information is not proprietary.

[95] FWS & NMFS, supra note 19, pg. 3–36.

[96] In its 1998 study on public participation and the HCP process, researchers at the University of Michigan analyzed 14 HCPs and the NEPA comments those HCPs generated. It found that the comments received during the NEPA process, regardless of their context, did not significantly affect the outcome of the plan. For example, the outpouring of public comments on the San Diego MSCP in part forced the applicant and the Service to prepare a second DEIR/DEIS for the plan. However, the second draft changed only minimally in content over the first. Similarly, for the Plum Creek HCP, the company representatives stated that part of Plum Creek's rationale in preparing an EIS rather than EA for the HCP was that NEPA afforded greater public participation under an EIS. Nonetheless, participants noted that public comment had a minimal effect on that plan. Univ. of Michigan, supra note 54, pg. 7–1, 8–3.

[97] Ibid.

[98] Lin, Albert C. Participants' Experiences with Habitat Conservation Plans and Suggestions for Streamlining the Process, 23 Ecology Law Quarterly 369, 416 (1996); Univ. of Michigan, supra note 54, pg. 14–8; NCEAS, supra note 12, pg. 47.

closely as some would like.[99] At present, information on individual plans can only be found by calling government field offices and asking the overworked biologists. The data base would help both the public and Services track the overall performance of approved plans.[100] The financial cost of maintaining such a data bank would be relatively modest because it would utilize information already compiled by the Services.

INCORPORATE ADAPTIVE MANAGEMENT AND THE PRECAUTIONARY PRINCIPLE INTO HCP DESIGN

Because our understanding of the biological world is incomplete, uncertainties are endemic to conservation planning. The biological information available on species and ecosystems—and their interaction with habitat—is always, to some degree, imperfect or ambiguous. The performance reviews recommend two interrelated tools for dealing with critical uncertainties: adaptive management and the precautionary principle. Adaptive management is a technique that tests the response of biological systems to conservation measures and adjusts conservation strategies as warranted on an ongoing basis. The precautionary principle resolves critical uncertainties in favor of greater protection for the species until and unless better information counsels otherwise.

Applying Adaptive Management Principles to HCP Design

Adaptive management is a strategy for coping with the uncertainties inherent in predicting how ecosystems will respond to human interventions. Adaptive management is an essential feature of habitat conservation planning because it responds realistically to ignorance about the ecosystem by monitoring the results of management efforts so that adjustments can be made as needed.[101] Under adaptive management, HCPs are acknowledged to be mere working hypotheses, predicated upon assumptions about how species and their ecological processes and functions respond to changes in habitat size, location, configuration, quality, etc. These assumptions, uncertainties, and knowledge gaps are made explicit, and the conservation strategy includes concrete plans and funding for a program of hypothesis-testing against specified, measurable performance goals.

Adaptive management treats every HCP as a "learning laboratory" where conservation strategies continue to evolve as scientific understanding increases. While HCPs will always be experiments with uncertain outcomes, adaptive management requires resource managers to acknowledge the risks inherent in the experiment and modify conservation measures according to experience and new information. Thus, another word for adaptive management is "contingency planning." At its core, an effective adaptive management program must include a method for evaluating the performance of the HCP and must specify the alternative conservation measures that will be triggered automatically in the event that performance fails to meet conservation goals. Under such a program, it might be necessary for the permittee to implement development activity in phases so that permission to begin a later phase is contingent upon the Services verifying that the performance standards in the prior phase have been met. This kind of phased development is more easily accomplished in larger landscape-scale plans that are implemented over time.

From the Services' perspective, property rights holders are already successfully incorporating adaptive management into HCPs. However, in both the existing Handbook and the proposed addendum, the practice of adaptive management is limited to circumstances where "significant uncertainty exists," and, even then, only to circumstances where the applicant accedes to its utilization.[102] In current practice, the range of conservation measures that might be required as a result of evolving information is negotiated as a term of the initial HCP.[103] Yet, many conservation biologists agree that "significant uncertainty" may not become apparent until after the

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[99] The lack of public scrutiny and involvement when HCPs were launched would later be characterized by the administration as a "quiet revolution." Kostyack, John. Surprise! The Environmental Forum 19 (March/April 1998).

[100] According to the NCEAS researches, centralized and readily accessible data on endangered species could do for species protection what centralized and accessible data on criminals and outstanding warrants has done for public safety protection; surely, if we can do this for law enforcement, we can also do it for environmental protection. NCEAS, supra note 12, pg. 47.

[101] Noss, et al., supra note 13, pg. 133.

[102] Ibid. pg. 3–24. The Draft Addendum to the Handbook does nothing to expand the use of adaptive management, since the Draft recommends adaptive management only for plans containing "significant data gaps." 64 Fed. Reg. at 11486.

[103] FWS & NMFS, supra note 19, pg. 3–25.

HCP has been approved. They advocate for including adaptive management practices in virtually every plan, making it the rule rather than the exception.

Conservation biologists have identified five steps to develop an HCP that utilizes adaptive management practices: [104]

(1) Identify explicit and quantifiable biological goals;

(2) Characterize the human-induced stressors of the ecosystem that must be overcome or counteracted to achieve those goals, including an explicit acknowledgement of the critical uncertainties regarding the stressor-response relationships;

(3) Specify high-probability measures to minimize, mitigate or offset these stressors or otherwise achieve the biological goals;

(4) Monitor biological indices by developing a statistically valid sampling protocol. Develop mechanisms to translate data into needed plan adjustments. [105]

The choice of conservation measures in Step 3 is crucial to the success of an HCP. These mitigation measures must represent the "best guess" based on the best available data. Once in place, these measures constitute the initial working hypotheses that the adaptive management regimen tests, monitors and adjusts to as necessary to reach the biological goals.

Measures to Reduce the Risks of Unsuccessful Mitigation

The most frequently used mitigation strategies consist of measures to minimize or avoid development impacts on the listed species. [106] While these are usually the easiest and least costly procedures to implement, the sufficiency of these measures can only be tested over time and in relation to how the target species responds in the real world. To maximize prospects for successful mitigation, measures should be based on the best science available and the mitigation strategy must be allowed to evolve over time as monitoring progresses. As to the scientific adequacy of HCPs to date, researchers have found that the efficacy of the conservation measures initially selected in the plans varies greatly. In most cases, the mitigation procedures do address the primary threat to the survival of the species, but only about half of mitigation plans adequately ameliorate that threat. [107]

There are several techniques that can reduce the risks to the species associated with unsuccessful mitigation strategies. In general, the Services recommend that mitigation habitat should be as close as possible to the area of impact. Also, the habitat should include similar habitat types and support the same species affected by the development covered by the HCP. [108] The Handbook recommends that habitats be "banked" through the use of conservation easements or other means before development occurs. [109] The "mitigation credit" system is a variant of this scheme. Under this system, newly created habitat receives a credit (usually on a per acre basis) which can then be used or sold to other parties requiring mitigation lands. [110] This allows landowners to pay mitigation fees into habitat acquisition funds in lieu of conserving habitat on their own lands. Other landowners may create habitat for purchase as mitigation. For instance, International Paper Company is restoring and selling red-cockaded woodpecker habitat in the southeast. The Bakersfield Metro-

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[104] Workshop Findings and Conclusions, supra note 16.

[105] These steps call for the rigorous application of the following scientific methods:

(1) System assessment: systematic collection and statistical analysis of data on "health" of the important ecosystem components and on the factors that may influence health at several levels: population, species, community, habitat, and ecological processes.

(2) Experimental science: rigorous, controlled, empirical tests to confirm causal relationships, management hypotheses, and the incidental impacts of management.

(3) Risk assessment: statistical analysis of empirical results to identify levels of risk, including those associated with uncertainty.

(4) Devices for managing risk and uncertainty: including application of the precautionary principle.

Workshop Findings and Conclusions, supra note 16.

[106] NCEAS, supra note 12, pg. 24.

[107] For the 57 percent of the species included in the HCPs examined by the NCEAS, the mitigation measures addressed the primary threat to the species to a degree considered "sufficient" or better. The research found that the 10 most common types of mitigation employed in HCPs were, in order of frequency: minimization, avoidance, land acquisition , conservation easements, habitat restoration, restoration of disturbance regimes, removal of exotics, research funding, habitat banking, and translocation of species. Ibid. pg. 25.

[108] FWS & NMFS, supra note 19, pp. 3–21, 3–22.

[109] Ibid. pg. 3–21.

[110] The Services find the "mitigation credit" system promising because: (1) it allows owners of endangered species habitat to derive economic value from their land as habitat, (2) it allows parties with mitigation obligations to meet their obligations rapidly since mitigation lands are simply purchased as credits, and (3) the mitigation lands are provided prior to the impact, eliminating uncertainty about whether a permittee might fail to fulfill the HCP's obligations after the impact has occurred. Id.

politan HCP is conserving a whole suite of species based entirely on marketable development rights.

Mitigation banking can achieve habitat goals in an economically efficient manner and can reconfigure habitat in ways that traditional HCPs cannot. Because spatial considerations are critical in conservation, mitigation banking has the potential to result in "no net loss" of habitat and to enhance population stability by exchanging fragmented habitats for non-fragmented habitats. Assuring that mitigation banks do not result in a net reduction in the extent or quality of habitat is particularly essential for already endangered or threatened species.

However, it is often difficult to establish a "common currency" for valuing the habitat that is banked or sacrificed. There may not be much "biological content" to the offset credits assigned. Since habitat value is site-and detail-specific, there are no unsigned biological bearer bonds. That is to say, the amount of habitat credit appropriate to a mitigation scheme is not fungible, but highly dependent upon the specifics of the exchange. Generic criteria will quickly break down. What is needed is a process for valuation, not fixed criteria.

The success of mitigation measures depends on their timely implementation. To increase the probability that unsuccessful mitigation procedures can be detected and corrected, implementation should occur before the listed species are impacted by the permitted development activities. If most of the take occurs before mitigation measures are implemented, the chance of adapting the conservation strategy to correct unsuccessful conservation measures is substantially reduced. This also applies to plans covering multiple species, both listed and unlisted.[111] Also, if take is permitted before the permittee implements mitigation measures, the incentive to mitigate effectively is reduced. In general, the Services recommend that the mitigation habitat should be available before the applicant's activities commence. However, in some cases, the Services will allow the HCP applicant to conduct activities before the time when replacement habitat can be provided. The Services find this acceptable so long as the HCP provides legal or financial assurances that the permittee will fulfill their obligations under the HCP. For example, this assurance can be provided through letters of credit controlled by the government until the permittee establishes the mitigation lands.[112]

Because mitigation can be one of the most expensive steps in the development and execution of an HCP, the Services and applicants must determine early in the development of the HCP the cost of the proposed measures, the source of funding, and the time period over which these funds will be available. HCPs generally satisfy these criteria.[113]

The Importance of Monitoring

While the choice of mitigation measures is crucial for an effective program of adaptive management, biological monitoring comprises the heart of adaptive management practices. HCPs that do not include a monitoring program cannot be scientifically evaluated. As previously stated, adaptive management treats all HCPs as "learning laboratories" in which the underlying conservation hypotheses are tested against actual responses in the species population. Monitoring of these responses in order to adjust conservation strategies is indispensable.[114] In addition, a precise trigger for mitigation adjustments needs to be spelled out in the HCP agreement, as well as procedures for accomplishing the indicated adjustment. The mere exist-

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[111] For example, the San Diego MSCP and the Plum Creek HCP cover 53 and 281 unlisted species, respectively, and 32 and 4 listed species, respectively, but there is no requirement that mitigation must occur before unlisted species can be taken. Monroe, Jud, Habitat Conservation Plans Assurances and Assurance Mechanisms: A Preliminary Review of Approaches to Mutual Assurances in Several Milestone Habitat Conservation Plans 3. Prepared for the Metropolitan Water District of Southern California (1997) (hereinafter cited as "MWD").

[112] FWS & NMFS, supra note 19, pg. 3–22.

[113] NCEAS found that 98 percent of the HCPs identified in advance the sources of funding for the mitigation proposed; however, only 77 percent had significant funds set aside to pay for mitigation at the onset of the HCP. NCEAS, supra note 12, pg. 28.

[114] An effective conservation plan requires a long-term obligation to ecological monitoring and to adjusting plans on the basis of new information. For example, the monitoring plan for the Coachella Valley fringed-toed lizard has uncovered, over the past decade, a number of important factors affecting both lizard populations and the physical processes of the ecosystem crucial to implementing the plan. The lizard population has been monitored within three preserves since 1986; the results of these surveys indicate that lizard populations fluctuate with the availability of loose sand, insects, and other resources. However, monitoring only lizards, with no observation of the larger ecosystem or commitment to action according to the results of monitoring, would not permit adaptive management it would be "an academic exercise, with no options for remedial protection efforts." Barrows, C.W. An ecological model for the protection of a dune ecosystem. 10 Conservation Biology as quoted in Noss, et al., supra note 13, pp. 133–134.

ence of monitoring is not a solution to data shortage unless it includes a quantitative decisionmaking process that links monitoring data to adjustments in management.

An adequate monitoring program requires the use of quantifiable indicators, placed in a hypothesis-testing framework with a valid experimental design. Three prominent conservation biologists recommend employing the following checklist when assessing the adequacy of an HCP's monitoring program: [115]

(1) Is the monitoring program scientifically and statistically valid? Monitoring need not be complex and expensive, just comprehensive.

(2) Does the program effectively test the success of the conservation measures? The purpose of monitoring is to test hypotheses and inform management. Does the HCP allow for testing of hypotheses regarding effects of management practices on populations and other conservation elements of concern? Does it allow for testing of alternative management treatments?

(3) Will the program provide timely analysis? Does the plan include a mechanism for regular and timely analysis and review of monitoring data? HCPs should include specific timetables for analyzing and interpreting monitoring data in order to inform management decisions. Such a requirement assures that monitoring will not stop with the collection of information but will include efforts to analyze and interpret it. Monitoring must also be time-sensitive to the life cycle of the monitored species. [116]

(4) Is the HCP designed to be responsive to information derived from monitoring? Can the plan be modified to take into account new information? An HCP that is "set in stone" and designed to avoid future surprises is inflexible and potentially places species and ecosystems at great risk. Since nature is dynamic and unpredictable, surprises will occur; it is a matter of whether we notice them. The sooner we notice them and take corrective action, the lower the risk to biodiversity. Therefore plans should be evaluated as to how open they are to modification based on new information.

The principal criteria for determining the adequacy of a monitoring program should be its ability to evaluate the success of mitigation measures and the consequent effect on protected species. Monitoring data should be incorporated into centralized data bases to facilitate access to information on the overall status of species, and to facilitate assessment of cumulative impacts for specific plans. [117]

Reviewers found that few HCPs have well-developed and statistically valid monitoring programs, [118] and the Services typically offer little help to an applicant in constructing a scientifically defensible monitoring program. [119] Fewer HCPs still have actually monitored their results adequately over a period of years so that

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[115] Noss, et al., supra note 13, pp. 135–136.

[116] For example, short-lived species, e.g., listed mice species, must be monitored much more frequently than long-lived species, e.g., desert tortoises (with respect to generation time), and annual plants more frequently than redwood tress. Ibid., pg. 132.

[117] NCEAS, supra note 12, pg. 44.

[118] In their research, Noss, O'Connell, and Murphy found that plans either completely lack monitoring programs or had only vague requirements for how plans should be modified on the basis of data derived from monitoring. Noss, et al., supra note 13, pg. 134. The NCEAS study sampled 43 HCPs to determine how often plans incorporate a monitoring program. They found that only 22 of the plans contained a clear description of the monitoring program. NCEAS found that for the vast majority of species, monitoring was either absent or not documented adequately for researchers to assess take, species status, or mitigation success during the course of the plan's implementation. NCEAS also found that plans with an adaptive management program were much more likely to also include clear monitoring plans. NCEAS, supra note 12, pp. 28–29.

[119] The HCP Handbook offers only vague guidance. It states that the following steps are logical elements for consideration in developing HCP monitoring programs for regional or other large-scale HCPs:

(1) Develop objectives. Any monitoring program should answer specific questions or lead to specific conclusions.

(2) Describe the subject of the monitoring program.

(3) Describe variables to be measured and how the data will be collected.

(4) Detail frequency, timing, and duration of sampling for the variables. Determining how frequently and how long to collect data is important to the success of the program.

(5) Describe how data are to be analyzed and who will conduct the analyses. A monitoring program is more effective when analytical methods are integrated into the design.

(6) Monitoring must be sufficient to detect trends in species populations in the plan area but should be as economical as possible. Avoid costly monitoring schemes that divert money away from other important programs such as mitigation.

(7) Monitoring programs can be carried out by a mutually identified party other than the permittee, so long as program is funded and the party is qualified.

FWS & NMFS, supra note 19, pp. 3–26 3–27.

trends can be detected. When monitoring is deficient, the essential goal of learning from experience is much harder to accomplish. Fortunately, the Services' Draft Handbook Addendum does propose to improve upon current compliance monitoring by requiring permittees to monitor both their success in implementing mitigation measures and their effectiveness in achieving the conservation goals.[120]

The Services require the applicant to demonstrate funds sufficient to carry out the activities under the HCP including conservation measures, plan administration, and biological monitoring.[121] However, reviewers have found that many HCPs do not commit sufficient funds to properly monitor species and habitat and identify problems. Without funding for the kind of thorough biological monitoring that makes adaptive management possible, plans cannot be implemented in a scientifically credible manner.[122] The conservation organization Defenders of Wildlife recommends that applicants be required to post a performance bond or other financial security before they are granted an incidental take permit, ensuring that funds will be available if a permit is revoked or additional mitigation measures become necessary. Such measures would also protect the public if landowners become insolvent or otherwise terminate the agreement before mitigation steps are completed.[123] Other commentators recommend establishing a Federal trust to provide supplemental support in the event that landowners comply with the plan but additional measures are needed to meet biological goals.

Applying the Precautionary Principle to HCP Design

Inadequate information regarding the status of a species or its habitat and the type and magnitude of take that will occur during development activities appears to be endemic in the preparation of HCPs. For 25 percent of species covered by HCP's in one study, the researchers could not determine whether enough habitat currently exists to sustain the species.[124] For only one-third of the species analyzed in that study were there enough data to evaluate what proportion of the population would be impacted by the proposed development.[125] The data limitations make it difficult to determine the impacts of future losses or alterations of habitat on the listed species.

When data are sparse, as they often are for listed species and usually are for other species covered by an HCP, it is difficult to confidently design an effective and efficient conservation strategy. This is why conservation biologists believe that optimal HCP development should be guided by the traditional scientific method of using experiments to prove or disprove a testable hypothesis concerning available conservation strategies.[126]

The precautionary principle is one method for coping with incomplete or inadequate information pertinent to habitat conservation planning. The precautionary principle is used in many fields of environmental management, as well as fields as diverse as engineering and economics, where decisions must be made despite uncertainty. The principle holds that, in the face of poor information or great uncertainty, managers should adopt risk-adverse practices.[127]

In the HCP arena, applying the precautionary principle means dealing with data deficiencies in a manner that does not place the target species at risk due to irreversible loss of habitat but also does not make development impossible. The first step is to assess the sufficiency of available data. An inventory of available data and acknowledgement of gaps should be a routine requirement in the development of every HCP. Where necessary data are not available and cannot be practicably obtained, the planning process should proceed with caution commensurate with the

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[120] The proposed amendment to the Handbook states that: "The Services often incorporate monitoring measures to assess whether goals are being met, especially in cases where additional information may be desirable or there is significant scientific uncertainty." The purpose of monitoring is to ensure that the permittee complies with the ITP. The Services have not revealed their intentions regarding Federal oversight or participation in developing a monitoring plan or the frequency with which they will review data generated by the monitoring program if at all. 64 Fed. Reg. pg. 11488–89.

[121] 16 U.S.C. § 1539(a)(2)(B)(iii).

[122] Defenders of Wildlife, supra note 7, pg. 82.

[123] Ibid.

[124] NCEAS, supra note 12, pg. 18.

[125] When available data were used in preparing an HCP, the NCEAS researchers found a varying level of quality of their use. For analysis of status, take, impact, population sizes and habitat availability, the overall quality of data use was fairly high. However, the use of existing data regarding extrinsic factors (anticipated human population growth, likely future pressures on species) was poor, which could undermine otherwise effective mitigation covered by the HCP. Id. pg. 19.

[126] Williams, supra note 14.

[127] Id. pg. 40.

anticipated risks and uncertainties. In extreme cases, an HCP should not be initiated or approved, for it would be wrong to call the HCP process scientific, or even rational, if it were not an option to halt the process in the absence of crucial information.[128] In general, the precautionary principle counsels that:[129]

- The greater the *impact* of a plan, the fewer gaps in critical data should be tolerated. For example, the standard of data adequacy should be higher for irreversible activities such as are typical in urban development. A lower standard of data adequacy might be tolerated for activities where impacts can be reversed, as may be the case for water diversions that are made conditional upon protection of instream values.
- A scarcity of data on *impacts of take* should be handled by assuming a worst-case scenario when determining whether approval criteria have been satisfied.
- *Take* should be quantitatively assessed for large HCPs covering vast expanses of land.
- *Mitigation measures* should be implemented and assessed before take occurs where there is a scarcity of information to validate the effectiveness of mitigation.
- *Monitoring* needs to be very well designed in cases where the success of mitigation is unproven.
- *Adaptive management* needs to be a part of every HCP predicated on substantial data shortages, not just to deal with "unforeseen circumstances."

In sum, where critical information is scarce or uncertain, application of the precautionary principle counsels that resulting plans should:

(1) be shorter in duration
(2) cover a smaller area
(3) avoid irreversible impacts
(4) require that mitigation measures be accomplished before take is allowed
(5) include contingencies
(6) have adequate monitoring

All of these principles should be enshrined in the HCP approval criteria in Section 10 of a reauthorized Endangered Species Act.

Review and analysis of HCPs to date has found that these corollaries of the precautionary principle have not been well applied in habitat conservation planning. In particular, HCPs based on less information or less certain information tend to be as long in duration and a real extent as those based on more adequate information. The degree of impact avoidance or minimization has not correlated with the sufficiency of data needed to determine the impacts of the proposed development activities. Finally, researchers have found that HCPs based on poor information tend to be more likely to include irreversible impacts.[130] These results suggest that HCPs are not generally structured to be more cautious in cases where applicants are working with large data gaps.

ALIGN REGULATORY ASSURANCES WITH ADAPTIVE MANAGEMENT AND THE CONSERVATION PERFORMANCE OF AN HCP

Regulatory Assurances: Controversial but Necessary

The Services are convinced that legal assurances are necessary to induce private rights holders to develop HCPs and to implement the conservation measures obligated therein.[131] The increase in HCP activity in response to such assurances seems to confirm this assumption. Implicit in this belief is the fear that, unless owners of non-Federal lands and waters are induced to make conservation commitments, endangered species habitats will be surreptitiously destroyed or degraded as such properties are developed. While such take may be prohibited by the ESA, its occurrence can readily overwhelm the detection and enforcement capabilities of the Services. In essence, regulatory assurances provide the necessary inducement for habitat conservation planning by exempting development activities from new or additional mitigation requirements beyond those committed in the HCP.[132] The major concern of the HCP performance reviewers is that such regulatory assurances can

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[128] Workshop Findings and Conclusions, supra note 16.
[129] These points are based on recommendations by NCEAS, supra note 12, pg. 41.
[130] NCEAS, supra note 12, pg. 41.
[131] Many commentators concur with the Services that such assurances are necessary. For example, Robert Thornton believes that regulatory assurances make HCPs palatable to landowners and can be set up to be consistent with principles of conservation where the plan is designed to protect ecosystems rather than listed species. Thornton, supra note 20, pg. 655–656.
[132] Dept. of the Interior and Dept. of Commerce. Final Rule, Habitat Conservation Plan Assurances ("No Surprises"), 63 Fed. Reg. 8859–8860 (Feb. 23, 1998) (hereinafter cited as "DOI & DOC").

introduce rigidity in the conservation strategy that inhibits or precludes adaptive management.

Assurances are also controversial because they tend to shift to the species, which can ill afford them, the risks associated with our imperfect knowledge about how complex biological systems respond to human interventions. Those risks are exacerbated by the practice of conferring assurances without regard to the quality or duration of the conservation plan.[133] The property rights holder typically seeks to be absolved of further responsibility for the conservation of the species in exchange for the development concessions made in the HCP, irrespective of the future population trends for the covered species.

Currently, the form of regulatory assurance provided by the Services is the "No Surprises" guarantee.[134] The policy can be traced back to a House of Representatives Committee Report on the 1982 Amendments to the Endangered Species Act.[135] The Report stated that, in the event an unlisted species is listed after permit issuance,

> "no further mitigation requirements should be imposed if the [HCP] addressed the conservation of the species and its habitat as if the species were listed pursuant to the Act."[136]

The Report also stated that "circumstances and information may change over time" and that the original plan might need to be revised. To address this situation, the Committee "expect[ed] that any plan approved for a long-term permit [would] contain a procedure by which the parties will deal with unforeseen circumstances." Finally, the Report specified that the Services may:

> "approve conservation plans which provide long-term commitments regarding the conservation of listed as well as unlisted species and long-term assurances to the proponent of the conservation plan . . ."[137]

Today, the "unforeseen circumstances" clause is interpreted to mean that landowners are not responsible for the decline of listed species covered by their plan if that decline is attributable to events that the landowner could not have foreseen at the time the plan was approved.[138] The Services formally adopted the policy as an agency rule on February 23, 1998.[139]

The "No Surprises" policy has had a dramatic affect on the public perception of the ESA. It has muted political concern that the ESA is unworkable and too stringent.[140] Yet, the policy has no shortage of critics, conservation biologists among the harshest. Some of the outstanding issues that biologists find problematic include:

- *Unforeseen circumstances.* The rule distinguishes between "unforeseen circumstances," which are events that could not reasonably have been anticipated, and "reasonably foreseeable changes in circumstances," including natural catastrophes that normally occur in the area. HCPs need address only the latter; unforeseen circumstances do not impose any conservation burdens on the applicant.[141] The rule thus requires contingency planning only for stochastic events rather than the more likely failure of mitigation measures to work as "foreseen" or anticipated, such as

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[133] The landowners' desire to reduce risks associated with economic projections typically determines how long plans apply. Defenders of Wildlife, supra note 7, pg. 83.

[134] The "No Surprises" rule provides a "bankable" understanding that additional land or money will not be required on the "whim and caprice of the Services"—especially when the additional requirements derive from events beyond the control of the landowner. Thornton, supra note 27, pg. 66. Yet, some commentators worry that the rule could set a dangerous precedent in the way agencies deal with changing circumstances. For example, polluters should not be protected from the regulatory effects of new information indicating that a discharged pollutant is a poison. Similarly, land or water developers should not be protected from the effects of new information indicating that certain habitat management techniques interfere with recovery. Sher and Weiner, supra note 32, pg. 69.

[135] H.R. Rep. No. 97–835, 97th Cong., 2d Sess. 30, reprinted in 1982 U.S. Code Cong. & Admin. News 2860, 2871–2872.

[136] Ibid.

[137] Id.

[138] FWS & NMFS, supra note 19, pg. 3–29.

[139] The policy was informally adopted in 1994 and included in the HCP Handbook in 1996. Ibid., pg. 3–29. Because the policy was adopted without benefit of public review or comment, conservationists sued the Services in 1997. Spirit of the Sage Council v. Babbitt, Civ. No. 96-cv02503 (Dist. D.C. 1997). To resolve the lawsuit, the Services adopted the policy a formal rule. DOI & DOC, supra note 132, pg. 8860.

[140] Baur, Donald C. The No Surprises Policy: Stepping Away from Sound Bites and Getting Down to Business. 14 Endangered Species Update: Habitat Conservation Planning 63 University of Michigan (July/Aug. 1997).

[141] In the event of unforeseen circumstances, the permittee "cannot be required to commit additional land, funds, or additional restrictions on land, water or other natural resources " FWS & NMFS, supra note 19, pg. 3–29.

the common circumstance in which the HCP is implemented as agreed but species decline nonetheless. The risk of such "unforeseen" events dramatically increases for HCPs that last several decades, cover large areas, and cover many species, such as housing developments or timber harvesting. Yet the plans for these activities involving long periods of construction or operation contain the same assurances as do short-term, single species plans.

In the event of a finding of "unforeseen circumstances," the Services are free to take additional actions at their own expense to protect the species, provided that they have the financial means appropriated by Congress to do so, and provided that the affected landowners agree to cooperate. Curiously, in an era where the Services are only able to meet a fraction of their statutory responsibilities,[142] the Services maintain that they have "significant resources" to provide additional protection for listed species subject to an HCP.[143] The Services also have expressed confidence that many landowners would willingly consider additional conservation on a voluntary basis.[144] However, given the wealth of evidence to the contrary, further explanation of this assumption is warranted.

In addition, the threshold for finding that circumstances are "unforeseen" (and that the Service can therefore undertake additional conservation measures at its own expense and with the permission of the landowner) is unrealistically high. Under the rule, the Services "have the burden of demonstrating that unforeseen circumstances exist, using the best scientific and commercial data available. The findings must be clearly documented and based upon reliable technical information regarding the status and habitat requirements of the affected species."[145] The rule includes a number of specific factors that the agency must consider in determining whether it has demonstrated that unforeseen circumstances exist.[146]

- *Adaptive management.* Conservation biologists worry that the "No Surprises" policy falsely assumes that we can predict all the consequences of implementing a particular HCP. Under the rule, the Services cope with gaps in biological data by either denying the application for a take permit or requiring that the applicant build an adaptive management program into the HCP.[147] However, the rule does not deal with the situation where new data from the monitoring program or another source indicates that achievement of the conservation goals will require a change in the conservation strategy. The ability to require such modifications is what we mean by "adaptive management." If modification of plans in response to new information is precluded by the "No Surprises" policy, failures to attain biological goals are inevitable.[148]
- *Regulatory assurances for conservation measures covering nonlisted species.* While the ESA does not require landowners to protect unlisted but declining species on their lands, the Services encourage landowners to "address" any unlisted species in an HCP by conferring additional regulatory guarantees that further mitigation will not be required if such species is later listed.[149]

A good example of the risks posed to unlisted species that are included in an HCP can be found in the Plum Creek timber plan. The Plum Creek plan allows the take of four species currently protected by the ESA: northern spotted owl, marbled

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[142] For example, an EDF study found that listed species are not improving on Federal land because the number of species being listed is out pacing the Services increases in funding. The funding for the endangered species program has increased nearly threefold since 1976; however, the number of listed species has increased fivefold during that same period. Environmental Defense Fund, supra note 6, pg. 6.

[143] DOI & DOC, supra note 132, pp. 8862, 8869.

[144] Ibid.

[145] Id., pg. 8868.

[146] The Services will consider the following factors:
(1) the size of current range of the affected species;
(2) the percentage of range adversely affected by the HCP;
(3) percentage of range conserved by the HCP;
(4) ecological significance of that portion of the range affected by the plan;
(5) level of knowledge about the affected species and the degree of specificity of the species;
(6) conservation program under the plan; and
(7) whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild. Id.

[147] Id., pg. 8864.

[148] Noss, et al., supra note 13, pg. 134.

[149] Assurances are only extended to measures covering an unlisted species if the HCP meets the section 10(a)(2)(B) standards for the species. DOI & DOC, supra note 132, pg. 8867. This is consistent with the assurances contemplated in the ESA's 1982 amendments. H.R. Rep. No. 97–835, 97th Cong., 2d Sess. 30, Reprinted in 1982 U.S. Code Cong. & Admin. News 2860, 2871–2872; Habitat Conservation Planning Assurances (No Surprises Rule) 63 F.R. 8859 (Feb. 23, 1998).

murrelet, grizzly bear, and gray wolf.[150] The HCP also addresses another 281 unlisted vertebrate fish and wildlife species. The planning area of 419,000 acres provides habitat for 77 mammal, 178 bird, 13 reptile, 13 amphibian, and 4 fish species.[151] While Plum Creek's measures to benefit these species include greater riparian buffers and wetland protection than would be required under existing state law, the public is likely to be bound to these commitments if, in 100 years, one or many of these species need further protection.

As another example, San Diego County's large-scale NCCP management plan shields local government and developers from providing additional commitments of land or money for conservation purposes so long as they comply with the plan.[152] Such regulatory assurances apply to some 85 listed and unlisted species and may be applied to additional species in the future if signatories to the MSCP agree that the species are "adequately conserved" by the plan.[153]

If adequately addressed in an HCP, unlisted species could be protected from further decline so as to avoid a listing, thereby guaranteeing that the landowner will not be subject to further mitigation.[154] Unfortunately, establishing conservation requirements for unlisted species is difficult since little is generally known about the requirements of the species. As a result, an applicant must be willing to invest in further biological studies to ensure that the HCP adequately covers unlisted species. In this case, a critical issue in HCP development is the early identification of those species or biological communities that the plan is to cover[155] and a determination by the Services that enough is known about the species so that HCP proponents can construct an effective conservation plan.

Reforming Assurances

Given the importance of regulatory assurances to create an environment in which non-Federal property rights holders will make commitments to conserve habitat, we must explore options that do not shift to the vulnerable species the risks inherent in uncertain and untested conservation strategies. Adaptive management permits a flexible response that improves as results are monitored. However, adaptive management requires a fundamental change in the way the regulatory assurances are structured so that HCPs remain flexible and contingent rather than immutable, as they are now. One solution lies in converting the assurance package from regulatory immunity to regulatory indemnity. A policy of regulatory indemnity would mean that, if the monitoring program indicates that the species will continue to decline unless additional restrictions are imposed or additional mitigation measures are applied, these could be implemented without the consent of the property rights holder but also without economic costs to that entity. Instead, the biological risks would be absorbed by a compensation fund.

The use of regulatory indemnity in the HCP process is analogous to risk insurance in that it converts the problem of how to allocate the risks associated with the biological uncertainties of HCPs to the problem of how to allocate the costs of funding the indemnity pool and how to determine eligibility for compensation. The compensation pool could be funded from "premiums" contributed by the "beneficiaries," a category that includes both HCP applicants and the public at large. Indeed, most commentators recognize that some, perhaps most, of the costs of managing adaptively will have to be borne by the public at large. This is already beginning to hap-

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[150] Plum Creek Multi-Species Habitat Conservation Plan on Forestlands owned by Plum Creek Timber Company in the I–90 Corridor of the Central Cascades Mountain Range (June 1996).

[151] Ibid.

[152] The Services may not even impose new mitigation measures that do not require additional land, land restrictions or money except in "extraordinary circumstances." Extraordinary circumstances are defined as either: (1) "a significant, unanticipated adverse change in the population of any covered species or [its] habitat with the MSCP Area"; or (2) "any significant new or additional information that was not anticipated by the [signatories] at the time the MSCP was approved and that would likely result in a significant adverse change in the population of any covered species or [its] habitat within the MSCP Area." Mueller, Tara. Natural Community Conservation Planning: Preserving Species or Developer Interests? 14 Endangered Species Update: Habitat Conservation Planning 27 University of Michigan (July/August 1997).

[153] Ibid.

[154] Defenders of Wildlife, supra note 7, pg. 20. The Services cite this same advantage in their HCP Handbook. The Handbook states that there are significant biological advantages when HCPs are comprehensive planning documents that address species' conservation needs collectively on a community, habitat-type, or even ecosystem level. The Services encourage this approach since it avoids inefficient, piecemeal land-use planning by encouraging landowners to trust that addressing the interests of wildlife serves their interests as well. FWS & NMFS, supra note 19, pg. 4–2.

[155] Thornton, supra note 20, pg. 640.

pen in the California Central Valley water system, the Everglades, and other aquatic ecosystems.[156]

One commentator notes that biological risks to economic development are not different in kind from the myriad of other risk factors for which the construction industry has found insurance coverage to provide the necessary certainty required by capital markets.[157] In the construction context, parties do not argue about the need to provide certainty since they know from experience that surprises are to be expected; instead, they figure out how to minimize the risks and provide sufficient security to afford the lender comfort to finance the project.[158] Carried to its logical conclusion, reducing the financial risks associated with land development under the ESA should lead to more favorable interest rates for development loans. Thus, potential also exists to fund a portion of the compensation pool through reductions in the cost of debt service for covered development projects on the premise that an indemnity arrangement does reduce the risks to development under the ESA.

As discussed above, another suggested reform in regulatory assurances would calibrate the duration or rigor of the assurance to the quality or expected performance of the HCP's conservation strategy. Under this approach, the scope or duration of the regulatory assurance would depend on the magnitude of the HCPs contribution to the recovery of the target species. Plans that confer a net survival benefit would get longer and more comprehensive guarantees than those that simply maintain the current population level or allow some decrease. Similarly, plans for which the underlying data and analyses are judged to be superior would be entitled to superior guarantees. Stronger, more comprehensive, or longer-term assurances would be reserved for HCPs that have the following features:

(1) Recovery goals;

(2) An effective monitoring program;

(3) An adaptive management program which identifies the significant risks of unsuccessful mitigation measures, includes a contingency plan that will be triggered in the event that the conservation measures do not achieve their goals, and commits sufficient funds to carry out this program; and

(4) An effective enforcement mechanism in the event that the commitments in the HCP are not honored.

CONCLUSION

Empirical reviews of the performance of the habitat conservation planning experience during its first 15 years reveal substantial opportunities to restructure the process to improve the prospects for successful outcomes from the vantage points of both imperiled species and nonFederal property rights holders. These benefits can be accomplished without amending the statutory framework, although a modest "tune-up" of the Endangered Species Act would help enable these reforms. A marked change in the Federal administration of this program and a substantial increase in Federal investments in habitat conservation are the indispensable ingredients.

In sum, these reforms would entail:

• *Shaping individual HCPs to contribute to a landscape-scale, bio-regional conservation strategy.* Responsibility for developing bio-regional conservation strategies would fall to either the Federal Services or units of government at the state or local level. Increased involvement of government would shift much of the burden of gathering adequate scientific data onto the public sector as well as allow for more involvement by independent scientists and the interested public. The creation of landscape-scale HCPs would define objectives and strategies to which conservation efforts on non-Federal lands would be expected to conform. And it would provide necessary guidance as to the contribution toward those conservation goals that is needed from each parcel-specific HCP within the eco-regional planning unit. In addition, eco-regional planning would facilitate a more equitable distribution of responsibility for conservation between Federal and nonFederal rights holders.

• *Aiming bio-regional conservation strategies at species recovery.* The only biologically defensible goal for habitat conservation planning is the recovery of the endangered species. The Federal Government can advance recovery by managing public lands and waters to a higher conservation standard than the legal *minima.* Recovery would also be advanced incrementally by habitat acquisitions or restoration actions that more than offset the habitat losses (i.e. mitigation measures that create a net biological benefit). Where species recovery requires a greater conservation ef-

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[156] Solving the issue of how to determine compensated loss in a manner that satisfies the private rights holder is simpler in the aquatic context than in the terrestrial because lost water supply reliability is both relatively easy to measure and to compensate for.

[157] Thornton, supra note 27, pg. 65.

[158] Ibid. pp. 65.

fort by the individual rights holders than is imposed by the current legal standard of avoiding jeopardy, Federal resources may be necessary to close the gap. This may often take the form of purchases of the highest-value habitats from willing owners. Occasionally, it may also entail involuntary, but fully compensated, acquisitions should Federal condemnation authority be eventually conferred.

- *Reserving the decision on participation in the HCP negotiations for the Services rather than the permit applicants.* If the Services act as "gatekeeper" to the HCP negotiations, highly qualified independent scientists and other representatives of the public interest can be included in what is now often a closed process. Scientific experts should be allowed to "intervene" in HCP negotiations on behalf of local communities and conservation interests to help shape a conservation program from its formative stages. Habitat conservation plans developed with independent scientific input are more likely to succeed in their conservation goals, thus diminishing the chances that the Services will need to revise development permits. Through innovative tools such as the HCP Resource Center, all stakeholders can all enjoy the benefits of expert scientific input in the HCP negotiation process without the proponent absorbing the cost.
- *Incorporating adaptive management routinely in HCPs.* This entails including in the chosen conservation strategy a process for structured learning and adjustment. This, again, will improve the prospects for success of the conservation venture. If coupled with an insurance arrangement, necessary adjustments can be accomplished without financial risk to the permit holder. This would reduce regulatory risk more effectively than the current "No Surprises" assurance, which, in any event, is legally infirm in the event of imminent extinction of a target species.

Habitat conservation planning must be made to work better in the interest of all stakeholders. For preventable extinctions in the course of developing private lands will not long be tolerated by a people who have affirmed time and again in the political crucible the mandate that the web of life on which human welfare itself depends shall be conserved. Experience to date illuminates some of the pathways for better performance. It is time to harness these lessons and chart a more certain course.

HABITAT CONSERVATION PLANS

TUESDAY, OCTOBER 19, 1999

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON FISHERIES, WILDLIFE, AND
DRINKING WATER,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:04 a.m., in room 406, Senate Dirksen Building, Hon. Michael D. Crapo (chairman of the subcommittee) presiding.

Present: Senators Crapo, Thomas, Reid, and Chafee [ex officio].

Also present: Senator Baucus.

OPENING STATEMENT OF HON. MICHAEL D. CRAPO, U.S. SENATOR FROM THE STATE OF IDAHO

Senator CRAPO. The hearing will come to order.

Good morning and welcome to the third in a series of hearings by the Subcommittee on Fisheries, Wildlife, and Drinking Water, examining habitat conservation plans.

The subcommittee began a listening and learning endeavor in July of this year to better understand the benefits and concerns related to habitat conservation plans. We heard from scientists, academics, forest products companies, and environmentalists about science and the adequacy of science, and the challenge of making land management decisions in the face of scientific uncertainty.

Today, eight witnesses will offer testimony focusing on the policy questions of HCPs. At present, under the Endangered Species Act, HCPs are the only flexibility afforded to private landowners who wish to conduct activities such as forest management or development, when threatened or endangered species occupy a piece of their land or use it as habitat.

We are joined today by representatives of the environmental community, county government, agriculture, homebuilding industry, the forest product companies and the energy industry to learn from their experiences and knowledge of HCPs. These are the people who have been directly involved in developing, negotiating, implementing, and litigating HCPs.

A growing list of species protected under the Endangered Species Act and the need for property owners to comply with the Act while continuing to derive an economic benefit from their land has resulted in an expediential increase in the use of this beneficial tool. To date, the Fish and Wildlife Service has negotiated more than 250 HCPs, and has approximately another 200 in process.

HCPs sound like the type of "win/win" solution that we would all like to see for threatened and endangered species, protection of the species, and flexibility for landowners to carry out activities on their land.

It is unfortunate that the reality of negotiating HCPs has not tracked more closely with what the law and the subsequent policies have intended.

While the Fish and Wildlife Service and the National Marine Fisheries Service have sought to improve the process of negotiating HCPs through its Habitat Conservation Planning Handbook and other guidance, the process remains fraught with obstacles for property owners seeking HCPs.

Landowners involved in negotiations and those who have completed plans have demonstrated their willingness to conserve species by coming to the table, ready to engage in negotiations, and implementing measures on the ground. But all too frequently, the process has proved to be inadequate in getting HCPs completed.

This is not a favorable outcome for the species in need of protection, or for property owners who must continue to make decisions about the activities that will be carried out on their land.

I am keenly interested in making HCPs work better. Americans have a rich conservation history, and we have demonstrated a commitment to protecting our wildlife and fisheries resources, particularly those threatened or endangered.

Private landowners do and can make important contributions to the endangered species conservation. But we must have mechanisms in place to allow property owners to make a living from their land. HCPs are definitely the right idea. But modifications must be made if they are to achieve their intended goal.

I believe today's witnesses will provide the subcommittee with a better understanding of the problems that habitat conservation and planning present, so that we can consider and improve this tool, and make it a truly beneficial tool to the species and to the people.

I will ask the chairman of the full committee, Senator Chafee, if you wish to make an opening statement.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator CHAFEE. Well, thank you very much, Mr. Chairman. I want to commend you for holding these hearings on habitat conservation planning under the Endangered Species Act.

I believe they are critical to our understanding of the important issue that is instrumental in the continued success of the ESA.

Before exploring the policies we should adopt to protect endangered species, it seems to me we have got to explore the scientific foundation supporting these policies. And that, of course, is what you did when you had your hearings in July. We heard testimony from a number of witnesses who provided insight into the science underlying HCPs.

I was particularly impressed by the general agreement among the scientists that HCPs, by and large, are essential for the conservation of species. And while improvements are needed, the basic principles behind the HCPs are sound.

I want to compliment you, Mr. Chairman, on holding these hearings. And I anticipate that today's hearing will be equally informative. And I would ask that the balance of my statement be included in the record.

Senator CRAPO. Without objection.

Senator CHAFEE. Thank you very much.

[The prepared statement of Mr. Chafee follows:]

STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Thank you, Mr. Chairman. I want to commend you for holding these hearings on habitat conservation planning under the Endangered Species Act. These hearings are critical to our understanding of an extremely important issue that is instrumental in the continued success of the ESA.

Before exploring the policies that we should adopt to protect endangered species, we must explore the scientific foundations supporting those policies. With respect to HCPs, the hearings that you chaired in July accomplished exactly that: we heard testimony from a number of witnesses who provided insight into the science underlying HCPs. I was particularly impressed by the general agreement among the academic scientists that HCPs by and large are essential for the conservation of species, and while improvements are needed, the basic principles behind HCPs are sound. I would like to complement you, Mr. Chairman, on holding those hearings, and I anticipate that today's hearing will be equally informative.

The need to protect threatened and endangered species on non-Federal lands could not be greater. (By non-Federal lands I mean those lands that are either privately or state-owned). Consider these facts: two-thirds of all listed species have over 60 percent of their habitat on non-Federal lands, and one-third of all listed species are dependent entirely on non-Federal lands. The conservation of these species thus rests largely, if not entirely, on the ability of non-Federal landowners to take appropriate measures. The primary tool under the ESA for their activities is the HCP.

At the same time, landowners have long criticized the ESA for being inflexible and unworkable. HCPs provide liability coverage against the prohibitions of the ESA, but more importantly, they provide a management tool for landowners. With the new policies instituted by the Administration, HCPs have become economically and logistically feasible for landowners. Since 1994, more than 245 HCPs covering six million acres have been approved, with another 200 under review.

However, there are still numerous questions regarding the development and implementation of HCPs. Conservation groups criticize the HCP initiatives, particularly the no-surprises policy, as undermining species conservation. Landowners complain that they still run into obstacles in both negotiating and implementing HCPs, and that the Administration does not always apply consistent standards.

In addition, critics on both sides believe that the Administration has exceeded its statutory authority in implementing these new policies, and are challenging them in court. This morning, we will hear from two of the lawyers involved in the litigation challenging the no-surprises policy.

As you know, last Congress we attempted to reauthorize the ESA, and our bill included a number of provisions to address HCPs. As we consider new legislative initiatives on HCPs, it is useful to further explore the science and policy behind the current policies. Your leadership on these hearings, Mr. Chairman, is both timely and critical. I look forward to the testimony of our distinguished witnesses this morning.

Senator CRAPO. Senator Reid.

OPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator REID. Thank you very much, Mr. Chairman.

Your predecessor, Senator Kempthorne, with the chairman of the full committee, Senator Chafee, the ranking member, Senator Baucus, and I, I think, did some of the best legislative work that I have ever been involved in, in my several decades involved in the legislative process. We came up with a Endangered Species Act.

We had the language passed out of this committee. We were very proud of that. It got on the Senate floor and was not brought up.

By the time we were ready to bring it up, a lot of darts had been thrown at it. We were unable to move that legislation. It was, I think, just a remarkably good piece of work. It is too bad that we did not move on it when we could.

We have not, and now we are trying to enact bits and pieces of the Endangered Species Act. It may be the way to go.

I would like to welcome all the witnesses today. Habitat conservation plans, I believe they are a useful, creative tool for the protection of both endangered species and private property rights.

They have not given us a perfect answer, but they have moved us in the right direction. I think a fresh look at what we have learned is beneficial.

The largest habitat conservation area in the United States is in the State of Nevada. People do not realize the State of Nevada is the most densely populated State in American, the most urban State in America. Ninety percent of the people live in two metropolitan areas, Reno and Las Vegas.

We are more urban than Rhode Island, New York, California, Florida. It surprises some to learn that the largest habitat conservation area in the United States is in the most densely populated part of Nevada. That is the Las Vegas area.

That habitat conservation plan for the desert tortoise encompasses almost 6 million acres, and has allowed for relatively peaceful coexistence of the threatened desert tortoise with as many as 10,000 new residents moving into Clark County every month.

These new residents have brought with them one of the longest sustained building and economic booms in the history of the United States. Yet, all of it is taking place despite the presence of the desert tortoise, a species that was emergency-listed in August 1989.

Jim Moore, formerly the desert tortoise HCP coordinator for the Nature Conservancy of Nevada, is here this morning to describe the process and procedures that were used in Las Vegas to bring about what has been a very successful solution in southern Nevada.

I am happy that Jim is here this morning and I certainly do not want to give away his testimony. I have read his testimony. It is extremely interesting and precise.

It is safe to say that the HCP process that was followed in southern Nevada has been successful. The entire process was time consuming, and at times, very frustrating.

The amount of public participation that went into the final plan was unprecedented, in addition to the amount of private money that went into the plan to make it successful. But the end result was a system that everyone could live with, and one that protects the species that have been listed.

Earlier this year, when I sat down to discuss the agenda of this subcommittee with you, Mr. Chairman, I shared with you my concern that comprehensive reform of the Endangered Species Act was probably unrealistic this year, and probably in this Congress, especially given last year's fate of S. 1180.

I think the committee can make substantial progress by taking an incremental bipartisan approach. As a group, there are many things we can and should address in the ESA.

This hearing is the latest in a series of forums that this subcommittee has held this year on specific issues within the Endangered Species Act. Earlier this year, we held hearings and drafted up legislation concerning recovery habitat. That legislation is currently awaiting action on the floor.

Based on what we hear and read, this committee may move forward to try to improve the procedures and processes surrounding habitat conservation plans.

While the desert tortoise HCP has been very successful, other communities have struggled, particularly with issues such as: what level of assurance is required for both sides; what level of public participation should be required; and what happens in the event of a mistake? All of these are valid concerns, and there are others that we will hear about today.

The things that we, as a group, can come to consensus about and act on to improve the use of HCPs, I think we should do that forthwith.

However, before we move too far down the path on habitat conservation plans, I want to see the fate of our recovery habitat bill played out a little more.

If the consensus and cooperation that mark this committee's work on S. 1100 carries through to full Senate consideration of that legislation, then I will be much more comfortable moving ahead in other areas of the ESA.

So, Mr. Chairman, I thank you for agreeing to hold this hearing. Throughout the year, I have been very impressed with your knowledge of this subject, and your willingness to listen to different sides. And I look forward to this hearing.

I do apologize, because of the duties that I have in the Capitol, I am not going to be able to stay for the entire hearing. My friend from Nevada will be on the second panel.

Senator CRAPO. Thank you very much.

Senator Thomas.

OPENING STATEMENT OF HON. CRAIG THOMAS, U.S. SENATOR FROM THE STATE OF WYOMING

Senator THOMAS. Thank you, Mr. Chairman. I am glad to be able to participate in this hearing today on conservation plans.

I think the future of the endangered species is one of the most important issues that we have to deal with on this committee. And I agree with my friend from Nevada, that we had an opportunity last year, but unfortunately, were not able to put it into place.

There are lots of examples of good intentions to recover endangered species that have gone astray. A lot of folks in Wyoming are clamoring for some type of reform.

At the outset, let me say that even though today's meeting is focused on habitat conservation plans, I think we need to look at substantially more changes than that. I also have a bill that deals largely with listing and de-listing.

We have found that the quality of science used in listing and nominating petitions falls short. They are of postage stamp peti-

tions. We need to change them, rather than trying to shore them up.

We need to take a look at HCPs as a tool. Apparently, they have been a better tool for large landowners than they have for small landowners. We need to take a long look at that. It is very costly for a small landowner. The incentives, I think, are not very high.

In general, I just believe we have to have an Act that is more effective in trying to protect the local landowners and public land managers and communities.

Our efforts are sure to fail if there is not some more cooperation among the Federal, State, and local governments. Many times, we say we are partners, and we are going to work in a partnership, but it is kind of a "one horse, one dog" partnership.

The city of Douglas, WY, for example, just recently got caught up in the bureaucratic administration of it. The city's water main broke. Inside of the break, a Preble's meadow jumping mouse, was found.

It took 2 months for the agency to issue a permit to fix a line, which left half the city of Douglas at risk for drinking water, and the whole city at risk in terms of fire protection.

Now come on. One jumping mouse is hardly an excuse for doing that. So I think we have a lot of things to do. This, perhaps is one step, Mr. Chairman, and I appreciate it.

[The prepared statement of Senator Thomas follows:]

STATEMENT OF HON. CRAIG THOMAS, U.S. SENATOR FROM THE STATE OF WYOMING

Mr. Chairman, thank you for holding this hearing to examine both the benefits and the policy concerns related to Habitat Conservation Plans (HCP). I think the future of the Endangered Species Act (ESA) is one of the most important issues we'll deal with in the Environment and Public Works Committee. Unfortunately, the Act has become one of the best examples of good intentions gone astray. Folks in Wyoming are truly concerned and are clamoring for some type of reform.

Out the outset, I want to make it clear that even though our focus today is on Habitat Conservation Plans, we really need to look at making substantial changes to the entire Act. As you know, I've introduced a bill S. 1305, the "Listing and Delisting Act of 1999" that deals with the core of the Endangered Species Act—sound science—specifically the quality of science used in the listing and petitioning process. Right now, it's basically a "postage stamp" petition: any person who wants to start a listing process may petition a species with little or no scientific support. We are simply going to have to make some real changes to an act that is not working.

Unfortunately, given the political reality, the Endangered Species Act is what it is. By that, I mean it is not going to be repealed and most likely is not even amendable with the significant modifications I and others have offered. Given that grim scenario, I will discuss Habitat Conservation Plans. HCP's are tools for some landowners to help manage their lands once a species has been listed. However, HCP's seem to be a better tool for very large companies rather than the small private landowner. For a small landowner, the HCP's could be very costly—where is the incentive? In many cases, these people depend on their land for their livelihood.

In general, we need to make the act more effective for the species we're trying to protect, and more effective for the local landowners, public land managers, communities and State governments who truly hold the key to the success of any effort to conserve species. If there's one lesson to be learned from the failures of the current act, it is that the only way we can successfully recover a species is through true partnerships.

Truthfully, our efforts are sure to fail if there isn't cooperation between Federal, state, and local governments, as well as private interests. Many times, this is easier said than done. The average citizen of Wyoming or anywhere for that matter is extremely leery of Federal agencies and they have a right to be. The city of Douglas, Wyoming just recently got caught up in the bureacracy of the administering of the

ESA. The city's main water line broke and at the site of the break, a Prebles Meadow Jumping Mouse was found. It took 2 months for the Agency to issue a permit to fix the line which left half the city of Douglas at risk in terms of drinking water and the whole city at risk for fire protection. This example illustrates the inability of this particular Federal Agency to cooperate and deal with folks in a real world manner. Mr. Chairman, I look forward to hearing from our witnesses and working with you as we discuss and ultimately amend a law that is simply not working.

Senator CRAPO. Thank you very much.

Senator Baucus.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Thank you, Mr. Chairman.

I appreciate your holding this hearing. Maybe we can get something accomplished here on a matter which is extremely important—a lot of landowners feel hamstrung by the Act. A well-intended group people are limited by a well-intended law, and therein lies the problem.

As has been mentioned earlier, we endeavored gallantly in the last Congress to come up with a basic solution to the reforms of the Endangered Species Act, which included habitat conservation plans. I thought it was a very good bill. It was virtually passed, but not quite.

My main point, Mr. Chairman, is that we have got to provide cooperation and leadership here. I agree with the comments of my good friend from Wyoming, that sometimes when we talk about partnership, the people on the other side do not live up to the spirit of what is intended.

But we are the Congress, and we make the laws. What we do here has an effect on what happens in the States whether in terms of what Federal agencies do, like the Fish and Wildlife Service or the Forest Service, or what States do.

For me, there is really not much alternative because the law is the law. We should find a compromise that works, and provide the leadership for a compromise. If we pass something here that is effective, then we are going to get the cooperation of Federal, State and local agencies.

An example that comes to mind, is the Safe Drinking Water Act. We found a common sense balance, and got the job done.

Another example is a bill that I am introducing. It is a mining reclamation cleanup bill. The States are cleaning up hardrock mine sites, abandoned mines, but they are doing nothing about the water. The water just continues to leak out and contaminate. They are doing nothing about the water because of the Clean Water Act. There is virtually no way in the world a non-mining entity, a city or a town, can find the money to comply with the standards of the Clean Water Act; they are so stringent. I must say in my State, and I know it is true in most other States, polluted water is still running downstream, even though the abandoned mine site has been cleaned up.

So what is the solution? My idea is to allow States to submit a remediation plan to the EPA with less than the standards of the Clean Water Act, but still with some kind of a cleanup. Either we have some cleanup, or no cleanup of the water. My view is that some cleanup is better than none.

The same general philosophy applies here to the Endangered Species Act and habitat conservation plans. Either we do something or we do nothing. In my view, something is better than nothing.

Perfection is not the enemy of the good. Let us do something good here. It is not going to be perfect. It cannot be perfect. We live in a democratic society. Everybody has got a different point of view. So, by definition, it is not perfect.

So, again, I appreciate your holding the hearing, Mr. Chairman. And I implore all of us to get this problem solved, and put partisan politics aside. This place is much too partisan—this Congress, this Senate, this House. It is the most partisan Senate I have seen since I have served in the Senate, and it is not helping the country one bit.

We have done a pretty good job on this committee, in some cases, in passing nonpartisan bills. The highway bill comes to mind, but nothing gets accomplished in this Congress unless there is agreement. Whenever there is partisanship, nothing gets accomplished. There is a lot of breast beating and a lot of complaining about the Government and a lot of finger-pointing. But that is not why the people elected us. They elected us to solve problems; not to find problems, but to solve them. I hope that we solve this one.

Thank you.

Senator CRAPO. Thank you very much.

We will now move to the first panel. And as I call your names, we would ask you to come forward and take a seat at the table.

Panel No. 1 is composed of Mr. Eric Glitzenstein, counsel for the Spirit of the Safe Council, the Defenders of Wildlife and Other Environmental Organizations; Mr. Rob Thornton, counsel for the Orange County Transportation Corridor Agencies and Other Intervenor-Defendants in the Spirit of the Safe Council versus Babbitt litigation; and Mr. William Pauli, president of the California Farm Bureau.

I would like to explain, not only to this panel, but also to the panel that will come forward following this panel, that we do have a 5-minute time limit requirement. And I can assure you that your time will run out before you are done saying what you want to say.

[Laughter.]

Senator CRAPO. And we ask you to watch the time limits, because we are all very busy, and we like to maintain the opportunity for some give and take in questions and answers between this panel here and you.

And we do read your written testimony very carefully, and it will be made a part of the record. So if you do not get a chance to go through your entire written testimony in your 5 minute presentation, do not feel that it has been lost or wasted. And please follow the time requirements.

Mr. Glitzenstein, we would like to start with you.

STATEMENT OF ERIC GLITZENSTEIN, COUNSEL, SPIRIT OF THE SAGE COUNCIL, DEFENDERS OF WILDLIFE AND OTHER ENVIRONMENTAL ORGANIZATIONS

Mr. GLITZENSTEIN. Thank you, Mr. Chairman and members of the subcommittee. I appreciate the opportunity to be here and talk about these very important issues.

My name is Eric Glitzenstein. I am a member of a public interest law firm, Meyer & Glitzenstein, which represents many environmental organizations on issues relating to implementation of the Endangered Species Act, and HCP issues, in particular.

I am providing my own views, based upon rather extensive involvement in litigation, including litigation over what has come to be known as the "No Surprises" Policy which, as I am sure all members of the subcommittee know, has become a rather controversial subject in implementation of section 10 of the Endangered Species Act.

I think it is important at the outset for me to say that I believe that the underlying intent of the whole HCP process was a sound one, when it was enacted in 1982.

And as I read the legislative history, and some here may be far more conversant with it than I am, but as I read the legislative history, the basic concept was that there would be a tradeoff, in exchange for permission to take members of an endangered or threatened species, which I think all would agree, is a rather extraordinary kind of permission to give someone with regard to a species already deemed to be on the verge of extinction, the applicant for that permit would have to prepare a habitat conservation plan.

And the word "conservation," as defined in the Endangered Species Act, has very specific meanings. These are activities which must promote the recovery of the species, help bring the species to the point where it no longer requires the protection of the Endangered Species Act.

So I think the concept underlying the HCP process was a sound one. We fear that when we look at some of the HCPs which have been, in fact, adopted and approved, especially by this Administration over the last number of years, many of these HCPs, regrettably, do not meet that basic set of requirements which we think was included in the 1982 amendments.

I have one quick comment on a point that was made by Senator Baucus involving the balance and how we strike a balance on these kinds of issues. Certainly, trying to strike a balance is always desirable. And reaching an appropriate compromise is always a desirable policy objective.

The problem, of course, as you all are intimately aware, when you are dealing with endangered species, the room for maneuverability and flexibility is, by definition, much smaller than it would be in other kinds of circumstances. These are species which already have been determined by scientists to be facing the prospect of becoming extinct in the foreseeable future.

So I think one of the things for this subcommittee to keep in mind is, one of the objectives has got to be to prevent species from getting to the point where they actually have to be put on the list of endangered or threatened species. Because that is where opportunities for compromise and dialog and coming up with flexible so-

lutions will be much greater than after a species is already in the emergency room, so to speak, and the opportunities for that kind of flexibility are, by definition, much smaller.

In my testimony, I give some examples of what I think are HCPs which have not accomplished the objectives that Congress originally set out. One of them involved a species known as the Alabama beach mouse, which was listed in 1985, because its habitat had already been drastically reduced.

Since it was listed as endangered in 1985, the Fish and Wildlife Service proceeded to approve at least five or six additional incidental take permits and HCPs, which allowed much more habitat to be destroyed, leading a Federal Judge, the Chief Judge of the Alabama District Court, to conclude that several of the most recent HCPs were, in that Judge's words, devoid of rationale basis, because they did not provide for the actual conservation of the species in exchange for the take that was being permitted.

The mitigation measures ranged from what we would submit are truly laughable mitigation measures such as warning children not to run across sand dunes where there is an endangered mouse—and suggesting that that is actually going to help prevent that species from being harmed, to what the Judge decided was an extraordinarily paltry sum of money to compensate for a rather substantial loss of habitat.

So I think that while there may be success stories which are worth learning lessons from, we also need to learn lessons from the very poor HCPs, which scientists and Federal Judges have now agreed have been approved.

In terms of a couple of the policies that I have focused on in the written testimony, obviously, as I mentioned, "No Surprises" is a big concern of many in the environmental community and the scientific community.

I think if you want to put that policy in perspective, it is useful to imagine the following scenario. Tomorrow, the Food and Drug Administration announces that henceforth, anyone who has received a license to market a drug or a medical device will receive an unprecedented guarantee that for the entire life of that license, even if we learn things about that drug or that medical device that threaten people in ways never previously anticipated, the recipient of the license will receive a guarantee that the license conditions will never be changed, no matter how much of a risk that may pose to the health of the public.

Or with the Nuclear Regulatory Commission, we guarantee to nuclear permittees that for the next 50 years, even if we learn new concerns about the design of the nuclear power plant, we will never change the conditions under which that plant is permitted to operate.

I think it is fair to say, however you come out on the "No Surprises" issue, it is a drastic departure from the set of assumptions that go into most Federal permitting and licensing approaches.

If you look at what the Administration has done, the lesson to learn here is, if you are going to provide for any kind of "No Surprises" assurance to the holders of incidental take permits, at least ensure that when surprises occur—and scientists say they will occur all the time, because nature is inherently variable and

changeable—when they occur, ensure that there is some mechanism by which changes to the plans and the permits can take place. And that means providing a guaranteed supply of funding, so that, in fact, those kinds of changes can occur.

And, also, we should recognize that there is variability in nature, and that you have to ensure that there can be different kinds of guarantees for different kinds of permits and different kinds of species.

In the written testimony, I also talk about problems with public participation in the process, and how that has broken down. And, obviously, we would strongly suggest that any approach to this issue take into account the need to involve the public and independent scientists.

Thank you.

Senator CRAPO. Thank you very much, Mr. Glitzenstein.

Mr. Thornton.

STATEMENT OF ROBERT THORNTON, COUNSEL, ORANGE COUNTY TRANSPORTATION CORRIDOR AGENCIES AND OTHER INTERVENOR-DEFENDANTS IN *SPIRIT OF THE SAGE COUNCIL* V. *BABBITT*, IRVINE, CA

Mr. THORNTON. Mr. Chairman and members of the committee, I am pleased to be here. My name is Robert Thornton. I am appearing today as counsel to the Orange County Transportation Corridor Agencies, which are two regional transportation entities in Orange County, CA, that have played a leading role in the Southern California Natural Community Conservation Plan. I had the privilege of accompanying Senator Chafee a year or so ago on a tour of the nature conservation planning areas.

I have labored most of my professional career to try to make the Endangered Species Act work. I am proud of the fact that I was the original advocate for what became the HCP provisions of the Act. And I have represented small landowners, large landowners, farmers, energy companies, timber operators on a variety of HCPs over the last 20 years.

I have been coming back here now to Washington, after having worked here several years, for 20 years. And I am always struck by the ebb and flow of the testimony regarding the Endangered Species Act.

I remember testifying before the House committee in 1992. And the concern on the part of the environmental community at the time was, how do we bring landowners to the table, because the Endangered Species Act, section 9, the hammers in the Act were not working to promote habitat conservation on private lands.

We could not bring landowners to the table to deal with, as Mr. Glitzenstein commented, dealing with the problem before the species are in the emergency room.

And the consensus, at that point in time—and, of course, that was a period of time when, politically, the Act was under attack—the consensus within the environmental community was what we need to have regulatory incentives. We need to have financial incentives. We need to encourage landowners to do the right thing, and to come to the table and engage in proactive planning.

Habitat conservation plans and the "No Surprises" Rule are absolutely essential, in my experience, to bring landowners to the table.

Now I want to deal directly with Mr. Glitzenstein's comment and the criticism that one hears of HCPs and the "No Surprises" Rule. And that comment is, "Well, gee, biological systems are full of surprises. How can you have a so-called 'No Surprises' rule?"

The issue has been mischaracterized. We acknowledge—I certainly acknowledge that biological systems are full of surprises. That is not the issue. The issue is, who pays for those surprises?

Fundamentally, the assurances rule is a mechanism to share the risks and burdens of habitat conservation between the Federal Government and, ultimately, the Federal taxpayers and private landowners. And it is an arrangement that is struck that in exchange for voluntary consensual conservation that a landowner commits to now, he will receive certain regulatory assurances that in the future, the deal will not be changed.

As Secretary Babbitt has said it best, I think eloquently. I can not do any better. "Take a bite at the apple. Take one good bite, and then a deal is a deal."

The problem that we have is, if you want landowners to engage in multi-species planning and address unlisted species, species that are not protected by the regulatory protections of the Endangered Species Act, if you want landowners to commit to conservation of corridors or linkages, which are not occupied with endangered species and, therefore, are not subject to regulation under section 9, you have got to provide them incentives. And regulatory incentives are the most powerful incentives that can be provided.

The problem that we have with our legal systems—it is not a problem; it is a reality—is that we have private property rights in this society. We have the fifth amendment to live with. We know, as a matter of law, that when that landowner signs that grant deed over to a conservation agency or to a public agency, that his property rights are transferred. They are extinguished.

And so the problem is, how do you rationally tell a landowner that you want him to sign that grant deed. You want him to provide funding for long-term conservation of endangered species, but you also want the ability to come back in 5 years or 10 years or 15 years and say, you know we have just discovered something new about this species and we have changed our mind. You have got to give us more property.

It is not realistic. If you want landowners to participate in the endangered species conservation activities, and you want to keep species out of the emergency room, then regulatory assurances are essential.

Now in the limited time, Mr. Chairman, that I have available, I have provided some graphics that sort of take you from the macro to the micro, to talk about what is going on in California, an area that I am very familiar with. I will just hold some of these up.

The bright pink graphic tells the State of the issue in California. These colors represent basically the extent of the conservation needs in California. I see I am running out of time.

The next graphic shows the conservation planning efforts that are under way in California. I have to say, these are driven almost

entirely by the HCP policies of the Babbitt administration and, in particular, the "No Surprises" Rule.

Finally, the last graphic I want to show is the conservation efforts that are emerging out of what has come to be called the Southern California Natural Community Conservation Plan.

The green shown on this map represents several hundred thousand acres of private land that is in the process of being put into conservation status, with little or no cost to the Federal Government or the Federal taxpayer.

And, again, the essence of the "No Surprises" Rule is, if you want to get that level of conservation commitment now, up front—and Senator Chafee saw these areas with me—then you have got to be prepared to provide regulatory assurances to these landowners.

With that, I would be happy to answer questions. Thank you, Mr. Chairman.

Senator CRAPO. Thank you very much.

Mr. Pauli.

STATEMENT OF WILLIAM C. PAULI, PRESIDENT, CALIFORNIA FARM BUREAU, SACRAMENTO, CA

Mr. PAULI. Good morning, Mr. Chairman and members of the committee.

I am Bill Pauli. I grow wine grapes and Bartlett pears and Douglas Fir timber in northern California, which is in Mendocino County. I am president of the California Farm Bureau, and I am here today on behalf of the American Farm Bureau and the California Farm Bureau.

I welcome the opportunity to present testimony on the practical implications of the HCP progress in agriculture. We have submitted a long written testimony that I hope you will have an opportunity to review and digest.

This is extremely important as HCPs, in general, simply do not work for farmers and ranchers. In fact, our experience in California with the regional multi-species HCPs is that they are tools for encouraging urban sprawl and magnifying the loss of good farm land by forcing productive land into public habitat preserves.

Generally HCPs fall under two types: single HCPs and multi-species HCPs, like we have in California. The first, as shown, works for large, industrial or institutional landowners, hardly applicable to many small farmers.

The second type of HCP is expensive and is time consuming, two factors that this type of program can not be used in agriculture. Only those changes in the use of the land can afford both the time and the money needed to participate.

Land developers can use this program as they develop part of the land and mitigate for the rest. It is a speculative use of the land that has nothing to do with the present activity on that land. The costs are passed on to the purchasers of the property that have been developed. Farmers and ranchers can not do the same.

Additionally, HCP authority also imposes permitting requirements on agriculture for activities that do not currently require permits. Often, such activities are normal farming practices that are necessary to continue the use of the land for farming purposes and for a family farming operation, that can not afford the cost nor

deal with the paperwork requirements for the permitting process. It is no wonder that this land then becomes available for mitigation, development, or for sale.

We would like to emphasize that given the proper protection and incentives, farmers and ranchers can play an important role in the protection and recovery of species. In fact, the agencies must have the cooperation of farmers, ranchers, and private property owners if the Endangered Species Act is going to work.

We do a better job of protecting species than the Government. And we contribute to the local tax base, provide jobs, and are productive, while still supporting wildlife. Farmers and ranchers who own most of the suitable species habitat are especially important if ESA is to succeed.

We hope that this committee would recognize the wide range of interest and agree that incentive-based programs work. When both the Farm Bureau and the Environmental Defense Fund can agree that we solve problems for species and landowners when we take this approach, we have a situation that begs for congressional action.

The Farm Bureau has testified before this committee no less than six times in the last four Congresses, seeking such incentive programs as the Critical Habitat Program. Everyone, it seems, agrees that such a program will help species and tap into the conservation ethic of all farmers.

Our rural communities reel under the regulatory excesses of the Endangered Species Act. Developers develop land that farmers can no longer afford to farm.

Mr. Chairman, I know that your State is starting to get the taste of what California has gone through for the last 10 years. I hope that you can learn from the mistakes made in California. Lawyers, bureaucrats, technicians, and politicians do not save endangered species. Farmers and ranchers can and want to. We are hoarse with telling Congress this fact.

Take away the regulatory disincentives that create financial ruin in our rural areas. Provide funding and the commitment to put in place programs that work on the ground for not only the people, but the species.

In the few seconds that I have left, let me say a couple of quick things. You know, you have got two concepts here. You have got industrial farming versus rural farming, agriculture as we have always known it.

We provide habitat on our fence lines, around our creeks, around our streams. If you want us to destroy that, then continue with the kind of regulation you are talking about here.

The easiest way for me to destroy habitat and to protect myself is to eliminate those areas along my fence lines and my creeks. Because if I protect the species that live there, some regulatory comes in says, "Look, you have got these species. Now you are going to have to broaden that."

Why are the species there? Because they like where they are. They like what I have been doing. I have been protecting those species.

Thank you, Mr. Chairman.

Senator CRAPO. Thank you very much, Mr. Pauli.

I will ask the first series of questions. And I will just start out with you, Mr. Glitzenstein.

From your written and your oral testimony, it is my understanding that one of your concerns with the "No Surprises" rule is that it essentially shifts responsibility for the funding, or for the maintenance and protection, of the species from the private landowner to the Federal Government.

And the question I have is that if endangered species is a significant national priority, what is the philosophical objection to having the Federal Government participate in the recovery of species?

Mr. GLITZENSTEIN. I do not think there is any objection to having the Federal Government participate. And it does in a number of different ways, under the Act.

I think the concern with shifting that responsibility under section 10 is that it really reverses decades, literally, of environmental regulation precedent, in which the basic concept is that the person who receives a permit to, in some fashion, harm the environment—and that is what an incidental take permit is—is responsible for paying for the damage associated with that, including paying for changes that might be necessary.

In my testimony, I point out that that is basically the State of the law under the Clean Air Act, under the Clean Water Act, under the Resource Conservation and Recovery Act, and virtually every other field of Federal environmental law. So this is truly a revolutionary change in a historical approach.

Having said that, if I could just add, I think there is an important philosophical question there. But I think the practical question is the greater one.

Under the current scenario, where the burden for surprises is shifted to the Federal Government, we have a Fish and Wildlife Service and a National Marine Fisheries Service, which are woefully incapable, financially, of paying for the changes that might be necessary.

We have Jamie Clark going in and filing affidavits in Federal court—and I can provide numerous examples to the subcommittee—saying we do not have enough money even to meet our mandatory, nondiscretionary duties under the Act. We do not have enough money to list species and designate critical habitat.

So how in the world could we expect the Federal Government, under the current scenario, to take on the very obviously substantial burden of dealing with all of these unforeseen circumstances?

So however you resolve the philosophical question—and it is a good one—the more important question is, if you are going to resolve the issue in favor of the Federal Government taking on that burden, at least make sure that there is an adequate source of funding, so that the Federal Government can do what it claims it should do, under the "No Surprises" approach.

Senator CRAPO. Are you aware of, or do you have any, information indicating what the cost would be to the Federal Government, if the funding were made available to implement the "No Surprises" policy, and have the Federal Government participate as it should?

Mr. GLITZENSTEIN. That is a very good question. I have never seen that. I think, obviously, one of the problems is, these are, by definition, unforeseen circumstances.

I would imagine the almost insurmountable difficulties in aggregating all of the unforeseen developments that could take place and affect incidental take permits.

Senator CRAPO. That is what I suspected. However, I also took from your answer, and I think I would agree with it, that the cost could be conceivably extremely high. We are talking about a very expensive cost here, in terms of recovery of species.

Mr. GLITZENSTEIN. Well, I think one of the things to keep in mind is—and I think Mr. Thornton would probably agree with this—the way in which the policy has currently been evolving, there has been a distinction drawn between what are called changed circumstances, which are different conditions which can be anticipated.

They may not necessarily happen. But in an area which is hurricane prone or subject to various kinds of natural fluctuations, under the existing policy, the incidental take permit holder can be held responsible for those.

If you look down the road in, say, 10 or 20 years, the plight of the species can change. Therefore, we should have what are called—and I know the scientific panel testified on this—adaptive management provisions.

The "No Surprises" rule is intended to deal with what I think we all agree has become defined as a somewhat narrower set of circumstances—unforeseen developments, which even scientists who are familiar with the area and familiar with the species can not anticipate.

So I think that the amount of money, cumulatively, may be much less than if you were dealing with responding to all kinds of changes which could take place, both changed circumstances, as they have been defined, and unforeseen circumstances. It may not be quite as expensive as you might surmise.

Senator CRAPO. All right. Mr. Thornton, what is your response to the argument that this is a different concept than is pursued in any of our other environmental laws; namely, having the Federal Government pay for the consequences of the recovery or the action required?

Mr. THORNTON. Well, I do not think that there is any Federal environmental statute that asks a landowner to give up property rights over a long period of time in order to address an issue that is not mandated under the Federal law. And that is what HCPs are all about.

The essence of Mr. Glitzenstein's argument is, why don't you just leverage these requirements out of landowners, in return for obtaining a permit?

The fallacy of that argument is that HCPs address what the environmental community said they wanted addressed; that is, they want large-scale, habitat-based plans that address species that are not on the Endangered Species list in addition to those that are.

They want corridors. They want linkages. They want all of the things that the National Academy of Scientists and the conservation biologists tell us constitutes good conservation planning, good

preservation design. In order to obtain those kinds of commitments, then you have got to provide certain incentives.

Now we have a representative from the Farm Bureau. I have represented farmers. You have a different problem that exists with farm operations. A number of farmers in California, quite frankly, because of the Endangered Species Act, make sure that their property remains tilled from stem to stern, year after year, without regard to whether they are growing crops on it; why? Because they do not want to have the regulatory burdens of the Endangered Species Act imposed on them.

So if we want to encourage farmers to engage in the kind of activities that will provide conservation benefits, then you have got to provide them regulatory assurances. That is what the HCPs are all about.

Senator CRAPO. Thank you. And Mr. Pauli, I know my time is running out here for my questioning period. But I think the essence of your testimony is that the HCPs, as they are being implemented, simply are not beneficial to agriculture.

Can you see a way in which HCPs could work in a beneficial manner, that would provide incentives or encourage farmers to participate?

Mr. PAULI. Well, you know, one of the things that we have been trying to do is to find solutions to protecting the species. I do not think that anybody is opposed to the concept, how do we effectively do it, recognizing the amount of urbanization we have in so many parts of the country; and how can we be effective in doing it.

It has to be through an incentive-based program that does not put farmers in jeopardy such that when they get one lizard or one kangaroo rat, even though they are providing a lot of habitat, will lose the farm or the ranch.

And how do you do that? It is going to have to be with a balanced, multi-species approach that tries to improve the habitat for all species. Where some of us have this problem under ESA, we want to try to protect as much habitat as we can. Ultimately, we all have to try to collectively do that.

By the same token, there seems to be a drive on the part of many of the regulators, particularly from the Fish and Wildlife Service, to find a reason to put us out of business. Their real objective here is to take the land; not just let us continue to farm, find a way to farm, to balance off what it is we are doing; but really trying to extract our property from us.

In the West is where we have such a conflict. These species have been there for years and years, and they are still there, but suddenly, everything we are doing is wrong, and they want to take our ground from us.

In the West is where we have this real conflict. If what we are doing is so totally wrong, then why do the species still exist there? Yet, we are finding ways to improve the habitat, improve the balance of the species, overall.

We are going to have to recognize, however, that some species may become extinct. We have been good stewards, but there are a lot of other impacts, from urbanization and growth around the country.

Senator CRAPO. Thank you. My time has expired.

Senator Chafee.

Senator CHAFEE. Thank you, Mr. Chairman.

Mr. Thornton, you listened to Mr. Pauli when he gave his testimony. And it was kind of a discouraging presentation. He indicated that, in his view, the Endangered Species Act, and I am paraphrasing him a little bit, worked exactly contrary to its given purposes. Is that a fair summation of what you said, Mr. Pauli?

Mr. PAULI. It certainly has not achieved its overall objectives of protecting species.

Senator CHAFEE. Yes, and then he gave the illustration of the growth along river banks, stream banks, where endangered species were surviving.

But now there is every incentive, as I understood what Mr. Pauli said, for the farmer to get rid of that protective growth, because they might find an endangered species there. And then all kinds of problems arise.

Although I do think he is going a little far when he indicated that what the Government really wants is to take the farmers' land, I do not think that is quite fair.

What do you say to all that? Here you are embracing, as I understood your testimony, the "No Surprises" policy. Why would that not work for Mr. Pauli?

Mr. THORNTON. Well, Senator, in my view, it can work, properly implemented. I think that farmers have some unique problems that clearly they have a setting that is different than an urbanized HCP. The HCPs in agricultural areas are different. I have worked on some agricultural HCPs.

I completely agree with his testimony that the cost of processing a separate individual section 10 permit for a small farmer is prohibitive. Therefore, you have to do it on a municipal or regional basis.

I have been working in Kern County, CA, for the last 10 years, which is a major agricultural area, working with farmers and with energy companies, to put together a plan that is more of a market-based plan that just does not lock land up and not use it, but rather tries to provide various forms of assurances to encourage farmers to manage their land to retain habitat values.

The problem that I have seen is that the Act, as it is currently structured and implemented, tells farmers if they get a Tipton kangaroo rat on their property in Kern County, they will not be able to put a crop in next season. It is not a good statute because the message to that farmer is, make sure there are no Tipton kangaroo rats on your property.

But I think the HCP process can work. Clearly, agriculture presents a set of issues that are different from the urbanizing area.

Senator CHAFEE. It is apparent that we will not be able to pass on the Senate floor and by both legislative bodies, a radical reform of the Endangered Species Act. We tried that under Senator Kempthorne's leadership, and we just did not prevail.

But it seems to me that there is great merit, I believe, in the "No Surprises" policy. Are you a "No Surprises" supporter?

Mr. THORNTON. Absolutely, Senator.

Senator CHAFEE. And how about you, Mr. Glitzenstein?

Mr. GLITZENSTEIN. I would certainly disagree with the current rule.

If I could just make one comment about that. I think that one of the important areas in your question is that there are many different kinds of HCPs and many different kinds of permit applicants. The current rule says, "thou shalt give "No Surprises" guarantees to each and every permit applicant, no matter who you are, whether you are a small farmer or a large multi-billion dollar timber company, no matter what species is affected, no matter how long the permit, whether it is for 2 years or 100 years.

The one thing I would really urge this subcommittee to take a look at, at an absolute minimum is at least give the Fish and Wildlife Service some flexibility to negotiate when "No Surprises" guarantees may be appropriate, to a particular farmer or someone else, and how long the guarantee should be.

Some of the environmental groups have suggested you can give a guarantee in one situation, that a permit will not change for 5 years; but because of variability in nature in an area and a big landowner, 20 years would not be appropriate.

But the current rule, which I am absolutely opposed to, as is every environmental group who commented on it and virtually every conservation biologist says that you must give "No Surprises" guarantees for every permit for the entire length of the permit, no matter how long it is. That, I submit, is a totally irrational policy.

Mr. THORNTON. Senator, if I might just quickly comment. This is the difference between the view from Washington and the view down in the trenches, as I like to call it, the ESA trenches.

Believe me, every HCP that I have been involved in, and I have been involved in over 2 dozen major HCPs, are very heavily negotiated, and the Fish and Wildlife Service does not provide blanket assurances.

There are negotiations over what species are covered. There are negotiations over the extent of the mitigation and minimization measures. There are negotiations over the term of the conservation agreement.

There is a whole scope and variety of negotiations that go on. And believe me, that rule is not being interpreted down in the field to provide blanket assurances to landowners.

Mr. PAULI. Can I make one comment? I think, Senators, one of the things we have to keep in mind here, and sometimes it is an over-simplification, but I do not really think it is. We have got very small versus very large. We have very different geographical locations in terms of the type of landscape and setting.

If you go to my State, California, in the southern part of the State in the Imperial Valley are 600,000 or 700,000 acres of irrigated land. It is high desert with 2 inches of rainfall, a very different kind of problem. But when you go up into the north coast, we have 40 to 80 inches of rain every year, very unstable soils. It is completely different. Yet, we have this one big plan. Then, we have big property owners and little property owners who cannot deal with the regulatory process, where the best lands really are, and some of the best species.

So you have got to keep in mind, it is not a one-kind-of-thing-fits-all. And there are two other things. You have got the small and the big——

Senator CHAFEE. Well, we are on my time here, so if you could summarize quickly.

Mr. PAULI. OK, you know, Fish and Wildlife Service has lost the respect of the property owners. Because as you make an agreement, through all these negotiations, expense, and time, and the next week, you have got a different person, a different interpretation, and a whole other problem. So you need to try to look at that issue. I mean, you talk about an agreement, but it can not keep changing every week and every year and every 6 months. That is a real problem.

Senator CHAFEE. OK, thank you. Thank you, Mr. Chairman.

Senator CRAPO. Thank you very much.

Senator Thomas.

Senator THOMAS. Thank you. First let me just say, Mr. Chairman, that I do not think what we tried to do is a radical change to ESA. It does need to be reauthorized, but I think it can be changed without being radical. What is radical in Rhode Island is not radical in Wyoming, I might add.

[Laughter.]

Senator THOMAS. Mr. Glitzenstein, is this your list of about 150 Ph.D.s and so on?

Mr. GLITZENSTEIN. That is one letter that was submitted. I think actually Ms. Hood in her testimony in July referred to another letter, which had many others.

Senator THOMAS. Would you think that all the nominations and listings are a result of full and complete scientific data?

Mr. GLITZENSTEIN. I think in the listing process, certainly there are examples where it may not comport completely with what scientists would prefer. These days, I think many species are not being listed that should be, because of what scientists would suggest.

Senator THOMAS. Do you think through a windshield, driving through a county and doing it on State and county lines is scientific?

Mr. GLITZENSTEIN. I am not familiar with that particular example.

Senator THOMAS. I am, and that is what has been done.

You point to everything being scientific. The fact is that nominations are not in the least scientific.

Mr. GLITZENSTEIN. I am sure you mean petitions.

Senator THOMAS. Petitions, yes, sure.

Mr. GLITZENSTEIN. Well, the petitions that I am familiar with, with the groups I work with, I must unfortunately disagree with you.

Senator THOMAS. OK.

Mr. GLITZENSTEIN. Because the ones that I have seen, and I am not saying every petition that has ever been submitted has been scientifically sound, but the ones I am familiar with, with the groups I work with, are very thoroughly researched, and supported by as much science as possible.

Senator THOMAS. Well, the ones I work with are not. My point is, I do not think you can make the generalization that the scientific end does everything, and that we ought to just live with that. There are lots of things that go into this besides the scientific end, as a matter of fact.

Mr. GLITZENSTEIN. Well, I agree.

Senator THOMAS. Do you consider that a listing of jumping mouse changes for a number of years is the same as a nuclear listing, a nuclear power plant?

Mr. GLITZENSTEIN. Well, what I am trying to show with that example is, the basic way in which we have approached environmental regulation in this country.

I think it is the same in the sense that if you are going to establish a set of criteria for getting a permit to take an action which would otherwise be unlawful, and it is critical to stress that the taking of an endangered species, under Federal law, is unlawful.

And Congress, when it passed that requirement, said that it regarded endangered species as being of the highest possible priority, that the loss of any species would be incalculable. And some of these species which people——

Senator THOMAS. I understand. It is the idea that you do not mow your ditches or you do some things, that is hardly equal to a nuclear change.

Mr. Pauli, have you had any experience with the 4(d) Rule? Have they used that at all with farmers and ranchers?

Mr. PAULI. Yes, Sir, they have attempted to, in California. And I am not as familiar as I would like to be on that. I would prefer not to comment on that.

Senator THOMAS. But that is an opportunity, I think, is it not, to make it more acceptable, to make it more workable?

We have one pending, as a matter of fact, that has not been completed now for a number of months that could make it workable, but has not been used.

Mr. PAULI. One of the problems that we continue to find comes back to the relationship with the people, back to your windshield kind of view.

The people on the ground do not have the kind of experience that many of us who farmed that ground or lived in that community for years and years have. And they simply do not understand the biology.

One of the real problems is the credibility of the biologist. We talk about science. We say, "Well, we should not have a contract for more than 5 years because, gee whiz, the science might change." Well, the science might change in a year or a month, but it also takes a long time for these things to trend.

In California, we will have a drought for 5 or 7 years, and things are completely contrary to where they were before, when you were in rainy sessions for 5 or 7 years.

Senator THOMAS. Mr. Thornton, you have generally represented larger users, is not that correct, by the look of your maps and so on?

Mr. THORNTON. Well, no, Senator, I have represented public agencies. I have represented small landowners, large landowners, small developers, small farmers.

Senator THOMAS. Well, is not it easier for Chevron to do something or a Weyerhaeuser for 100,000 acres, than it is for someone with 250 acres?

Mr. THORNTON. Absolutely, clearly, large landowners have greater flexibility and more of the ability to work within the system.

What has worked well, in my experience is, instead of a small landowner to attempt to process his own permit, but rather to work through a larger regional conservation plan. That is what we have done in Kern County. That is what we have done in various parts of southern California. And that is really more efficient. So then the local governmental agency takes on the processing chore of processing the plan.

Now that does not make it an easy process. Some of these efforts literally have taken a decade or more to reach the sufficient consensus and wherewithal to get the plan together. But that is the way the small landowners have to do.

The point that I try to make in my testimony is, we have got to come up with incentives. And regulatory incentives are just part of it. There has got to be financial incentives.

Landowners, especially small landowners, have to see some reason to keep their property in conservation status.

Senator THOMAS. Thank you, Mr. Chairman.

Senator CRAPO. Thank you.

Senator Baucus.

Senator BAUCUS. Thank you, Mr. Chairman.

Mr. Thornton and Mr. Glitzenstein. Let us assume the two of you were to go out. Do you drink beer?

Mr. GLITZENSTEIN. I do. I have been known to.

[Laughter.]

Senator BAUCUS. Let us assume the two of you were to, this evening, just go out and have a couple of beers together, and just sat down someplace, out of the spotlight of this hearing, away from your clients, just two guys that know each other pretty well, and looked at this issue pretty well.

You are two fellows that are well meaning. I mean, you are doing what you think is right for this country. You are red-blooded Americans.

Where would you two agree on how you deal with "No Surprises" in habitat conservation plans? Because there is obviously a tension here. Landowners, appropriately, are concerned about all these Feds coming down. They are always changing their minds all the time. And most landowners are good people. They want to do what is right.

On the other hand, we have got a very important national policy. It is protecting endangered species. It is extremely important. Because we do not want a society where we wake up one day and find the species gone, or at least a significant deterioration, as is the case in a lot of other countries.

So there is an inherent tension between preserving species, you know, and adaptive management, say, on the one hand, and "No Surprises", on the other.

So where would you two start? You know, you are talking to each other. What is your first name?

Mr. GLITZENSTEIN. Eric.

Senator BAUCUS. Eric. What is yours?
Mr. THORNTON. Rob, Senator.
Senator BAUCUS. Rob?
Mr. THORNTON. Rob.
Senator BAUCUS. OK, so Rob, you say, "Eric, what do you think about this?" And Eric says, "Yes, Rob, that is a good idea. Yes, you know, I hear what you are saying." So Eric and Rob are having a couple beers together, alone.
Mr. THORNTON. Senator, I am not sure where Eric and I would come out.
Senator BAUCUS. Well, I am asking just the two of you.
Mr. THORNTON. Right.
Senator BAUCUS. Please answer my question.
Mr. THORNTON. But, actually, it is an interesting question, because I went through that exercise, 2 years ago, with representatives of the World Wildlife Fund, the Environmental Defense Fund, the Center for Marine Conservation, the National Wildlife Federation. And we spent about a year, along with representatives of the National Realty Committee——
Senator BAUCUS. That is a lot of beer.
[Laughter.]
Mr. THORNTON. That is a lot of beer. A lot of beer was consumed, Senator, I assure you.
And there was a consensus reached. And it was ultimately articulated in what came to be known as the Endangered Species Working Group. Unfortunately, that particular proposal did not seem to get legs here on Capitol Hill.
Senator BAUCUS. I am sorry, I am not worried about the process, here. I am just asking about substance.
Mr. THORNTON. Well, the substance, I would say——
Senator BAUCUS. We do not have a lot of time here. So just cut to the quick. Where do the two of you tend to agree?
Mr. THORNTON. I would say that the consensus would emerge around the quality of the planning that is done. The level of public participation, which the environmental community is concerned about, although I think it is adequate in the existing process. Some commitments regarding some funding commitments in the future, to address unforeseen circumstances. And that might mean setting up a mechanism in Congress to establish some form of trust fund to fund unforeseen circumstances.
Senator BAUCUS. Eric, what do you think?
Mr. GLITZENSTEIN. I can not disagree with what Mr. Thornton has said. I think, critically, we both agree that there has to be some guaranteed form of funding, when these changes are necessary.
We have this philosophical concern that we talked about. But putting that to one side, somebody has got to pay for these things. And under current law, there is no clear answer to how that is going to happen.
I think public participation is critical. I agree completely with that. I think independent scientific input on the validity of plans is critical. I agree with that. I would hope that the one other thing we could reach agreement on is that one-size-fits-all does not make any sense.

Senator BAUCUS. OK, let us put the funding aside for a second. Do you agree with the concept of more public participation?

Mr. THORNTON. I, philosophically, Senator, am not opposed to it. And when I hear this criticism, and I offer my response to my environmental friends, which is to say——

Senator BAUCUS. Slow down, we are not talking about criticism, here.

Mr. THORNTON. OK.

Senator BAUCUS. Our goal here is to come together.

Mr. THORNTON. I think these planning processes have to have significant public participation for them to work.

Senator BAUCUS. So more than currently is the case?

Mr. THORNTON. I think there is a lot of public participation in the plans that I am working on, but to the extent you want to codify and make them more formalized, I would not oppose that.

Senator BAUCUS. OK, besides money and public participation, how are you going to deal with some of the changes that may occur? How do you deal with that, or what do you think?

Mr. THORNTON. I think you deal with it through adaptive management.

Senator BAUCUS. What does that really mean?

Mr. THORNTON. Well, adaptive management means that the plan can change within certain parameters. And, ultimately, these negotiations, in my experience, get down to a place where the plan can change; how can it change, putting sideboards or parameters on the changes that can occur that are going to be paid for by the landowner.

Senator BAUCUS. Do you think that you can agree with people in the conservation community as to what those parameters are?

Mr. THORNTON. Well, in my experience, you can reach agreement with components of the conservation community who have, in fact, endorsed a number of these plans. You can not reach agreement with everybody. That is clear.

Senator BAUCUS. Well, my time is up. Eric, if you could just comment in 15 seconds on what Rob said.

Mr. GLITZENSTEIN. I think trying to come to an agreement on those points up front is critical.

Senator BAUCUS. On the parameters.

Mr. GLITZENSTEIN. On the parameters, and what kind of adaptive management there should be. But the critical feature, also, which I hope we could come to agreement on, is that the small farmer gets different kinds of assurances than the multi-billion dollar timber company.

Senator BAUCUS. Well, that is clearly a problem.

Mr. GLITZENSTEIN. And those things can be negotiated, as well; how much of an assurance is appropriate, given the size of the HCP, the nature of the species, the length of the permits. Those things should be subject to some, I think, case-by-case analysis. And I would hope that we could, if we sat down, come to some understanding of that, as well.

Senator BAUCUS. I encourage you two to help us out here. Congress does not lead. Congress follows. Congress does what the people want done. So the more you guys are together, the more we are going to solve this. The more you are apart, the more we will not.

I am asking you participants, the experts, who know this subject, to work this out together. Go have a couple of beers. I do not care what it takes. Just find some way to get some agreement here, because the more you are divided, this is not going to be solved here.

Members of the House and Senate are going to follow their own constituent groups and special interest groups. Money gets spent on campaigns and you know what, and nothing happens. Congress follows. Congress does not lead. You have got to remember that.

So if you want this solved, you have got to get together. You may not want it solved. If you do not want it solved, it is not going to be solved. But if you want it solved, you are going to have to do more than 50 percent of it yourselves, or it is not going to happen.

Thank you.

Senator CRAPO. Thank you very much.

Senator Chafee and I have no further questions at this point. Did you want to ask any more, Senator Baucus?

Senator BAUCUS. No, thank you, Mr. Chairman.

Senator CRAPO. We do have more questions. And we will probably submit a series of questions to you in writing. But in the interests of time and keeping ourselves on schedule, we will dismiss this panel at this time. And we thank you very much for your appearance here.

Our second panel, and please come forward, is Mr. Rudolph Willey, president of the Northern California Presley Homes; Ms. Brooke Fox, director of Open Space and Natural Resources of Douglas County, Castle Rock, CO; Mr. Jim Moore, director of Public Lands Conservation of the Nature Conservancy; Mr. Steven Quarles, counsel for the American Forest & Paper Association; and Mr. Don Rose, manager of the Land Planning and Natural Resources, Sempra Energy, of San Diego.

We welcome you all. Were all of you here when I gave my admonition at the beginning about the fact that we are going to be seeing a red light before you are done saying what you want to say? And please keep your eye on the light, so that we will have time for interaction between the members of the panel here and yourselves.

With that, we will start out with you, Mr. Willey.

STATEMENT OF RUDOLPH WILLEY, PRESIDENT, NORTHERN CALIFORNIA PRESLEY HOMES, MARTINEZ, CA

Mr. WILLEY. Thank you, Mr. Chairman and members of the subcommittee.

Before Presley purchased land in San Jose in 1997, we were aware that the property once had been occupied by the threatened Bay checkerspot butterfly.

We contacted the nationally recognized Stanford conservation biologist, Dr. Dennis Murphy, who addressed this subcommittee on July 20 on science and habitat conservation planning. We contacted Dr. Murphy, because he was the petitioner of the butterfly. And no scientist is more committed to this species than he.

Stanford researchers who studied the species for decades told us that the butterfly had abandoned the site in the mid-1990's, and that weedy exotic grasses had virtually replaced the host plants on

which the butterfly survives, making it impossible to recolonize the site.

Dr. Murphy worked with Presley to develop a plan to bring the butterfly back. Even though there were no animal species on the property, and thus, no incidental take permit required, Presley chose to pursue a section 10 habitat conservation plan, because it was prudent to obtain the No Surprise Assurance, and it was the right thing to do.

We used the best scientific data available to produce a plan with extraordinary conservation commitments, with specific biological goals to achieve a 71-acre butterfly habitat, with 17 acres of host plants, 20 dedicated plant conservation areas, the first agency sanctioned man-made tiger salamander pond, and an environmental trust, to which Presley will deed over 50 percent of the 575 acres, and provide initial funding of $1.6 million for recovery and restoration, and annual funding of $200,000 in perpetuity for professional management and monitoring.

Given the voluntary nature and the progressive scope of the HCP, we expected the plan to be embraced by the Service.

Senator CHAFEE. By the Service, you mean Fish and Wildlife?

Mr. WILLEY. Fish and Wildlife Service, yes, Sir.

But when we presented our draft at a large meeting, a Service-staffed biologist simply asserted that nearly the entire property constituted habitat for the butterfly, but did not offer any empirical or scientific evidence to support this assertion.

It did not matter that annual surveys confirmed a complete 4-year absence of the butterfly; nor, that the habitat was so degraded, the species could no longer re-colonize, without heroic restoration efforts.

The Service then failed to comment in writing on the HCP. For nearly 4 months, we waited, called, and wrote, and even a letter to the Chief of California Operations went unanswered.

Finally, we met with the supervisor in Sacramento, who said he had something in writing, but wanted to talk to Dr. Murphy before giving it to us.

He listened to Dr. Murphy. And we pointed out that unless the Service engaged in a dialog to move this process along, we could legally proceed anyway, without an incidental take permit. He said he understood, and had told his staff that unless they cooperated, they would lose their opportunity to contribute to this project.

He said he was powerless to override or direct his subordinates' actions, because he feared lawsuits from third parties' special interest groups. In the end, he gave us nothing in writing.

We secured the appropriate permits from California Department of Fish and Game, Army Corps., and got a waiver from the Regional Water Quality Control Board.

At every step of the way, the Service contacted these agencies, demanding they deny the permits. But each concluded the Service had no jurisdiction.

In June, the city issued a grading permit, allowing for clearing the site, and work began. The Service had passed on a section 10, was denied a section 7 by the Army Corps., and had no grounds for a section 9. So now they elected to step outside the regulatory process altogether.

First, they sent documents to private interest groups, which were used to sue another Federal agency, the Army Corps. Then, they sent the city of San Jose threatening letters and e-mails claiming, without substantiation, that grading the site would cause illegal take of butterfly, for which the city would be held liable, under section 9. They demanded the city withhold any more permits.

The city capitulated, explaining they could not upset the Service, because it was holding up $3.5 million in Federal funds for city projects.

So we have been at a costly dead stop for 3 months now, and have lost a chance to construct any type of habitat, man or butterfly, until the dry season next Spring.

We have contacted every level of the Service to get this resolved. And, at last, 2 weeks ago, they acknowledged there was no take, no grounds for a section 9 action.

I asked for a simple letter to give to the city of San Jose. It arrived just this last Friday, and it was a qualified letter, at that.

I ask you, where is the certainty in the regulatory process for me, as an applicant? The Administration promotes HCPs. Yet, mine was insufficient, with the species absent.

And, finally, on behalf of all endangered species, is not this sending the wrong message, not to get involved in HCPs or restoration efforts? The butterfly has lost. And there is no escaping the irony, here. The developer attempts to protect and restore the species. And the Services blocks that effort.

Thank you. I would like to make the committee aware that I will have James Meek, Project Manager available for technical questions, if any.

Senator CRAPO. Thank you very much, Mr. Willey.

Ms. Fox.

STATEMENT OF BROOKE FOX, DIRECTOR, OPEN SPACE AND NATURAL RESOURCES, DOUGLAS COUNTY, CASTLE ROCK, CO

Ms. FOX. Thank you.

Mr. Chairman and members of the subcommittee, my name is Brooke Fox, and I am the Director of Open Space and Natural Resources for Douglas County, CO.

I am honored to be here today on behalf of the Douglas County Board of Commissioners and the Coalition for Responsible Species Conservation to testify about our experience with the federally listed Preble's meadow jumping mouse, and our habitat conservation plans.

Specifically, I would like to talk a bit about Douglas County, our HCP and ESA issues, and I will finish with just a few thoughts.

Douglas County is located between Denver and Colorado Springs, the two largest cities in Colorado. We are conservative politically, and at the same time, our voters and elected officials are committed to protecting our beautiful, diverse landscapes and wildlife habitat. In fact, our voters have voted consistently three times since 1994 to tax themselves to preserve open space.

Our county's master plan, zoning regulations, and open space preservation programs implement the county's commitment to preserve wildlife habitat. These documents, regulations, and programs

consider wildlife, in general, and are not aimed at one specific species.

Douglas County has successfully preserved over 26,000 acres through our open space preservation program, and through our development review process.

I am sure you have heard numerous stories about the time and expense it takes to deal with the ESA. Briefly, here are a few of ours.

The Fish and Wildlife Service in Colorado lacks the sufficient resources to review every day and long-term ESA issues in a timely manner. This affects us in two ways. Simpler issues needing attention before our regional HCP is approved take too long.

For example, Douglas County recently purchased 150 acres to preserve Preble's meadow jumping mouse habitat and to provide some limited public access. Of the 150 acres, the trail could not avoid 400-square feet of mouse habitat. The required low effect HCP took 8 months to be approved.

Second, we think given this experience, it is probably going to take us between 2 and 3 years, just to get our regional HCP approved.

Because the Fish and Wildlife Service's goals and direction tend to change, everything takes longer. For example, many have relied on the proposed guidance provided in the Fish and Wildlife Service's proposed 4(d) Rule for the mouse.

The 4(d) Rule was issued to provide clarity on what is and is not considered a take of mouse habitat during the period before the regional HCPs are approved. Well, the rule is about to be re-proposed. And we have heard that some of the guidelines such as extent of habitat will also be changed.

I have outlined in my written testimony what we have and what we expect to spend to develop our HCP. I would like to make the point now that we are expected to spend upwards of a half a million dollars all to put our successful programs into a language that the Federal Government understands.

My last issue is common sense. First, focusing on the "species du jour" does not make good sense. Our efforts, the county's efforts to work toward preserving landscapes and wildlife habitat as a whole does make sense.

Second, by the Fish and Wildlife Service imposing arbitrary mitigation ratios, they may actually create disincentives to preserve high quality, occupied habitat. The Fish and Wildlife Service's proposed mitigation ratios for the mouse actually provide incentives to restore or enhance marginal habitat that may yield questionable benefits for the mouse.

To me, it makes more sense to provide incentives to ensure that the really good habitat, occupied habitat is preserved.

And in conclusion, I have just a couple of quick thoughts. In our situation, the Fish and Wildlife Service must be provided with adequate resources to fulfill its legal obligations.

We are faced with the scenario where we are going to be spending at least a half a million dollars to put in place just a plan. But we also may be required to pay for the Fish and Wildlife Service's NEPA requirements. We think that is an unfunded mandate.

Second, we also encourage Congress to consider streamlining the HCP process. Third, we would like you to consider keeping the species preservation decisions as close to the local level as possible, to allow for common sense solutions.

And fourth, and finally, I totally agree with a lot of what has been said today. We need to work on providing incentives for landowners to become partners in this preservation effort.

I would be happy to answer any questions that you may have.

Senator CRAPO. Thank you very much, Ms. Fox.

Mr. Moore.

STATEMENT OF JIM MOORE, DIRECTOR, PUBLIC LANDS CONSERVATION, THE NATURE CONSERVANCY, LAS VEGAS, NV

Mr. MOORE. Thank you, Mr. Chairman and members of the committee. Good morning, my name is James Moore. I formerly served as the Desert Tortoise HCP coordinator for the Nature Conservancy of Nevada.

As you have heard from my colleague, Michael O'Connell in July of this year, the Nature Conservancy has been involved in conservation planning under the Endangered Species Act since section 10 was authorized in 1982.

I was requested to come before you today to discuss a successful case study of an HCP, which began in 1989 in the unlikely setting for conservation of any kind, Las Vegas, NV.

In the late 1980's, the economy of southern Nevada was booming, with an average of between 5,000 and 6,000 people moving into Las Vegas Valley every month.

In August 1989, the Mojave population of the desert tortoise was listed by emergency rule as endangered, and by final rule as a threatened species in April 1990.

Under section 9 of the 1973 Endangered Species Act, no take of the desert tortoise or its habitat could occur on private lands. Much of the private land in the Las Vegas Valley was and is to this day desert tortoise habitat.

The surging Las Vegas economic train threatened to derail over an innocuous herbivorous reptile on the tracks. Numerous construction plans and commitments for large-scale projects such as school construction, flood control projects, and master-planned communities were delayed, while awaiting the outcome of court cases and appeals of the emergency listing.

It was in this atmosphere of conflict that a little known provision of the ESA was brought into play. The Nature Conservancy had recently participated in a similar setting in the rapidly developing resort area of the Coachella Valley outside of Palm Springs, CA, when the fringe-toed lizard was listed as endangered.

We assisted State and Federal agencies and private landowners to create and implement a successful conservation program under the auspices of section 10(a)1(B) amendment of the ESA.

And following this example, Clark County, NV took the lead on resolving the desert tortoise listing conflict, and enlisted the aid of the Nature Conservancy to provide recommendations and environmental input into the development of an HCP to solve the needs of private landowners in the Las Vegas Valley. It was at this time I was hired as the Desert Tortoise HCP Coordinator.

The first order of business was to assemble a steering committee of affected parties; stakeholders representing a diverse array of land uses and landowner issues in tortoise habitat.

Livestock ranchers, miners, off-road vehicle enthusiasts, hunters, hikers, tortoise advocacy groups, national environmental groups, together with private property owners, representatives from four cities, State and Federal land and wildlife management agencies convened for some tension-filled, early, get-acquainted sessions.

Land use rhetoric and entrenched bureaucratic positions abounded on all sides while the group sought a common direction. This seemingly impossible task fell to the skilled facilitator, Paul Selzer, also involved in the Coachella Valley HCP, to set the legal sideboards for the discussions and to mold this dynamic oil and water group into a coordinated, constructively engaged body.

The uncertainties inherent in embarking on this relatively new provision and untested provision of the ESA attracted much scrutiny from environmental activists groups, who wished to ensure that a low standard was not set by this HCP.

The projected lengthy timeframe required to develop a conservation plan for 20 or 30 years led the group to submit an application for a short term, 3-year HCP. During this time, the long-term plan would be developed using lessons learned from the short-term experience.

The shorter timeframe of the 3-year HCP also provided more skeptical environmental groups with some assurances that take would be very restricted and would be commensurate with the conservation mitigation.

In exchange for the limited take provided, mitigation would occur on public lands, where a majority of the best examples of viable and protectable tortoise habitat remained at a ratio of roughly 20 to 1. This was an extraordinary ratio of conservation to take, proposed under this provision.

Some of the more notable accomplishments of the short term HCP were the purchase and retirement of livestock grazing permits from willing seller ranchers, encompassing over a million acres of public lands; the transfer of competitive off-highway vehicle racing out of priority conservation areas and into areas less ecologically sensitive; the initiation of a tortoise relocation program to place tortoises removed from developing lands back into previously depleted areas of the Mojave Desert; and the reliable funding of public land management activities for the benefit of the desert tortoise.

An additional byproduct of this process was the development of trust among the stakeholders involved in the conservation planning. This led to the successful negotiation of transitioning the short term into a long term desert conservation plan, which is now, as Senator Reid pointed out, the largest conservation plan in the United States.

The subsequent successful transition from short term to long term also led to the now developing multi-species HCP, which is proposing to address the conservation needs of an additional 78 species.

Many uncertainties exist for those additional species. And the multi-species plan proposes to integrate a strong adaptive management component into its conservation recommendations.

It relies heavily on trust that the monitoring program will be sensitive enough to detect when management assumptions go awry for one or more of the covered species. And the appetite of landowners for these future adaptations of conservation provisions and mitigation measures is, as yet, untested.

The jury is still out, in conclusion, as to whether or not this multi-species plan will pass what I consider the environmental smell test; that is, are the species proposed for coverage under this plan better off in the presence of a coordinated, well-funded conservation planning process than they would be in the absence of it? And I believe the answer will be yes, but that remains to be seen.

Thank you.

Senator CRAPO. Thank you very much, Mr. Moore.

Mr. Quarles.

STATEMENT OF STEVEN P. QUARLES, COUNSEL, AMERICAN FOREST & PAPER ASSOCIATION, WASHINGTON, DC.

Mr. QUARLES. Thank you, Sir. I am Steve Quarles. I am counsel for and appearing today representing the American Forest & Paper Association.

AF&PA believes that habitat conservation planning is an extraordinarily valuable tool to elicit from the private landowner support for species protection.

A massive amount of private land has been enlisted in the cause of species protection as a result of the habitat conservation planning process. AF&PA's members alone have 15- to 20-million acres of land in HCPs for which incidental take permits have already been issued.

We have strongly supported legislative reform to provide a more solid, statutory basis for habitat conservation planning, and to remove some of the more recent problems that have arisen in habitat conservation planning.

More even than the amount of land including within incidental take permits is the quality of management on that land resulting from habitat conservation planning. Remember that the only obligation of a private landowner is to avoid take of individual members of the species. That typically means that a private landowner that is not engaged in a habitat conservation planning simply avoids or perhaps puts buffers around discrete pieces of the landscape, where identified members of the species are nesting, breeding, or otherwise conducting behavior important to their survival.

And even this minimal habitat is usually not protected long term from fire, disease, insect, or simply growing out of the appropriate habitat conditions. It is only with HCPs that landowners agree to grow and replace habitat. It is only through HCPs that landowners are willing to invest the money, the time, and the effort to, in fact, ensure additional new habitat consistently.

You know the statistics. Over 70 percent of all listed species have 60 percent of their habitat on private land. Over 35 percent of endangered and threatened species have all their habitat on private land. Clearly, habitat conservation planning is important for species protection.

It is also of importance to landowners. The landowner obligation absent habitat conservation planning is simple: to avoid take. But

the consequences are severe: injunctions, imprisonment, penalties. Clearly, a landowner would like to avoid those consequences, and the habitat conservation planning process is the best way to do that.

Landowners are under no illusion that the process is easy, timely or inexpensive. I refer you to a chart in my written testimony, I submitted to this committee 5 years ago, in which I compared how much more costly, lengthy, and procedure-laden is the process for private landowners to obtain incidental take protection under section 10, than the process for Federal agencies to obtain incidental take protection under section 7.

But this Administration is to be complimented. It has invested significant energy, policies, and resources to make the HCP process work better. And the process has become a good business investment for landowners who can afford it.

That is enough of the positive. My task today is to discuss the problems that our members have recently and more frequently encountered. We really do see a loss of focus and momentum in the habitat conservation planning process.

A number of our members' HCP preparations have come to a standstill, with no prospect of obtaining a permit. In other cases, HCPs have been abandoned by the companies. And, finally, many more of our members are seriously considering whether they can justify participation in the habitat conservation planning process.

We see six categories of problems, which I discuss in some detail in my written testimony, but I will only summarize here. First, are procedural problems that are escalating the costs and delays beyond the capacity of even the largest landowners to absorb. The Services' habitat conservation planning handbooks say that even the most complicated HCPs are supposed to be processed within 10 months. Today, we are finding 2-year processing time to be precipitous agency actions. We are looking at processing times of anywhere from 3 to 6 years. You heard Rob Thornton speak of a 10-year period.

Second, the Services originally encouraged and now they are undermining multi-species HCPs by their demands.

Third, we see the Services sacrificing science to administrative efficiency, by seeking boilerplate provisions for all HCPs addressing the same species, even though there are particular habitat conditions for each landowner, and by requiring arbitrary mitigation ratios.

Fourth, we see threats in the courts and from the Services to the linchpin for landowner participation—the certainty that a deal is a deal. This, of course, is the certainty that is embodied in the "No Surprises" rule.

Fifth, we see the imposition by the National Marine Fisheries Service of an inappropriate and unlawful standard of recovery as a condition of approval of HCPs—a standard that no landowner can meet, and is a principal reason why a great number of HCPs are now at a standstill.

Sixth, and finally, we see a failure of the Services and Congress to provide an effective mechanism that allows small landowners to pursue the same incidental take immunity attained through HCPs.

This obviously sounds like quite an indictment. It is. We are seriously concerned that the HCP program is faltering. But you have no greater fans of that program than the American Forest & Paper Association. We believe it is the strongest hope for species preservation on private lands.

Thank you.

Senator CRAPO. Thank you, Mr. Quarles.

Mr. Rose.

STATEMENT OF DON ROSE, MANAGER, LAND PLANNING AND NATURAL RESOURCES, SEMPRA ENERGY, SAN DIEGO, CA

Mr. ROSE. Good morning, Mr. Chairman and members of the subcommittee. My name is Don Rose. I work for Sempra Energy.

My staff and I are responsible for the siting and route selections for transmission lines, gas and electric, and the siting of other facilities, like substations, and regulator stations. We also get the permits and the environmental clearances, so those facilities can be developed.

Sempra is the parent company for San Diego Gas and Electric and Southern California Gas, which serves a great deal of Southern California.

I appreciate the opportunity to appear here today on behalf of Sempra and the Edison Electric Institute, which is the trade association for shareholder-owned electric utility companies. We commend the subcommittee for conducting these hearings. We are very interested in the hearings. We are especially interested in the outcome of the hearings.

Gas and electric systems are complex. And like lots of complex systems, they need constant care and maintenance. Without that care and maintenance, there are outages.

Outages can have serious consequences, which can be economic. They can be serious to health. There can be fire. The environmental consequences can be quite serious. Because of that, the State and Federal Governments on which we must be permitted by require and mandate certain maintenance.

To perform this maintenance, it frequently puts us in a conflict situation with the Endangered Species Act. Maintenance, typically, must be performed during, weather permitting, the nesting season for most of the protected species, that being Spring and Summer and Fall.

During the bad weather, we can not do the maintenance. The maintenances for maintaining access roads, et cetera, has to be done during the good weather. Therefore, complying with one regulation puts us in conflict with another regulation. So the regulatory conflict is one of the biggest issues we have with the Endangered Species Act. HCPs help resolve that, to a degree.

San Diego County, more than most places in the United States, is in this conflict situation. There are more listed species in San Diego County than any other county in the continental United States. So it is very difficult to go out into the natural environment, without encountering that kind of a situation.

HCPs seem to be the solution, so we went for it, enthusiastically. We spent $1.2 million on a mitigation bank and about another

$800,000 on training and all the things necessary to process an HCP.

And it worked very well for about 3 years. We are able to do new construction without obtaining additional endangered species permits. We are able to do our maintenance year around, even during the sensitive time of the year. And we were able to maintain our access roads.

Now the access roads are the most important part of that maintenance activity. Because it is the access roads that allows us to do all the other maintenance. We must have access to the facilities in order to do that.

Well, along came the Quino checkerspot butterfly. Even though we had 110 species covered, that was not on the list. It was believed to be locally extinct. It was resurrected, and what do you know. It just seemed to love the plant life that would gravitate to our access roads. So we were not allowed to regrade our access roads.

We talked about possible environmental consequences. The two main activities, at least the ones we do the most frequently are what we call insulator washing and line clearing. We must wash the insulators. If you do not, they will collect dust, and they will conduct electricity, and cause what is called a flashover. Tree trimming or line clearing does something similar, put out lines or starts fires.

This is a flashover on a low-voltage line, 26,000 volts. The lines we are talking about are the lowest voltage transmission lines on our system of 69,000. Three times that, 138,000 and 230,000 are the two most frequent lines that cross the country, and we have a 500,000-volt line.

Now the ball of fire gets bigger. And I do not know if it is arithmetic or what, but it is bigger as the voltage goes up. This is not a wolf cry. This is real. We lost 20-square miles of very valuable habitat in San Diego County, due to a fire from poor maintenance.

Our HCP is avoidance-based and it is habitat-based. It is not species-based like the act, itself. We put aside large numbers of acres. We have put our rights-of-way into preserves. Concerning our protocols, we completely changed the corporate culture, adopted new protocols for people who work in the field. They have to do things differently than they have historically.

And I would say, at this point, I think SDG&E is probably the most environmentally-sensitive electric utility company in the United States, in the way that they do their maintenance and their new construction. I have a list of these kinds of protocols they must comply with, if you are interested.

Certainty and comprehensive are the two key words. There is no certainty with your HCP. The Quino checkerspot came along. Our HCP is now nearly useless. We can not use our access roads. We can not wash our insulators. We can not trim the trees.

It is not comprehensive. If another species comes along, even though it is habitat-based, it should be protected, as long as it lives in that habitat, but it is not.

So what kind of things could we do to change that? One is that if you have a habitat-based HCP, anything that lives in there is af-

forded the same protection. And it ought to be included, unless it can be proved otherwise that there is special danger to it.

But more important would be a separate career path for the Fish and Wildlife Service personnel that are managing HCPs, not the field biologists. Their charge is to go out and heroically protect those things that are on the brink of extinction, not to issue a take permit, as philosophically opposed to that. People with the broad view and the long view are needed to manage HCPs.

Can I keep going on? I have a red light. But I would love to go on.

Senator CRAPO. Well, we probably should conclude with that. Your written testimony has been carefully reviewed.

I will ask a few questions of the panel at this point. We thank you all for your testimony.

I would like to start with you, Mr. Willey. You mentioned during your testimony that you hired Dr. Dennis Murphy to develop your HCP. And Dr. Murphy, of course, testified before this subcommittee in July on the question of the science of HCPs. I am assuming that your plan has been through a rigorous scientific examination, by not only Dr. Murphy, but others.

The question is, is the Fish and Wildlife Service's basis for not approving your plan based on a problem with the science, or have they elaborated a reason for why they have not approved the plan?

Mr. WILLEY. They did not elaborate a reason. And as I mentioned in the testimony, they never gave us any comments in writing, whatsoever.

The comments that we did get from them were verbal and sporadic. They ranged from, "this entire hill is habitat," to Dr. Murphy, "you do not know how to count butterflies." This literally was said to Dr. Murphy.

Senator CRAPO. So at this point, you do not really have an understanding of exactly why the delays have occurred or why the approval has not been received?

Mr. WILLEY. No. I have suspicions, but I have never been told. But, yes, our plan, which is right here and costs $300,000 to produce, before we even rang the doorbell over at Fish and Wildlife, was put together by H.T. Harvey and Associates and Sycamore Associates, and reviewed by Dr. Murphy and Dr. Ray White and Alan Lonner, the real experts on this species in the world. And it was good science. It was a good plan.

Senator CRAPO. Can you tell me how much it has cost Presley Homes to this point to develop the HCP?

Mr. WILLEY. Half a million dollars, so far.

Senator CRAPO. And review with me, again, the amount of delay you have incurred.

Mr. WILLEY. Well, we have made our formal application and submitted the draft HCP in October 1998, and presented it in a formal meeting in November 1998. We began grading this summer and were stopped after just a couple of weeks of grading. But the Service waited until we were out there actually doing work before they stopped us.

Senator CRAPO. Mr. Willey, many builders are small volume builders. They build between 10 and 25 homes a year or less. Do

the concerns that you have outlined in your testimony apply across the board to small operations like that?

Mr. WILLEY. Oh, absolutely. I could not imagine myself being a small volume builder, or worse yet, a private landowner who has had some land in the family for a few generations, and want to develop my property. I can not imagine somebody having to go to the Fish and Wildlife Service and go through the maze there.

The private landowners, would not only have the money to do the types of mitigations that are demanded these days, but they would not be able to afford the scientific help to even get started.

Senator CRAPO. Thank you very much.

Ms. Fox, as you stated, Douglas County is making enormous investments in a county-wide HCP. Would the county consider these investments without the assurances provided in the "No Surprises" rule?

Ms. FOX. That is something that we have been concerned about, all along. I think that it would be very difficult for us to move forward without those assurances.

Senator CRAPO. You also indicated in your testimony that the NEPA costs were in the context, as you viewed them, essentially as an unfunded mandate. The cost of the agency's compliance with NEPA is being borne by the county.

Could you elaborate on that?

Ms. FOX. I think our biggest fear is that after we have spent a lot of money, to get to a point where we are negotiating our habitat conservation plan with the Fish and Wildlife Service, and that if we get to a place where we are agreeable, and the Fish and Wildlife Service says, "Well, this is great, but we can not issue your permit, because we can not afford it." They do not have the money or the resources to pay for NEPA compliance. Then the county will have to come up with the additional funds.

The county commissioners would have a pretty hard time justifying that, after we have already gone through an extensive amount of time and negotiation and cost to our taxpayers.

Senator CRAPO. I think that is understandable.

I happen to have a constituent in Idaho who owns a ranch in Colorado, where his elderly mother resides. And that ranch is on the market and happens to be habitat for the Preble's meadow jumping mouse.

A few months ago, an offer was made on the ranch, and subsequently withdrawn, because the buyers were concerned about the presence of the mouse.

And although I do not know whether this ranch is located in Douglas County, I am wondering if the HCP that your county is developing would provide assurances to potential buyers that they would not be required to undertake burdensome conservation measures to protect the mouse, increasing their level of confidence in purchasing the property.

In other words, if this ranch were in Douglas County, would the HCP that you are working on help them to be able to provide the necessary assurances to a buyer?

Ms. FOX. One of the things that the county commissioners were very concerned about when we launched into this process was to do some things that not only covered the county's activities, such

as building roads and bridges and trails. We have a significant amount of rural landscapes in the county and ranches. The county commissioners have a strong ethic toward agriculture. We wanted to include agricultural activities into our habitat conservation plan.

So we are working with private entities, developers and others to work on the development of our habitat conservation plan, to make it acceptable to a wide variety of people, and take into account other activities besides just our county activities.

Senator CRAPO. OK, good.

Mr. Moore, could the Clark County Desert Conservation Plan be used as a model for HCP species in other parts of the country, or is this also uniquely different in terms of the circumstances that we can not identify model aspects of projects such as this?

Mr. MOORE. That is a good question. The term model HCP has been used and thrown around quite freely by many of the different plans that have been successful in the past.

The Clark County plan is unique in that the funding mechanism for the plan, very early and up front, was the same issue, if you will, that caused the listing in the first place. That is the rapid development and loss of habitat, also created the successful funding mechanism for the development of the plan. That is the imposition of impact fees on the private property owner that wanted to develop his or her land.

On the whole, the Clark County HCP, I think, is somewhat unique in that both the species requirements, the fact that most of the species, the desert tortoise, existed on public lands, not private lands, allowed for a pretty flexible negotiation process with the Fish and Wildlife Service in terms of the mitigation would not be placed on the backs, if you will, of the private property owner, but would take place on public lands; that is, largely BLM owned and managed landscape.

So there are components of the Clark County HCP, I think, that can not be duplicated elsewhere. But there are lessons learned, I think, that can be. And that is the fact that the Clark County HCP is recognized as one of the leaders in terms of public participation early and up front, which takes away a lot of the resistance at the latter part of HCP development.

It definitely lengthens the process. And if you do not have the luxury of a funding mechanism to pay for that process, then a lot of public participation is probably not a desirable aspect of HCP development, especially for a smaller private property owner.

Senator CRAPO. I was interested in the lessons learned section of your written testimony and your presentation today with that point.

You indicate that the resistance to the proposed mitigation measures was effectively diffused by the large amount of public input. Could you elaborate on that?

I am interested in finding a common approach that could be modeled in other areas. Public participation is an area in which I have a significant amount of interest because I am concerned about the way we go about it under our environmental laws today.

How did you do it there, and what made it so effective?

Mr. MOORE. Well, we did it by identifying not only those stakeholders that would be impacted by desert tortoise habitat, a take

on tortoise habitat—those whose private property is actually within the critical habitat designation, but also those stakeholders that would be affected by the proposed mitigation strategies on public lands, which was not private property.

So we adopted essentially a "y'all come" scenario. The meetings were open to everybody. The only requirement was that if you come in, you come in informed. Do your homework; read up on what has taken place before. Still, there was a lot of venting up front, a lot of tension.

The meetings were frequent. We tried to distribute the meetings throughout the day, so that people that worked during the day could attend some meetings at night because the Las Vegas Valley or Las Vegas community is essentially a 24-hour town. There are three shifts of people operating at all times. We had to make sure that the key landowners or key stakeholders in the process had the opportunity to participate.

One of the difficulties in that scenario, however, is the cost associated with participation over a long period of time. The thing that brought people to the table and kept them there was essentially the balance of terror. It was the belief, or the fear, that if they were not there, that something was going to be negotiated that they would not have a say in.

So a lot of people, especially the smaller landowners, the small miners, OHV recreationists, who did not actually own the private property that affected livelihood or their recreational interests, all participated as much as they could.

In fact, at times, the livestock ranchers dropped out of the process, because they did not see a benefit to themselves early on.

Clark County essentially went out and hired an attorney known for her adoption of western land use issues, Karen Budd-Falen. They hired her to represent the livestock interests. It was incumbent upon her to go out and solicit input from the ranchers and miners and other people that could not participate on a daily basis or on a monthly basis, and bring those interests to the meetings.

Senator CRAPO. Who was in charge of handling the meetings?

Mr. MOORE. Paul Selzer, the facilitator for Clark County, was hired by Clark County because of the success that he had had in negotiating the Coachella Valley, development.

Senator CRAPO. And did the Federal agencies involved attend?

Mr. MOORE. Yes, definitely, they were all ex officio members, from the State, Federal, and local government levels.

Senator CRAPO. How were decisions made? Was a consensus process followed?

Mr. MOORE. It was a consensus-based process. Many times, you know, we just talked issues out until either people were just brain dead or could not argue any more, or did not feel strongly enough or impassioned enough in their opposition to continue the arguments against a particular direction that we were taking.

Senator CRAPO. Then once those decisions were reached—which Federal agency were you dealing with, in terms of the HCP?

Mr. MOORE. It was the Fish and Wildlife Service.

Senator CHAFEE. Fish and Wildlife?

Mr. MOORE. Yes, Sir.

Senator CRAPO. How was Fish and Wildlife convinced to agree with the consensus that was reached in the meetings?

Mr. MOORE. Well, we were somewhat lucky in our scenario, in that the Service was an active participant. They still were straddling the NEPA regulations—they cannot pre-decide a policy or a decision, based on an application for an incidental take permit.

They could provide the sideboards during the process and kind of tweak the process along the way, and let people know if they were heading off in the wrong direction.

Also, we had the benefit of a recovery plan, which took kind of the big-picture approach of habitat-based conservation planning. So the service was engaged.

For the development of the short-term plan, there was a consistent representation, not only in terms of the staff that were participating, but also in terms of the policy that was being forwarded by the Service to the committee.

I have heard a continous strain throughout the discussions of various HCPs today—consistency in representation and consistency in commitment to policy guidelines that the Service representatives bring to the table is essential to negotiating an agreement that works.

Senator CRAPO. But if I understand it correctly, though, the Service effectively let the process work, and to the extent consistent with the legal requirements it was working under, accepted the recommendations or the consensus that was developed.

Mr. MOORE. Absolutely, and I think the reason behind that was that they had enough foresight to see that if they did not let the process run its course, if they did not let all the stakeholders have their say and have some input in terms of deciding how this negotiation was going to occur, and what the provisions in terms of the conservation proposal and the mitigation requirements was going to be, that they would get hammered at the end product. A big document would be produced at considerable cost, but it would lay on a shelf, because it would not be accepted by the key stakeholders involved.

So they realized that the process, while lengthy and costly and tedious, was essential to getting a successful product at the end.

Senator CRAPO. Now do you have a "No Surprises" element in this plan?

Mr. MOORE. Yes, the "No Surprises" rule or guidelines came about late in the game. And I think it was in 1994 or 1995, when we had already had a successful short-term plan, and had already submitted our long term 30-year desert conservation plan.

But "No Surprises", I think, was operating at a constant level throughout the process. So it was not something that everybody insisted would be a new policy, integrated into the process, because it had been consistent throughout.

Senator CRAPO. It had basically been achieved in the consensus already.

Mr. MOORE. Yes, because it was such a high-profile HCP, the largest in the Nation, it attracted the attention of a lot of people at the upper levels. We needed the assurance to get especially the more politically powerful stakeholders and private property owners to sit at the table and agree to the mitigation.

Senator CRAPO. Do you think you could have achieved this consensus without that kind of agreement on "No Surprises"?

Mr. MOORE. I think it would have been difficult if we had not had it kind of operating at a *de facto* level throughout. I do not think if the Service had changed courses during the development of the short term plan to the long term plan or the transition, then I think we would have lost some key constituents.

Senator CRAPO. All right, thank you.

Mr. Quarles, you have raised an issue that I think is pretty important. Would you elaborate on your view that it is inappropriate to impose recovery standards on private landowners in the habitat planning process? And would you describe how you see this standard being imposed presently?

Mr. QUARLES. Certainly. If there is probably any principle of law that there is more agreement on, under the Endangered Species Act, it is that recovery is a responsibility only of the Federal Government, and not a responsibility of the private landowner. The private landowner has a much more modest responsibility, and that is to avoid take.

You can find this principle both in the language and in the legislative history of the Endangered Species Act, the Interior Department's Solicitor's opinions, preambles to the rules of the Service, court opinions, even the Solicitor General's briefs to the U.S. Supreme Court in Sweethome, and in the Service's own Habitat Conservation Planning Handbook. That is a principle that has guided the Service until very recently in the administration of the law.

ESA section 10 does have two additional requirements for landowners seeking incidental take permits that also are much more modest than the recovery standard. One of them is virtually identified to be not likely to jeopardize the continued existence of the species standard that is in the section 7 process for Federal agencies to obtain incidental take immunity.

And the other standard is that the landowner, to the maximum extent practicable, is to minimize or mitigate the direct impacts of the incidental takes. This standard is very similar to the proportionality requirement of the Supreme Court in the Dolan decision, that government can not require more of landowners than to address the impacts of their own actions.

These standards have been made irrelevant by the NMFS in particular salmon HCPs on the West Coast. NMFS now is requiring fully functioning or properly functioning habitat which the landowner must provide during the term of the HCP.

That means that the landowner does not just mitigate the results of his or her own actions. The landowner has to mitigate all the impact upon the habitat that may have occurred long before the landowner acquired the property.

This new NMFS standard is, by definition, not proportionality. By definition, it is recovery. You have to recover that land, that habitat, and recover it to the point that the species can recover on that land.

The simple fact of the matter is that if this new standard were to prevail, there would be virtually no HCPs. Landowners cannot provide recovery. Their land usually does not cover enough of the landscape for that purpose. Even if they take all the necessary ac-

tions to supposedly provide a fully functioning habitat and the species do not come, then it is not a properly functioning habitat. The landowner can not bring the species. There may be all sorts of natural or human-caused reasons why they do not come.

It is not an exaggeration to say that HCPs will not occur under this standard. Because to my knowledge, there is not a single HCP that, once NMFS has demanded fully functioning or properly functioning habitat, has proceeded to an incidental take statement. Each and every one of them has reached a standstill.

Senator CRAPO. If I understand you correctly then, essentially your position is that there is no legal justification for the imposition of this standard, but nevertheless it is being imposed in the HCP process?

Mr. QUARLES. Yes, by one agency. Interestingly enough, as far as we can tell, this is a fundamental disagreement between the Fish and Wildlife Service and the National Marine Fisheries Service.

The Solicitor's opinions in the Department of the Interior and, as I say, the Solicitor General of the United States, are clearly on record as saying that conservation is not a standard to be applied—recovery is not a standard to be applied to landowners.

Senator CRAPO. And it is the National Marine Fisheries Service that is applying this recovery standard.

Mr. QUARLES. Yes, it is.

Senator CRAPO. One other aspect that you covered in your testimony is the difference between section 10 and section 7, and the question of whether Congress intended that HCPs developed under section 10 should undergo a section 7 consultation.

Would you evaluate or explain a little further your approach to that issue?

Mr. QUARLES. I will. First of all, there are two lawsuits that say that because you have to do section 7 consultation on an HCP whenever a new species is listed or new information arises the Services, either NMFS or the Fish and Wildlife Service, have the a right to re-initiate consultation on that original HCP, and make all sorts of additional demands for expenditures and set-asides of land. That completely contravenes the "No Surprises" policy.

Second, there is another lawsuit, which simply says that under section 7(d), during the course of consultation, you can not make any irretrievable commitment of resources that could frustrate options for the incidental take permit. This would mean that landowners would not take any actions that would alter habitat during the entire course of the negotiations of the HCP which, as I said, can take anywhere from 2 to 6 years.

Developers may be able to avoid that, because they do not disturb the ground until all the permits are in place. But farmers, forest land operators cannot forego land management entirely for years.

And the final reason why it is of real importance is because section 7 gives the Services an excuse to consider issues and apply conditions in HCPs that Congress specifically decided not to apply to private landowners. One is the protection of critical habitat. Another is the protection of listed plants. So we believe that that is really a problem.

In fact, we believe that the law states that section 7 should not apply to HCPs, and that there are two separate processes—the section 10 process for incidental take permits and the section 7 process for incidental take statements.

There are a number of proofs in the pudding. But perhaps the greatest one is that when Congress enacted both those processes in 1982, it took the principal standard of Section 7, the "do not jeopardize" standard and inserted it in the Section 10 process, clearly indicating they expected those to be two separate and mutually exclusive processes.

Senator CRAPO. Good, well, thank you, I appreciate those observations. They are helpful.

Mr. Rose, in your statement, you recommended the development of a new career track at Fish and Wildlife. And I find that an interesting proposal. We are looking for solutions here that can work. And perhaps we need to look at the structural operation on the agencies.

Why do you think a new career track is needed, and what would you propose there?

Mr. ROSE. Well, I have dealt with few agencies or organizations of any kind, that is so top heavy with a single discipline.

About 90 to 95 percent—and this is casual observation from the regional offices that I am familiar with, but also just discussing with other people—of the professionals in the wildlife agency, the service, are biologists. They do not have the other disciplines necessary, in my opinion, to carry out what is needed for a comprehensive HCP.

For the long term and the broad view, I think you need people like land planners. You need people maybe with some economic backgrounds and several other disciplines.

And I will give you an example of what I mean. The wildlife biologists are very focused on implementing how they interpret the Endangered Species Act, to conduct heroic efforts to save these things on the brink of extinction.

In San Diego and along most of the California coastline, we have a bird called the least tern. The least tern is protected, and it should be. There were only 600 known mated pairs left in the world. They are back to about 2,000 now. They nest in the open sand. When it is faced with less and less open sand, it has fewer places to nest.

Some chose to nest on the runway of the San Diego Airport. It was open. They could see their enemies coming, so they nested there. Then more followed close by. They did not all nest on the runway. But some chose the runway, and there were some deaths. The service issued a biological opinion, saying if you kill three least terns, we have got to shut down the airport.

In the biological opinion was a proposed mitigation. They wanted the airport to cut grooves in the runway and fill them with sand and shells, because that is what the least terns like to nest in. So they wanted to attract more least terns to the airport, so that more would get killed, and they would have to shut it down.

It seems that decisionmaking and planning and discretion is not compatible with the comprehensive HCP, which is supposed to ac-

complish more than just the heroic efforts to bring something back from the extinction. It is supposed to expand things, do more.

So I believe you need other disciplines and other focuses, and maybe even other philosophies.

Mr. WILLEY. May I add to that, please, Mr. Chairman?

Senator CRAPO. Certainly.

Mr. WILLEY. Mr. Rose, I think you understated that. That would not even be compatible with common sense.

My experience with the Service is that—and maybe, Mr. Rose, you can back this up—sometimes it is very difficult to find anyone who can make a decision; or, if they do, they will be in conflict with other ones. They will even change their minds again, before you leave.

We found we could find no one who would take responsibility; no one who would make a decision. The biologists, who like to refer to themselves occasionally as "combat biologists," make the decisions. No two are the same.

But I think that this leads to complaints of having different mitigation for the same situations, of people being treated differently, and projects processed differently, depending upon what day you take them in or what person you talk to.

So I agree with Mr. Rose, there does need to be a variety of different disciplines working at the Service. And someone needs to be in charge.

Senator CRAPO. Ms. Fox.

Ms. FOX. In Colorado, that 8-month low-effect HCP, that I just mentioned in my testimony was the first habitat conservation plan issued in the State of Colorado.

And we feel like we are hoeing entirely new ground. But, yet, we know that there are all these other HCPs that have been negotiated throughout the country.

But our representatives at the Fish and Wildlife Service are new to all of this. So it would be great to have a little bit of cross-fertilization, because we feel like we are going through a whole new process.

Senator CRAPO. I think these are all good suggestions. I suspect that there is probably frustration within the agencies themselves with regard to the structures and the requirements they are required to face.

Maybe we can find, as we look to build a reform, some way to suggest some institutional and structural changes to help decision-making occur and to have some consistency, and to have some timeframes within which it will be made, and some responsibility there.

Mr. Rose, I also note that last year, in the Senate's comprehensive Endangered Species Act Reform bill that was reported out by the committee, there was a provision that provided for a "low-effect activity incidental take permit".

What do you think of that kind of an approach, and how well would that address some of your problems; in other words, creating sort of a new category for very low-effect activities?

Mr. ROSE. I think the concept is OK, like the whole concept of HCPs. How would it be administered? Who would determine what is low effect?

I think right now it would be back to that field biologist that wanted to shut down the airport. So the risk is high. But the concept sounds good.

If it has rigid standards for some kind of application so that there is no discretion given to the field biologists on how it would be applied, I could look more favorably on it. But right now, I would be very concerned about the risks involved, and I would need to know a lot more about the specifics.

Senator CRAPO. Fair enough.

Mr. Quarles.

Mr. QUARLES. Yes, if I may, that was one of my criticisms, and let me expand on that just a bit.

All of us have the good intentions of trying to find a way to make this work for the smaller landowner. But I do not think we have found the answer yet.

For example, the small-effects language in the committee's bill last year, still required a potentially expensive case-by-case analysis.

And the result is, even though the Service's handbook says that those small-effects HCPs, I believe, are supposed to be completed in 3 months, you heard something like 6 to 8 months. And, obviously, the high-effects ones were supposed to be completed within 10 months, and we are hearing 2 to 6 years.

The Services, to their credit, have experimented with a number of other mechanisms, such as no take letters, for birds in Austin. They have also developed the Safe Harbor concept. But none of those has really received broad acceptance or use by smaller landowners. And many in the Services are opposed to the use of those mechanisms.

AF&PA suggested to this committee last year, and we would love to have it considered again, that we authorize general, incidental take permits, like the general permits issued under the Clean Water Act, as a means of getting away from the case-by-case process, and wrap in small landowners in a way that will allow them to obtain this incidental take immunity without significant cost.

Senator CRAPO. That is a good suggestion, also. Thank you.

One last question for you, Mr. Rose. It seems to me as I read and listen to your testimony that what happened in your case is that you had a pretty extensive HCP, under which you managed your rights-of-way in a successful way to develop and maintain habitat.

And then your efforts were trumped by the post-implementation listing of a species, that essentially interfered with your ability to achieve the objectives of what you were seeking to do.

But it also seems to be that it is very possible that that new species came there because of the habitat development efforts and the activities that you were undertaking.

Was that ever an issue of discussion between you and the regulators?

Mr. ROSE. Yes, Senator, it was, but it was dismissed.

Our contention is that the butterfly is, in fact, attracted to the plants that grow on our access roads. But it is attracted to other areas in our rights-of-ways that are not access roads. So the butterfly is there, and we are saving it.

The plants and the road would be regraded every other year, but they come back. So the Service says, "Well, it is a magnet for the butterfly."

Well, we say, "It is good that it is there." Because if we cease to grade the access roads, that plant would not come back. It must have sun. If the sagebrush grew over the road, there would be no sun and the plants would not come back.

So we felt that the butterfly has come back and is using our roads to do so. So that should be part of the Service's recovery plan. But they did not want to see it that way—another shortcoming of the whole HCP.

But that plan does not apply on Federal lands, and our facilities go for miles. They cross Federal lands; they cross wetlands. It does not apply there, only on the private property.

So when we are talking about how that works for us, we are only talking about the private property aspects of our lines, not the miles on military reservations, forest service, et cetera.

Senator CRAPO. I understand.

Well, I have a lot of other questions, and I also have run out of time. And I want to thank this panel for your written and your oral testimony, today.

And I would just say to you and to everyone, here, obviously, we think this is a very critical issue that needs to be addressed, and is one of the issues that we hope has the potential for being able to be resolved, or we can find that consensus, if possible, to move forward on some meaningful reforms.

We are in a political climate where, as I think Senator Baucus indicated, if we do not find an ability to move forward, we simply find ourselves at loggerheads and unable to move.

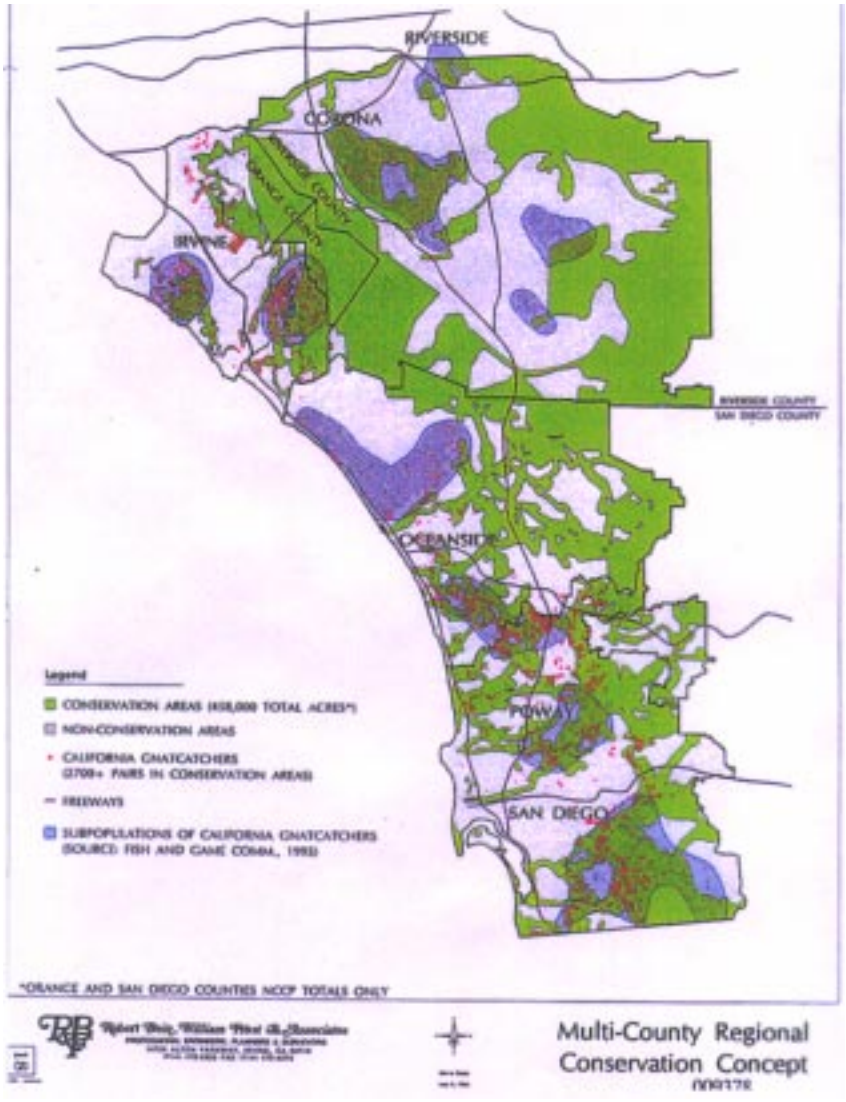
But we also see real potential in some of these areas. And your efforts in helping us identify what is happening on the ground, so to speak, as we see difficulties in implementing the process will help us hopefully to find the way to build a path forward out of this difficulty.

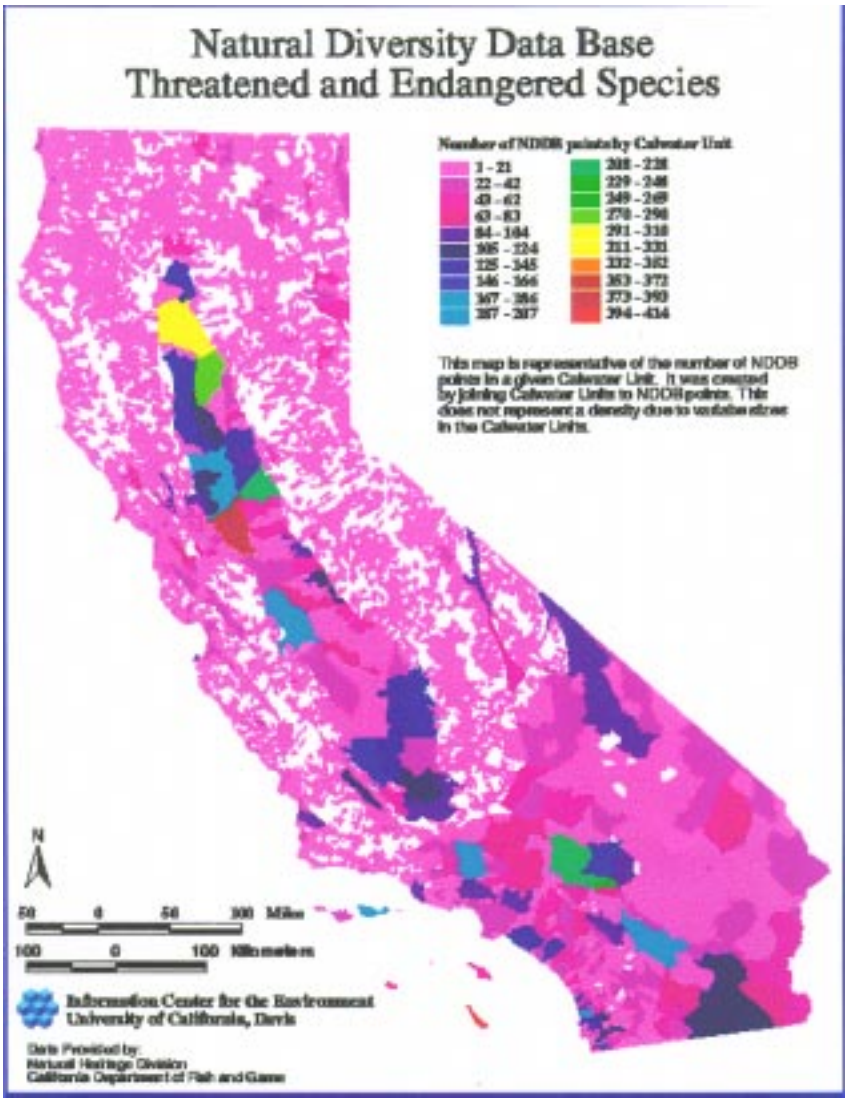
I would encourage all of you, not only those of you who are on the panel, but others who are interested in the issue, to continue to provide us information and observation and suggestions, as we move forward to try to identify a solution to this issue, and because we are going to be working on it very aggressively.

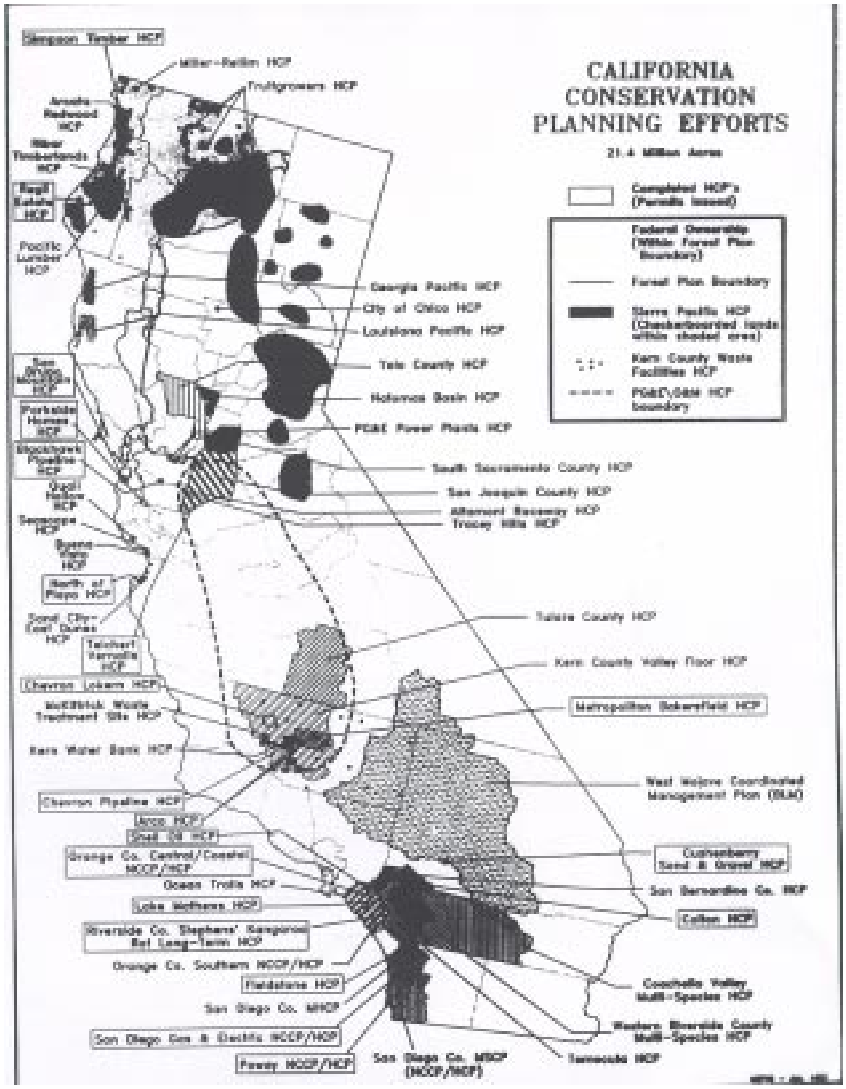
With that, again, I thank everyone for your participation in the hearing. And this hearing is adjourned.

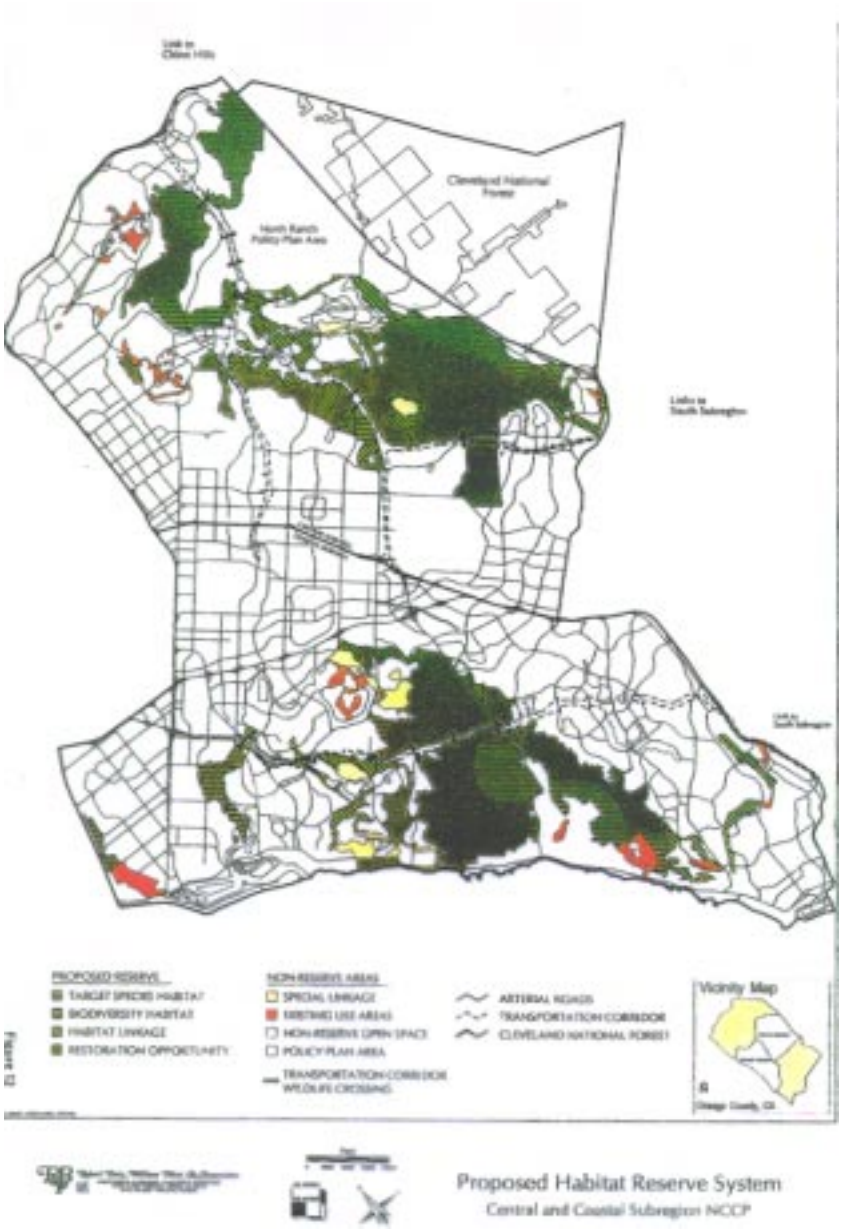
[Whereupon, at 12:16 p.m., the subcommittee was adjourned, to reconvene at the call of the chair.]

[Additional statements submitted for the record follow:]


RIVERSIDE
CORONA
IRVINE
OCEANSIDE
POWAY
SAN DIEGO
Legend
CONSERVATION AREAS (458,000 TOTAL ACRES*)
NON-CONSERVATION AREAS
CALIFORNIA GNATCATCHERS (2700+ PAIRS IN CONSERVATION AREAS)
FREEWAYS
SUBPOPULATIONS OF CALIFORNIA GNATCATCHERS (SOURCE: FISH AND GAME CODE, 1993)
*ORANGE AND SAN DIEGO COUNTIES NCCP TOTALS ONLY
Multi-County Regional Conservation Concept


Natural Diversity Data Base
Threatened and Endangered Species
Number of NDDB points by Calwater Unit
1 - 21
22 - 42
43 - 62
63 - 83
84 - 104
105 - 124
125 - 145
146 - 166
167 - 186
187 - 207
208 - 228
229 - 248
249 - 269
270 - 290
291 - 310
311 - 331
332 - 352
353 - 372
373 - 393
394 - 414
This map is representative of the number of NDDB points in a given Calwater Unit. It was created by joining Calwater Units to NDDB points. This does not represent a density due to variations in the Calwater Units.
N
50 0 50 100 Miles
100 0 100 Kilometers
Information Center for the Environment
University of California, Davis
Data Provided by:
Natural Heritage Division
California Department of Fish and Game


CALIFORNIA
CONSERVATION
PLANNING EFFORTS
21.4 Million Acres
Completed HCP's (Permits Issued)
Federal Ownership (Within Forest Plan Boundary)
Forest Plan Boundary
Sierra Pacific HCP (Checkerboarded lands within shaded area)
Kern County Waste Facilities HCP
PG&E\ORM HCP boundary
Simpson Timber HCP
Miller-Rellim HCP
Fruitgrowers HCP
Pacific Lumber HCP
Georgia Pacific HCP
City of Chico HCP
Louisiana Pacific HCP
Yolo County HCP
Natomas Basin HCP
PG&E Power Plants HCP
South Sacramento County HCP
San Joaquin County HCP
Altamont Raceway HCP
Tracey Hills HCP
North of Playa HCP
Sand City-Cost Dunes HCP
Tulare County HCP
Kern County Valley Floor HCP
Chevron Lokern HCP
Metropolitan Bakersfield HCP
Kern Water Bank HCP
West Mojave Coordinated Management Plan (BLM)
Chevron Pipeline HCP
Arco HCP
Shell Oil HCP
Orange Co. Central/Coastal NCCP/HCP
Cushenberry Sand & Gravel HCP
Ocean Trails HCP
San Bernardino Co. HCP
Lake Mathews HCP
Colton HCP
Riverside Co. Stephens' Kangaroo Rat Long-Term HCP
Orange Co. Southern NCCP/HCP
Fieldstone HCP
Coachella Valley Multi-Species HCP
San Diego Co. MHCP
Western Riverside County Multi-Species HCP
San Diego Gas & Electric NCCP/HCP
Poway NCCP/HCP
San Diego Co. MSCP (NCCP/HCP)
Temecula HCP



STATEMENT OF ERIC R. GLITZENSTEIN, COUNSEL, SPIRIT OF THE SAGE COUNCIL, DEFENDERS OF WILDLIFE AND OTHER ENVIRONMENTAL ORGANIZATIONS

I appreciate this opportunity to testify on the benefits and policy concerns associated with Habitat Conservation Plans ("HCPs"), especially as those HCPs have been employed by the present Administration. I am a partner with the public-interest law firm Meyer & Glitzenstein which has brought lawsuits on behalf of a wide spectrum of national and grassroots conservation and animal protection organizations, includ-

ing the Spirit of the Sage Council, Defenders of Wildlife, the Center for Marine Conservation, the Biodiversity Legal Foundation, the Sierra Club, the Fund for Animals, the National Audubon Society, the Humane Society of the United States, the Alliance for the Wild Rockies, the Earth Island Institute, the Center for Biological Diversity, the Environmental Defense Fund, and the Natural Resources Defense Council. I am also the President of the Wildlife Advocacy Project, a non-profit organization assisting grassroots organizations in advocacy on behalf of wildlife and other animals. In this testimony, I am providing my own perspective on the benefits and problems associated with HCPs, based on my extensive experience in litigating over these issues in Federal court.

HCPs ARE LEGAL REQUIREMENTS, NOT VOLUNTARY "DEALS"

Before turning to some of these issues, it is important to understand precisely what role an HCP plays in the legal and regulatory structure established by the Endangered Species Act. As a matter of Federal law, an HCP is *not*, as some have suggested, a voluntary agreement reached by the Federal Government and a non-Federal party in which a compromise "deal" is struck that provides protection for endangered and threatened species. Rather, under section 10 of the ESA, the development of an HCP is a necessary *quid pro quo* for private parties who wish to engage in an activity that would otherwise be flatly unlawful under Federal law, *i.e.*, the incidental "taking" of an endangered or threatened species through killing, harassing, harming, or adverse habitat destruction. Simply put, if a private party wishes to engage in the extraordinary and presumptively unlawful action of killing or harming members of a species that is already on the brink of extinction, that party must, under the ESA, prepare a Habitat Conservation Plan which, as the name implies, adequately offsets the permitted "taking" by promoting the "*conservation*" of the species—defined by the ESA to mean that which is "necessary to bring any endangered species to the point at which the measures provided pursuant to this chapter are no longer necessary." In brief, under section 10, the Federal Government is allowed to permit the killing or harming of some members of the species, in exchange for measures that will enhance the protection of the species as a whole.

That Congress initially intended HCPs to actually promote the *recovery* of endangered and threatened species is made clear by the legislative history accompanying the 1982 amendments to the Act. The requirement that those seeking permits to "incidentally take" imperiled species ("ITPs") must prepare a "conservation" plan was expressly "modeled after a habitat conservation plan" which had been developed for the San Bruno Mountain area of San Mateo County. 1982 Conference Report at 30–31. That plan sought to address the conservation needs of endangered butterflies which "face[d] threats to their existence[] even in the absence of any development," including 'encroachment on the species' habitat by brush and exotic species." Id. at 32. In particular, according to Congress, the plan "preserves sufficient habitat to allow for *enhancement of the survival of the species*," including by "protect[ing] in perpetuity at least *87 percent of the habitat* of the listed butterflies." *Id.* at 32 (emphasis added). Based on that "model," Congress made clear that the Federal Government could issue ITPs for many years, but only if those permits were accompanied by HCPs which were "likely to *enhance the habitat of the listed species or increase the long-term survivability of the species or its ecosystem*." *Id.* at 31 (emphasis added).

Regrettably, in its rush to approve "deals" which are far better for developers than the imperiled species the ESA was designed to protect, the present Administration has perverted Congress's original intent in enacting the HCP requirement. In effect, that provision has been converted from one intended to facilitate the *recovery* of species into one under which the wholesale "taking" of endangered species is authorized in exchange for woefully inadequate "mitigation"—not "conservation"—plans which do little, if anything, to offset the extensive damage to the affected animals and plants.

AN ADMINISTRATION "SUCCESS STORY": THE WOEFULLY INADEQUATE ALABAMA BEACH MOUSE HCPs

One notable example—in which several recent high-profile HCPs were declared illegal by a Federal judge in Alabama—is illustrative of the problems which plague many of the recent HCPs/ITPs approved by the Administration. That case involved ITPs issued to developers, which allowed the direct "take," and destruction of habitat, of the Alabama beach mouse, a critically endangered species which plays a vital ecological role in combatting beach erosion, but whose coastal habitat has been "drastically destroyed by 'residential development and commercial development, recreational activity, and tropical storms.'" *Sierra Club* v. *Babbitt*, 15 F. Supp. 2d 1274,

1280 (S.D. Ala. 1998). Although the species had been listed as endangered precisely because of the catastrophic loss of its habitat, the Interior Department decided to issue several ITPs for massive beachfront developments which will destroy large chunks of the scant occupied habitat that remains.

In exchange for this severe damage to a species already on the edge of oblivion, the Service did not even require the developers to implement plans which would actually promote the conservation of the species in any meaningful manner, *e.g.*, by conserving habitat that would otherwise be destroyed and which was vital to the species' survival and recovery. Instead, the HCPs approved by the Service relied on "mitigation" measures which ranged from the truly laughable—including the placement of signs warning young children that they should stay off sand dunes occupied by endangered mice—to the patently inadequate—such as meager cash payments for "offsite mitigation" which, the record showed, would not be sufficient to purchase even a fraction of the amount of habitat obliterated by the projects.

In fact, even the FWS's own biologists concluded that these measures were totally inadequate to compensate for the grievous injury inflicted on the endangered species—a fact which the Chief Judge of the Federal District Court in Alabama stressed in declaring the ITPs/HCPs to be contrary to the ESA:

> "Remarkably, the FWS simply ignored the clearly expressed concerns of the experts Congress intended the agency to rely upon in making such discretionary decisions . . . [T]he Court finds that the Administrative Record is *devoid of any rational basis* upon which the FWS could have reasonably relied in deciding to issue the ITPs for these two projects." 15 F. Supp. 2d at 1282 (emphasis added).

Regrettably, the Alabama Beach Mouse HCPs are typical, not aberrational, examples of the Administration's recent approach to HCPs/ITPs. Indeed, these very plans—which a Federal judge declared to be "devoid of any rational basis"—have even been trumpeted by Secretary Babbitt as HCP "success stories," including in "The Quiet Revolution," the Interior Department's glossy but thoroughly misleading advertisement for the scientifically bankrupt HCPs which have becomes the Administration's stock in trade. Plainly, with "success stories" like these, species such as the beach mouse—and its critical role in the coastal ecosystem—will soon be consigned to the pages of history.

Making matters even more bleak for imperiled species are two sweeping policies which the Administration has adopted—one of which has been codified in a Federal regulation, and one which has not been formally adopted, but which is just as obvious to anyone who observes the Federal Government's ITP/HCP approval process. The former is the so-called "No Surprises" policy which ensures that awful HCPs like those driving the Alabama Beach Mouse to extinction will remain immutable for decades, and the latter is the Administration's unspoken, yet unmistakably clear, policy of avoiding meaningful public input on ITPs/HCPs, and instead negotiating back room "deals" with ITP applicants. If Congress wishes to seriously grapple with the problems plaguing ITPs/HCPs, it must squarely address both of these seriously misguided policies.

"NO SURPRISES"

Imagine the Food and Drug Administration announcing that, henceforth, companies which receive licenses to market drugs or medical devices will receive "regulatory assurances" that, even if the drugs or devices are found to suffer from unanticipated dangers—such as a risk of serious unexpected side effects—the licenses will still not be modified for as long as a century. Or imagine the Nuclear Regulatory Commission announcing that utilities operating nuclear power plants will, from now on, receive "regulatory assurances" that, even if their plants are found to be suffering from a previously unknown design defect which increases the risk of a nuclear accident by a factor of ten, the license to operate the nuclear plant cannot be changed for decades or longer.

Imagine further that when the FDA's or NRC's policy is greeted by the inevitable public outrage, the agency explains its policy by saying that these "regulatory assurances" are necessary in order to give the drug company or nuclear licensee an "incentive" to comply with the law.

There is no functional difference between these facially absurd scenarios and the "No Surprises" policy adopted by the Clinton administration, which guarantees ITP holders that significant changes will *never* be made in their decades-long permits, even if such modifications are essential to avoid the extinction of the species harmed by the permits. In plain terms, the "No Surprises" policy provides that, when conditions unexpectedly change to the detriment of an endangered species, the species loses and the developer wins every time. As hundreds of conservation groups and

independent conservation biologists have argued, it is difficult indeed to imagine a policy more antithetical to the core purposes of the ESA.

The "No Surprises" approach represents an extreme departure from the manner in which other environmental laws are implemented and, indeed, from virtually every sphere in which the Federal Government regulates third party activities that are deemed potentially harmful to societal interests. For example, when the Environmental Protection Agency issues permits for the discharge of emissions into the water and air, or for the storage of hazardous wastes—which would otherwise be unlawful under the Clean Water Act, Clean Air Act, and Resource Conservation and Recovery Act—it does not give dischargers an additional "incentive" to comply with these laws by promising them that their permit conditions will never change, even if the permitted activities turn out to be far more detrimental to the public health and environment than previously believed. To the contrary, although those permits are issued for far shorter periods of time than ITPs (only 5 years for Clean Water and Clean Air Act permits, and 10 years in the case of RCRA permits), the EPA nonetheless retains explicit authority to modify the permits in response to new information.

Yet in the case of species on the brink of extinction—where law and logic dictate an exceptionally cautious approach—the Administration has adopted a truly radical regulatory regime, which affords permittees unprecedented guarantees they receive literally nowhere else in Federal environmental law—or any other area of the law for that matter. Yet the Administration has never offered the public even a plausible—let alone convincing—rationale for why those who seek permits to kill or otherwise "take" imperiled species should receive far greater "assurances" than those who wish to discharge pollutants, operate nuclear power plants, market prescription drugs, or take any other action which is unlawful without Federal approval.

This drastic policy was first announced by the Departments of the Interior and Commerce in 1994, without the benefit of any advance public notice or comment. When a coalition of grassroots conservation groups—led by the California-based Spirit of the Sage Council—subsequently filed a lawsuit arguing that it was unlawful for the government to adopt this drastic change in the law without any consideration of the public's views, the government belatedly agreed to expose the policy to public comment, including the scrutiny of independent scientific experts.

When the Interior and Commerce Departments subsequently proposed codifying the policy as a formal rule, the rule was opposed by every national conservation and animal protection organization which commented on it, as well as a host of regional and grassroots environmental groups from every part of the country, religious organizations, Native-American tribes, and ordinary citizens who expressed deep concern that the proposal would, if adopted, subvert the nation's longstanding commitment to endangered species conservation (Attachment A* lists the types of commenters who opposed the policy).

The proposal was also severely criticized by *hundreds* of conservation biologists and other scientists, including those in academic institutions, as well as those performing field research on endangered species. These commenters opposed the proposal on many grounds, including that it would make it impossible to prevent the extinction of species under innumerable circumstances—*i.e.*, "surprises"—that occur in the natural world all the time, and hence that there must be some mechanism by which HCPs/ITPs that are approved for many decades can be modified in response to "surprises such as new diseases, droughts, storms, floods, and fire." *Statement on Proposed Private Lands Initiatives from the Meeting of Scientists at Stanford University* (April 1997) ("Stanford Paper").

Thus, a letter signed by 168 scientists with experience in endangered species conservation—including 122 with Ph.D's in wildlife conservation, ecology, and related fields—warned that the proposed rule would "*greatly increase the risk of extinction of rare, threatened and endangered species in the wild*," and hence that the proposal is "*antithetical to the Endangered Species Act*." (Attachment B*) (emphasis added). These scientists further explained that adoption of the "No Surprises" policy as a final rule would:

> "disregard a large body of scientific evidence, along with the professional opinions of many scientists, that *surprises are inherent in the distribution and abundance of both common and rare species, as well as in our interpretation of nature generally*."

Id. at 1 (emphasis added).

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*Retained in committee file.

*Retained in committee file.

Hundreds of other scientists have described the "No Surprises" approach in similarly ominous terms. For example, as many commenters noted, leading conservation biologists denounced the "No Surprises" approach following a meeting at Stanford University, opining that such a policy:

> "*runs counter to the natural world, which is full of surprises* . . . Surprises will occur in the future; it is only the nature and timing of surprises that are unpredictable. Furthermore, scientific research produces surprises in the form of new information regarding species, habitats, and natural processes . . . *Unless conservation plans can be amended, habitats and species certainly will be lost*."

Similarly, Dr. Gary Meffe, author of the nation's leading college textbook on conservation biology, and Editor of the international journal *Conservation Biology* explained in his comments that the "No Surprises" approach "*runs counter to everything we know about natural systems and their management*," and that the "*policy makes no sense from an ecological perspective and cannot help but put species in further jeopardy of extinction*." (Attachment C*). Along with his comment, Dr. Meffe submitted a letter signed by over 160 leading conservation biologists from throughout the country, who again urged, in no uncertain terms, that the "No Surprises" approach:

> "*does not reflect ecological reality and rejects the best scientific knowledge and judgment of our era. It proposes a world of certainty that does not, has not, and will never exist*."

These scientists catalogued the many kinds of unforseen developments which can and do routinely affect endangered species, and explained that "*[e]very ecosystem of which we are aware changes over time*: in species composition and abundance, in structural complexity, in nutrient dynamics, in genetic composition, in virtually any parameter we choose to measure." *Id.* at 1 (emphasis added). The scientists concluded that:

> "*the only thing certain about ecological systems is their uncertainty*. Because we will always be surprised by ecological systems, the proposed 'No Surprises' amendment flies in the face of scientifically based ecological knowledge, and in fact rejects that knowledge . . . 'No Surprises' . . . not only *ignores all present scientific knowledge of ecological systems*[] but denies the ability to manage in an adaptive way that welcomes and incorporates new information and allows and encourages improvement."

One would hope that, when confronted with this vehement opposition by hundreds of independent conservation biologists, the Administration—which, under the ESA, is supposed to make decisions based on the best available science—would have reconsidered the wisdom of the "No Surprises" policy. But that was not the case because, as has become painfully apparent—and as respected scientists such as Peter Kareiva, Laura Hood, and Stuart Pimm testified to this Subcommittee in July—the Administration's approach to HCP policy is driven largely by politics, not objective science. Accordingly, the Interior and Commerce Departments codified the "No Surprises" policy as a formal rule in February 1998, stressing that, once an ITP is issued, "no additional land use restrictions or financial compensation will be required of the permit holder with respect to species covered by the permit, *even if unforseen circumstances arise after the permit is issued indicating that additional mitigation is needed for a given species covered by a permit*." 63 Fed. Reg. 8859 (emphasis added). Under the rule, such assurances are automatically extended to the permit holder for as long as the permit is valid, which may be for as long as a century.

In exchange for making these unprecedented assurances to permit holders, the final rule does not even require that HCPs actually promote the recovery of species—which, as noted above, was the original Congressional expectation for *all* HCPs. In other words, under the Clinton Administration's bizarre regulatory scheme, ITP holders get extraordinary, unprecedented "regulatory assurances" even where their actions confer no net benefits for endangered species but, instead, leave such species at even graver peril than before the permits were issued.

Equally perplexing, the Administration's "No Surprises" rule does not even afford government officials *any* discretion whatsoever to *decline* to include a "No Surprises" guarantee in any particular ITP, or even to use it as a bargaining chip in exchange for additional conservation measures. Rather, the rule irrationally *requires* the Services to make "No Surprises" guarantees to *all* ITP holders for the entire duration of the permits, regardless of the degree of imperilment of the species affected, the length of the permit, the amount of habitat destroyed, or any other variables. The Administration has *never* furnished a coherent explanation for this "one-size-fits-all" approach, which simply disregards the inherent variability of nature, and strips gov-

ernment negotiators of the ammunition they need to secure the best possible result for endangered and threatened species.

The farfetched premise underlying the "No Surprises" rule is that, when unexpected changes occur to the detriment of species, the Federal Government—*i.e.*, Federal taxpayers—will be able to address those developments, rather than the ITP holders themselves, who have received extraordinary permits to kill, harm, or otherwise drive endangered species closer to extinction. As suggested previously, that premise reverses decades of Federal environmental policy, which is predicated on the assumption that those responsible for causing harm to the environment—and *not* Federal taxpayers—are obligated to pay for those damages.

But even aside from that sharp break with precedent, the Administration's premise that it will have sufficient funds to respond to all unanticipated developments affecting species—*e.g.*, by purchasing additional habitat for species harmed by ITPs—has no basis in reality, especially since high-ranking Administration officials (such as the Director of the Fish and Wildlife Service) have repeatedly sworn in affidavits filed in Federal courts that they lack the necessary resources even to meet non-discretionary statutory deadlines because of insufficient appropriations. On the other hand, many of the ITP holders who have received decades-long "No Surprises" assurances are multi-million dollar companies which obviously could afford to make necessary changes in their HCPs. For example, in 1998, the Plum Creek Timber Company had revenues of $669.4 millions, with a net income of $75.4 million. Another major beneficiary of the government's "No Surprises" policy—the Weyerhauser Corporation—had sales of $10.8 billion in 1998 and earned $339 million. There is no sound reason why companies such as these cannot and should not be fully liable when their HCPs prove to be inadequate to compensate for the harm that the companies' actions are doing to endangered and threatened species.

LACK OF MEANINGFUL PUBLIC INPUT

The Administration's false characterization of HCPs as "deals"—instead of legally required permits conditions, which is what they are under Federal law—has inexorably led to another devastating, albeit tacit, government policy. As recently set forth in a study of the HCP process by the University of Michigan School of Natural Resources, the Administration is failing to "provide[] meaningful opportunities for public involvement in the HCP process" because it has far "higher priorities than public participation, including streamlining the HCP planning process, maintaining congressional support for the ESA, providing flexibility to landowners, and enticing landowners to pursue HCP agreements." University of Michigan School of Natural Resources & Environment, *Public Participation in Habitat Conservation Planning* 4 (1998). Consequently—as occurred with the "No Surprises" policy—even legitimate public and scientific concerns are completely ignored in the mad rush to approve HCPs at all costs. The University of Michigan report quotes one FWS biologist working on numerous HCPs as saying that:

> We have been bombarded from above with this sort of can-do attitude—to get out there and work with the applicant and get some product on the market. Anything that delays that or makes it more difficult is not viewed favorably. The whole concept of customer service has been really stressed with the applicant being considered the only customer.

Id. at 23.

My firm is currently litigating a case, on behalf of Defenders of Wildlife and a Maryland conservationist, which reflects all to well the Administration's jaundiced attitude towards public involvement in the HCP process. The case involves an effort to build a housing project in the habitat of another desperately endangered species, the Delmarva fox squirrel. That species has been reduced to about 10 percent of its former range, with most of the remaining fox squirrels located in only four counties of Maryland's Eastern Shore which is experiencing rapid development. Many of the populations of fox squirrels that exist today are located in small, isolated groups which are directly threatened by the ongoing loss and fragmentation of their habitat. Collisions with cars associated with human development are the main cause of fox squirrel deaths, along with predation by pets and other human-caused disturbances.

Despite these severe, ongoing threats to the species, the Fish and Wildlife Service has done virtually nothing to stem the destruction of fox squirrel habitat on private lands. Instead, the Service recently issued an ITP to a developer which expressly authorizes the razing of still *more* fox squirrel habitat, and allows the direct "take" of at least 15 endangered fox squirrels, out of a local population of only 10–40 individuals. As compensation for this loss, the Service stated that it was requiring ex-

tensive "mitigation," which consisted largely of the developer's commitment to preserve some offsite area which the FWS asserted was "optimal" fox squirrel habitat.

Yet when the FWS solicited public comment on the ITP/HCP, it failed even to inform the public about the location of the offsite mitigation area, although it knew about the proposed location at the time it solicited public comments. And when a representative of Defenders of Wildlife—which has been very involved in fox squirrel conservation issues—informed the Service that it and other members of the public obviously could not provide meaningful comments without even knowing the location of the offsite mitigation area, the Service flatly conceded that the documents it had made available for public review had "not adequately defined" the offsite area which is the centerpiece of the HCP. Incredibly, however, the Service then delayed providing identifying information about the offsite location *until after the close of the comment period, so that the concerned public never had the opportunity even to submit comments on this critical feature of the HCP.* Despite Defenders' repeated requests, the Service has refused to reopen the comment opportunity and, even in response to a Federal lawsuit, it is steadfastly insisting that it could approve the HCP without even *hearing* environmentalists' concerns regarding the value of the offsite mitigation area to fox squirrels.

This case also shows that meaningful public input is not merely window dressing, but can be extremely valuable to the scientific integrity underlying the HCP/ITP process. As it turns out, the offsite mitigation area is not "optimal" fox squirrel habitat. To the contrary, according to the world's leading expert on the species, Dr. Vagn Flyger—who has studied the fox squirrel for the past 50 years and who, incidentally, was FWS Director Jamie Clark's masters advisor at the University of Maryland—the offsite area is "exceptionally poor [fox squirrel] habitat" and hence is of "no conservation benefit to the subspecies." Of course, the public never even had the opportunity to submit such vital information to the Service because of the Administration's practice—as described in detail in the University of Michigan study—of treating public input as, at best, a minor inconvenience to be dispensed with as rapidly as possible.

RECOMMENDATIONS

In drafting any legislation addressing HCPs, I respectfully suggest that the Subcommittee consider the following:

1. While there is no convincing policy rationale for making Federal taxpayers, rather than ITP holders themselves, pay for changes in HCPs which are necessary to address new circumstances, if there is any consideration to legislatively codifying some permutation of the "No Surprises" rule, Congress must at least ensure that there is an adequate, guaranteed source of funding to deal with such developments. The current scenario—under which ITP holders are let off the hook, while totally inadequate funds are appropriated to the Departments of the Interior and Commerce—will obviously doom many species to extinction.

2. Any legislation should expressly require that all ITPs/HCPs contain detailed adaptive management provisions which make the ITP holders responsible for addressing all reasonably foreseeable developments which might adversely affect species whose taking is authorized by the ITP. While the Administration has, in response to criticism from the scientific community, acknowledged the importance of adaptive management provisions, it has never issued a regulation actually requiring them. Nor has the Administration required that all ITPs/HCPs include the kinds of comprehensive monitoring programs without which adaptive management requirements are useless.

3. Congress should, under no circumstances, endorse the Administration's policy of *automatically* extending "No Surprises" guarantees to each and every ITP holder for the duration of the permit, irrespective of the size of the area affected by the permit, the nature of the endangered species impacted, who the ITP holder is, and other significant variables. As discussed above, such an approach erroneously assumes that all ITPs/HCPs should be treated in identical fashion, and also precludes government scientists from extracting, in negotiations, the best possible conservation measures for imperiled species.

4. To ensure that the public has meaningful input into the ITP/HCP approval process, Congress should require that the public be involved sufficiently early in the process so that such public input does not come only after a "deal" has already effectively been struck between the ITP applicant and the Service. One way to accomplish this result is by requiring that the proposed ITP/HCP—and all underlying scientific documentation—be made available for public review *before* any substantive discussions occur between the developer and the Service. That way, the Service will

receive the benefit of public and scientific input when it actually makes the critical decision of whether to approve the permit and, if so, on precisely what terms.

CONCLUSION

According to a nationwide survey of biologists recently announced by the American Museum of National History, "seven out of ten biologists believe that we are in the midst of a mass extinction of living things, and that this loss of species will pose a major threat to human existence in the next century." Unlike prior extinctions, this crisis is "mainly the result of human activity and *not* natural phenomena." These scientists "rate biodiversity loss as a more serious environmental problem than the depletion of the ozone layer, global warming, or pollution and contamination." Indeed, the vast majority of scientists polled believe that "during the next 30 years as many as one-fifth of all species alive today will become extinct, and one third think that as many as half of all species on the Earth will die out during that time." (A copy of the press release announcing these results is Attachment D*).

When confronted with what scientists agree is a "mass extinction" of living creatures, the last thing the U.S. Government should be doing is approving HCPs which harm, rather than help, endangered species; giving unprecedented regulatory guarantees to those who wish to "take" such species; and going out of its way to exclude the public and independent scientists from the process by which HCPs are considered and approved. Sadly, though, that is precisely what this Administration is doing. Before it is too late for the Alabama Beach Mouse, the Delmarva Fox Squirrel, and countless other species for which time is rapidly running out, I urge this Subcommittee, and Congress as a whole, to consider and adopt legislation which restores scientific integrity to the HCP process, and reaffirms this nation's commitment to do what it can to stem the accelerating loss of animals and plants in this country and throughout the world.

STATEMENT OF ROBERT D. THORNTON, COUNSEL, ORANGE COUNTY TRANSPORTATION CORRIDOR AGENCIES

I. INTRODUCTION & SUMMARY

I am Robert Thornton, general counsel to the Orange County Transportation Corridor Agencies—two regional transportation agencies in Orange County, California who have played a leading role in the Southern California Habitat Conservation Planning Program. These agencies are developing 68 miles of new regional transportation facilities. Since 1987, these agencies have spent well over $100 million for the conservation of wildlife habitat and other environmental protection measures.

I have labored most of my professional career to make the Endangered Species Act work on the ground—in the real world. I am proud of the fact that I was the original author and advocate for what eventually became the habitat conservation plan ("HCP") amendments to the ESA in 1982. I have represented public agencies, landowners, developers, farmers and forest products companies in the negotiation of two dozen habitat conservation plans, including the first HCP approved by the Fish and Wildlife Service (San Bruno Mountain), one of the largest regional HCPs (Metropolitan Bakersfield), and one of the first habitat-based HCPs (Orange County Central/Coastal Natural Community Conservation Plan). Most recently, I acted as counsel to the Pacific Lumber Company with regard to the Headwaters Forest transaction and the related HCP concerning the Company's 200,000 acres in Humboldt County, California.

The views expressed today are mine alone, though I believe they fairly reflect the views of many of the private landowners who I have represented on endangered species matters for the last 20 years.

In Summary:

1. Habitat Conservation Planning is at a crossroads. Whether landowners will continue to cooperate in conservation planning depends on the continued viability of the assurances (or "no surprises") rule and the other Babbitt reforms of the ESA. But certain elements of the environmental community are attempting to kill the Babbitt reforms through a concerted litigation strategy;

2. Fundamentally, the assurances rule is a device to allow the Federal Government to share risks and burdens between the Federal Government and private landowners. The policy allows landowners and the Services to enter into consensual agreements under which the landowners agree to commit to significant investments

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*Retained in committee file.

in endangered species protection now, in return for the Federal Government assuming the risk and burden of future protection measures in the event of unforeseen circumstances;

3. It is now widely accepted that habitat conservation plans are essential if the goals of the ESA are to be achieved. The National Academy of Sciences has commented favorably on HCPs because such regional conservation approaches are more consistent with principles of conservation biology than project-by-project, species-by-species regulatory approaches;

4. Emerging underground interpretations of the ESA within the agencies will seriously undermine landowner cooperation in habitat conservation planning efforts. These underground interpretations include attempts to impose a recovery standard on HCPs and efforts to define "jeopardy" by reference to impacts on sub-populations;

5. The authority in the ESA to prepare "habitat-based" HCPs should be solidified. One of the great potential advantages of the HCP process to the development community is the opportunity, in one planning effort, to resolve conflicts involving both listed and unlisted species through a single HCP. But the wildlife agencies and the environmental community are reluctant to agree to plans that absolve developers from the need to provide additional mitigation in the event that the unlisted species are subsequently listed—especially if the biological studies did not *specifically* survey for and study the species; and

6. New market-based approaches to HCP planning are needed. Most of the HCPs developed to date have relied on command and control regulatory mechanisms. Typically, biological consultants identify areas that are the highest priority for future preservation. Lines are drawn around these areas prohibiting or greatly restricting development in the proposed preserve areas. Landowners developing habitat outside of the preserve areas are required to contribute to the acquisition of the preserves—usually through the payment of development fees. This model can work fine as long as the owners of land within the preserve areas are willing participants. Often, this is not the case. We need to develop market-based approaches, which provide economic incentives to landowners to engage in conservation planning.

II. HABITAT CONSERVATION PLANNING IS AT A CROSSROADS

Secretary Babbitt breathed life into Section 10(a) through the adoption of the "assurances" policy, candidate conservation agreements, the "safe harbor" policy, and various other measures to encourage landowners to participate in habitat conservation planning. Secretary Babbitt's initiatives have exceeded beyond anyone's wildest dreams. Four hundred HCPs have either been approved or are under development. Beginning in the early 1990's, landowners and local governments initiated so-called "habitat-based" HCPs. These new form of HCPs attempt to move away from the "species-by-species" approach of the early HCPs and resolve conflicts with development activities through an ecosystem or habitat-based approach. Collectively, these plans will address tens of millions of acres of land and the habitat of hundreds of endangered or threatened species.

It is now widely accepted that habitat conservation plans are essential if the goals of the ESA are to be achieved. The National Academy of Sciences has commented favorably on HCPs because such regional conservation approaches are more consistent with principles of conservation biology than project-by-project, species-by-species regulatory approaches.[1] The former general counsel of the National Wildlife Federation has also recently documented the conservation benefits that are being realized through HCP planning efforts.[2] The National Academy of Sciences has identified six tenets of conservation biology:

1. Species well distributed across their range are less susceptible to extinction than species confined to small portions of their range.

2. Large blocks of habitat containing large populations of a target species are superior to small blocks of habitat containing small populations.

3. Blocks of habitat that are close together are better than blocks far apart.

4. Habitat that occurs in blocks that are less fragmented internally is preferable to habitat that is internally fragmented.

5. Interconnected blocks of habitat serve conservation purposes better than isolated blocks, and habitat corridors or linkages function better when the habitat within them resembles habitat that is preferred by target species.

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[1] Committee on Scientific Issues in the Endangered Species Act, *Science and the Endangered Species Act*, at 78–93 (National Academy of Sciences 1995) (hereinafter "National Academy of Sciences Report")

[2] O. Houck, *On The Law of Biodiversity and Ecosystem Management*, 81 Minn.L.Rev. 869, 953–974 (1997).

6. Blocks of habitat that are roadless or otherwise inaccessible to humans are better than roaded and accessible habitat blocks.[3]

The record of the last 20 years under the ESA strongly indicates that tenets are more likely to be achieved through regional conservation planning efforts than through project-by-project, species-by-species approaches.[4] This is the case because it is only through comprehensive, regional conservation programs that entire ecological systems can be effectively conserved.

Initially, the environmental community endorsed the notion of regional planning to conserve endangered species habitat and resolve conflicts with development.[5] The endorsement appeared to be driven by a sincere realization that the traditional regulatory mechanisms of the ESA could not address effectively the immense challenge of habitat conservation on private land. As a leading environmental advocate has stated:

> Given that the ESA's only current tool to affect the behavior of private landowners—the taking prohibition—does not effectively address many of the most serious threats to rare species, and given that fear of that tool has sometimes prompted landowners to act against—rather than for—the best interests of such species, other conservation tools are clearly needed. Simply deterring harmful conduct—as the taking prohibition seeks to do—is not enough. It is necessary to encourage and reward beneficial conduct.[6]

Certain segments of the environmental community—including groups that previously endorsed multi-species conservation planning—are increasingly critical of HCPs and Secretary Babbitt's administrative reforms. A coalition of environmental groups have challenged the "No Surprises" rule under the ESA and the Administrative Procedure Act.[7] Lawsuits challenging the San Diego Multi-Species Conservation Plan have been filed as have 60-day notices to challenge the Pacific Lumber HCP. Challenges to pending HCPs in other parts of the west are very likely. The outcome of this litigation will largely determine the future of habitat conservation planning on private land.

A number of innovations have emerged in recent years in the HCP process including the following:

1. The emergence of multi-landowner regional habitat conservation plans;
2. The development of multi-species and "habitat-based" conservation plans;
3. The issuance of the "no surprises" policy by Secretary Babbitt and the emergence of workable interpretations of the policy in several HCPs;
4. The use of free market mechanisms to conserve wildlife habitat; and
5. New funding sources.

Whether any of these new initiatives survive depends on the political debate in Washington, litigation over the "No Surprises" rule, and the fate of other attempts to undermine the Babbitt reforms of the ESA.

II. THE ASSURANCES RULE IS ESSENTIAL TO OBTAIN THE COOPERATION OF THE PRIVATE LANDOWNERS AND LOCAL PUBLIC AGENCIES IN HABITAT CONSERVATION PLANNING

None of the Babbitt reforms have generated as much interest, or as much controversy, as the "assurances" or "no surprises" policy. In simple terms, the policy provides that once the Federal wildlife agencies have approved a HCP, they will not seek more land or more money from the HCP parties beyond the land and money committed through the HCP. Secretary Babbitt has eloquently described the rationale of the policy:

> [W]e need to codify the success stories that I've told you about. The habitat conservation idea, signing these agreements that say we can accommodate resource use and development with protection guarantees. . . . With it comes a concept that we call "no surprises." It's a very important idea. We once again learned this not here in Washington but out on the ground in Southern California where the developers, after we had gone through months of the intense difficult negotiations on the ground, as we were nearing closure on the design of

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[3] National Academy of Sciences Report, at 88–89.

[4] For a review of decisions under Section 7 of the ESA see, O. Houck, The Endangered Species Act and its Implementation By the U.S. Departments of Interior and Commerce, 64 Col.L.Rev. 63 (1993).

[5] Bean, M.J., S.G. Fitzgerald, and M.A. O'Connell, Reconciling Conflicts Under the Endangered Species Act: The Habitat Conservation Planning Experience (World Wildlife Fund 1991).

[6] M. Bean, The Endangered Species Act on Private Land: Four Lessons Learned from the Past Quarter Century, 28 Envtl. L. Rep. 10701, 10707 (Dec. 1998).

[7] Spirit of the *Sage Council* v. *Babbitt*, District of Columbia District Court No. 1:98CV01873(EGS).

these preserves, . . . the developers were saying, "Now what happens if we sign onto this and a year or two from now the Fish and Wildlife Service comes back and says, '[W]e want a second bite.' "

If we're going to make this Act work on the ground in the real world, and ask timber companies and developers to make those kinds of concessions, . . we've got to establish one simple common-sense principle, and that is one bite at the apple—take a good one—thrash it out, then say to the developer, "OK, a deal's a deal."[8]

Although some environmental groups have derided the policy as a radical new idea, the policy was explicitly contemplated by Congress in 1982. The legislative history of Section 10(a) indicates that Congress contemplated that a Section 10(a) permit approval would also encompass the FWS agreement not to impose additional mitigation, except as contemplated by the approved HCP. The conference report to the Act's 1982 amendments stated the following in this regard:

The Committee intends that the Secretary may utilize this provision to approve conservation plans which provide long-term commitments regarding the conservation of listed as well as unlisted species and long-term assurances to the proponent of the conservation plan that the terms of the plan will be adhered to and that further mitigation requirements will only be imposed in accordance with the terms of the plan.[9]

This legislative history reflected the structure of the San Bruno Mountain HCP. The landowners and agency participants in the San Bruno Mountain HCP entered into an agreement which set forth the terms and conditions of the Section 10(a) permit. The agreement included covenants by the public agencies that they would not impose additional mitigation measures beyond the terms of the agreement.

The policy emerged out of the southern California NCCP plans. In the southern California NCCPs, the parties to the planning processes, including the FWS, have agreed to "no surprises" language in the implementing agreements that would preclude the imposition of additional mitigation requirements that would require the contribution of additional land or more money. The effect of this approach is to shift a certain amount of the risk of "unforeseen circumstances" to the government. Given the disproportionate share of the burden of endangered species protection that is borne by the private landowners, this shift is entirely appropriate.

In late 1996, several organizations challenged the "No Surprises" policy alleging that the policy was issued in violation of the Administrative Procedure Act and the ESA.[10] The plaintiffs alleged that the APA required the policy to be adopted after notice and comment procedures. In early 1997, the government settled the litigation by agreeing to promulgate the rule through a noticed and comment rulemaking proceedings. The agencies promulgated the rule February 23, 1998 with certain modifications.[11] The plaintiffs in the earlier case have filed a new action challenging the rule on its face as a violation of the ESA and APA.[12]

The "No Surprises" rule provides that an incidental take permit holder will not be required to provide more land, water, natural resources or financial commitments in the event of "unforeseen circumstances" if the HCP is being properly implemented. The term "unforeseen circumstances" means a change affecting a species or area covered by an HCP that could not reasonably have been anticipated and that results in a substantial and adverse change in the status of the covered species. If the Services determine that additional mitigation is required due to unforeseen circumstances, such action must be provided on Federal land to the maximum extent possible. If those protective measures are insufficient, the Services may seek additional mitigation from the permit holder. Such additional mitigation must be limited to modifications of the HCP's operating conservation program for covered species, while maintaining the original terms of the HCP to the maximum extent possible.

The rule makes a distinction between "unforeseen circumstances" (events which are not reasonably foreseeable) and "changed circumstances" (events which are reasonably foreseeable). Unlike unforeseen circumstances, HCPs are required to include

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[8] Address by Bruce Babbitt, Secretary of the Interior to the National Press Club Luncheon, at 5 (July 17, 1996).

[9] H.R. Rep. No. 835, 97th Cong. 2d Sess. 31, reprinted in 1982 U.S. Code Cong. & Admin. News 2860, 2872.

[10] *Spirit of the Sage Council* v. *Babbitt*, District of Columbia District Court No. 1:96CV02503 (SS)(D.D.C.).

[11] 63 Fed. Reg. 8859–8873 (Feb. 23, 1998).

[12] *Spirit of the Sage Council*, et al. v. *Babbitt* et. al. District of Columbia District Court No. 1:98CV0187s (EGS). Cross motions for summary judgment are anticipated to be decided in late 1999.

measures to address the effect of changed circumstances. In the event of changed circumstances the Services may require the incidental take permit holder to undertake additional mitigation, but only to the extent described in the HCP.

The defense of the rule is founded on the legislative history of Section 10. It is also founded on the principle of judicial deference to the interpretations of the administrative agency enunciated in *Chevron U.S.A. Inc.* v. *Natural Resources Defense Council:*

> When a challenge to an agency construction of a statutory provision, fairly conceptualized, really centers on the wisdom of the agency's policy, rather than whether it is a reasonable choice within a gap left open by Congress, the challenge must fail. In such a case, Federal judges—who have no constituency—have a duty to respect legitimate policy choices made by those who do.[13]

Plaintiffs' argument that the rule violates the Services' Section 7 "no jeopardy" obligation has been seriously undermined by the FWS promulgation of new standards governing the revocation of ITPs. In the regulation, FWS indicated that where use of their other authority would not avoid jeopardy, FWS will revoke an ITP to avoid violating the Section 10 permit issuance standards (which include the "no jeopardy" requirement).[14] While the ITP revocation rule will likely assist in turning back the challenge to the "No Surprises" rule, it may diminish the level of assurances that can be obtained by landowners through a HCP and, in turn, deter landowners from participating in regional conservation planning efforts.

Fundamentally, the "no surprises" rule is a device to allow the Federal Government to share risks and burdens between the Federal Government and private landowners. The policy allows landowners and the Services to enter into consensual agreements under which the landowners agree to commit to significant investments in endangered species protection now, in return for the Federal Government assuming the risk and burden of future protection measures in the event of unforeseen circumstances.

Antagonists to the policy in the environmental community argue that the policy is flawed because surprises are inherent in natural systems and because the Federal Government may not elect to spend sufficient resources to address unforeseen circumstances—even if the government has a legal obligation to do so. Ultimately, this is a policy debate over the extent to which Federal taxpayers should shoulder the cost of endangered species protection, or whether the lion's share of this cost should continue to be borne by affected landowners and their customers.

III. EMERGING UNDERGROUND INTERPRETATIONS OF THE ESA WILL UNDERMINE LANDOWNER COOPERATION

A. Attempts to Impose the Recovery Standard on Section 10 Permits

The statutory standards for issuing a Section 10(a) permit are relatively simple. The applicant needs to demonstrate that the plan will minimize and mitigate the impacts of the development activity and that the taking will not reduce the likelihood of the recovery and survival of the species in the wild. This latter standard is the regulatory definition of the "jeopardy" standard applicable to inter-agency consultations on Federal agency actions under section 7(a)(2) of the ESA.[15]

In several recent HCP negotiations, the Fish and Wildlife Service ("FWS") and National Marine Fisheries Service ("NMFS") are attempting to require the HCP applicants to do more than minimize and mitigate and avoid jeopardy. They are seeking conditions in the HCP to achieve the recovery[16] of the species. For example, in several pending HCP on the west coast addressing the recently-listed coho salmon, NMFS biologists are seeking to impose restrictions on timber operations that NMFS asserts are necessary to achieve the recovery of the coho salmon. In other HCPs involving the marbled murrelet, the FWS is seeking to define "jeopardy" by reference to the impacts of the HCPs on sub-populations of murrelets within "conservation zones" in order to achieve certain recovery goals identified in the draft recovery plan.

These agency demands are well beyond the requirements of the ESA. The section 7 regulations define the term "jeopardy" narrowly. The term "jeopardy" is defined to mean:

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[13] 467 U.S. 837, 865–66.
[14] 64 Fed. Reg. 32706 (June 17, 1999)
[15] 50 C.F.R. 402.02.
[16] In contrast the minimization concept in section 10, the ESA defines "conservation" to mean improving or recovering the status of a listed species "to the point" that the protections of the ESA are no longer necessary and the species can be de-listed. 16 U.S.C. § 1532(3).

> [T]o engage in an action that reasonably would be expected . . . to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild. . . .[17]

The preamble to the regulations explained that the word "both" was added to the definition to make it clear that "to find that an action is likely to jeopardize a listed species . . . the Service must identify detrimental impacts to 'both the survival and recovery' of the listed species."[18] The FWS and NMFS explicitly rejected proposed definitions of jeopardy that would have expanded the definition to include actions where the impact did not jeopardize the survival of the listed species. For example, FWS and NMFS rejected a definition of jeopardy that would have required a jeopardy finding when there was "injury to recovery for an already depleted species."[19]

The agencies' suggestion that HCP applicants are required to achieve recovery standards also ignores clear distinction in the ESA between the obligations of private parties and those of Federal agencies. A fundamental precept of the ESA is that the Federal Government in general and the Departments of Interior and Commerce in particular have special obligations under the ESA which are above and beyond the obligations of the private sector and State and local governments. Under section 7(a)(1), the Secretary is required to take actions in furtherance of the purposes of the ESA.[20] The courts have interpreted this provision to impose special burdens on Interior and Commerce which do not apply to other Federal agencies—let alone non-Federal entities.[21]

B. Attempts to Define "Jeopardy" With Reference to Sub-Populations

The Services' formal interpretation of the jeopardy standard (as enunciated in the section 7 regulations) is in sharp contrast to the assertion of certain Service representatives that it is appropriate to define jeopardy by reference to the impact on a sub-population of a listed species. If "injury to recovery for a depleted species" does not constitute jeopardy (as the FWS concluded in the section 7 regulations), then it is difficult to understand the basis for a claim that jeopardy can be defined by reference to injury to a sub-population.

The attempt to define "jeopardy" by reference to impacts to sub-populations is also contrary to the clear Congressional directive to limit the regulatory reach of section 7 of the ESA to distinct population segments and higher taxonomic units. During the consideration of the 1979 amendments to the ESA, Congress debated extensively an amendment recommended by the General Accounting Office to eliminate the authority to list separate populations. Although Congress ultimately retained the FWS authority to list "distinct population segments" of vertebrate species, it made it clear that it was retaining this authority in the ESA to provide the Services with greater (not less) management flexibility. Congress further emphasized that the population listing authority should only be utilized in very limited circumstances. The Report of the Senate Committee on Environment and Public Works on the 1979 amendments stated the following:

> [T]he General Accounting Office recommended that the subcommittee consider an amendment . . . which would prevent the FWS from listing geographically limited populations. . . . [U]nder the GAO proposal FWS would be required to provide the same amount of protection for the bald eagle population in Alaska, which is healthy, as for the bald eagle population in the conterminous states, which is endangered.
>
> [T]he committee is aware of the great potential for abuse of this authority and expects the FWS to use the ability to list populations sparingly and only when the biological evidence indicates that such action is warranted.[22]

In other words, Congress authorized the listing of distinct populations in limited circumstances and only because it wanted to provide the FWS with greater management flexibility under the ESA. Throughout the lengthy ESA debate preceding the 1978, 1979 and 1982 amendments, no one suggested that the section 7 "no-jeopardy" standard could be applied to sub-populations. As the above legislative history indicates, Congress considered eliminating entirely the authority to list distinct popu-

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[17] 50 C.F.R. § 402.02.
[18] 51 Fed. Reg. 19926, 19934 (June 3, 1986).
[19] Id.
[20] 16 U.S.C. §§ 1531(a)(1).
[21] See, *Carson-Truckee Water Conservancy Dist.* v. *Clark,* 741 F.2d 257 (9th Cir. 1984) [holding that Section 7(a)(1) of the ESA required the Department of the Interior to administer programs to further the conservation purposes of the ESA].
[22] S. Rpt. No. 96–151, 96th Cong. 1st Sess. at 6–7.

lations.[23] It intended that the listing of separate populations should be a rare event. It never intended or contemplated that the jeopardy requirement would be applied to units below the population level.

The above agency demands, if they become established agency policy, will almost surely put the brakes on the recent increase in regional habitat conservation efforts. If the FWS proposed standard were to be applied to other HCPs, it is extremely doubtful that landowners and local agencies would agree to participate in conservation planning for unlisted species.

III. ESA AUTHORITY TO PREPARE "HABITAT-BASED" PLANS SHOULD BE SOLIDIFIED

Over the last decade, HCPs have become increasingly complex and sophisticated. They have grown from the relatively small scale of the San Bruno Mountain HCP (3,000 acres; three species) to large scale regional plans (such as the Metropolitan Bakersfield HCP) which addressed dozens of species over hundreds of square miles of habitat.

The movement toward the development of large scale, multi-species HCPs is driven by two primary factors:

1. The recognition that regional conservation issues often can only be effectively addressed on a regional basis; and

2. The reluctance of private landowners to commit to permanent restrictions on development and other costly conservation measures in the absence of protection against additional regulatory restrictions as a result of future listings.

One of the great potential advantages of the HCP process to the development community is the opportunity, in one planning effort, to resolve conflicts involving both listed and unlisted species through a single HCP. The inclusion of unlisted species in a plan is important because it provides some level of certainty that the FWS will not impose additional obligations on the permit applicant in the future in the event of the listing of a species.

The conference report to the 1982 amendments expressed the congressional intention that HCP's not be limited to resolving conflicts involving only listed endangered and threatened species.[24] But the wildlife agencies and the environmental community have been reluctant to agree to plans that absolve developers from the need to provide additional mitigation in the event that the unlisted species are subsequently listed—especially if the biological studies did not *specifically* survey for and study the species.

The Stephens' kangaroo rat HCP in Riverside County, California is a good example of the folly of focusing a long-term HCP on a single species. Acquiring the proposed kangaroo rat reserves has cost tens of millions of dollars, yet there is no assurance that public acquisition will protect other species in the area sufficiently to obviate their listing under the ESA. Subsequent to the initiation of the Stephens' kangaroo rat HCP, the FWS listed the coastal California gnatcatcher and the quino checkerspot butterfly which are also found in Riverside County. There is very little enthusiasm in the development community for the imposition of development fees, and the expenditure of enormous resources, necessary to protect the kangaroo rat only to turn around and confront the same problem with the gnatcatcher and the quino checkerspot.

The HCP process underway for the habitat of the gnatcatcher in Southern California have broken new ground on this issue. Certain of these so-called "Natural Community Conservation Plans" (or "NCCPs") have been developed using "target" or "indicator" species as planning surrogates for a larger list of species that occupy the coastal sage scrub ecosystem. A committee of nationally-recognized conservation biologists endorsed the target species approach.

Secretary Babbitt approved the first NCCP plan—the plan for the Central/Coastal portion of Orange County, California—in July 1996. The FWS approved a second plan, for the southern portion of San Diego County, in late 1997. The Orange County plan establishes a reserve of over 37,000 acres and comprehensively resolves conflicts involving development within the coastal sage scrub habitat of the California gnatcatcher and a large number of other species.

The biological rationale for the NCCP approach is that the gnatcatcher and the other target species are strongly associated with coastal sage scrub habitat in southern California, and thus, the adequacy of the protections for the target species will be a test of whether the HCP has adequately addressed the conservation of the

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[23] The effect of this amendment would have been to require section 7 jeopardy determinations to be made with regard to the effect on the biological species as a whole. In the case of the murrelet, the amendment would have required the evaluation of the each HCP to consider the very large murrelet populations in British Columbia and Alaska.

[24] H.R. Rep. No. 835, 97th Cong. 2d Sess. 30.

coastal sage scrub system. The target or indicator species approach now being utilized in the NCCP process has also been advocated for HCP planning efforts in other parts of the country.

In order to provide the kind of assurances typically required by banks in order to obtain project financing, Congress may need to amend the ESA to authorize explicitly the use of "target" and "indicator" species in the preparation of HCPs, and to authorize the issuance of a Section 10(a) permit for all species found within the habitat types addressed in the HCP, whether or not such species are specifically identified in the HCP.[25] In the winter and spring of 1996, a coalition of environmental, real estate, timber, urban water, and State fish and game agency interests negotiated a set of amendments to the ESA to codify the NCCP approach in the ESA and explicitly to authorize the use of "indicator" species in habitat conservation planning.[26] This effort failed—in part due to the continuing ESA gridlock in Congress, but also due to opposition from certain segments of the environmental community who are antagonistic to any form of regulatory assurances for private landowners.

IV. NEW CONSERVATION PLANNING APPROACHES ARE NEEDED TO STIMULATE PROACTIVE CONSERVATION PLANNING

Most of the HCPs developed to date have relied on command and control regulatory mechanisms. Typically, biological consultants identify areas that are the highest priority for future preservation. Lines are drawn around these areas prohibiting or greatly restricting development in the proposed preserve areas. Landowners developing habitat outside of the preserve areas are required to contribute to the acquisition of the preserves—usually through the payment of development fees.

This model can work fine as long as the owners of land within the preserve areas are willing participants. Often, this is not the case. Unless the agencies are prepared to acquire all private parcels within the preserve areas at fair market value without deducting for constraints imposed by the ESA, the HCP soon devolves into a zero sum game with distinct winners and losers. In the case of the one HCP in which the preserve areas include thousands of landowners—the HCP for the Stephens' kangaroo rat in Riverside County, California—many of the landowners questioned the benefits of the HCP and, for some time, opposed it.

The HCP process needs a new approach to address this problem—an approach that eliminates the zero sum game problem by allowing landowners that own valuable habitat to realize economic value from the conservation and enhancement of that habitat. One approach, proposed in Kern County, California, is a market-based system that would allow landowners to create conservation credits by dedicating or enhancing habitat and then sell those credits to developers as mitigation for impacts on wildlife habitat. Using this approach, the preserve system would emerge from market-based transactions rather than command and control zoning regulations.

The plan under consideration in Kern County includes elements of a traditional regulatory component and a market-based system. Market driven transactions will determine the size, shape, timing and location of the preserves within broader "conservation zones" identified by the agencies. But the plan also includes a "safety net" that prohibits development receiving authorization under the HCP from exceeding a limit or "cap" on development in the conservation zones.

A market-based system relies on the efficiency and creativity of the marketplace, rather than a command and control planning system to ensure the conservation and enhancement of natural resources for the protection of endangered species. A market-based approach has a number of important potential advantages. First, it avoids the zero sum game and resulting political and legal problems. Second, it ensures that the conservation plan that emerges will in fact reflect a deliberate conservation strategy rather than simply a politically feasible planning arrangement. Market-based strategies hold out this promise because the transactions using habitat credits would be required to conform to the underlying conservation strategy of the plan.

Third, the market-based approach could be structured to provide strong incentives to landowners to restore habitat on their property to make money. Encouraging restoration holds out the promise of expanding the balance of wildlife habitat and alleviating emotional fights over the development of the last remaining endangered species habitat in an area.

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[25] This concept is discussed in greater detail in R. Thornton, Searching for Consensus and Predictability: Habitat Conservation Planning Under The Endangered Species Act of 1973, 21 Environmental Law 605, 654–656 (1991).

[26] For a discussion of these amendments see, C. Williams, Finding Common Ground: Conservationists and Regulated Interests Pursue ESA Reform Together 13 Endangered Species Update No. 6 (1996).

The approaches to market-driven solutions are potentially numerous. Over the last few years, we have seen the emergence of increasingly sophisticated and elegant market systems to encourage habitat conservation.[27]

STATEMENT OF WILLIAM C. PAULI, AMERICAN FARM BUREAU FEDERATION

Good afternoon. I am William Pauli; I grow winegrapes in Potter Valley, in Mendicino County, California where I own Braren-Pauli Winery and Redwood Valley Cellars. Furthermore, I am President of the California Farm Bureau Federation, and am appearing today on behalf of the American Farm Bureau Federation and the California Farm Bureau Federation. I welcome the opportunity to present testimony on the practical implications of the Habitat Conservation Planning (HCP) process on agriculture. This issue is extremely important, as HCP's in general simply do not work for farmers and ranchers. HCP's do not work for small farmers and ranchers at all. In fact, our experience in California with the Regional Multispecies HCP's is that they are tools for encouraging urban sprawl, and magnify the loss of good farmland by forcing productive land into public habitat preserves.

As an initial matter we would like to emphasize that, given the proper protection and incentives, farmers and ranchers can play an important role in the protection and recovery of listed species. In fact, the agencies must have the cooperation of farmers, ranchers and private property owners if the Endangered Species Act (ESA) is going to work. A report of the General Accounting Office[1] found that over 90 percent of listed plants and animals have some of their habitat on nonFederal lands, with 78 percent occupying privately owned lands. Only about 34 percent of all listed species occur entirely on nonFederal lands. Private landowners and private lands are clearly the key to the Act's success. They do a better job than the government and they contribute to the local tax base while they also support wildlife. Farmers and ranchers, who own most of the suitable species habitat, are especially important if the ESA is to succeed.

Farmers and ranchers produce the food that feeds our Nation and many others in the world. They are a vital part of local economies. They support people who keep schools running, provide local jobs, and provide opportunities for newcomers to this country. Our productive farm and ranchlands are indispensable to our character and our future as a nation. Farm and ranch lands need to continue to be productive in order to continue meeting this considerable responsibility.

You must understand that there are two types of HCP's. There are the HCP's for one or two species and one property—like the Red Cockaded Woodpecker Plan. These can work for some large institutional landowners—large timber operations for example or developers. Then there are the regional multispecies plans. These work well for developers, but their sole function is to mitigate for urban growth by taking farmland out of production—destroying its food-producing potential. Instead of preserving farms and ranches, the HCP process encourages the opposite result, by taking agricultural lands out of production and using them as mitigation lands for HCP-allowed urban development. It is critically important for all species, including humans, that we work with our farmers and ranchers to enhance the habitat value of their properties in a way that does not impair the present and future productivity of their land. Unfortunately, HCP's are designed and controlled by "-ologists" who care nothing for human needs, and by developers.

Many farm and ranch activities, if allowed to continue, actually benefit listed species. Many species depend heavily on cultivated land or rangeland for their continued existence. In California, for example, a U.S. Forest Service study found that Swainson's hawks nesting in sagebrush habitats more than one mile from cultivated alfalfa fields suffered 100 percent nesting failure, while those nesting within one-half mile of cultivated alfalfa fields enjoyed an 86 percent success rate in rearing broods.

One of the largest nesting colonies of tri-color blackbirds, a candidate species, was recently found in a San Joaquin Valley grainfield. This species was recently determined not to be endangered, specifically because of the numerous colonies hosted by California farmers on their lands—at no cost to the American taxpayer.

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[27] For a discussion of one such market-based approach, see T. Olson, D. Murphy, and R. Thornton, The Habitat Transaction Method: A Proposal for Creating Tradable Credits in Endangered Species Habitat, in Fischer and Hudson, Building Economic Incentives Into the Endangered Species Act (Defenders of Wildlife 1993).

[1] "Endangered Species Act: Information on Species Protection on Nonfederal Lands," GAO/RCED–95–16 (December, 1994)

We have found that several species of federally-listed kangaroo rats are thriving in drip-irrigated vineyards after our members have adopted some simple kangaroo-rat friendly rodent control measures.

Our western water supply networks, our levees, our water impoundments, all offer tremendous opportunities for endangered species—all wildlife—if only farmers and ranchers are helped and not hindered by wildlife agencies.

Yet instead of encouraging farmers and ranchers to maintain and improve species habitat on their lands, the ESA actually discourages habitat conservation. The consultation requirements imposed by section 7 of the ESA and the prohibitions against "taking" listed species imposed by section 9 of the ESA often impose blanket restrictions on human activity and land use that penalize farmers for necessary agricultural activities because some of the creatures supported by their farms may be "taken." This necessarily creates a negative attitude of landowners toward listed species on their lands. The law is turning wildlife into a significant liability for the farmer and rancher.

Farm Bureau believes that endangered species protection can be more effectively achieved by removing disincentives and providing incentives to private landowners and public land users rather than by imposing land use restrictions and penalties. Desired behavior is always more apt to be achieved by providing a carrot rather than a stick. There is no "carrot" provided by the Endangered Species Act as currently written. This is important because it bears directly on the nature of HCPs and why they were authorized.

I. HABITAT CONSERVATION PLANS ARE NOT SUITED FOR AGRICULTURE

The concept of the Habitat Conservation Plan had its origin in California, and California has more approved or pending HCPs than any other State by far. HCPs were envisioned as a mechanism to allow high-value urban development of species habitat if other habitat were set aside in mitigation. It was designed to give some relief to private landowners from the otherwise absolute "take" prohibitions of section 9 of the Act. As the process developed, mitigation took the form of either purchase or dedication of additional habitat, or payment of a predetermined sum of money into a mitigation fund. In return, the landowner was granted a permit for an "incidental take" of the species if it was in the course of the approved activity. Because these HCP's were designed for single project, one-time developments, in urban areas, they never considered the problems of co-existing with species in a working landscape. Farmers don't build and leave; they and the habitat they provide live together. This worked pretty well until the Endangered Species Act.

A. The HCP Process Is Not Affordable For Farmers, Ranchers And Most Small Individual Landowners

Habitat Conservation Plans came into being in order to accommodate land developers who were otherwise restricted from developing species habitat by the prohibitions of section 9. The HCP process incorporates a series of costly biological surveys and the development of an extensive planning process whose central theme is habitat mitigation. Once developed, the entire package must be approved by the Federal Government before it becomes operational.

In practice, the HCP process has been costly, cumbersome and controversial. The process requires extensive and expensive biological data covering virtually every square foot of the proposed habitat area. The data collection alone can cost a million dollars. It also requires that a funding mechanism be in place to accomplish the mitigation purposes of the HCP. In addition, the data required under the process often takes several years to accumulate, making the process time-consuming at best.

But even after all of the data requirements have been met and the incidental take application has been accepted, it still must be approved by the U.S. Fish & Wildlife (FWS) Service, a process which can take several more years. Many applications have been pending with the FWS for several years. Recently, only 40 of the more than 150 Habitat Conservation Plans that had been submitted to the FWS had been approved. So far in California, only one multispecies regional HCP is complete and approved—a small one for the city of San Diego involving use primarily of public land enhancement for habitat mitigation. There is no guarantee that a carefully crafted and negotiated HCP will result in FWS approval. Our experience has been frustrating with FWS repeatedly raising new demands and endlessly renegotiating the HCP. Kern County has been working for the better part of a decade on its HCP.

As a result of these factors, the HCP process is generally unsuitable and impractical for small private landowners like individual farmers and ranchers. The extensive data requirements alone price farmers and ranchers out of the HCP process. The mitigation requirements are also much too expensive and burdensome for farmers and ranchers to use on a practical basis. You simply cannot grow grain or row

crops or even grapes if you are going to have to give the FWS an acre or more of land for every acre you plant.

As noted before, the HCP process was not designed to address ongoing activities on land such as agricultural production. Rather, its mitigation policy was designed to accommodate one-time development of property that essentially removes that property as species habitat and replaces it with mitigated habitat. Such a process applied to agriculture serves neither the needs of species nor of people. Since species depend on agricultural lands for habitat, the goal of an agricultural habitat policy should be to find ways to maximize both agricultural production and species habitat on the same agricultural lands. We believe that such a policy can and would work.

The addition of the concept of "incidental take" was a positive one. The ESA must be amended to allow this concept of habitat conservation to be used for their ongoing activities by farmers and ranchers who coexist with species, and not only by those who have high-priced urban projects and can afford the exorbitant price tag. The current system has created a two-tier exemption program that is available to developers and the super-rich, but not to the smaller businessman or the family farmer and rancher. Family farmers and ranchers are being hurt most by the current application of the ESA.

But even the perceived "super-rich" are now bailing out of the HCP process. A large industrial timber operation in California spent millions to complete an HCP. After years of work, the company finally dropped the entire process citing its cost, the inflexibility of the Federal agencies, and the endless litigation that is caused by the failure of the law to provide for a workable HCP process with real safeguards for the landowner.

The current provision for HCPs in the ESA is too cumbersome and inflexible. The provision and implementing regulations contain fairly specific requirements that perpetuate the problem of making these procedures largely unavailable for most farmers, ranchers and small landowners. Section 10 and accompanying regulations provide such specific and detailed requirements for HCP and incidental take permits that there is little flexibility to adapt the HCP process. In order to achieve the flexibility that is needed for an agricultural HCP process, both the statute and the regulations will have to be amended.

B. Multi-Party Or Regional HCPs Fail To Adequately Consider The Needs Of Local Agricultural Producers

Many areas within California are seeking to develop HCPs on a county or regional basis. The advantage to such a process in theory is that such plans will cover a more comprehensive habitat area and will encompass a wider range of normal human activities. Instead of covering one entity or one land use, a regional HCP could cover many different types of normal activities within the HCP area. In practice, these regional multispecies HCPs do nothing to relieve the disincentives for the agricultural landowner, and only increase the conversion of agricultural land to urban uses because of the expensive mitigation such plans require. Land in these HCP's falls into two categories, developed or habitat. Under the current process neither use is consistent with maintaining a viable agricultural operation.

Agricultural land is classified as a habitat type, depending on what species benefits the particular FWS staff office thinks it provides. There is no consistency in—Kern County, row crop land is given *no* habitat value (but landowners who build on it have to pay 1 to 1 mitigation!), but in San Joaquin County, row crop land is given the second-highest habitat value. Mind you, this habitat "value" schedule means that farmers can't change from one type of farming to another without paying mitigation! FWS is in the business of agricultural market control. We may all have to eat what they think provides the best habitat value.

The role of agriculture within a regional or multispecies HCP (MHCP) is different from nearly all other affected interests. This difference is not taken into account in establishing the MHCP or in setting its parameters. These basic differences are of such a nature that affected interests within the MHCP area often benefit at the expense of agriculture. Some of these differences are as follows:

1. The mitigation schedules that are so harmful to agricultural production actually encourage conversion of agricultural land. Agricultural producers have the most land within a MHCP area but often have very little ready money. Developers and others who might take advantage of the HCP process usually have money, but very little land. Since the primary focus of the HCP process is on mitigation of habitat loss caused by urban development (involving dedication of additional lands for habitat), agricultural lands become prime targets for those mitigation areas because they are cheap compared to urban lands. In Kern County, for example, the mitigation ratio for using native lands as mitigation is 3:1 acre of developed land. The mitigation ratio for using agricultural lands for mitigation purposes is 1:1. The California

process thus actively encourages the use of our most valuable agricultural lands for mitigation purposes under HCPs, thereby further reducing the amount of agricultural lands available for the production of food and fiber. By the same token, agricultural producers generally cannot afford the same process of mitigation to increase the productivity of their lands by changing crops, or to purchase more land for food production. This is not a minor issue. For example all of the land in San Joaquin County HCP is private farmland. In San Diego County, more than 100,000 acres would be designated in the North San Diego HCP, thus precluding any agricultural improvements on the land.

2. For those HCPs that involve the payment of mitigation fees instead of purchase of mitigation lands by the applicant, developers can pass along the costs to the ultimate users of the property whereas farmers and ranchers cannot. Thus, for most within an HCP area, the mitigation fee is merely a cost of doing business, whereas for the farmer or rancher it is much more.

3. Outside of the specific land that they have targeted for development, developers or the habitat authority itself care little about what land is used or purchased for mitigation purposes. For them, it is almost as if such land is a fungible commodity. However, for farmers and ranchers who actually use the land, every aspect of their land is unique in the role it plays within their operation.

4. Developers can complete their mitigation by the one-time purchase of additional dedicated habitat or the payment of a mitigation fee. The purchase of the additional land or the payment of the fee does not affect the development because the land so purchased or mitigated is outside their development site. Farmers and ranchers, who own most of the suitable habitat within the HCP area must mitigate by setting aside part of their own property. Without compensation and/or incentives, the process of setting aside lands does not work for small farmers and ranchers. Frequently, the mitigation requires them to take more land out of production than they had desired to put in.

5. In most cases developers are engaged in speculative uses of the land that involve future activity and not ongoing present activities. HCP restrictions on land uses within the habitat area that might result from required data collection activities or pending planning decisions only affect the timing of the development of the speculative uses without appreciable impact on present activities. In addition, once those developers have received their permit and finish their projects, they have no additional impacts. Farmers and ranchers, on the other hand, use their property on an ongoing basis so that the same restrictions placed by the HCP authority pending collection and review of data have significant present impacts on current operations. Furthermore, because their operations are ongoing, farmers and ranchers are impacted at every stage and by every decision of the HCP authority. Those impacts include continued liability for compliance with the section 7 consultation requirements and the section 9 take prohibitions.

6. In our experience, the HCP authority also imposes permitting requirements on farmers and ranchers for activities that do not currently require permits. Such activities might include grading, plowing or discing land—activities considered normal farming practices that are necessary to the continued use of the land for farming purposes, and which cannot accommodate the uncertainty of the permitting process.

7. Farmers and ranchers often use their property in ways that are beneficial to wildlife and listed species, whereas developers do not. Thus, in many cases farmers and ranchers can actually enhance habitat through application of normal farming practices. These benefits, however, are generally not considered or explored in the HCP process.

8. Value of land within an HCP area generally goes down simply by virtue of its being included in an HCP. Theoretically, this value can be restored as mitigation opportunities are identified. Since agricultural lands are themselves the very "mitigation opportunities" that developers identify, the value of agricultural land is always less than designated. In the Stephens Kangaroo Rat HCP, the HCP authority became the only "market" for agricultural land, and the "value" of such lands included in the HCP area was at the mitigation fee of $1,950 per acre—substantially less than actual market value outside the HCP.

The mere inclusion of property within a HCP is a per se declaration that such property is habitat for a listed species, and its value drops accordingly.

The practical impacts of these problems can be illustrated by a few examples.

Pleasant Valley Habitat Conservation Plan

The impetus for this plan came from the town of Coalinga in western Fresno County, an area that contains habitat for the listed kit fox, blunt-nosed leopard lizard and the Tipton kangaroo rat. Coalinga is a town of approximately 9,000 people. The Pleasant Valley Habitat Authority sought to have a habitat area of approxi-

mately 250 square miles, of which only 2.3 percent encompassed urban uses. Yet the pressure for the HCP was from developers seeking to expand in urban areas. Of the remaining area in the proposed HCP, 76 percent of the land was either intensive agricultural lands or productive rangelands.

It became apparent that the extensive agricultural acreage was proposed for inclusion in the HCP for only one reason—to provide lands for mitigation so the urban developers could undertake their projects. The plan was for these productive farm and range lands to be taken out of production and dedicated for habitat for the target species so that others could reap their own benefits. All of the benefits of this proposed HCP were geared to these urban developers, and all the burdens were projected to fall on agriculture. It was clear that there were no benefits to the farmers and ranchers whose lands would have been included in the HCP area.

The Fresno County Farm Bureau objected to the development of this HCP on these grounds, and the HCP did not go forward.

Riverside County Habitat Conservation Plan

Another example that illustrates the problems experienced by agriculture in the HCP process involves the Riverside County Habitat Conservation Plan (RCHCP) that is for the protection of the Stephens kangaroo rat.

The RCHCP scheme involves the establishment of a mitigation fund administered by the Riverside County Habitat Conservation Agency. The funds will go in part to purchasing mitigation lands to be dedicated to habitat for the Stephens kangaroo rat.

The mitigation fee that as established was $1,950 per acre. Payment of the fee and associated costs entitled the owner to make improvements on the property. The fee is the same for both developers and farmers, and therein lies its inequity. Agricultural production is a land intensive business that involves little or no building. Buildings that might be constructed are low density, low cost structures that pale in comparison of value to residential or commercial construction. Yet the mitigation fee is $1,950 per acre regardless whether the construction is residential, commercial or agricultural.

An example will illustrate the point. A western Riverside County poultry operation constructed a 30,000 square foot agricultural building on 39 acres. The cost of the building was $340,000. The $1,950 per acre mitigation fee cost the operation a total of $67,500, amounting to approximately 20 percent of the total cost of the building. On the other hand, a typical subdivision might include four houses per acre, resulting in mitigation fees of $487.50 per house. If the homes were built for $100,000 each, the mitigation fee would be less than .5 percent of the cost of construction. In addition, the costs of the mitigation fee for residential or commercial development can be passed on to the purchasers of such development. Farmers cannot pass the fee along to anyone.

Farmers and ranchers in the RCHCP area have experienced other problems due to their inclusion in the HCP area. They have been prevented from discing or working their fields due to the suspected presence of kangaroo rats. Even if their lands do not actually contain the species, they are still prevented from using the land until it has been cleared as a possible habitat or mitigation site. Most cannot afford the $1,950 per acre mitigation fee it would take.

This Committee has heard several horror stories from residents within the RCHCP area on previous occasions. Cindy Domenigoni has testified that the family farm that has been in her husband's family for several generations was prohibited from planting on over 800 acres for 3 years because the farm was in the RCHCP area and therefore kangaroo rat habitat. It was only after a government official remarked that the species had moved out of their lands earlier that the Domenigonis were allowed to resume operating on that portion of their farm. This of course happened after fires ravaged the area and eliminated the k-rat and their habitat.

The Committee also heard from several other victims of forest fires in the area that occurred in 1993. Part of the restrictions for protecting the kangaroo rat habitat involved prohibitions against discing fields and removal of habitat. These prohibitions created conditions conducive to swift fire movement through the area. In addition, the discing prohibitions prevented people from creating firebreaks around their homes to protect their residences. Some people who obeyed the restrictions lost their homes to fire. Others who ignored the restriction kept theirs.

By and large, the HCP process was designed to facilitate growth on the outskirts of urban areas. Section 10a was written for only the largest landowners who could afford the costs of the process and who could pass the costs on to the ultimate purchasers. The HCP process is poorly adapted to all segments of a community. There are few benefits to farmers and ranchers, if any, from participation in the HCP proc-

ess as it is currently authorized. The entire process needs to be reviewed and revised.

While titled "habitat conservation planning," the HCP program deals very little with the conservation of habitat. By focusing on the "incidental take" of individuals of a species as the end result of the HCP process, the program focuses less on habitat development or maintenance than on individual members of the target species. A revised HCP process that truly involves "habitat conservation" and that provides for the unique problems and benefits of the agricultural landowner is called for, and it must be accomplished by legislation.

II. PROPOSALS TO INCREASE THE EFFECTIVENESS OF THE HCP PROCESS AND MAKE IT MORE AVAILABLE FOR AGRICULTURE

The process for change must begin with a consideration of the American farmer and rancher, and the role they play in the creation, maintenance and development of wildlife habitat. In order to be effective, the new HCP process must provide a "carrot" to the landowners instead of a "stick." For most farmers and ranchers, removal of the "stick" would be welcome enough relief. Furthermore, we have to recognize the importance of our farm and ranchlands to the future of this country. We all know that we are losing more land than we can afford. If we are to provide a secure food base for next generation we can't afford to sacrifice our farm resource lands to wildlife habitat *or* concrete and houses. In California, we have lost nearly 400,000 acres to habitat in the 1990's alone (see attachment 1).

Farm Bureau is working at different levels to develop programs that would remedy some of the problems described above.

A. Habitat Enhancement Landowner Program (H.E.L.P.)

In the San Joaquin Valley in California, a coalition of agricultural organizations including the California Cattlemen's Association, the California Farm Bureau Federation and others has developed a proposal called the Habitat Enhancement Landowner Program (H.E.L.P.). The H.E.L.P. program would provide a general incidental permit program for participating agricultural regions. Under the program, participating farmers and ranchers would be allowed to conduct normal farm or ranch activities on their property and receive a general incidental take permit for such activities or for emergency response or repair activities. In exchange for dispensing with the normal section 9 taking prohibitions for such activities on their property, regional committees of farmers and ranchers would agree to develop and implement actions to improve or enhance species habitat on their lands. It is designed to provide incentives for habitat management by removing the considerable disincentives that currently exist. We believe this program could usher in a new era of farming for food, fiber and the future of wildlife.

As stated, the purposes of the H.E.L.P. program are as follows:

1. To develop a general permit program that will remove current disincentives to habitat protection.
2. Develop a voluntary program that will enable farmers and ranchers to conduct normal agricultural activities, and to undertake additional actions that may benefit listed species, without threat of liability for incidental take under either the State or Federal laws.
3. Maximize what willing landowners can accomplish on their property by developing incentive mechanisms that will support species and habitat conservation practices while at the same time maintaining and protecting the long-term economic viability of their agricultural operation.

The program is premised on the fact that farmers and ranchers want to preserve listed species and that given the proper incentives they will do so. For this program, the "incentive" is nothing more than a suspension of the considerable disincentives that currently drive the ESA. The program is also premised on the belief that farmers and ranchers can do a good job in protecting species and their habitat, and that normal farming and ranch activities are generally compatible with habitat protection. California Farm Bureau Federation tried negotiating with the Fish and Wildlife Service and the California Fish and Game Department for adoption of this program.

Our own Fish and Game Department worked cooperatively with us—they understand the value of agriculture to wildlife. The Fish and Wildlife Service, on the other hand, sat silently at our meetings and refused to work with us—they raised objection after objection and could never commit to anything. As a result, this very valuable program for maximizing both farm value and habitat value is still just a dream of California farmers and ranchers. It's now clear that the only way this com-

mon-sense program will be adopted, will be for you to pass legislation mandating its adoption.

B. North Carolina Sandhills Habitat Conservation Plan

This limited "safe harbor" agreement is currently in place in Moore County, North Carolina. This program is designed for the protection of red cockaded woodpeckers and their habitat. The major elements of this program are as follows:

1. FWS conducts an inventory of red cockaded woodpeckers (RCW) on the lands proposed for inclusion in the program. This establishes a baseline population.
2. The landowner agrees to manage the lands in such a way as to protect this baseline population, and to conduct habitat improvement activities on their lands. This is accomplished through a cooperative management agreement.
3. There are no additional constraints on the landowner with regard to additional RCW that may subsequently inhabit the lands.
4. As with the H.E.L.P. program, this program is voluntary with landowners. In addition, the RCW program allows landowners to opt out of the program at their option.
5. There will be no additional restraints placed on landowners other than the management activities that they have agreed to undertake. The guidelines to be followed are those in effect at the time of execution of the agreement. Also, the habitat improvements carried out under the agreement will not result in any additional restrictions on the participating lands or neighboring lands.
6. Program participants are responsible for monitoring compliance with the program.

Program administrators believe that even if private landowners opt out of the program after a short time, there will still be benefits to the red cockaded woodpeckers. The red cockaded woodpeckers have been in decline on the private property within the program area for so long that any beneficial habitat enhancement—however short—will help reverse that decline.

Although valuable for highly focused species conservation efforts keyed to critical needs of some species, this approach cannot be extended regionally to cover normal activities or for covering multiple species.

The North Carolina program is the only "safe harbor" agreement to be approved thus far. Details on both programs will be provided for the hearing record.

The safe harbor concept in North Carolina is positive. It shows that a single-species HCP can work for single landowners, where a positive working relationship is offered by the FWS. However, it does not show that HCP's can work for multiple species or for regional economic development. It will not work in the Western States, because it is based on the premise of trust and cooperation between the agencies and private landowners.

It's clear that landowners under the ESA are not treated the same in the West when compared to other states. Where voluntary means to preserve species in are allowed in some states, they are rudely dismissed in the West where agency authority overrules everyone including Members of Congress.

C. Critical Habitat Reserve Program

In addition to these specific programs, Farm Bureau has developed a proposal for a voluntary program called the Critical Habitat Reserve Program (CHRP) administered by the Secretary of Interior. Under the proposal, the Secretary of Interior would enter into contracts with willing landowners and public land users in areas designated as "critical habitat" for a listed species. The private landowner/operator would agree to implement a plan for the management of a listed species. Management plans would focus on actions that would enhance the species instead of blanket land use prohibitions.

In return, the Secretary would provide the costs for implementing the CHR program, pay annual rental and management fees to the private landowners for the conversion of private property to CHR use, and provide technical assistance and management training to cooperating landowners.

The program would be voluntary, and must protect the private property rights of both participants and non-participants alike. The program must contain assurances that participants in the CHRP will not be later restricted in the use of their property outside the terms of their voluntary agreements. Participants who enhance species habitat pursuant to their agreements to the point where other listed species might also take up residence should not be restricted because of the presence of these other residents.

The CHR contract would be for a period of no more than 5 years, to coincide with the periodic species review mandated by the Act. In order not to de-stabilize the eco-

nomic base of the community, the CHR would be restricted to no more than 25 percent of the total area of any one county.

The program would also permit the enrollment of land that might already be enrolled in other government conservation programs, and would require consultation between the Secretaries of Interior and Agriculture to ensure harmony between the CHR program and other programs.

We believe that, given the opportunity and proper support from the government, farmers and ranchers can do a better job of enhancing listed species than the government. As experienced, practical land managers who may have observed the species for a number of years, they bring a working knowledge that government scientists do not have. More importantly, they can offer day-to-day management of the species that the government certainly cannot do. Such a program will result in better management and greater chance for recovery of the species than is provided under the current law.

We also believe that with the proper incentives and a respect for private property rights of participants and their neighbors, farmers and ranchers will be willing to participate in the program.

We would be happy to discuss this program with you in greater detail.

D. General Provisions

It's clear that changes are needed to authorize and improve the HCP process. The following elements are essential to the debate.

1. Compensation to affected landowners. The promise of incentives alone will not work. The only way to ensure agency employees do not abuse the law is to require compensation when their activities undermine the use or value of the land. In those instances where land is identified as critical to the survival of listed species, it should be acquired by compensation, not regulation.

2. Participation in any HCP must be voluntary. County-wide or other multi-species plans must not include any landowners who do not wish to participate in this process.

3. HCP's must not be allowed that require any exterior habitat buffers on agricultural lands. They must instead, provide protection for adjacent landowners should listed species migrate onto their property. We *must* stop turning endangered species into a nightmare of liability for neighboring landowners.

All four of these proposals are designed to maximize protection of species habitat while minimizing disruptive impacts to private lands. They are designed to avoid the "train wrecks" caused by species-human conflicts by removing the conflicts. Finally, and most importantly, they are designed to replace the "stick" of negative ESA enforcement through section 7 and section 9 restrictions with a "carrot" approach to habitat management. All sides to these proposals realize that this approach is a "win-win" situation for both species and for people. That is why the North Carolina proposal was in part supported by the Environmental Defense Fund. These changes are designed to encourage landowners protect and enhance species habitat because they want to, and not because they have to. This simple attitude adjustment makes a world of difference for habitat protection, and may turn the current horror stories of the ESA into success stories.

But these changes will require legislation. Some believe that the current section 10a is sufficient to enact these subtle but important changes, but we have doubts whether the current statutory language would allow such provisions. The current section 10a may work well for the larger landowners and developers, and they may want to retain that section. One thing that Farm Bureau has learned through participation in several HCP negotiating exercises is that different landowners have different interests and goals as far as the HCP process is concerned. We believe that enactment of a separate section to protect agricultural producers and small landowners along the lines outlined in the four proposals above is appropriate and necessary if this Nation is to preserve both the capacity to produce food for its residents and protect species from becoming extinct.

III. "NO SURPRISES" POLICY

Under this policy, landowners entering into cooperative agreements for the protection and maintenance of habitat would not be required at some later time to undertake additional mitigation measures for species covered under the plan. In other words, the government would be bound by what it promised in any landowner agreement.

This should be a necessary element of any agreement that any landowner would enter with the government. While it protects landowners from being hit with any additional requirements that they might not have agreed to, it does not begin to solve any of the problems that farmers and ranchers experience with HCPs or with

the Act. If anything, even the need for such a policy illustrates the problems of dealing with the government, and the problems faced by farmers and ranchers under the ESA.

CONCLUSION

All of the proposals that we have discussed above benefit different elements of the public and at the same time benefit endangered or threatened species by conserving, managing and enhancing habitat. Different proposals use different methods and benefit different segments of the community. One plan does not fit all.

Agricultural interests do not benefit from current HCPs because it is their lands that are eyed for mitigation. Further, they generally cannot afford the mitigation fees that can be paid by large developers and passed on to ultimate purchasers. The CHRP or the broader H.E.L.P. type of agreement is better suited for agricultural concerns. In addition, requiring compensation under this process keeps everyone honest when it comes to ESA regulations. Requiring the landowners consent to include land in a designated HCP is only fair.

We urge the Committee to consider these proposals as a coordinated policy that benefits both listed species and people. It is a situation where everybody wins, and affected interests from all sides should embrace such an effort. Also, demonstrating that the interests of species and people can be accommodated through the enactment of such a coordinated policy might open the door to other necessary ESA reforms.

CONVERSIONS OF PRODUCTIVE FARMLAND TO HABITAT SINCE 1990

State Agricultural Land Acquisitions: 307,251 acres

Federal Agricultural Land Acquisitions: 36,172 acres

CALFED Agricultural Land Acquisitions: 40,023 acres

All Government Agricultural Land Acquisitions Totaled: 383,446 acres

- All acreage totals are either previously acquired, in the process of being acquired, or are actively being sought for acquisition (i.e., the agency is looking for willing sellers in the project area.)
- All of the aforementioned purchases involve agricultural resources, as far as we know. As better information becomes available, we will update these figures.
- Undoubtedly, more agricultural land conversions have occurred than we have listed in these figures.
- The best information available states land acquisitions in terms of whether agricultural resources are involved, and total acres of the project. This means that some of the acres purchased were not agricultural. Currently, there is no way to determine the acreage break-down for each project. Thus, if agriculture is involved, the whole project is treated an agricultural conversion.
- Definition of Agricultural Land = agriculturally zoned parcels, and/or parcels currently or previously in agricultural production.
- These land totals are basically the same parcels as depicted on our preliminary land acquisition map. The only change is the addition of 14,400 acres that are currently being purchased by State agencies. These additional parcels were discovered through State Clearinghouse records and conversations with Farm Bureau Executive Directors who are familiar with the circumstances of these projects.

Northern California Water Association (NCWA) Publication on Land Conversions Land Acquisition and Habitat Protection in the Sacramento Valley, September 28, 1999 Attachment 1 to Statement of William Pauli on October 19, 1999. (Table 1)

Table 1

Program	Acres
DFG Wetlands Easements	2,371
State Wildlife & Ecological Reserves	116,900
WCB Inlands Wetlands Conservation	3,565
DWR/Rec Board Mitigation	1,625
Department of Parks and Rec	700
State Lands Commission (a)	12,000
NRCS Wetlands Reserve Program	12,397
BLM	12,574
USFWS Conservation Easements	26,781 (24,316 = acres in easements)
Sacramento NWR Complex	33,593
The Nature Conservancy	51,290

Table 1—Continued

Program	Acres
Bay-Delta Ecosystem Funding	5,090
Total	278,886 (W/O TNC=227,596)

• These totals do not include access acquisitions or habitat restoration projects. (Table 1, FN 1.)
• Bay-Delta Ecosystem funding includes = Prop. 204, Category III, Federal Bay-Delta Act, and CVPIA Restoration Funds. (Table 1, FN 4.)
• These figures only refer to the Sacramento Valley. (Introduction)
• Approximately 3.6 million acres are contained within this area, of which 1.85 million acres are dedicated to irrigated agriculture. (Introduction.)
• The acquisitions in the NCWA publication will duplicate some of the FB generated ''agricultural land conversion'' data.

Table 2.—NCWA Proposed Acquisitions

Program	Acres
Central Valley Habitat Joint Venture Wetlands	54,400
Upper Sac. River Acquisitions—BLM	4,000
BLM ''Exchange Lands''	10,000
Sacramento River Inner Zone	10,200
CALFED ERP Riparian Acquisitions	15,000–20,000
Inks Creek Conservation Easement	13,000
Stillwater Plains Conservation Area	2,667
Total	104,300–114,300 acres

STATEMENT OF RUDOLPH WILLEY, PRESIDENT, NORTH CALIFORNIA PRESLEY HOMES

Before Presley purchased our land in San Jose in 1997, we were aware that the property had once been occupied by the threatened Bay checkerspot butterfly. We contacted the nationally recognized Stanford conservation biologist, Dr. Dennis Murphy (who addressed this subcommittee on July 20 on science and habitat conservation planning), because he was the scientist who petitioned the USFWS to list this butterfly, and no individual is more committed to this species. We were told by Stanford University scientists who studied this species for decades, that the butterfly had abandoned the site in 1990 and that weedy exotic grasses had almost entirely replaced the host plants which the butterfly requires to survive. The butterfly would be unable to re-colonize this site on its own because of this weedy invasion.

Dr. Murphy worked with Presley to develop a plan to conserve nearly two-thirds of the area onsite that was once occupied by the butterfly, eliminate the non-native weeds, restore native plants, and bring butterflies back to the site. (A condition that would never exist again without aggressive habitat management.) These objectives formed the basis of our draft HCP, which took many months and $300,000 to produce. Even though there was no listed animal species on the property, and thus no incidental take permit was required, Presley chose to purse an HCP and Section 10 permit voluntarily because it would be prudent to obtain the ''No Surprises'' assurances, and because it was the right thing to do. The HCP included extraordinary conservation commitments, with specific biological goals of:

- 71 acre permanent butterfly habitat preserve, including 17 acres of host plants
- 20 major plant conservation areas—
- The first agency sanctioned man-made California tiger salamander pond
- Substantial avoidance/Translocation of listed plants

The HCP also included an exemplary adaptive management plan with some of the following points:

- An Environmental Trust to which Presley will deed over 50 percent of the 575 acres and provide initial funding of $1.6 million.
- Thereafter, the trust will receive $200,000 a year in perpetuity for professional biological management and monitoring of the preserved lands.

Given the voluntary nature and progressive scope of the HCP, Presley expected the plan to be embraced by the Service. Instead, the Service has fought this project at every turn, and refused to act on the HCP at all. Presley met with the Sacramento Field office several times before drafting the HCP. We then submitted our HCP and Section 10(a) permit application and fee in October 1998 and the following month had a formal meeting with Service staff to present our plan. At this and subsequent meetings, a Service staff biologist asserted that nearly the entire 575 acres constituted ''habitat'' for the butterfly, that the current unsuitability of the habitat for the butterfly did not matter, the fact that the species could no longer survive there without heroic management did not matter, and the 4 year complete absence

of the species on the site (as confirmed by annual surveys) did not matter. He did not offer any empirical or scientific evidence to support any of these opinions. At the conclusion of this meeting, Service staff and management agreed to produce and deliver written comments to Presley's draft HCP within 2 weeks. The comments never came. After three and a half months of calls, and letters to the Chief of the Service's California/Nevada Operations Office which were never answered or acknowledged, we contacted the Field Supervisor of the Sacramento office. He said he had a letter from the Service to give us, but wanted to talk with us and Dr. Murphy first. We pointed out to the Field Supervisor of the Sacramento Office that since we had no listed animal species onsite we could legally grade without having an incidental take permit. He agreed, and said he had told his staff that unless they cooperated in this engagement that they would lose their opportunity to influence this project. He also said that he was powerless to override or direct his subordinates' actions since he feared lawsuits from third party special interest groups. He concluded with saying that he was not going to give us the letter.

We then proceeded, obtaining the appropriate permits from California Department of Fish and Game, the U.S. Army Corps of Engineers and obtained a waiver from the Regional Water Quality Control Board. At every step, personnel from the Service repeatedly called and wrote these agencies demanding they deny Presley at every approval. In every instance, after extensive consultation, each agency agreed that the Service had no jurisdiction. In June, the Army Corps of Engineers authorized Presley to fill less than one half acre of wetlands and concluded that the Corps' permitting action would not affect listed species, thereby denying the Service a Section 7 consultation on the project. San Jose issued Presley a grading permit allowing for clearing of the site and Presley began work.

The Service inexplicably passed on a Section 10, did not get a Section 7 consultation with the Corps and did not take Section 9 enforcement action. Instead, they stepped completely out of the regulatory process. First, they sent documents to private interest groups which were then used by these groups to sue another Federal agency (the Army Corps) and Presley. Then they sent the City of San Jose threatening letters and e-mails asserting, with no substantiation, that grading the site would cause illegal "take" of the butterfly and the City would be held liable for such a "take". The Service urged the City to withhold any more grading permits. The City capitulated to these threats, explaining to Presley that the Service was holding up $3.5 million in Federal funds for City projects, that they did not want to upset the Service for fear that they would lose that money and would not issue Presley's further grading permits.

We have been at a dead stop for almost 3 months now. We may not be able to grade until at least next spring at a cost of approximately $3 million. We have contacted every level of the service to get this resolved. They did acknowledge 2 weeks ago that there was no take, would be no grounds for a Section 9 action, and said that I could have a letter to that effect to show the City of San Jose. Although it has been promised on almost a daily basis, we just received a qualified letter this last Friday, October 15.

I ask you, where is the certainty in the regulatory process for me as an applicant? I ask you, how can it be acceptable to the Congress to have the Fish and Wildlife Service simply ignore the ESA and its duty to implement the Act, and instead wage an improper, ideological campaign to stop this project? What does the Service have against HCPs, especially one this generous? Unfortunately, for the endangered species, I'm afraid this is sending the wrong message to the development community, not to become involved in the HCP process. I think HCPs, in theory, are a great idea. Yet, we can't escape the irony here . . . the developer attempting to protect and restore the species, and the Service trying to block that effort.

Presley Homes List of Exhibits

Exhibit No.	Exhibit Description
1.	Executive Summary to Presley's draft HCP. A full copy of the HCP is available by contacting Sharla Moffet-Beall at Senator Crapo's office or by contacting Laura Murray at Presley Homes (925)229–8880.
2.	October 9, 1998 letter from H.T. Harvey and Associates to Bill Lehman, Chief of the Conservation Planning Division at the USFWS/Sacramento office. This is a short but comprehensive letter which accompanied the section 10(a) application and submitted the draft HCP.
3.	Pages 1–10 of the Environmental Trust for the Ranch on Silver Creek. A full copy of the Environmental Trust is available by contacting Sharla Moffet-Beall at Senator Crapo's office or by contacting Laura Murray at Presley Homes (925)229–8880.
4.	December 21, 1998 letter to Bill Lehman, Chief of the Conservation Planning Division at the USFWS/Sacramento office from David Moser of McCutchen, Doyle, Brown and Enerson, LLP, requesting written comments to the HCP promised by the service, now overdue.
5.	January 27, 1999 letter to Mike Spear, Manager, California/Nevada Operations Office from David Moser requesting written comments to the HCP now three and a half months overdue. This letter was never answered or acknowledged.
6.	March 28, 1999 letter to James Meek at Presley Homes from Dr. Dennis Murphy detailing his conversations with Service staff biologists. Even though Dr. Murphy is a leading expert on the butterfly, an agency staffer questions his competence.
7.	July 23, 1999—An e-mail from David Wright, a staffer at the Service, to the City of San Jose asserting a take and warning the City of its liability. "Mass grading on the site would cause increased take of listed wildlife. Presley Homes does not have a permit from us for this take, nor does the City of San Jose. I think it's important you be aware that courts and cities and local governments can be liable for their actions that result in a take."
8.	July 28, 1999 letter from Wayne White, Field Supervisor at the USFWS/Sacramento office to Joe Horwedel, Deputy Director of the city of San Jose Planning Department urging the city to deny Presley grading permits or the city may be held accountable.
9.	September 29, 1999—An e-mail from USFWS staffer, David Wright, to Joe Horwedel, Deputy Planning Director at the city of San Jose. This e-mail was sent after the Service told Presley that the official decision was no take and details how USFWS wants to approve site erosion control methods and implies that even the erosion control may result in a take and is offering to indemnify the city from it.
10.	*Service Recommended Helpful Hints* vs. *Actual HCP Process for the Ranch on Silver Creek*. These "helpful hints" are excerpted from November 1996 issue of the "Endangered Species Habitat Conservation Planning Handbook", a reference book for Service biologists and for applicants. In the left hand column are the helpful hints and in the right hand column are the actual experiences.
11.	Aerial photo of the Ranch on Silver Creek. Note the housing projects surrounding the site as well as Highway 101 along the west side of the project.

EXHIBIT 1

EXECUTIVE SUMMARY

The 575-acre Ranch on Silver Creek is a master-planned residential and golf community designed and developed by Presley Homes of California. Located at the northern end of the Silver Creek hills in San Jose, California, the project comprises approximately 88 acres of homes in several residential neighborhoods, 280 acres of habitat and open space, 18 acres of common area open spaces, 13 acres of roadway, 160 acres of golf course (including clubhouse, parking, and golf course maintenance facilities), and 16 acres of regional and public park facilities.

The project site is located on the northern end of a northwest-trending ridge of the Silver Creek Hills. Elevations range from approximately 819 feet national geodetic vertical datum (NGVD) at the top of the ridge on the southeastern boundary to 200 feet NGVD on the western edge of the site. The moderately steep, rounded hills support numerous rock outcroppings and broad drainages. The site is underlain at the surface by serpentine and sandstone. The northern half of the site drains to Silver Creek, a perennial stream that originates above the Silver Creek Country

Club project, while the southern half of the site drains to an unnamed tributary (Hellyer Canyon). All flows from the project site eventually travel to Coyote Creek. The site is dominated by non-native annual grassland on a serpentine substrate (92 percent). It also includes relatively small areas on non-native annual grassland on a non-serpentine substrate, Diablan sage scrub, freshwater ponds, seeps, and marshes, and central coast live oak riparian forest habitats.

The species that will be covered by the HCP and Incidental Take Permit include the Bay checkerspot butterfly (Euphydryas editha bayensis; federally threatened), Santa Clara Valley dudleya (Dudleya setchellii; federally endangered), Metcalf Canyon jewel-flower (Streptanthus albidus ssp. albidus; federally endangered), Mount Hamiltion thistle (Cirsium fontinale var. campylon; CNPS 1B), and California tiger salamander (Ambystoma californiense; federal candidate species).

The project site has historically supported populations of the Bay checkerspot butterfly. As late as 1993, it was estimated that 25 percent of the northern Silver Creek Hills population (65 percent on Silver Creek Country Club and 10 percent on Chelmer/Wong) occurred onsite. However, extensive surveys conducted between 1996 and 1998 failed to detected larvae and adult butterflies onsite. In addition, the quality and quantity of the habitat onsite had dramatically declined. Presently, no butterflies and no suitable habitat exist onsite for the butterfly.

The project site presently supports numerous populations of Santa Clara Valley dudleya totally 21,947 individual plants. Several populations of the Metcalf Canyon jewelflower occur onsite that support approximately 75,000 plants and several populations of Mt. Hamilton thistle of 3,000 plants were also documented.

A small pond (approximately 24,000 square feet) north of the old quarry onsite supports breeding for the California tiger salamander. A maximum area of approximately 25 acres circumscribes the total estivation habitat for this pond.

It has been estimated that 3,836 individual dudleya plants (17.5 percent of the onsite population), no Metcalf Canyon jewelflower plants, and 350 individual Mt. Hamilton thistle (11.7 percent of on-site population) will be directly lost due to project implementation.

Current development of the project site will likely not result in "take" of any life stage of the Bay checkerspot butterfly because the species is absent from the site. The possibility of take, however, does exist if immigrant females entered the site, laid eggs, and the larvae succeeded in reaching diapause during the 1998 or subsequent seasons.

The project would result in loss of breeding and estivation habitat for the California tiger salamander. The maximum impact would total 25 acres.

Impacts to the plants will be mitigated by the establishment of 20 Plant Conservation Areas (PCA). These areas will be set aside and monitored into perpetuity. The objective of the dudleya mitigation is to replace through restoration all plants and the habitat lost during project implementation. On-site restoration will be comprised of several different elements, including: (1) salvage dudleya plants from serpentine rocks and transport them into suitable PCA's; (2) recreate dudleya habitat on suitable unoccupied habitat; (3) transplant container-grow plants into existing "unoccupied" rock outcrops; (4) create new habitat by fracturing unoccupied rock; and (5) plant dudleya seed collected during the salvage effort into recreated dudleya habitat. Mitigations for Mt. Hamilton thistle include: (1) salvage mature plants from within the impacted drainages and transport these plants into adjacent reaches that do not currently thistle; and (2) collect seed from both impact and non-impact plants and distribute into suitable unoccupied habitat onsite.

An approximately 71-acre Butterfly Conservation Area (BCA) will be established and managed for the butterfly into perpetuity. The goal of the BCA is to support a minimum of several hundred Bay checkerspot butterflies on a long-term basis. Management goals of the BCA include the establishment of 17 acres *of Plantago erecta* in densities of several hundred plants per square meter. This is expected to be accomplished by manipulating areas of 5,000 to 10,000 square feet and then seeding these areas with *Plantago erecta*, the larval food plant. In addition, this area will be grazed in a winter/spring phase so as to maximize the competitive advantage of the *Plantago erecta* patches.

The loss of tiger salamander habitat will be mitigated by preservation of offsite habitat (within a 40–50 mile radius) at a 1:1 ratio (breeding and estivation habitat) and the creation of new breeding habitat onsite. The offsite area should consist of a breeding pond (or pond complex) and must include adequate estivation habitat. In addition to offsite acquisition, tiger salamanders would be salvaged from the impact site and transferred to the new breeding habitat.

The incidental take permit will be in effect for 7 years from date of issuance. The permit will allow Presely Homes or its successors to take the species covered by this

HCP over that time period within the geographical boundaries and during the implementation of otherwise lawful activities identified in this HCP.

EXHIBIT 2

H.T. HARVEY & ASSOCIATES,
Alviso, CA, October 9, 1993.

Mr. BILL LEHMAN,
Chief, Conservation Planning Division,
U.S. Fish and Wildlife Service,
Sacramento, CA.

Subject: The Ranch on Silver Creek (aka "Cerro Plata") HCP (PN 1315–01)

DEAR MR. LEHMAN: Enclosed is the Habitat Conservation Plan (HCP) and Endangered Species Act (ESA) Section 10(a) incidental take permit application for the Ranch on Silver Creek. Dave Moser (applicant's attorney) notified you in a September 24, 1998 letter that we would be submitting this application on behalf of Presley Homes. This HCP is a significant effort in coalescing all known data on the biology of several serpentine endemic plant and animal species. This document was prepared by staff biologists with significant experience with the relevant species from H.T. Harvey & Associates and Sycamore Associates. For example, several experts (a combined 80-plus years experience with research of the butterfly) of the Bay Checkerspot Butterfly contributed significantly to the sections related to the butterfly (e.g. Dr. Raymond White) or were consulted as reviewers of the document (e.g. Dr. Dennis Murphy). Other biologists contributed by conducting surveys on the site since the early 1990's (e.g. Drs. Alan Launer and Stuart Wiess).

The Presley environmental team has met on five separate occasions with staff biologists of the Endangered Species Division (ESD). These staff members include Jim Browning, David Wright, Betty Warne, and Diane Elam. These meetings have included two meetings with the Service in Sacramento and three meetings on the project site. Not all Service staff members attended each meeting, but Browning. Wright and Warne were present at three of the five meetings. We invited (through ESD) a representative of the HCP group to one of the Sacramento meetings, but were informed that the HCP group would only become involved once an HCP was submitted to the Service for review. We also requested that the Service staff (i.e., Browning, Wright, and Warne) provide us any examples of HCP's they believed satisfactorily handled similar level of issues; recognizing an HCP addressing these same species may not be available. However, no examples were provided to us, so we relied on the HCP handbook and other accepted HCP's such as those prepared for the City of Bakersfield and the Natomas Basin.

We believe this HCP represents a significant effort at avoidance, minimization, and compensation for impacts to the relevant species. This document should serve as a significant basis for the protection of significant populations of several serpentine plant species and allow rehabilitation of the site for the Bay checkerspot butterfly.

To this end, we have based the general goals and objectives of this HCP, to the extent possible, on the goals and objectives of the Draft Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area. Specifically this HCP will:

- Protect and restore 71 acres that formerly supported the Bay checkerspot butterfly. In addition, significant Plant Conservation Areas will be established onsite for Santa Clara Valley dudleya, Metcalf Canyon jewelflower, and Mt. Hamilton thistle. Nearly 18,000 dudleya plants will be protected onsite, 4,000 dudleya plants directly impacted will be relocated and at least one of the plant conservation areas will protect a population of over 2,000 plants.
- Contribute research on co-management of dudleya and Bay checkerspot butterfly habitat. The Butterfly Conservation Area also supports a large population of dudleya.
- Require on-going monitoring of the butterfly and plant conservation areas.
- Allow translocation of butterflies to conservation area if allowed and feasible.
- Provide for adaptive management for all conservation areas onsite.
- Develop educational programs for homeowners, golfers and local residents of the unique resources onsite.
- Support research on various aspects of the Bay checkerspot butterfly biology and on seed germination, propagation techniques, and demographics of the plant species covered by the HCP.

We believe this plan allows for the protection, preservation, restoration and adaptive management of the significant serpentine plant and animal resources onsite and

look forward to discussing the approach and focus of this document. We hope that the HCP reviews process can speedily evolve into a productive and cooperative relationship between the Service and the Presley team. We recognize that comments on this document will tend to fall into the categories of form and content. We would propose that our initial efforts with the Service focus on content (e.g., the biology of the species and specific mitigation programs), leaving issues relating to form for later discussions.

Sincerely,

RICK A. HOPKINS, PH.D.,
Wildlife Ecologist and Project Manager.

EXHIBIT 3

ENVIRONMENTAL TRUST FOR THE RANCH ON SILVER CREEK, SAN JOSE, SANTA CLARA COUNTY, CA

I. INTRODUCTION

The plan for the Environmental Trust for The Ranch on Silver Creek (Trust) is a traditional concept that uses a modern approach. The Trust is rooted in the American tradition of land stewardship for environmental protection, and utilizes state-of-the-art knowledge and scientific approach for adaptive resource management. The essence of the concept is that Presley Homes, the project developer, will protect the resource-critical portion of The Ranch on Silver Creek (about 52 percent of the site or 298 acres) by deeding it to the Trust and ensuring that the Trust has an adequate financial base to assure the best chance for survival and recovery from pre-existing conditions for endangered plants, animals, and habitats.

The key to Presley's plan, and what sets it apart from nearly all other currently implemented resource management programs required as mitigation, is that the protection and scientific management of the sensitive resources is provided for in perpetuity rather than for a limited number of years.

II. RESOURCES WORTH PROTECTING

The Ranch on Silver Creek has significant resources to protect and manage, including plant and animal species, wetlands and riparian habitat, and serpentine habitat (see Attachment A, Site Photographs). The project has been designed to avoid as many of these resources as is feasible. The following paragraphs summarize these plant, animal, and habitat resources that are present on the project site, and quantify the degree of avoidance that the project design has produced. The Project avoidance percentages listed below represent the amount of the onsite species population that has been avoided by the project.

Attachment A.

ENVIRONMENTAL TRUST
FOR THE RANCH ON SILVER CREEK
SITE PHOTOGRAPHS

Photograph 1. Santa Clara Valley dudleya

May, 1999

Prepared by Daniel O. Holmes

1220 Oakland Boulevard, Suite 100
Walnut Creek, CA 94596
925-279-0580

Listed Species

Federally Endangered plants:

- Santa Clara Valley dudleya (*Dudleya setchellii*) [project avoidance 82 percent]
- Metcalf Canyon jewelflower (*Streptantus albidus* ssp. *albidus*) [project avoidance 100 percent].

California Native Plant Society 1B-ranked plants:

- Mount Hamilton Thistle (*Cirsium fontinale* var. *campylon*) [project avoidance 88 percent]
- fragrant fritillary (*Fritillaria lilacea*) [project avoidance 89 percent]

• chaparral bush mallow or Hall's bush mallow (*Malacothamnus fasciculatus*) [project avoidance 100 percent].

As indicated, these rare plants are largely avoided by the proposed project.

The site is also habitat for the State species of special concern and Federal Candidate species, California tiger salamander (*Ambystoma californiense*). An onsite translocation project has been conducted in 1999 for this species, relocating it into a pond newly created for the salamander. Please see Attachment B for a complete list of Special-status plant and animal species, their status, and known or potential occurrence on The Ranch on Silver Creek project site, San Jose.

Project mitigation includes management and restoration of pre-project populations of dudleya and jewelflower. Transplanting, propagating, seeding, and enhancing and creating potential habitat are among the conservation measures planned to assure this success.

The site also has noteworthy potential for the development of viable habitat for federally threatened Bay checkerspot butterfly (*Euphydryas editha bayensis*). Currently, this species is not present, but the Environmental Trust will create the proper host and food plant community to sustain the butterfly on 17 acres within a 71 acre preserve. The butterfly formerly occupied this portion of the site, therefore the soils, aspect, slopes are suitable to habitat restoration, provided a management regime favorable to the host plants is implemented.

Wetlands and Riparian Habitat

Ninety-one percent of the 4.70 acres of wetland arid riparian habitats on the site are avoided by the project. Ninety-six percent (of the 10,270 linear feet) of the two major riparian corridors will be avoided: Silver Creek, consists of a main stem (~3,200 feet in length) and a tributary (~1,600 feet), and Hellyer Creek consists of a main stem (~4,900 feet) and a tributary (~1,000 feet). Lower Hellyer Canyon also includes an on-stream pond of 15,190 square feet surrounded by 4,495 square feet of riparian habitat. Silver Creek is a rich riparian corridor with an abundant community of riparian forest and shrubs. In contrast the Hellyer Creek corridor consists of herbaceous vegetation and very few trees. A portion of the Silver Creek riparian corridor will be deeded to the City of San Jose as a part of the Silver Creek Linear Park; the balance of the riparian corridors is to be owned and managed by the Trust. There will also be an additional 0.75 acre of constructed wetlands in lower Hellyer Canyon and a California tiger salamander pond of 0.22 acre has already been built in upper Hellyer Canyon.

Serpentine Habitat

Since this site is predominantly serpentine habitat, there are many endemic species which could occupy and potentially use the site. The Trust has a special opportunity to enhance this site for these species. The U.S. Fish and Wildlife Service in the Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (1998) points out that these are unique habitats worthy of protection. The Service also notes that in most cases the lands require active management in order to maintain and enhance habitat values for the 14 federally listed species and 14 species of concern of plants and animals that occur exclusively or primarily on serpentine soils and serpentine grasslands in the San Francisco Bay Area.

III. RATIONALE

The Ranch on Silver Creek project impacts natural resources of national, state, and local significance. Wetlands, endangered and threatened species, and critical habitats are being adversely affected. Mitigation measures usually required by regulatory agencies include avoidance, minimization, and/or compensation through habitat enhancement or habitat creation. The Ranch on Silver Creek has exercised significant avoidance and minimization of impacts, and provides for compensation.

In most other resource management programs, open space is put into a permanent conservation easement and a funding mechanism, such as the local Homeowner's Association, provides for long-term management of these resources. Such easements and funding are frequently required as conditions of project approval. Unfortunately, permanent funding and a Homeowner's Association are not enough to assure permanent professional management of the resources. Such management is usually needed to provide a good chance of long-term survival for listed species and enhancement of habitat. Homeowner's Associations are ill-equipped to manage or oversee management of natural resources. Furthermore, effective long-term (i.e. permanent) management can only occur with certain administrative elements, which typically are not incorporated into the long-term plan. These elements include:

(1) Permanent record keeping of materials on management procedures and practices including: environmental site documents, methodologies of measurement, results of prior studies, information on benchmarks for plot or sample locations, photography for repeat studies, and results from long term monitoring. Inadequate record keeping seriously undermines the validity of any management strategies or resource studies.

(2) Regular professional staff assigned to the site/resource to continuously perform and/or oversee management practices, scientific studies, and data collection. This is especially important because, as the regulatory agencies have repeatedly pointed out in species recovery plans, developing the underlying scientific knowledge for effective management of many of these habitats and species will require years or even decades of studies, experiments, and experience with adaptive management and specific sites. Professionals are essential because of the complexity of the biological and habitat issues.

(3) Coordination with other sites and studies which share similar resources or constraints. Progress toward understanding management issues requires knowledge of what has been learned in other study/management sites.

For the Ranch on Silver Creek, Presley Homes has taken the initiative to provide continuity and professional management of site resources, open space for restoration and mitigation, and conservation of easement sites. By making this commitment, Presley Homes is demonstrating a concern for the resources to the public and the agencies.

IV. MISSION STATEMENT

The Environmental Trust for The Ranch on Silver Creek will actively provide stewardship of the Trust properties in perpetuity for the sensitive and unique plant and animal species, and sensitive habitats of concern including serpentine, wetland, and riparian habitats. The Trust will function in a scientifically, fiscally, and socially sound manner.

V. OBJECTIVES

In order to attain the goal embodied in the Mission Statement, a number of objectives need to be met. The objectives of the Trust include:

Site Management

- Protect existing natural resources
- Maintain, repair, and replace physical property
- Maintain fences and signs
- Maintain public access in suitable areas
- Patrol habitat, report violations to law enforcement
- Work with the golf course to assure enforcement of out-of-bounds areas
- Work with City of San Jose, Pacific Gas & Electric, and other stakeholders with easements or adjacent property to minimize impacts
- Monitor golf course maintenance to minimize impacts
- Collect golf balls from protected habitat
- Monitor and maintain permanent water quality best management practices (BMPs)
- Maintain appropriate fire buffers
- Communicate with other sites managing similar resources

Science and Research

- Participate in the Northern California research community through ongoing communications, writing papers, attending and participating in conferences, and disseminating knowledge gained from studies conducted on the site
- Plan, facilitate, and conduct scientific studies
- Utilize the site for scientific studies
- Monitor and document resources and environmental conditions
- Maintain involvement of academic and research communities
- Propagate special status species
- Encourage California native plant horticulture through outreach to interested organizations

Administration

- Maintain a science and management handbook
- Manage finances and staff

Public Education and Relations

- Maintain and develop public education and raise local environmental consciousness [e.g. via an interpretive center and outreach including web site]
- Build a constituency for the site resources including volunteer involvement
- Promote public understanding of the natural history and history of the site

- Sell environmental materials including native plants, posters, local maps, nature art
- Educate community about using non-invasive species

Library and Records

- Serve as a repository for a reference library of historic and contemporary documents (see Attachment C for a Preliminary Reference Bibliography)
- Maintain site and resource documents, records, and data
- Provide appropriate computer systems, including a geographic information system, and equipment for utilizing library materials including maps, aerial photographs and scientific data
- Provide public access to Trust library materials

Mitigation and Compliance

- Mitigate for impacts resulting from The Ranch on Silver Creek project
- Ensure compliance with the Ranch on Silver Creek project city and agency Conditions of Approval, and FEIR and EIR Addendum mitigation measures
- Coordinate mitigation for projects affecting the site

VI. GOVERNANCE

The Environmental Trust will be governed by a seven member Board of Directors who have the ultimate responsibility for fulfillment of the Mission of the Trust. They will set policy, prioritize major objectives, oversee management, hire and fire the Trust Manager, and provide primary fiscal responsibility. The Board must take care that directors, officers, and staff avoid conflicts of interest. It is essential that the Board limit its activities to protect its Non-Profit, tax-deductible Status. See Attachments D and E, Draft Articles of Incorporation and Draft Bylaws.

VII. STAFF, CONSULTANTS, AND VOLUNTEERS

The site will be managed by a Trust Manager. This individual, who will likely be associated with a consulting or resource management firm, will be responsible for overall management, as well as all the day-to-day aspects of the Trust including:

- Implementing the policies of the Board of Trustees
- Reporting to the Board
- Maintaining a strong scientific and historic knowledge of the site and its resources
- Overseeing adaptive management of the resources
- Managing day-to-day operations including financial matters
- Conducting meetings of the Advisory Panel
- Hiring, firing, and supervising employees and volunteers
- Maintaining facilities
- Meeting the Trust objectives

The Manager will hire assistance as funding provides and needs require, and seek to build a cadre of volunteers to work with the program for environmental monitoring, educational activities, projects, public education and relations, and site/resource maintenance.

VIII. ADVISORY PANEL

There will be an Advisory Panel made up of representatives of stakeholders in the area. The sole purpose of the Advisory Panel is to lend its membership's perspectives to scientific and management issues, generally advising the Trust Manager and/or the Board of Trustees on the full range of management concerns. The Advisory Panel will likely include a Bay checkerspot butterfly expert, a California Native Plant Society representative, an Audubon Society representative, the Ranch on Silver Creek Golf Course superintendent, a City of San Jose Parks Department official, a City of San Jose Maintenance District official, a United States Fish and Wildlife Service official, a California Department of Fish and Game official, a Regional Water Quality Control Board official, a member of the Kirby Canyon Habitat Conservation Trust, a local schools representative, a homeowners representative, and some interested citizens. All members and positions on the Advisory Panel will be subject to approval/removal by the Board of Directors.

IX. ADAPTIVE SCIENTIFIC MANAGEMENT AS A RESOURCE MANAGEMENT STRATEGY

The Trust will utilize an adaptive management approach, which allows the management plan to adjust to unforeseen circumstances. Adaptive management in conjunction with continued research is cited by the U.S. Fish and Wildlife Service in the Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area to be a crucial component of serpentine species recovery. The primary reason for using

adaptive management is to allow for changes in the strategies that may be necessary to reach the long-term goals of protection of a site and its resources, and to ensure the likelihood of the survival of target species in the wild. Under adaptive management, activities and ecosystems are monitored and analyzed to determine how they function ecologically and if they are producing the desired results. If the desired results are not being achieved, adjustments in the management strategy must then be considered. Monitoring is an integral tool in an adaptive management approach. Sampling and analyses will be designed in such a way as to ensure that data will be efficiently and properly collected, analyzed, archived, and used to adjust mitigation management strategies, as necessary.

A key element of adaptive management is the establishment of testable hypotheses linked to the conservation strategies and their biological objectives. If monitoring determines that biological conditions are outside specific parameters or thresholds, the conservation strategies must be reviewed. The thresholds for review must be linked to key elements of the plan and should be measurable by the collection of monitoring data. The establishment of measurable parameters would dictate the types of monitoring to be done including the kinds and number of samples, distribution of samples, and use of controls.

X. RELATED ENVIRONMENTAL MANAGEMENT

The Trust will provide other essential functions that dovetail with their management mission. As mentioned above, compilation and archiving of scientific documentation is essential. Providing public education about the Trust's sites and resources is necessary. The Trust will provide general oversight for problems with trespassing, fences, erosion, vandalism, off-road vehicles, etc., as appropriate. Trust personnel will contract for and oversee all site uses such as grazing, scientific studies, monitoring, repairs, construction, etc. Staff will participate in the public, professional, and agency dialog concerning the resources they manage.

XI. PHASE-IN

For a portion of the build-out period of the project, anticipated to be 3–5 years, Presley Homes may retain ownership of the Trust lands and hire an entity to manage the site in accordance with the project mitigation measures and the Trust Mission Statement. Initially the management entity will be Sycamore Associates LLC, an experienced environmental consulting firm which is intimate with the site as well as its resource and environmental permitting constraints. During this period, an Advisory Panel will be constituted to assist Sycamore in the complexities of instituting mitigation measures and management. The initial Advisory Panel members will include other consultants who may be paid. It will also likely include representatives of the golf course, architecture and engineering firms, construction firms, City of San Jose Parks Department, homeowners, regulatory agencies, species experts, the California Native Plant Society, and other resource professionals.

XII. LAND AND FACILITIES

Trust properties and facilities will include the land, trails, office, native plant garden, weather station, plant nursery, workshop, storage, historic barn, and dudleya demonstration area. A substantial portion of the design of the facilities is being based on the Jasper Ridge Biological Preserve at Stanford University, Palo Alto, California.

A. Trust Lands

The lands to be administered by the Trust are expected to be about 298 acres (52 percent of the site) and are shown on the Attachment F. Map 1. It is expected that among the spaces administered by the Trust, are lands which the City of San Jose Maintenance District or the golf course will provide maintenance in cooperation with the Trust. Note also that PG&E has certain easements across the property. Attachment G. Map 2 shows the key species and habitats: Santa Clara Valley dudleya, Metcalf Canyon jewel-flower, Mount Hamilton thistle, fragrant fritillary, bush mallow, California tiger salamander, and wetlands/riparian areas. It also shows the City Park and the Bay Checkerspot Butterfly Conservation Area. Several public trails outside of critical habitat are also planned to facilitate public enjoyment and foster appreciation of the open spaces without public endangering the natural resources.

B. Office

The Trust will have an 800 square foot office in the Golf Course Clubhouse. This is where the all-important library will be housed and the professional staff will do

most of their work. The office will also afford space for public contact and volunteers, and for the preparation of materials for educational functions.

The Trust will have responsibility for and right to permanently set up educational displays in the hallways and rooms of the Clubhouse. These will be prepared and maintained by the Trust in keeping with the quality and taste of the Clubhouse decor. The displays will be in high visibility locations and not be less than 60 linear feet of wall space. Typical display topics would include: serpentine endemism, California tiger salamander ecology and life cycle, Bay checkerspot butterfly ecology, origin of serpentine habitat in coastal California, distribution of species of concern in Santa Clara County, California extinctions, and the Trust program description.

With reasonable advance notice, the Trust will be assured access at a reasonable cost to Clubhouse meeting rooms and public spaces for public activities related to the Trust, including lectures and programs, children's nature-related activities, and receptions. On the Clubhouse grounds, the Trust will maintain a modest display garden of native plants and a weather station, to be maintained and monitored by the Trust.

The library will include scientific data, reference documents, maps, aerial photographs, photograph collection, interpretive materials, reports, and permits. Appropriate equipment and software for the use of the library materials will be maintained in the office.

C. Field Station

The Trust will maintain the historic 6400 square foot Hassler Barn near the Silver Creek entrance to The Ranch on Silver Creek. As a part of The Ranch Planned Unit Development Conditions of Approval, the structure will be restored, have a foundation installed, and be seismically reinforced in keeping with the guidelines established by the Secretary of Interior for historic structures.

A structure will be placed within or adjacent the barn or in the adjacent City Park to provide a field office. Visual impact will be minimal. A plant nursery area for propagation of native plants, workshop, parking, and storage area will be provided at this location. It is anticipated that adjacent lands in the City Park can be used for complementary activities. Equipment, tools, and supplies for site maintenance will be kept in the field station. Appropriate research and laboratory equipment will be maintained at either the field station or office. Scientific equipment will likely include computer equipment, plant presses, microscopes, balances, drying oven, GPS receiver, and storage cabinets.

The field station will also house a shower (essential because of poison oak on the site), small kitchen and accommodations. Researchers will be allowed to stay at nominal cost on the site for short periods. Note that motel accommodations in the area are very expensive and tend to be full.

D. Other Assets

A 4-wheel drive vehicle will be maintained as a part of the Trust for use by staff. The Trust will have a designated parking spot at the Clubhouse.

XIII. FINANCIAL AND ASSET MANAGEMENT

Funds will be managed and accounted for in accord with the requirements of the Internal Revenue Service, the Franchise Tax Board, the Board of Directors, and the Prudent Investor Act. The Board of Directors assumes ultimate responsibility for all financial matters.

XIV. FUNDING AND BUDGET

Funding will be provided from two sources: an endowment to establish the facilities and some operations from Presley Homes, and a portion of the property tax for the portion of the property tax administered through the City of San Jose. It is anticipated that the annual budget will be approximately $200,000 (1999 dollars). Additional funds may be raised through grants, sales of educational materials and plants, contracted work for managing or doing science on nearby preserves, contracted work for onsite mitigation or monitoring for utilities or other entities, and other appropriate activities. See Attachment H. Preliminary Annual Budget.

EXHIBIT 4

MCCUTCHEN, DOYLE, BROWN & EMERSEN, LLP,
San Francisco, CA, December 21, 1998.

Mr. BILL LEHMAN,
Chief, Conservation Planning Division,
U.S. Fish and Wildlife Service,
Sacramento, CA.

Subject: The Ranch on Silver Creek HCP

DEAR BILL: As you know from my prior correspondence, Presley Homes is growing increasingly concerned with the Service's apparent lack of progress in processing our HCP and Section 10(a) application. I was very much hoping to speak with you last week before you left for vacation. When I reached you about 11:30, you indicated you were just leaving for lunch and would call upon your return. When I had not heard from you by 2:30 I called and was informed you had left for the day. I left you a voicemail message anywise, but did not hear back from you. Since I will be out of the office when you return, I will convey my requests with this brief letter.

The start of the new year will mark 3 months since Presley submitted its HCP and application. It will also mark 7½ weeks since we met with you and your staff to discuss the HCP. At that meeting, the Service committed to providing us with written comments on the HCP, and to do so within a few weeks. Nevertheless, we

have not received those comments. Also, though my December 2 letter to you asked for an update on the Service's progress, we have not received that either.

I respectfully request your assistance in making every effort to provide us with the Service's comments as soon as possible. I also request a meeting with you and appropriate members of your staff during the first week of January to discuss whatever comments the Service may have, and to update you on the significant progress Presley has made in addressing issues we discussed in November. Marylee Guinon of Sycamore Associates will contact you the week of December 28 to set up that meeting.

Presley remains firmly committed to this HCP, which will provide very significant conservation benefits to the Bay checkerspot butterfly. Presley is also firmly committed to the HCP processing and project construction schedule we discussed in November. Your assistance in processing our HCP and application would be greatly appreciated.

Very truly yours,

DAVID E. MOSER.

EXHIBIT 5

MCCUTCHEN, DOYLE, BROWN & ENERSEN, LLP,
San Francisco, CA, January 27, 1999.

Mr. MICHAEL J. SPEAR,
Manager, California/Nevada Operations Office,
U.S. Fish and Wildlife Service,
Sacramento, CA.

Subject: The Ranch on Silver Creek HCP—San Jose, California

DEAR MIKE: This letter follows my letter to you of December 2, 1998, in which I sought your early assistance on the HCP referenced above. A copy is attached for your convenience. Unfortunately, the frustrating situation which existed then has only worsened. I wish to meet with you at your earliest possible opportunity to discuss a situation which is intolerable to the applicant, and which should be unacceptable to Service management.

It has now been 3½ months since my client, Presley Homes, submitted an HCP and Section 10(a) permit application to the Service's Sacramento Field Office. It has been 11 weeks since we met with Service staff to discuss the HCP. Although the Service at that meeting promised to provide us with written comments on the HCP within a couple of weeks, and although the Service's published target processing time for HCPs such as this is a total of 3–5 months, and although the Service's Customer Service Standards (National Policy Issuance 96–02) requires the Service and all employees to respond to its external customers in a timely and professional manner, *Presley has yet to receive any written comments on the HCP, and Presley has yet to see the Service make any significant progress toward processing the HCP.* Presley has continually requested action from the Service, but to no avail. Moreover, this HCP appears to be the victim of internal turf battles and disagreements in the Sacramento Field Office. Indeed, it now appears that responsibility for processing this HCP has inexplicably been removed from the HCP Division.

You have been a leading proponent of HCPs on behalf of the Administration. As you know from my work on the San Diego MSCP and other projects, I have likewise been a strong advocate for HCPs. Unfortunately, and for reasons which are a mystery given the soundness of the Ranch on Silver Creek HCP and the benefits it will provide both to the Service and to the species resources at issue, on this HCP project the Service has consistently displayed a negative attitude, a lack of responsiveness, and an uncooperative manner. Not only is this unacceptable to Presley Homes, it undermines the entire HCP program.

I will call you tomorrow to request a meeting as soon as possible to try and put this project on its proper course. Your involvement is necessary, and I hope I can count on your assistance.

Very truly yours,

DAVID E. MOSER.

McCUTCHEN, DOYLE, BROWN & ENERSEN, LLP,
San Francisco, CA, December 2, 1998.

Mr. MICHAEL J. SPEAR,
Manager, California/Nevada Operations Office,
U.S. Fish and Wildlife Service,
Sacramento, CA.

Subject: The Ranch on Silver Creek HCP

DEAR MR. SPEAR: I represent Presley Homes, the developer of the Ranch on Silver Creek residential and golf course project in San Jose. In early October, following extensive consultations with the Service, Presley submitted a draft HCP. We have since had one meeting with the Service, followed by two letters from me identifying issues to be worked on. Copies are enclosed for your information, along with correspondence which both preceded and accompanied the HCP.

My purpose in writing you about this project are twofold. First, this is a high-profile HCP within the Sacramento Field Office, and Bus one you should personally be aware of sooner rather than later. The HCP is high-profile in part, because of apparent fundamental differences of opinion as between the Conservation Planning Division and Endangered Species Division regarding this project. Second, I am quite concerned that given such disagreements, and personnel changes within the Conservation Planning Division (our assigned staff member, Meri Moore, is leaving the Service imminently, which is a significant loss to the Service and the HCP program as she was one of the best staff people I have ever dealt with), the HCP may not be processed in a timely manner.

I would like to keep in touch with you regarding this HCP over the coming weeks and months, as Presley is counting on the Service to meet its published target times for processing the HCP. Any help you can provide in this regard would be greatly appreciated.

In the meantime, as always, please do not hesitate to call me if I can provide any additional information.

Very truly yours,

DAVID E. MOSER.

EXHIBIT 6

UNIVERSITY OF NEVADA,
Reno, NV, March 28, 1999.

Mr. JAMES MEEK,
Presley Homes,
Martinez, CA.

DEAR MR. MEEK: I wanted to convey to you a brief summary of my conversation with the U.S. Fish and Wildlife Service in February 1999. On the phone to me from the U.S. Fish and Wildlife Service Field Office in Sacramento was David Wright, Ken Sanchez, and Diane Elam.

I initiated the exchange with a 10-minute overview of the status of the bay checkerspot butterfly on the Ranch on Silver Creek property, including its history of population fluctuations there, its recent decline to disappearance, the well-documented near disappearance of habitat elements on the site, and a description of how conditions on the property relate to adjacent holdings, and current and recent roles of those holdings in supporting the butterfly. Having visited the site with Mr. Wright on 14 January 1998, I related my observations to that visit and described hoof the El Nino condition of 1998 and more moderate current weather conditions have affected habitat suitability on the property. I stated unequivocally that although once prime habitat for the bay checkerspot butterfly, the Ranch on Silver Creek property is no longer capable of supporting a viable population of the butterfly, that standardized field surveys indicate that neither larvae or adults of the species have occupied the site since the flight season of 1995, and that the decline of habitat value is not reversible without management intervention, including focused restoration efforts involving grazing and mechanical treatments.

David Wright responded that he did not agree with my conclusions that the site had diminished in habitat quality to the point that it cannot sustain the bay checkerspol butterfly and that the butterfly no longer occupies the property. He offered these observations as assertions. He presented no empirical evidence to support his position on this habitat issue. He stated that the field techniques employed by scientists from Stanford University and consultants on the site were inadequate to establish absence of the butterfly.

As the petitioner for the listing of the bay checkerspot butterfly under the Federal Endangered Species Act, I have had few opportunities to respond to a questioning of my scientific competence and my integrity of judgment regarding the species. I therefore responded. In reference to the butterflies onsite, both larval and adult focused surveys do indeed have a finite probability of missing the species at extremely low densities in any given sampling period. That likelihood is decreased when both life stages are adequately sampled in the same year And the probability is further diminished to vanishingly close to zero when surveys are carried out over 4 years in sequence. As the draft habitat conservation plan amply documents, the bay checkerspot butterfly no longer occupies the Ranch on Silver Creek property. As for habitat quality, the draft plan also describes the observed rapid decline in habitat quality on this site as measured by reductions in the butterfly's larval hostplants following cessation of grazing earlier in this decade. The dramatic decline of the primary hostplant, *Plantago erecta,* is demonstrated in the draft plan which describes localized orders-of-magnitude decreases in plant numbers, and complete disappearance of the species in many sample quadrats. Importantly, conclusions regarding the status of the butterfly and habitat quality on the site are shared by Drs. Alan Launer and Stuart Weiss of Stanford University and Dr. Raymond White of Harvey and Associates, who with me combined have more than 90 years of research experience with the bay checkerspot butterfly, and together have provided the entirety of available knowledge on this species at the site.

All of the above was a repeat of information from the 14 January 1998 site visit with David Wright, which you attended. I then pointed out on the ground the historical distribution of both the butterfly and its habitat, discussed its history on the adjacent Shea Homes property, and speculated on means of arresting the nearly complete invasion of the site by non-native grasses and forbs. When I noted the then 3-year record of non-occupancy by the butterfly, Wright stated that further surveys would not be necessary and that the data available would be sufficient to inform an HCP. One year later, he clearly has reversed his opinion on the sufficiency of existing data, yet offers no explanation for that reversal. During that same year, the recovery plan for the bay checkerspot butterfly was finalized arid published as part of a plan for other species that are restricted to serpentine soils. The butterfly plan was virtually entirely based on the research of the three biologists mentioned above and myself—including all data on distribution, abundance, habitat use, and risks to populations. Our research and observations were apparently sufficiently reliable to provide the empirical basis for the species' recovery plan, but not reliable enough to assess the status of the bay checkerspot butterfly and its habitat on your property in 1999. As the authority on this species, with dozens of peer-reviewed scientific journal articles, book chapters, and a dissertation on the species, I find it galling to have my competence questioned by an agency staffer with no first hand experience with the species. Moreover, Wright's recent campaign of lobbying other agencies (the Army Corps of Engineers among them) to his unsupported position and impugning me in the process is so far out of line as to be unprofessional.

My differences of opinion with David Wright are not differences in fact. Wright has brought no new opposing data or observations to the dialog The disagreement clearly is a construct to force you to scale back development plans on the site. Since I have not discussed with you either the footprint of your development, the number of units proposed, or associated land uses, I can offer you no advice on those issues in your continued deliberations.

I, however, can assure you that the information provided to you on the historical distribution and abundance of the bay checkerspot on your property is reliable, that my conclusions about its current status and the status of its habitat are sound, and that development activities will not result in take of the bay checkerspot butterfly on the Ranch on Silver Creek property That stated, my disappointment at the rejection by the U.S. Fish and Wildlife Service of your proposed habitat conservation plan for the site cannot be greater—it is a conservation opportunity lost for no good reason.

I close by noting that I walked your site on 20 March. The invasion of non-native plants continues unabated and no butterflies were apparent under superior flight conditions.

Should you wish a more detailed assessment or related information, do not hesitate to contact me. I can be reached at (775) 784–1303.

Sincerely,

DENNIS D. MURPHY, PHD.
Research Professor.

COBLENTZ, PATCH, DUFFY & BASS, LLP,
San Francisco, CA, August 2, 1999.

Mr. DAVID NAWI, ESQ.,
Regional Solicitor,
U.S. Department of the Interior,
Sacramento, CA.

Re: Presley Homes—Cerro Plata (a.k.a., The Ranch on Silver Creek), San Jose, California

DEAR MR. NAWI: This concerns the unsigned copy of the letter from Professor Dennis D. Murphy to James Meek dated March 28, 1999 (which was attached as Exhibit "A" to Presley Homes, letter to Secretary of the Interior Bruce Babbitt and certain other Federal officials dated July 29, 1999). We are unable to locate a signed copy of the subject letter. However, enclosed please find a statement from Professor Murphy, dated today, to the effect that a signed original of the subject letter was sent by him to James Meek, of Presley Homes, on March 28, 1999.

Very truly yours,

NAOMI RUSTOMJEE.

August 2, 1999

I represent that the original of the unsigned copy of the attached letter, from myself to James Meek of Presley Homes dated March 28, 1998, regarding the absence of the Bay checkerspot butterfly on the Ranch at Silver Creek, San Jose, property, was signed by me on that date and sent to Mr. Meek.

DENNIS D. MURPHY, PH.D.

EXHIBIT 7

U.S. FISH AND WILDLIFE SERVICE,
Sacramento, CA, July 23, 1999.

From: Darryl Boyd

To: Ruby, Tom

Subject: FW: Important you not approve grading Ranch on Silver Creek proj

DARRYL, JOE, AND GERRY: I spoke to Gerry and left a message for Darryl earlier this morning. I understand the Planning department will have opportunity to review and say yes or no to a mass grading permit application for the Ranch at Silver Creek project, Presley Homes property, tentatively scheduled very soon.

I recommend that the City of San Jose NOT approve this grading permit. Our office (Sacramento office of the U.S. Fish and Wildlife Service, which has jurisdiction over federally listed threatened and endangered species) have been telling the City for a long time that there are listed species and their habitat on the Ranch on Silver Creek site. Because of language in City Resolution 64913—EIR on Recycling Water and verbal assurances from Joe, and from Mike Enderby, your issuance of a grading permit for clearing and grubbing and other site prep work on July 7 took us by surprise. Since then we have advised Presley Homes, by telephone, fax and letter, that their actions on the site are likely to be causing prohibited unpermitted "take" of listed wildlife in violation of the Federal Endangered Species Act (ESA), and requested that they halt these activities immediately. We copied the City on some of this correspondence. Presley Homes said they would take this under advisement. It is our understanding that Presley Homes has agreed in relation to a separate lawsuit to stop all work on the site until August 5, so there should be no rush to issue the mass grading permit.

Mass grading on the site would cause increased take of listed wildlife. Presley Homes does not have a permit from us for this take, nor does the City of San Jose. I think it's important you be aware that courts have found that cities and local governments can be liable under the ESA for their actions that result in take. Some cases: Strahan v. Coxe 127 F.3d 155 (1st Cir. 1997), U.S. v. Town of Plymouth, Mass., 6 F. Supp. 2d 81 (D. Mass. 1998); and Loggerhead Turtle v. County Council of Volusia County, 896 F. Supp., 1170 (M.D. Fla. 1995).

We would like the City to postpone its grading pervert decisions until after Presley Homes has obtained incidental take authorization from the Service consistent with City Resolution 64913 p. 43.

As always we are available to discuss these issues. We are moving our office shortly (see attached) but will do our best to be responsive to you. Contact me or Ken Sanchez at the number below.

DAVID WRIGHT,
Entomologist.

EXHIBIT 8

DEPARTMENT OF THE INTERIOR,
Sacramento, CA, July 28, 1999.

Mr. JOSEPH HORWEDEL,
Deputy Director,
Department of Planning, Building and Code Enforcement,
San Jose, CA.

Subject: Proposed Ranch on Silver Creek Project

DEAR MR. HORWEDEL: This letter concerns the City of San Jose's (City) consideration of a mass grading permit for Presley Homes Ranch on Silver Creek project in San Jose, Santa Clara County, California. The U.S. Fish and Wildlife Service (Service) is concerned about the impacts of this project on the federally threatened bay checkerspot butterfly (*Euphydryas editha bayensis)*, California red-legged frog (red-legged frog) *Rana aurora draytonii*), the endangered Metcalf Canyon jewelflower (*Streptanthus albidus* ssp. *albidus*) and Santa Clara Valley dudleya (*Dudleya setchelli*). These species are protected under the Endangered Species Act of 1973, as amended (16 U.S.C. §§ 1531–1543, as amended) (Act). In addition, the California tiger salamander (*Ambystoma californiense*), is present on the site and is a candidate for Federal listing.

Issuance of a mass grading permit or other site activities permits by your office relating to this project is likely to result in take of listed species. Section 9 of the Act and implementing regulation (50 CFR 17.21 and 17.31) prohibit "take" of threatened or endangered wildlife by any "person." Section 3 (12) of the Act defines person to include "any officer, employee, agent . . . of any State, municipality, or political subdivision". Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" any such animal. Significant habitat modification or degradation is defined to be take where it actually kills or injures listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR § 17.3). The Service is concerned that the mass grading, if authorized by the City, may cause, among other things, further killing of butterfly larvae and more severe degradation of the species' habitat. Any issuance of a grading permit that results in the loss or take of protected species or their habitat may put the City in direct conflict with the Act.

The Service continues to be available to work with Presley Homes to identify an appropriate project design—one that avoids and minimizes impacts to listed species. Unless and until Presley has obtained the required permit from the Service, I ask that you withhold all approvals for ground-disturbance and other activities on the site, consistent with San Jose City Council Resolution No. 64913, which calls for Service approvals before the development is permitted to proceed.

To discuss this matter please contact me at (916) 979–2710.

Sincerely,

WAYNE S. WHITE,
Field Supervisor.

EXHIBIT 9

DAVID WRIGHT,
Sacramento, CA, September 29, 1999.

Mr. JOSEPH HORWEDEL.

From: David Wright

To: Joseph Horwedel

Subject: FW: Ranch on Silver Creek

Original Message

Subject: Ranch on Silver Creek

HELLO JOE, Congratulations to you and the City on winning the suit Presley brought against you. We appreciate the effort this was for you. We are working on a letter for you about site erosion control measures. Measures themselves are done, the concern that arose is that the City be protected against liability for incidental take that might occur from regrading etc., and how do we do that. Hopefully just will require careful language—we will ask our solicitors to review. What are your needs?

DW.

EXHIBIT 10

SERVICE RECOMMENDED HELPFUL HINTS VS. ACTUAL HCP PROCESS FOR THE RANCH ON SILVER CREEK

"Service biologists must combine flexibility, creativity, good science, and good judgment in providing technical assistance to HCP applicants and making the section 10 program successful. The following "rules of thumb" should be helpful in meeting these challenges."

The above quote was taken from the November 1996 issue of "Endangered Species Habitat Conservation Planning Handbook", published by the U.S. Fish and Wildlife Service and National Marine Fisheries Service, a reference handbook for Service biologists and for applicants alike. This handbook is just one example of the type of literature Presley used as research before beginning the HCP process for the Ranch on Silver Creek (as recommended in item 2 below). Please note that the left hand column is the list of the Services' suggested "rules of thumb", and the right hand column is a comparison of the Service's actual follow-through to each of those items.

USFWS "Rules of Thumb"[1] for its Staff	Presley's Actual Experience [2]
1. Review recovery plans for affected species and assess the extent to which HCP mitigation programs are consistent with them. Although FWS or NMFS cannot mandate that HCPs contribute to recovery, applicants should be encouraged to develop HCPs that produce a net positive effect on a species. Recovery plans should be used to help identify strategies to minimize and mitigate the effects of the HCP. When recovery plans are not available, contact recovery teams or other species experts to obtain information pertinent to HCP development. When appropriate, the development of the HCP could involve more active participation by recovery team members and species experts by providing technical assistance to the applicant.	Presley's HCP would have produced a net benefit to the species, and contributed to recovery: • An environmental trust • A 71-acre butterfly habitat • 20 major plant conservation areas • The 1st man-made CTS pond • Translocation of listed plants. Nevertheless, even after 1 year the Service refused to even consider the HCP.
2. Keep up-to-date on applicable statutes and policies, including the ESA, its implementing regulations, this handbook and court decisions. Understand the authorities and limitations of the ESA and NEPA. Be up-to-date on new biological developments and state-of-the-art techniques such as population viability analysis. Keep reference materials on hand concerning legal and biological issues applicable to the section 10 program.	The Service threatened Presley and the City of San Jose with enforcement action without any legal or factual support—it was merely a bullying tactic. The Service failed to process Presley's permit application. The Service ignored the best available scientific and commercial data.
3. The HCP is initiated by the applicant and is the applicant's document, not FWS's or NMFS's. The Services should assist the applicant and help guide the process by providing sufficient staff and technical advice. However, if the applicant insists on measures that would not allow the HCP to meet section 10 issuance criteria, the Service will inform the applicant of the deficiencies in writing and offer assistance in developing a solution. If deficiencies are not corrected, the FWS or NMFS may ultimately have to deny the permit. Providing technical assistance early and continuously through the HCP development process will hopefully prevent such situations from occurring.	Technical assistance was never provided. Applicant was unable to establish a constructive dialog with the Service. The Service failed to provide a single written comment on the HCP.

USFWS ''Rules of Thumb''[1] for its Staff	Presley's Actual Experience [2]
4. Help the applicant determine early in the process what species are to be addressed in the HCP. This will depend on what species occur in the project area, whether they are likely to be affected by project activities, their listing status (listed, proposed or candidate), the applicant's objectives and other factors. The Service will encourage permit applicants to address any species in the plan area likely to be listed within the life of the permit. This can benefit the permittee in two ways: (1) the ''No Surprises'' policy applies to unlisted species that are addressed in an HCP; and (2) it prevents the need to revise an approved HCP should an unlisted species that occurs within the plan area but was not addressed in the HCP subsequently be listed. The Services should advise the applicant on this issue, but ultimately the decision about what species to include in the HCP is always the applicant's.	Presley developed a multi-species HCP and should have obtained the benefits of the ''No Surprises'' policy. But the Service simply refused to even consider Presley's permit application.
5. Work with the applicant to get important issues on the table as early as possible in the HCP development stage. Make sure the applicant understands the section 10 issuance criteria and any regulatory or biological issues that will need to be addressed in the HCP. Avoid ''eleventh-hour'' surprises that result in delays and bad feelings on all sides.	The Service deliberately waited until the ''eleventh hour'', after Presley had begun grading, to threaten the City of San Jose and Presley with a section 9 take enforcement action, causing the City to stop Presley's grading permits.
6. HCP mitigation programs will be as varied as the projects they address. Some will be simple while those for large-scale, regional planning efforts may be quite complicated. There are few ironclad rules for mitigation programs but make sure they address specific needs of the species involved and that they are manageable and enforceable. A monitoring plan should be developed that establishes reporting requirements, biological criteria for measuring program success, and procedures for addressing deficiencies in HCP implementation.	Presley's Environmental Trust has a professional monitoring program and will report annually to all interested agencies. Despite complying with this (and all other) requirements, the Service refused to even consider Presley's permit application.
7. Service Field Offices and Regional Offices must coordinate regularly throughout the HCP process and work as a team, not as isolated, separate players. This is essential to ensure that FWS or NMFS, as applicable, provide consistent, dependable assistance to the applicant in developing the HCP and that internal differences in approach are resolved prior to the submission of an HCP proposal to the Regional of flee for formal processing.	Presley could not locate any one person in the Service who would take responsibility for making a decision or who could negotiate a mutually beneficial resolution.
8.	
9. Make sure the Services' section 7 obligations as they apply to issuance of a section 10 permit are explained to the permit applicant(s) and that section 7 considerations are introduced into the HCP from the beginning of the planning process. Compliance of the HCP with section 7 and 10 of the ESA should be regarded as concurrent, integrated processes, not as independent and sequential.	Not only did the Service not do this, but when the ACOE denied them a section 7 consultation, we believe Service personnel contacted a special interest group and urged them (successfully) to sue the ACOE and Presley in an attempt to stop the project.

USFWS "Rules of Thumb"[1] for its Staff	Presley's Actual Experience[2]
10. The activities addressed under an HCP may be subject to Federal laws other than the ESA, such as the Coastal Zone Management Act, Archeological Resource Protection Act and National Historical Preservation Act. Service staff should check the requirements of these statutes and ensure that Service responsibilities under these laws, if any, are satisfied, and that the applicant is notified of these other requirements from the beginning. Service staff should, to the extent feasible for all HCPs other than low-effect HCPs, integrate analysis done in compliance with other environmental and cultural review requirements into the NEPA analysis prepared for the proposed HCP.	No action was taken by the Service.
11. Work with the permit applicant in good faith but ensure that the HCP established clearly measurable and enforceable compliance standards, including written documentation of all applicable biological results	No action was taken by the Service.
12. Once an incidental take permit has been issued, monitor permit compliance, and make sure monitoring activities are conducted and monitoring reports are submitted as defined by the HCP. Develop tracking and accountability system for issued permits. Report all violations of permit conditions to the appropriate law enforcement personnel.	The Service waited until grading had begun to allege that a "take" had occurred and sent enforcement staff on an all day site investigation. Over a month later, and only after Presley consulted with Department of Interior officials, did the Service conclude that there was no basis for a section 9 action. Even so, the project is still at a full stop because Service officials have not informed the City of San Jose which refused further grading permits after threats from USFWS.

[1] November 1996 "Endangered Species Habitat Conservation Planning Handbook", published by the U.S. Fish and Wildlife service and National Marine Fisheries Service.
[2] Based upon notes and correspondence between applicant, applicants legal counsel and consultants, and the Service.

STATEMENT OF BROOKE S. FOX, DIRECTOR, OPEN SPACE AND NATURAL RESOURCES

Mr. Chairman, and Members of the Subcommittee, my name is Brooke Fox and I am the Director of Open Space and Natural Resources for Douglas County, Colorado. I am honored to be here today on behalf of the Douglas County Board of Commissioners to discuss our experience with the Endangered Species Act ("ESA") and habitat conservation plans ("HCPs").

When I spoke with your staff person prior to coming out here, we talked a little bit about Douglas County's experience in dealing with the Fish and Wildlife Service, and what we have gone through in preparing our county-wide habitat conservation plan to address the Federal listing of the Preble's meadow jumping mouse as a threatened species. I explained that we probably did not have as many "war stories" as some, because we were just beginning the process of developing an HCP. "After all," I said, "the mouse has only been listed for about a year and a half." Although we both laughed, the sad reality is that we are no where close to having our county-wide HCP approved. This fact lead me to think about the three things that have affected us most when dealing with the Endangered Species Act: time, expense, and lack of common sense.

While those three factors will be the focus of my testimony today, allow me to give a little background on Douglas County. Douglas County is located between two major metropolitan areas in Colorado: Denver and Colorado Springs. The County is said to be one of the fastest growing counties, by percentage growth, in the U.S. Despite the enormous growth that is occurring in our county, we have some of the most beautiful rural landscapes along the Front Range of Colorado. Douglas County is very conservative politically, and at the same time, our citizens and our elected officials are dedicated to protecting our unique landscape and wildlife habitat. In fact, our voters passed a ballot initiative in 1994 to tax themselves to preserve open space, wildlife habitat, and agricultural land.

Despite the commitment of the County to preserve our cherished natural resources, many are bewildered by the time, expense, and ultimately the wisdom or need for preserving habitat for a mouse. The County Commissioners have experienced the full range of emotions on this issue: disbelief, fear, anger, frustration, humor and finally resignation. After reviewing the listing decision with our attorney

and biological consultant, the Commissioners resigned to the fact that the most logical way to proceed was to develop a habitat conservation plan. The County HCP will not only cover county-sponsored activities (such as building and maintenance of trails, roads, bridges, managing open spaces, and constructing county facilities), but we will also attempt to work with other groups and individuals (e.g., towns, metropolitan districts, ranchers and farmers, State Parks, Division of Wildlife, utility companies and others) to cover activities with low or moderate impacts on the habitat.

With that brief background, let me talk about timing, expense and common sense. In expressing my concerns, I would like to make sure you understand that my remarks are aimed at the constraints of the Endangered Species Act and not at the individuals at the FWS with whom we work.

First, timing. Again, it has been a year and a half since the mouse was listed as a threatened species. Secretary Babbit came to Colorado to announce the listing of the mouse in May 1998, and committed during his visit that a 4(d) Rule would be issued "before the snow melted on the Rockies." The 4(d) Rule was intended to address certain activities and clarify what was and was not a prohibited "take" of the mouse during the interim time period before regional and subregional HCPs were developed. Lucky for Secretary Babbit that we do have some glaciers in the Colorado Rockies. The 4(d) rule has yet to be finalized, and in fact the FWS is contemplating reproposing the rule in November. Thus, the regulated community has had absolutely no regulatory relief (or even clarification as to what is or is not allowable conduct). Until something changes, each and every action that may potentially impact mouse habitat must be reviewed by FWS.

This brings us to the issue of insufficient FWS staff resources available to review and evaluate project proposals which may impact mouse habitat. There are two individuals assigned to work on mouse issues. One works on Section 7 consultations (8 to 10 have been processed this year, with 30 to 40 in the works), and reviews mouse presence/absence reports (over 400 reports filed in 1999). The other employee is the only HCP specialist in the Colorado Field Office, and is working on at least 6 subregional HCPs (county-wide HCPs such as our's) and 6 to 10 individual HCPs that have been filed to date.

Only two HCPs have been noticed for public review and both are in Douglas County. The first was for a "low effect" incidental take permit for one of our trail projects. The property where this trail project is located was purchased with the intent to preserve the 150 acres for the mouse and other wildlife while providing some limited trail access. The total impact to mouse habitat was a grand total of 400 square feet, but we are preserving 150 acres for open space. We filed our HCP in March of this year—we have just received the permit last Thursday. Because of the mouse however, Douglas County is suspending all trail construction on our previously planned regional trail systems until either our county-wide or a trail specific HCP is developed.

The other permit request is from Robert Hier and Hal Gannon, private developers who have lived in Douglas County their entire lives. Bob and Hal were ready to break ground on their business park project in January. They had already put in a sewerline to the project when they became aware that they may have a potential conflict with the ESA. On advise of their attorney, the two businessmen approached FWS with the intent of doing the right thing and working through the issue together. On April 15, 1999, after months of delay, FWS issued Bob and Hal the first Section 9 fine issued in the State of Colorado for "activities that resulted in disturbance of previously undisturbed areas" after the listing of the PMJM as a threatened species. With the delays and uncertainty of whether the business-park could be built, over $1 million in contracts for office space have gone away. FWS just issued a notice of availability and request for an incidental take permit on October 5.

The second issue is expense. As public servants we obviously have to justify our expenditures to the public. Even though we have dealt with the ESA for a couple of years, it is one of the most costly Federal law we have had to comply with. To date, Douglas County has expended approximately $100,000 in funds for legal and technical expertise from outside consultants. I spend at least 50 percent of my time dealing with "the mouse issue." In addition, the County has expended approximately $375,000 to preserve properties that will directly benefit the Preble's meadow jumping mouse and its habitat. We anticipate that the development of our county-wide HCP will take at least 2 to 3 years, at an estimated cost of an additional $250,000 to $350,000. Keep in mind.that this is for one species, and that $800,000 just gets us to the table with FWS. Our biggest fear is that after we have spent those funds and proceed to negotiate a favorable HCP, the FWS will say, "Sorry but we don't have the funds to complete our NEPA requirements." In fact, we have been told by

our local FWS representatives that given their current funding scenario, that is precisely what may happen.

Talk about unfunded mandates!

My third issue is Common Sense. There are many areas in which the ESA does not allow common sense to prevail. For example, Section 9's take prohibition does not distinguish between essential populations and outlying populations or individuals, and so, an isolated population receives the same protection as larger more sustainable populations. This issue can be addressed in a regional or subregional HCP. However, absent our county-wide HCP, we and other individuals are having to address all populations equally for any activity impacting habitat before the overall HCP is negotiated.

On a related issue, we hope to work with FWS to create incentives to allow preservation of occupied mouse habitat as a primary mitigation strategy. The mouse exists in Douglas County precisely because we have large amounts of high quality habitat. Under current guidelines proposed in the draft 4(d) rule; however, the ratio of 10 to 1 for preservation actually provides a disincentive to preserve this occupied habitat and an incentive to try to restore or enhance more "marginal area." Douglas County is in the position of having an enormous amount of high quality habitat with a lot of mice. We have very little habitat that can be enhanced, restored or created. There is no scientific evidence addressing the success of enhancing, restoring or creating habitat for the mouse. Rather than imposing onerous and arbitrary preservation ratios that will yield questionable benefits, common sense tells us that removing threats to and preserving high quality habitat is the best strategy for ensuring the long-term viability of the mouse.

Because Douglas County has so much good habitat and so many mice, it seems common-sensical that the stewardship practices employed by the County and its residents are consistent with preserving the mouse. If we can keep ranchers on the land, continue our good land planning practices and preserve open space, Douglas County will preserve the mouse. It is a shame that we have to spend so much time and money simply to put those ongoing practices into a language that the Federal Government understands.

Another common sense issue has to do with the wisdom of protecting subspecies of otherwise abundant species. We have recently become aware of another species of concern in our area. We have been informed by a biological expert that while the species itself is quite prevalent, populations is often become isolated by natural boundaries. Once isolated they cannot breed. In our situation, we end up with what may be one subspecies on the north side of a creek and a separate subspecies on the south side. I question whether we should be protecting each and every subpopulation of these kinds of animals.

In closing, we are concerned by the time it takes to develop, negotiate and get approval for HCPs. We are concerned by the unfunded cost burden the Act places on local communities and individuals. And, finally, we believe the ESA does not take into consideration on-the-ground, common sense approaches to species conservation.

STATEMENT OF JAMES E. MOORE, PUBLIC LANDS CONSERVATION COORDINATOR

Mr. Chairman and members of the Committee, good morning. My name is James Moore, formerly the Desert Tortoise HCP Coordinator for the Nature Conservancy of Nevada. Thank you for the opportunity to address this committee on the case study of the Clark County, Nevada Habitat Conservation Plan for the Desert Tortoise.

As you have heard from Michael O'Connell of our California office in July of this year, The Nature Conservancy has been involved in conservation planning under the Endangered Species Act (ESA) since Section 10(a) was authorized in 1982. We have played a major role in a number of HCP processes, including in Coachella Valley, California; Balcones Canyonlands in Texas, the Natural Community Conservation Planning Program in Southern California and the Clark County, Nevada example which I will address today. I would like to emphasize that this testimony reflects my experience with the development and implementation of the HCP case study in the Las Vegas area and does not necessarily reflect the views or opinions of The Nature Conservancy as an organization toward the larger question of the values or shortcomings of HCPs in general. I believe Michael O'Connell did a more than adequate job of discussing the scientific merits of current HCP policy.

A BRIEF HISTORY

In the late 1980's the economy of southern Nevada was booming, with an average of between 5 and 6 thousand people moving into the Las Vegas Valley every month.

In August 1989, the Mojave population of the desert tortoise was listed by emergency rule as endangered and by final rule as a threatened species in April 1990. Under Section 9 of the 1973 Endangered Species Act (ESA) no take of the desert tortoise or its habitat could occur on private lands. Much of the private land in the Las Vegas Valley was, and is to this day, desert tortoise habitat. The surging Las Vegas economic train threatened to derail over an innocuous herbivorous reptile on the tracks. Numerous construction plans and commitments for large-scale projects such as school construction, flood control projects, and master-planned communities were delayed awaiting the outcome of court cases and appeals of the emergency listing.

It was in this atmosphere of conflict that a little known provision of the ESA was brought into play: the Section 10(a) allowance for both scientific take and incidental take permits could be used by qualified private landowners who adequately mitigated for the allowed take during the course of otherwise lawful activities, such as land disturbance associated with construction projects. A potential solution was set in motion.

The Nature Conservancy had recently participated in a similar situation in the Coachella Valley outside of Palm Springs, California with the Fringe-toed lizard in the midst of that rapidly developing resort area. The Conservancy assisted State and Federal agencies and private landowners to create and implement a successful conservation program under the auspices of the Section 10(a)1(B) amendment of the ESA—more commonly referred to as an incidental take permit accompanied by a Habitat Conservation Plan (HCP). Following this example, Clark County, Nevada took the lead on resolving the desert tortoise listing conflict and enlisted the aid of The Nature Conservancy to provide recommendations and environmental/scientific input into the development of an HCP to solve the needs of private landowners in the Las Vegas Valley. It was at this time that I was hired as the Desert Tortoise HCP Coordinator for the Conservancy.

The first order of business was to assemble a Steering Committee of affected parties—stakeholders representing a diverse array of land uses and landowner issues in desert tortoise habitat. Livestock ranchers, miners, off-road vehicle enthusiasts, hunters, desert tortoise interest groups, and national environmental groups, together with private property owners, representatives from four cities, and both State and Federal land and wildlife management agencies convened for some tension-filled initial meetings. Land use rhetoric and entrenched positions abounded on all sides while the group sought a common direction. This seemingly impossible task fell on the skilled facilitator Paul Seizer, also involved in the Coachella Valley HCP, to set the legal sideboards and mold this dynamic group into a coordinated, constructively engaged, body. Without a strong, personable facilitator the process would have undoubtedly strayed and disintegrated.

The uncertainties inherent in embarking on this relatively new provision of the ESA attracted much scrutiny from environmental activist groups who wished to insure that a low standard was not set by this HCP. The projected lengthy timeframe required to develop a habitat conservation plan for a 20- or 30-year period led the group to submit an application for a short-term, 3-year HCP. During this time a long-term HCP would be developed using lessons learned from the short-term experience.

The shorter timeframe of the 3-year HCP also provided the more skeptical environmental groups with some assurances that take would be very restricted. Only a certain number of acres (22,352) of desert tortoise habitat and a limited number of tortoises (3,710) could be disturbed during the course of otherwise lawful activities under the 3-year permit. In exchange for this limited take, mitigation would occur on public lands where the majority of the best examples of viable and protectable tortoise habitat remained, at a ratio of roughly 20:1 for conserved habitat acreage to disturbed habitat. A ratio of 20:1 was an astounding achievement for what amounted to an experiment in building local government, State and Federal agency partnerships in order to resolve a private property issue in the still-wild West.

Some of the more notable accomplishments of the Short-term HCP were: the purchase and retirement of five livestock grazing permits from willing-seller ranchers that encompassed over a million acres of public lands; the transfer of competitive off-highway vehicle racing out of priority conservation areas and into areas less ecologically sensitive; the designation of roads throughout the conservation area as open or closed to reduce fragmentation of desert tortoise habitat and the likelihood of vehicle-caused tortoise mortality; the initiation of a tortoise relocation program to place tortoises removed from developing lands back into previously tortoise-depleted areas of the Mojave Desert; the creation of an innovative public information campaign; the hiring of extra law enforcement rangers for the Bureau of Land Man-

agement; the reliable funding of public lands management activities for the benefit of the desert tortoise; and the initiation of a highway fencing program to prevent further roadkills of tortoises in conservation areas bisected by heavily traveled highways.

One by-product of the sometimes tedious meetings during the development and implementation of the Short-term HCP was the development of trust among the diverse stakeholder representatives. While very few converts were made from one side to the other, our positions were well understood and respected. Subsequent discussions and consensus-based decisions became less contentious and more productive since we knew each other's bottom lines. This burgeoning trust among the participants led to a much more productive process of developing the Long-term HCP now known as the Clark County Desert Conservation Plan which is currently the largest Section 10 permitted conservation plan in the country. This plan addresses the human land uses, land ownership and conservation needs of the desert tortoise across roughly 5.6 million acres of mostly public land.

The successful transition from Short-term to Long-term in the mid–1990's caused some key stakeholders, such as the Southern Nevada Home Builders and the Clark County government to ask "what might be next on the horizon, in terms of future listings, and, what could we do to head those off now?" The answer to those questions has been a now 4-year long process of developing the Multiple Species Habitat Conservation Plan (MSHCP). In addition to the desert tortoise provisions contained in the Desert Conservation Plan, this ambitious program is seeking Section 10 coverage for an additional listed bird species and Candidate Conservation Agreements with Assurances for another 77 species which could conceivably become listed if current habitat impacts remained unabated throughout the County. Many uncertainties exist for those additional species and the MSHCP proposes to integrate a strong adaptive management component into its conservation management recommendations. But, under this plan, conservation benchmarks are few. Take, however, is certain and the habitat conversion final. Much of this plan relies heavily on trust that the monitoring program will be sensitive enough to detect when management assumptions go awry for one or more of the covered species. The appetite of landowners, particularly the more politically powerful ones, for future adaptations of the conservation management provisions and mitigation measures is as yet untested. How flexible they will be should the regulatory environment change in response to unforeseen circumstances that adversely affect the covered species remains to be seen.

The jury is still out on this Multiple Species Plan as to whether it will pass the "environmental smell test"—that is, will the permit-covered species be better off under the provisions of this plan than they would be in the absence of such a coordinated and well-funded program? Time alone will have to tell us whether we've done an adequate job of integrating what we know now about the species and their habitat and whether we have built in enough flexibility to incorporate what we will undoubtedly learn about the complex interrelationships of the species. The pressures of development continue to this day with little slowdown in the rate of new residents moving into the Las Vegas Valley and surrounding communities. Habitat continues to fall under the bulldozer for new master-planned communities and hastily constructed schools to accommodate the incredible influx of the human population. But this construction is also the funding mechanism for an extraordinarily proactive conservation plan in one of the fastest growing communities in the United States.

Thank you for the opportunity to present this successful case study to the Committee. I look forward to a thought provoking and challenging discussion.

CLARK COUNTY-SPECIFIC LESSONS LEARNED

- The Clark County Desert Tortoise HCP is ranked as the premier example of public participation in terms of crafting the terms and conditions of the conservation mitigation. While the time required to develop the Short-term and Long-term plans was relatively time consuming (2 and 5 years respectively), the resistance to the proposed mitigation measures was effectively defused by the large amount of public input throughout the process.
- One can either invest in the time during the process to avoid conflicts and public backlash, or pay the price afterwards when the plan comes under fire and the process is set back several more years trying to repair damaged public relations.
- A well designed and well-informed Recovery Plan can set the parameters (sideboards) within which an HOP can be tailored to fit the particular needs of the affected landowner(s) or local government, allowing the requisite flexibility, while insuring basic ecological standards are retained throughout the process.

- A skilled and apparently neutral party should be retained to facilitate the larger, more complex HCPs—trust is everything in keeping parties at the table, but equally important is maintaining the "balance of terror" among the stakeholders (Reilly, 1997).
- Service participation during the course of crafting HCPs has been inconsistent from plan to plan, and even within plans. This has led to apparently contradictory decisions as to the adequacy of mitigation measures, and breeds distrust among HCP participants. No applicant should be surprised at the time of submission of a 10(a) permit application and accompanying HCP. If the Service has done its job the applicant(s) will know what will be required to meet the Service's approval. This can also be accomplished without direct participation in the meetings as long as the overarching conservation requirements are explicit and unambiguous in the Recovery Plan for the listed species.
- For a species such as the Mojave desert tortoise where nearly 90 percent of its habitat exists on federally managed public lands, it is important that the Federal Government play an equitable role in conserving its habitat. Private landowners should not shoulder the "burden" of conservation while critical habitat on public lands continue to be degraded through unimpeded multiple uses such as mining, livestock grazing, off-highway vehicle recreation, power and utility corridors and road construction.
- Section 7 of the ESA and Section 10 should play parallel and complimentary roles in achieving recovery of the listed species or prevention of further population and habitat declines for candidate species.
- Early buy-in and shepherding of other interests by the key stakeholder, Southern Nevada Home Builders, was probably integral to the success of acceptance of the mitigation terms in the Short-term HCP.
- The rapid growth in the Las Vegas Valley in the late 80's and early 90's provided not only the pressure for developing and maintaining a successful HCP, but also provided the crucial funding stream through impact fees charged for every acre of land that was developed during that period. Not all communities and local governments have the ironic "luxury" of such an economic boon to drive the process.
- The health of the southern Nevada economy, coupled with habitat conservation occurring on public instead of private lands, allowed for a good mix of responsibilities between the private and Federal entities to mitigate for the regulated take of the desert tortoise.
- Benchmarks of mitigation and conservation for the listed species in an HCP insure that "take" of the species and its habitat remains commensurate with on-the-ground conservation of critical habitat. After all, take is usually permanent and irreversible, whereas mitigation and conserved habitat can always be further eroded over time through gradual policy concessions, allowed uses of the land, and through unforeseen and uncontrollable stochastic events (natural disasters, disease, global climate change).
- The environmental "smell test" for HCPs should be the question posed: Is the listed species better off in the presence of a coordinated conservation effort with assured funding (the HCP) than it would be under a status quo situation where it is "protected" by a minimally funded ESA with no take allowed? If the answer is "yes" then an HCP is on the right track and should be strongly supported, although continuously monitored. If "no" then an HCP is not appropriate and should not be negotiable.
- There is a fine balance that must be maintained in the integration of science into an HCP—the landowner is seeking a predictable and assured environment into a set period of the future, whereas science dictates, and the natural world effectively requires, an adaptive approach to inevitably changing situations for the species and their habitat. The degree to which "adaptation" requires changing the protective provisions to the landowner will determine whether an HCP, or any of the new ESA policies such as Safe Harbor or Candidate Conservation Agreements with Assurances, remain attractive options to pre-listing habitat destruction, litigation, or other relief available to a private landowner.
- Multiple species HCPs should be encouraged wherever possible, but must be tempered with the realization that the time required to develop such a plan will be concurrently lengthened. The habitat conservation measures for one species may not satisfy the basic needs of other currently or potentially listed species. Therefore, the proposed mitigation may not be complimentary but additive in terms of acreage required or types of land uses that can or cannot be allowed under the provisions of an HCP. This will inevitably affect the degree of stakeholder "buy-in" for the larger, publicly driven planning processes.

• HCPs and CCAs represent an insurance policy against the unpredictable future for landowners who require or desire a stable planning horizon with fixed costs and known requirements for mitigation.
• Monitoring in and of HCPs should take place at many levels simultaneously to assure adherence to the intent, the terms, and the conditions that generated them. This includes monitoring the administration of the planning process and expenses incurred by the plan proponent; monitoring the species and its habitat for population health and stable or improved condition in light of the HCP; and monitoring the effectiveness of management in accomplishing the biological goals of the HCP program.

GENERAL OBSERVATIONS AND RECOMMENDATIONS

• Habitat Conservation Plans are important relief mechanisms for private property owners caught up in federally-listed species habitat protection via the Endangered Species Act, and as such, should persist as an option for landowners in the future.
• HCPs cannot be a "one-size-fits-all" program due to the peculiar life histories associated with the specific animal for which they are developed, as well as the unique needs of each HCP proponent.
• Flexibility in designing HCPs insures they remain an attractive option for private landowners, but the limits on the degree of flexibility must be set by the ecological tolerances (e.g. the habitat needs) of the species which they (the HCPs) are addressing.
• As long as there is another cheaper, quicker option that a landowner can pursue, they probably will because HCPs are high maintenance beasts, depending on the degree of public participation and scientific oversight required.
• HCPs are particularly appropriate for wide-ranging listed species for which numerous areas of habitat can be evaluated for not only "take" but also for which several options exist for conservation.
• Conversely, HCPs are inappropriate for narrow endemics—situations where a one-and-only location exists for a distinct listed species. There are no other alternatives for habitat protection and numbers are typically perilously low, not conducive to regulated "take".
• It is equally important to avoid playing the "numbers game" in either listing decisions or determining levels of take because it is more germane what is happening to the habitat of the listed species in the design of mitigation actions or in proposed "reserves". Analogy of an airplane where the determination has been made that the bolts are degrading rapidly—it is less important how many of them there are—but more important to determine what can be done to remedy the situation (recovery strategy).
• Individual HCPs can be negotiated between single landowners and the Service without public input or oversight as long as there is an overarching recovery strategy in place that the small or single landowner HCPs contribute toward and that do not preclude or impede attainment of the Recovery goals.
• While there is currently no requirement for HCPs to achieve or attain "Recovery" of the listed species, they should be designed to progress toward that goal (cumulative progress).
• The reluctance of individual landowners negotiating HOP agreements with the Service in public forums where the interested public are really not "affected stakeholders" can be effectively addressed by the Service developing the overarching recovery strategy in a public forum, with science playing an influential role, but the general conservation strategies crafted with interested party input. This highlights the importance of the Service placing a priority on developing Recovery Plans for any listed species. The absence of sufficient data to determine what would be required for "recovery" of a species calls into question the adequacy of data to support the listing in the first place.
• The desire to maintain or enhance the "user-friendliness" of the ESA in order to preserve its very existence, while a noble and probably highly practical goal, must not compromise the reason the Act was created in 1973—to protect this Nation's wildlife species from the eternity of extinction. The concern of many environmental groups is that HCPs have become so diverse and are proliferating at such a rate that it is impossible to effectively monitor their compliance to the aforementioned "smell test" of basic ecological benefit to the listed species.
• The key to maintaining the balance of responsibility of the Federal Government in terms of implementing the conservation provisions of largely private-land HOP mitigation strategies should be a *fully funded* and *obligated* Land and Water Conservation Fund (LWCF). This LWCF should be protected from the temptations to

solve other, perhaps more politically popular or expedient, programs from budget dipping and creative bookkeeping at the expense of protecting this Nation's natural landscapes and imperiled species. To paraphrase Benjamin Franklin, a penny spent on proactive habitat protection for species and ecosystems is a wise expenditure versus the dollars that will be required to try to "save" species once they reach the endangered species list.

STATEMENT OF STEVEN P. QUARLES, COUNSEL, AMERICAN FOREST & PAPER ASSOCIATION

A. INTRODUCTION

Thank you for the opportunity to appear before you today. I am testifying on behalf of the American Forest & Paper Association (AF&PA). The focus of my testimony is the process by which private landowners can achieve limited immunity from the prohibition in section 9 of the Endangered Species Act of 1973 (ESA) against the "take" of any endangered or threatened species. In that process, the landowner submits a conservation plan—more commonly called a Habitat Conservation Plan or HCP—to the Fish and Wildlife Service or National Marine Fisheries Service that describes the land use activities the landowner wants to conduct and the mitigation, funding, and monitoring that the landowner intends to provide to protect the endangered or threatened species that could be affected by those activities. If the HCP meets the mitigation, funding and other requirements of ESA § 10(a)(2) and is approved by the Service, the Service issues to the landowner an Incidental Take Permit (Permit). The Permit authorizes the landowner to engage in the activities covered by the HCP and removes the liability of the landowner for taking members of the species to which the HCP applies when the taking is incidental to those activities and the landowner is conducting the mitigation and other species-protection actions set forth in the HCP.

AF&PA strongly supports voluntary habitat conservation planning on private lands under the ESA. The obligation of private landowners toward endangered or threatened species imposed by the ESA is typically modest; in most circumstances, it requires no more than the avoidance of taking of individual members of those species. Although the obligation is modest, the consequences for failing to meet it can be severe—injunctions against productive use of the land, fines, and imprisonment. Worse, any actions landowners might undertake on their own to fulfill that no-take obligation and avoid those consequences—even if those actions severely curtail use of the property—come with no guarantee that they will be successful.

The habitat conservation planning process provides an extraordinarily valuable mechanism for the landowner to secure that guarantee that he or she can undertake the desired land use without risking those consequences and for the government to obtain far greater voluntary species and habitat protection than would be achieved if the landowner pursues only take avoidance.

AF&PA commends Secretary Babbitt and the Services for their support of the habitat conservation planning process. They deserve credit for recognizing how important that process could be for species conservation on private lands and for dedicating the resources and providing the energy to give it life. Yet, AF&PA is deeply concerned that, after a robust beginning, the process is losing focus and momentum. To make this voluntary process a truly successful and integral component of this Nation's dedicated effort to provide permanent protection to species at risk of extinction, it must provide to the landowner reasonable certainty at a reasonable cost and must meld scientific credibility with business or economic sensibility. Recent departures from these principles which I will discuss, if left unchecked, will significantly reduce the incentives for voluntary private contributions to species preservation.

B. AMERICAN FOREST & PAPER ASSOCIATION

The American Forest & Paper Association is the national trade association of the forest, paper, and wood products industry. Our organization represents nearly 200 member companies and related trade associations which grow, harvest, and process wood and wood fiber; manufacture pulp, paper and paperboard from both virgin and recycled fiber; and produce solid wood products. Additionally, AF&PA represents a vital national industry which accounts for over 8 percent of the total U.S. manufacturing output. Employing some 1.6 million people, the industry ranks among the top ten manufacturing employers in 46 states, with an annual payroll of approximately $45 billion.

Members of AF&PA have developed or are developing HCPs covering 10 to 15 million acres throughout the United States. AF&PA has been active in the Endangered

Species Coordinating Council—an organization of trade associations, companies, and labor unions seeking reauthorization and reform of the ESA. One of the Association's most critical legislative objectives is the strengthening of the habitat conservation planning process by providing it with a more secure statutory foundation and removing the recently surfaced constraints on its effectiveness. Several members of AF&PA are also members of the Foundation for Habitat Conservation. Portions of my statement are shamelessly borrowed from the May 26, 1999, testimony of Jim Johnston, the Foundation's counsel, before the Committee on Resources, House of Representatives.

C. THE VALUE OF HABITAT CONSERVATION PLANNING UNDER THE ESA

According to the General Accounting Office, over 70 percent of species listed as endangered or threatened under the ESA have over 60 percent of their habitat on private or other non-Federal lands, while over 35 percent of the listed species are completely dependent on such lands for their habitat. Permits under ESA § 10, principally Incidental Take Permits, are the only mechanisms currently available that provide incentives to the private sector to protect threatened and endangered species on those lands. Without the ESA-related certainty that the government can offer a private landowner through Incidental Take Permits, few if any landowners could afford, or justify, the broad and meaningful commitments of land and resources that have been and are being made in HCPs. And, for the Services, the alternative is a regulatory enforcement program that must be implemented on a property-by-property basis. From either standpoint—most efficient use of government resources or participation of the greatest number of landowners—the habitat conservation planning process is advantageous.

The value of HCPs can be measured both in amount of land covered and results produced. As I've said, millions of acres are now included in HCPs that were negotiated, and can be enforced, by the government. Absent HCPs, the land subject to government oversight would be limited to the few properties that the Services' officials could find time to visit. The vast acreage under HCPs is actively managed to provide protection or mitigation for listed species. Absent HCPs, officials of the Services are likely to visit only those lands that are managed without any consideration for listed species and where serious threats to their existence are thought to occur. Mostly, fundamentally, landowners' efforts to prevent "take" provide only limited protection to existing habitat by avoiding, and perhaps leaving buffers around, nesting, breeding and other areas where significant behavior occurs. This typically protects identified species' members presently occupying the habitat, but does not ensure the habitat's viability for future generations or greater numbers of the species. Indeed, the land may frequently be managed to avoid growing any new habitat, by harvesting trees in short rotations or not resting cropland for extended periods. The habitat conservation planning process removes the "take" prohibition's disincentive to enhance existing habitat or to allow non-habitat to grow into habitat. Most HCPs for forested land provide for the growth of new habitat. When that cannot be accomplished, HCPs typically require the acquisition and permanent protection of existing habitat. The habitat conservation planning process results in the provision of more and better habitat, and the thoughtful accommodation of species protection with reasoned development.

D. THREATS TO THE HABITAT CONSERVATION PLANNING PROCESS

1. Overview

Recent experiences of members of AF&PA who are attempting to develop HCPs—even those members that have had great success in securing Incidental Take Permits in the past—provide persuasive evidence that the habit conservation planning process has lost much of the focus and momentum it once had.

Our members are under no illusion that the process is easy or painless. Four and a half years ago, I presented testimony for AF&PA before this Committee that included a chart (attached) showing how much more costly and time-consuming, with many more procedural hurdles, was the process for obtaining incidental take permits for private landowners under ESA § 10 as compared with the process for obtaining incidental take statements for Federal agencies under ESA § 7. Those landowner burdens were imposed by statute. Yet, habitat conservation planning grew and flourished in the mid-90's because many landowners perceived the product—Incidental Take Permits—to be worth this relatively steep price in processing time and costs. The Services' dedication to make the habitat conservation planning process work produced policies and applied agency resources that made investment in the HCPs a good business decision for the landowners who could afford it.

The strong cooperation between landowners and the Services in habitat conservation planning that developed during the mid-90's now appears to be dissipating. The policies that made the process workable are being challenged by litigation or eroded by newer interpretations or new policies of the Services. And the previous zeal within the Services to make successful this process to enlist private land in the species protection effort seems to have waned. The result is that a significant number of HCPs—certainly in terms of acreage—have reached a standstill. And many landowners, including members of the AF&PA, are questioning whether their continued participation in the habitat conservation planning process can be justified.

The most significant problems experienced by landowners arise from debilitating process, excessive demands, and loss of certainty. They include:

- Loss of leadership and staff dedicated to processing each HCP.
- Increasingly lengthy timeframes for developing HCPs and issuing Incidental Take Permits.
- The too frequent inability of the Services to reach timely "closure" on key issues and to avoid the reopening of already closed issues.
- Tremendous escalation in the already expensive cost of HCP preparation.
- The Service's encouragement of, but failure to support, multi-species HCPs.
- Increasing advocacy of standardized HCP provisions that sacrifice good science for administrative efficiency.
- Imposition of significant burdens, and obligations to achieve broad species' recovering objectives not applicable to private landowners under the ESA and beyond what is reasonably related to the landowner's future potential impacts on the species.
- Litigation and policies that have the potential to undermine the degree of certainty that is provided by the "No Surprises" Rule and is the prerequisite for voluntary landowner participation in the habitat conservation planning process.
- The failure of Congress or the Services to develop an effective, broadly used alternative or streamlined process to enable small landowners who cannot afford HCP preparation costs to receive incidental take permission.

2. Process Problems

The first four bullets are matters of process. We perceive their cause to be partly a matter of management and partly a matter of resources. Much of the early HCP momentum-building was fueled by strong leadership within the Services. Leaders were chosen and empowered to oversee the processing of each HCP. Teams were appointed to facilitate that processing. Now even when leaders are appointed and teams assembled, they come and go. Some landowners have witnessed as many as three complete staff turnovers during the processing of their HCPs. Others have seen staff disappear for extended periods to work on other matters, including other HCPs, perceived to have a higher priority. Inevitably this means less ownership of Service personnel in the success of any particular HCP preparation process and often leads to duplication of effort and changes in direction.

At a minimum, the duplication of efforts will involve the acquainting of new staff with the landowner's operations and landscape conditions. The changes in direction may be as serious as revisiting the applicable science or reviewing previously agreed upon management or mitigation measures, or may be as seemingly insignificant as choosing a new format for the planning document. But, whatever the duplication of efforts or changes in direction may be, the inevitable result is frequent delays and mounting costs.

Worse, in some cases this lack of dedicated leadership and staffing results in a total failure to resolve critical issues. Landowners are told their HCPs are inadequate but then their requests to resolve the differences go unanswered. On occasion, instead of being informed on how to "fix" an already prepared HCP, landowners are advised to submit a new proposal with little or no guidance on how it should differ from the last one. HCPs in these circumstances are not just delayed; they ultimately may be abandoned by the Services, the landowners, or both.

Unlike the process for preparing environmental impact statements under the National Environmental Policy Act, there is no strong "lead agency" approach that provides a single point of agency contact and ensures—or at least makes more likely—coordination among the various agencies that have direct or indirect jurisdiction over an issue, such as riparian management, to be addressed in an HCP. Too often the landowner finds that he or she must deal with each agency separately—shuttling back and forth between agencies with no agency assigned, or even feeling, the responsibility to reconcile conflicting policy interpretations.

Finally, that attached chart comparing the differences between the landowners' Incidental Take Permit process and the Federal agencies' Incidental Take Statement process presented to this Committee—years ago pointed out that the Statement

process has deadlines required by ESA § 7, while the Permit process has no mandatory deadlines established by statute or regulations. That issue has become increasingly significant as the delays mount and even processing schedules which the Services have informally negotiated with the landowners are broken, if not entirely ignored. Although the Services' "Habitat Conservation Plans" Handbook calls for processing of even the most complicated HCPs in less than 10 months, processing periods of as much as 3 to 6 years are becoming more frequent.

I know this may sound like a severe indictment of the Services' performance. However, as serious as these problems are, the Services' performance must be put in perspective in three ways. First, any new agency program progresses from its early years of individualized attention and pioneering zeal to its maturity when it integrated and competing with the agency's numerous other programs. We would argue that, if this is what is occurring here, it is premature. The habitat conservation planning program cannot become routinized; it still warrants the special care and nurturing due to a novel, and unproven, initiative. Second, these process problems are particularly visible because they are silhouetted so starkly against the background of extraordinary performance by the Services in the mid-90's. This is emphatically not a program so mismanaged that it deserves a failing grade. Third, the Services are clearly handicapped by the limited resources available to them to support habitat conservative planning. In its legislative efforts, AF&PA has supported a dedicated funding source to implement the ESA. Too much of the Service's funding is siphoned off to accomplish other ESA tasks for which the statute has imposed, and the courts have enforced, deadlines—including species' listings, critical habitat designations, and consultations.

3. Multi-Species HCP Problems

For a number of years, the Services have advocated multi-species HCPs. This has the advantage of focusing on the most critical component of species' viability—habitat availability. It is most compatible with the increasing emphasis on the twin land management concepts of ecosystem management and protection of biological diversity to which the Services and Federal land management agencies adhere. It is also cost-saving, since the Services do not have to process new HCPs or amend existing, HCPs each time a new species is listed. It provides the landowners with greater certainty that their operations will not be disrupted and investments lost with future listings. Multi-species HCPs are particularly valuable for members of AF&PA because the forested landscape can and does support a multiplicity of species, and the entire landscape will be managed over the long-term.

Yet, we find that the Services are frustrating their own objective. Far from fostering, they are discouraging, preparation of multi-species HCPs. The Services have begun to require such extensive data on each specific species that to be covered in a multi-species HCP becomes too expensive and time-consuming to be feasible. More landowners are now finding that eliminating species from their HCP proposals presents the only viable option. Single-species HCPs are becoming a matter of procedural necessity, even if, as a matter of science, they cannot be crafted to provide the same measure of protection for as many listed species as do multi-species HCPs.

4. Sacrificing Science to Process

Several problems concerning the sacrifice of science to process may arise from the same urge to routinize habitat conservation planning about which I speculated earlier. One example is the tendency of the Services to adopt a "one-size-fits-all" or a "comparative" approach. In this approach, the Services attempt to apply automatically measures from one HCP to another. They may take what one landowner agrees to and make it the baseline for another. HCPs are voluntary and individual to each landowner. The landscape conditions are unique to each HCP. In these circumstances, "boiler-plate" measures, as much as they might contribute to administrative efficiency, are inappropriate and constitute bad science.

Another administrative short-cut that ignores good science is the increasing use of mitigation ratios. Too often, the Services estimate the likely number of incidental takes and then set arbitrary mitigation ratios—typically so many acres to be dedicated or so much money to be paid for each projected take. Not only are the Services often overly conservative in speculating on a high number of takes, but they seldom provide any rational justification for the numbers chosen for the mitigation ratios.

5. Attack on Certainty

Above all, the government must offer landowners a guarantee of certainty in the conservation planning process if it expects them to participate and undertake broad species protection measures on private lands. The "No Surprises" Rule provides that certainty and was the catalyst for the extraordinary growth in HCPs and Incidental Take Permits in the mid-90's. This Rule, however, is under attack from within and

outside of the Services. It is not an exaggeration or too dramatic to say that, if the Rule falls, so does habitat conservative planning.

The attack from outside the Services is mounted by citizen suits and centered in the courts. The "No Surprises" Rule is challenged directly in litigation filed in the Federal District Court in D.C. Three coalitions of landowners—public and private—with HCPs, including AF&PA, have intervened in that case to defend the Rule.

Indirect litigation attacks on the "No Surprises" Rule are of no less concern. These attacks are grounded in the ESA § 7 requirement that Federal agencies consult with the Services when undertaking Federal agency actions. The Services have determined that each time they issue an Incidental Take Permit they have committed a Federal agency action. They, therefore, must consult with themselves. We believe this self-consultation on HCPs is not required by the ESA. The language of and legislative history of the ESA strongly suggest that Congress intended consultations under ESA § 7 and issuances of HCPs under ESA § 10 to be separate, mutually exclusive processes. Congress included the same test under ESA § 7 consultation as a separate condition for issuance if Incidental Take Permits under ESA § 10; there would be no reason for Congress to have done that if an HCP had to undergo both the ESA § 10 and ESA § 7 processes. If the landowner received an Incidental Take Permit under ESA § 10, what earthly good does it do him or her to also receive an Incidental Take Statement under ESA § 7? As the attached chart shows, the Incidental Take Permit process is both duplicative of, and more onerous than, the Incidental Take Statement process. It makes little sense to force a landowner who has survived the Incidental Take gauntlet once to turn around and race right back through it again. Finally, the principal benefit for the Services of requiring HCPs to undergo ESA § 7 consultation is that it allows the agencies to force private landowners to accept additional restrictions that Congress deliberately chose not to impose on the private sector—particularly restrictions to protect listed plants and designated critical habitat.

Having said this, absent a change in the Services' interpretation or the law itself, landowners are faced with the prospect of consultation on their HCPs. This ESA § 7 process currently poses the single biggest risk to the "No Surprises" Rule outside of the D.C. Federal District Court. Citizen suits have been brought under ESA § 7 that, if successful, would erode the Rule. In one suit, on appeal to the Ninth Circuit, environmental plaintiffs successfully argued that an Incidental Take Permit applicant cannot continue to engage in any everyday management activity that alters habitat under ESA § 7(d), a provision that prohibits the Federal agencies and applicants from making irreversible or irretrievable commitments of resources after initiation of consultation that would foreclose adoption of conditions on Federal agency actions. The plaintiffs and the district court reasons that such alteration—otherwise an entirely legal activity—would foreclose a possible alternative that called for that particular habitat to be left unaltered under the HCP. This litigation challenged a forestry HCP; under the logic of the ruling, no harvest activity could occur during consultation. Moreover, the court construed "consultation" as including the entire time period that the applicant and the Services work together on preparation of the HCP. Thus, under such an interpretation, a Permit applicant who engages in consultation would have to cease all operations on the land covered by the HCP proposal the moment the first contact is made with the Service. No prudent manager would risk the expense, uncertainty, and disruption that would accompany the habitat conservation planning process if a suit for an injunction under ESA § 7(d) might succeed.

Another line of attack on the No Surprise Rule using ESA § 7—this one supported by some officials in the Services—is that consultation must be reinitiated on an existing HCP whenever a new species is listed that is not covered by that document but arguably is present in the area to which it applies. That new consultation in turn can cause the imposition of a whole new set of constraints on the Permit holder that otherwise would be barred by the Rule. At a minimum, the argument could be made that, once again, the landowner must shut down operations to comply with ESA § 7(d) during the entire time the reinitiated consultation is conducted. The Services' regulations do require that a completed consultation be reinitiated when certain circumstances are present (where agency discretion or control over the Permit holder is retained, and some new information or a new issue arises). One court recently interpreted these rules to hold that, as a general matter, the mere existence of an HCP and Incidental Take Permit does not give a Service sufficient discretion or control to require reinitiation of consultation on that HCP and Permit just because a new species is subsequently listed. There are, however, circumstances under HCPs where some agency discretion is retained. A good example of this are certain adaptive management provisions, which I will discuss later in this testimony.

Erosion from the outside may be matched by decay on the inside since the Services seem intent on reinterpreting the "No Surprises" Rule in a manner that lessens its guarantee of certainty to private landowners. On June 17, 1999, the Fish and Wildlife Service promulgated a final rule that announces the government's intention to revoke Incidental Take Permits "as a last resort" if their continued operation is determined to result in likely jeopardy to any species covered by the Permits and the Service has not been successful in remedying the situation through other means. Our understanding of the "No Surprises" Rule prior to this regulation was that the Service, not the holder of the Permit, was responsible for responding to a jeopardy situation. Even though the Service states that it expects revocation of Permits under this requirement to occur only in "narrow and unlikely situation[s]," if the jeopardy standard is interpreted liberally, the "No Surprises" Rule itself will be in jeopardy. Moreover, even if the Service interprets the jeopardy standard conservatively, this new revocation regulation provides an attractive opportunity for citizen suits against landowners whose operations are covered by Incidental Take Permits but are opposed by the plaintiffs.

On March 9, 1999, the Services adopted a new policy on adaptive management which also may pose a threat to the viability of the "No Surprises" Rule. Landowners understand that the guarantee of certainty under HCPs is not boundless. AF&PA recognizes that adaptive management provisions are appropriate elements of many long-term HCPs. Adaptive management—through appropriate monitoring and a focused "feedback" mechanism—can result in more efficient and effective management techniques. It can also be very valuable if it is used as a method to resolve questions of science that could delay development of the HCP. It can ensure that mitigation under an HCP will provide the intended results by starting with reasonable operating assumptions and allowing for appropriate adjustments.

However, we remain concerned that adaptive management can be misused. It can become an easy substitute for an HCP reopener clause and used to force the landowner to adopt new mitigation measures that undermine the "No Surprises" Rule's certainty or to call for the set-aside of more land or for additional species protection expenditures directly contrary to the Rule. Moreover, it is also inappropriate for the Services, in the name of adaptive management, to insist on very stringent restrictions—using "worst case" assumptions—and then require landowners to pursue expensive research to "prove" the worst case scenarios incorrect. Finally, although adaptive management is dependent on monitoring, it is not appropriate to require landowners to perform or fund research. And the monitoring for which landowners are responsible should be focused on actual events that do occur. In short, just as the "No Surprises" guarantee is not boundless, so too bounds must be established for adaptive management. The Services must be judicious in their demands for adaptive management in HCP processing, or that concept will subsume all notions of certainty which the Rule is intended to provide.

6. Inappropriate Imposition of a Recovery Standard in the Habitat Conservation Planning Process

The language and legislative history of the ESA, Interior Department Solicitor's opinions, preambles to ESA-related rules, court opinions, Solicitor General's briefs before the Supreme Court, and the Services' own "Habitat Conservation Planning Handbook" have all categorically stated that recovery of endangered and threatened species is a responsibility of the government only and that the private landowner's single obligation is the avoidance of "take" of those species. AF&PA is concerned that this governmental responsibility is becoming a standard for approval of private landowners' HCPs.

ESA §10 does establish conditions beyond "take" avoidance for issuance of Incidental Take Permits to private landowners, but those conditions stop well short of any obligation to ensure recovery. As I noted, one condition is the same as the standard for consultation under ESA §7—that is, not to jeopardize the continued existence of the species. A second condition is that the holder of the Permit must, "to the maximum extent practicable, minimize and mitigate the impacts" of the incidental takes which the Permit authorized. In other words, the mitigation burden imposed on each landowner in the habitat conservation planning process is intended to address the impacts of taking that would be caused by the landowner's future activities. We believe that ESA §10 is consistent with the Supreme Court's Dolan decision—the burden imposed on the applicant must be proportional to the impacts that would be authorized by the Incidental Take Permit. This proportionality concept is abandoned if Permit applicants are asked to assume responsibility for—and agree to correct—all landscape conditions that are believed to be inadequate, including conditions not caused by the applicants. Unfortunately, this is just what the National Marine Fisheries Service (NMFS) has done. It has insisted in the negotiations

on a number of West Coast HCP proposals that the landowners commit to restoring "properly functioning habitats." Under this standard, applicants are being asked to develop "ideal" habitat conditions, without regard to the extent of the impacts on covered species that the landowners' future operations would actually cause or to the properties' pre-existing conditions. By definition, this is a recovery standard. By definition, there is no proportionality under this standard.

Although we believe the properly functioning habitat standard to be unlawful, it is impractical as well. HCPs should not be measured on whether they "guarantee" achievement of certain population recovery goals. HCPs can only cover a portion of the landscape. The actions of others, including government, can profoundly affect a species' status. All Incidental Take Permit holders can do is provide habitat. Moreover, most species can move in and out of the area covered by an HCP. Whether members of a species actually use the habitat the Permit holder provides or whether the species continues to be adversely impacted by other causative agents—natural or human-induced—is often outside the control of the Permit holder. For example, if a Permit holder provides habitat for salmon, but fish are still not returning to the HCP due to passage restrictions, poor ocean conditions, predation by marine mammals, unnatural bird congregations, or over-fishing, that landowner should not be held accountable for fish populations. That responsibility can only be the government's, as only the government has the power to influence all pertinent factors.

The effort by NMFS to impose a recovery standard on Incidental Take Permit applicants has resulted in the virtual paralysis of negotiations on the affected HCP proposals. Apparently, this issue can only be resolved by litigation or legislation.

7. The Lack of Alternatives For Small Landowners

Earlier, I said that HCPs are a valuable tool for landowners who can pay their preparation costs. Many cannot. Relief from the ESA "take" prohibition should not be available only to those who can afford it. There has been much talk in Congress and the Services about the need to adopt an alternative or streamlined process to provide small landowners with "take" immunity. The Services have provided occasional no-take letters, devised the "safe harbor" process, and proposed the "low-effect" HCP in their "Habitat Conservation Planning Handbook." None of these approaches has been successful in providing opportunities broadly to small landowners to seek incidental take permission. Numerous bills, including the legislation reported by this Committee last Congress, have proposed incidental take processes better suited to small landowners. None has passed. Establishing such a process must be the highest priority of the Services and the Congress.

E. THE ROLE OF SCIENCE AND HOW TO MEASURE SUCCESS

Of late, much has been said about the role of science in HCPs. HCP critics raise the alarm that "HCPs are not based on science." For starters, this flies in the face of the fact that some of the best science on endangered and threatened species is being accomplished today in the context of HCPs. This criticism ignores the important concept that HCPs are more than scientific documents. They are also business plans. AF&PA agrees that available scientific data should be used in developing the management and mitigation measures for HCPs. We do not believe however, that any useful purpose is served if each HCP becomes a written compendium of every known fact about a species. Demands for such encyclopedic content breed unnecessary costs and delays. Science should play an important role in formulating an HCP, but ultimately the document must balance the minimization of impacts with the notion of practicability.

AF&PA also does not support the contention of some that an HCP may be inappropriate whenever there are significant gaps in science. There are and always will be gaps in knowledge, and how significant such gaps may be is not even known until long after they are identified. There are at least two reasons that denial of HCP coverage in the face of uncertainty is inappropriate. First, we adhere to the tenet that, if the Services knew enough to list a species, they know enough to address it in an HCP. Second, even if significant species-specific data are not available, often there are data concerning the general habitat requirements of other, similar species, and those available data can be used to craft an HCP that moves management toward protection of the target species. Furthermore, situations in which scientific gaps are identified could also be candidates for reasonable adaptive management provisions.

The "success" of any HCP must be judged by a blend of both scientific and business criteria, tempered by practicability. Any purely "biological" or "scientific" review of HCPs misses a good deal of the equation. Perfection can be the enemy of the good.

Thank you for the opportunity to testify. I was asked to discuss problems AF&PA's members are experiencing in the habitat conservation planning process. This task forced me to emphasize the negative. Just the same, AF&PA certainly wishes to be on record in stating its view that the habitat conservation planning process is a valuable and highly important mechanism to allow private landowners to both make productive use of their land and comply with the strictures of the ESA. We are prepared to offer solutions to many of the problems we address here. We understand that to be the purpose of the second hearing. We hope to submit for the record any of our suggested solutions that are not discussed on that occasion.

STATEMENT OF DON ROSE, MANAGER, LAND PLANNING AND NATURAL RESOURCES

Mr. Chairman and Members of the Subcommittee, I am Don Rose, Manager, Land Planning and Natural Resources for Sempra Energy. My staff and I are responsible for performing route and site selection for energy facilities, such as gas and electric transmission lines, obtaining permits for construction, and assuring compliance with environmental laws and regulations. Sempra Energy appreciates the opportunity to appear before the Sub Committee on Fisheries, Wildlife & Drinking Water to discuss the topic of Habitat Conservation Planning and the Endangered Species Act.

Sempra Energy is the parent company of Southern California Gas Company and San Diego Gas and Electric (SDG&E), as well as several unregulated subsidiaries. Sempra Energy is a Fortune 500 company and has the largest customer base of any energy services company in the United States. As such, the need to expand the energy infrastructure and maintain existing facilities is a constant and massive undertaking and obligation. I appreciate the opportunity to appear before this Subcommittee on behalf of Sempra Energy, the Edison Electric Institute (EEI), and the more than 200 shareholder-owned electric utilities who are likewise members of the EEI. I commend the Subcommittee for the hearings you have been holding on the strengths and weaknesses of the current habitat conservation planning and "incidental take" process under the Endangered Species Act (ESA). The generation and delivery of electricity involves extensive uses of land and water. In order to deliver electric power to commercial users and individual citizens, electric utilities maintain more than 670,000 miles of transmission line rights-of-way (ROW). Hydro-electric projects often preserve significant project lands that can benefit various plants and animals. In addition, nearly 90 percent of the electricity used in the United States is generated from nuclear or fossil fuel in steam-electric processes that depend on water resources for cooling water, makeup water, and other operations essential to providing reliable electricity. Much of the remaining electricity comes from hydropower projects, which rely on the weight of falling water to turn turbines that generate electricity. All of these land and water uses afford opportunities to maintain and protect habitat.

The service territory of SDG&E, essentially San Diego County and Southern Orange County in California, has more listed species under the Federal ESA than any other County in the continental U.S. There are more candidate species queued up waiting to be listed than any County in the continental U.S. While the likelihood of encountering listed species decreases north of San Diego, the density of endangered species in California is still higher than any State in the continental U.S., making it equally challenging for Southern California Gas Company (SCG) to do their work. Maintaining the energy delivery infrastructure in so vast a region is a significant challenge, and it is compounded by endangered species management concerns.

SDG&E is the only public utility in the country with an adopted, system-wide, multiple species (110 species are covered) HCP. This HCP has been in operation since December 1995. The development of this HCP involved:

- commitment of $1.2 million for the creation of a mitigation bank
- development of an extensive and ongoing training program for construction maintenance personnel, including guidance literature
- establishment of an on-call environmental surveying team to monitor and insure compliance with the HCP

As these steps indicate, Sempra has made dramatic changes in our corporate culture, imposing rigid standards on the design, construction, and maintenance of energy delivery facilities. I will discuss issues that Sempra's experience with HCP's, and the Endangered Species Act itself. Sempra has benefited from the implementation of our HCP in several ways. Our company is able to:

- initiate new construction without obtaining additional permits
- conduct maintenance activities year-round, including during nesting season
- conduct access road maintenance

These operational advantages save our company time through avoiding unnecessary permit delays, and the investment in stewardship this HCP represents has paid dividends in establishing our company as a protector of the environment in the public eye. The U.S. Fish and Wildlife Service often cites our program when making recommendations to other developers and industries.

Sempra has also encountered several problems implementing our HCP, and unfortunately, these few problems have the potential to neutralize all of benefits listed above. The problems, in my experience, lie not with the concept of HCP's but with the implementation. Sempra agrees with the concept behind HCP's, and recognizes their potential to benefit the species they protect. In fact, we would argue that HCPs should be used more often. In practice, however, HCPs and the administration of ESA have several significant problems that need to be remedied.

(1) CONFLICTING REGULATIONS

Like many other complex systems, electric and gas systems require periodic maintenance to avoid shut downs. The resulting outages can cause serious economic and human health problems. Because utilities provide an essential service necessary for public health, safety and welfare, the licensing agencies that regulate utilities, recognizing that poor maintenance will result in system problems, mandate much of the maintenance we do as well as dictating its frequency.

For Sempra Energy, these maintenance activities include:

- insulator washing
- insulator replacement and repair
- repair and replacing conductors
- pole brushing (removal of flammable vegetation from base of wood poles)
- tree trimming
- access road re-grading and maintenance
- pole line inspection
- repair or replacement of structures supporting utility equipment
- pipeline erosion repair
- pipeline leak patrolling
- pipeline repair & replacement
- exposed pipeline repair

All of these maintenance operations must be performed when needed and when weather permits. Unfortunately, this means most of these operations must be performed during the spring and summer, which is nesting season of many protected species. As a result, conducting utility field operations in natural areas presents an unavoidable opportunity for conflict with the Endangered Species Act (ESA).

This regulatory conflict may also catch utility customers in an ongoing financial trap. In California our utilities operate under a performance-based rate system that factors in standards of maintenance and system reliability. Poor rates of return, triggered by delays in access to systems for maintenance, can translate into lowered financial ratings; which, in turn, would negatively affect customer rates. When our legal responsibilities conflict, the end result can harm the customer and the species.

(2) GREATER RISKS TO THE HABITAT

Of the maintenance activities we conduct, the most important is access road regrading and maintenance. Without driveable access roads, few of asset maintenance activities (as listed under item (1) can be performed. For electric systems, deferred maintenance has potentially serious consequences. Three of the most common are: outages, equipment damage, and fire. If insulators are not washed, flashovers are almost certain, and may be catastrophic. (See attached photograph.) A dirty insulator can conduct electricity on its surface thus causing a short. Flashovers can result in outages and potentially, catastrophic fire. If a flashover occurs, the equipment is always damaged and must be replaced. The flashover can also cause a surge that can damage sensitive customer-owned equipment which relies on the stable operation of the electrical system. Additionally, the reliability of the grid can be seriously compromised.

Of greatest threat to the goals of the ESA, fire is a very possible consequence of these flashovers, especially in the fire prone regions of the desert southwest. If unperformed maintenance results in a fire, extensive damage to the habitat areas of concern, including the potential loss of many species can be expected. Ironically, the same activities that were prevented for the purpose of protecting habitat can facilitate that habitat's destruction by fire.

Gas systems require less maintenance than electric systems because the majority of the system is underground and not exposed to the elements and other activity. However, when maintenance is needed, it is no less critical than for the electric sys-

tems. Outages, fire and damage to the environment are all potential consequences of deferred repair and maintenance. The magnitude of the consequences, as with electric equipment, increases with the capacity of the facility.

(3) UNEQUAL TREATMENT UNDER THE LAW

One of the problems that a utility finds with HCP's is that they appear to be designed for a one-time use, which is most typical of development versus continuous operations.

Most development must mitigate for certain impacts caused by the development. So it should be. Utilities also mitigate when they develop their facilities, but it doesn't end there as it does with other forms of development. *They must continue to mitigate repeatedly in order to operate and maintain these facilities.* Even worse than the questionable continual mitigation requirements are the extensive and repeated delays incurred to complete these requirements.

Another example from our experience illustrates what can happen when additional species are listed, and found to be located in the area of an otherwise thorough and exhaustive HCP. As mentioned before, the SDG&E[1] HCP covers 110 species system-wide. When our HCP was initiated, the Quino Checkerspot Butterfly was not included in this species list. USFWS told SDG&E that the Quino Checkerspot was locally extinct in our region, and therefore it need not be included in the HCP. Three years later, however, the butterfly reappeared, alive and well, and in our service territory. We subsequently discovered that the butterfly's primary host plant appears to flourish along SDG&E's dirt access roads.

As a result of the species re-emergence, the Service has asked Sempra to amended our HCP or apply for a separate Section 10 permit. The application processes for a Section 10 permit normally takes a year or more, during which time much critical maintenance work is shut down or perilously delayed. The Service has been flexible in allowing maintenance in some areas where they feel the butterfly is unlikely to be present. However, the butterfly survey protocols mandated by the Service to determine that the butterfly is not present are extremely detailed, protracted, difficult, expensive, and ultimately limit the time and type of maintenance that can be conducted.

If a small window of opportunity is missed, one must wait an entire year in order to conduct an acceptable survey pursuant to the Service's standards, and performing surveys according to USFWS strict, prescribed standards is no guarantee of acceptance. Recently, the Service declared several surveys conducted by other companies unacceptable. Despite compliance with a rigorous survey protocol prescribed by USFWS, the surveys were not accepted because the surveyed area did not experience enough rain during the time of the survey.

As the result of the USFWS approach to protecting Quino Checkerspot Butterfly, a comprehensive HCP with up-front mitigation, including significant financial and human resource commitments by Sempra, is now practically useless in lieu of the new listing. While an amendment to the HCP is now being prepared, there is no guarantee how the fix will last, and there is no way to recover the resources and time that have been lost since the new listing. Simply put, it runs counter to reason that such an extensive management program as the SDG&E HCP, created to protect 110 species, could be de-railed and rendered moot simply because of the addition of one additional species.

(4) A PATCHWORK OF RULES

An ironic aspect of HCP's of this nature is that they do not apply to Federal land. Thus they are void on lands owned by the same government agency which issued the permit in the first place. The linear nature of energy utilities requires regulation addressed in a more comprehensive manner. A transmission line may travel many miles, and cross military reservations, forest service land, national parks, national wildlife refuges, and other Federal lands. The terms of the HCP do not apply in these areas, and separate agreements must be negotiated in each case, limiting an otherwise system-wide HCP. Furthermore, other Federal actions, such as the relicensing of a hydroelectric facility, are not covered by HCPs on Federal lands. What ensues is redundant review of the same sorts of activities by the same agencies.

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[1] In July 1998, after the implementation of the HCP, SDG&E and Southern California Gas Company were joined under the holding company Sempra Energy.

(5) THE APPEARANCE OF CONFLICTING MISSIONS

The U.S. Fish and Wildlife employs hundreds of specialists in the fields of biology and species conservation. Electric utilities value this perspective, and we too employ biologists and other environmental professionals to focus our activities and insure that we protect the environment. As our HCP illustrates, the mission of the U.S. Fish and Wildlife Service and utility land managers need not be in conflict. Far too often, however, those who bring biological expertise to the management equation are unaware of the practical implications and stewardship opportunities of the management activity. In such cases, perhaps a multi-disciplinary approach would yield better results. Through cross training, the appointment of an HCP manager well versed in both the biological goals of HCP's and the technology being managed, or the appointment of more personnel in the USFWS with land management expertise, could forge a stronger connection between biological and management goals of an HCP.

FINDING REMEDIES

Sempra Energy is a strong supporter of the goals and intent of the Endangered Species Act, and we feel that the HCP process holds great promise. An operating HCP can be a very valuable tool for a utility. SDG&E has utilized its HCP on nearly a daily basis. That is, until the Quino Checkerspot butterfly was listed. But to further the goals of the ESA, some remedies to the HCP process should be considered. Some options to consider might include:

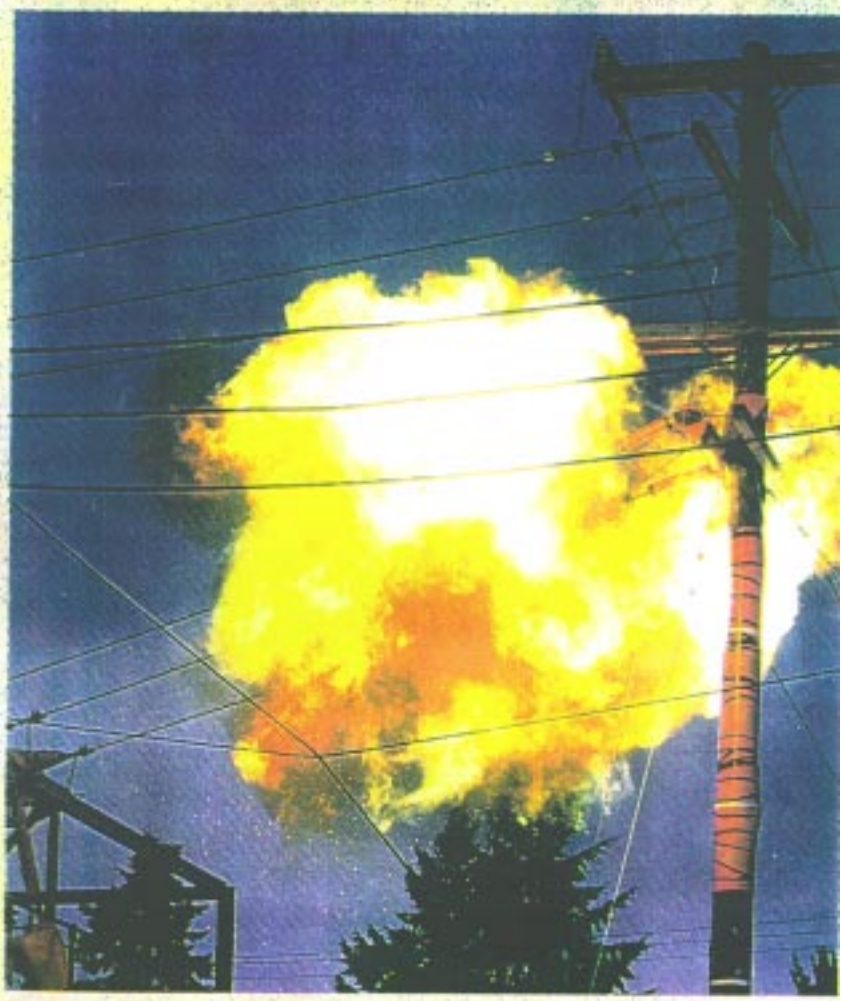
- Habitat-based HCPs should be recognized as protecting all inhabitants of such habitats. In the example we provided, if the butterfly has returned from regional extinction along the access roads, it has also returned to areas in the utilities' service territory other than the access roads. It therefore should be automatically included in the system-wide, habitat-based, SDG&E HCP that already covers and protects most of the habitats for the plants and animals in the area. In other words, the butterfly is afforded the same protection as the 110 species covered in the plan today, as it resides in similar habitat. In this case, over 200 acres of mitigation bank had been purchased and deeded over for preservation. So, the wildlife agencies have the mitigation in place for future work, work that is being prohibited by the butterfly listing.
- HCP's should only require mitigation once for such things as building access roads. Maintenance should not require additional mitigation. However, this should not be interpreted as a license to be irresponsible to the environment. Utility crews must adhere to strict protocols when working in environmentally sensitive areas. This includes restoration of damaged habitat. Sempra supports and voluntarily enforces this program.
- Existing access roads could be given "safe harbor" status much like agricultural lands.
- HCP's should apply to all lands where habitats need protection and where work must be done, including Federal lands.
- There should not be a regulatory whipsaw created. A utility should not be found in violation of the ESA while performing regulatorily mandated functions.
- A separate career track should be developed within the U.S. Fish and Wildlife Service for HCP managers. Such managers would be trained not only in the biological aspects of habitat conservation, but well versed in the various land uses and technologies accommodated by HCPs. This official would be in a position to make long-term planning decisions with regard to individual HCPs. In cooperation with several Federal agencies including the U.S. Fish and Wildlife Service, the Edison Electric Institute supports a course to train Federal land management personnel in the specifics of electric utility operation. We strongly recommend that U.S. Fish and Wildlife personnel making HCP and ESA decisions, including final biological opinions, complete the Electric Systems Short Course and similar courses that cover the management of technology and development.

As it stands today, the unreasonableness of the application of the ESA and HCP's to these maintenance activities threatens to undermine the tremendous level of support within utilities for the conservation objectives of the Act. Instead of providing a mechanisim that allows essential generation, transmission, and distribution, and generation activities to occur in predictable compliance with the ESA, the HCP program presents great uncertainty, cost, and risk.

For well over a century, Sempra Energy's utility companies have operated in the naturally abundant but sensitive environment of southern California. Utilities nationwide play a role in the daily stewardship of our nation's natural resources. We place a high value on our role as an environmental steward, and offer these suggestions in the hope that we can find a way to further the underlying goals of the ESA.

Working together with Congress and the administration, we hope that we can solve these problems.

FLASHOVER



Seattle City Light created a flashover on a 26 kV transmission line in a substation to dramatically emphasize the danger of high-voltage lines to the public. See page 18 for additional photos. Photo courtesy of Albert T. Koskie.

EDISON ELECTRIC INSTITUTE,
Washington, DC., October 1, 1999.

Hon. MICHAEL D. CRAPO,
U.S. Senate,
Washington, DC.

DEAR SENATOR CRAPO: The Edison Electric Institute (EEI) formally requests the opportunity to provide testimony to the Environment & Public Works Subcommittee on Fisheries, Wildlife, & Drinking Water in any hearings you may hold on the subject of Habitat Conservation Plans (HCPs) under the Endangered Species Act.

EEI is the association of U.S. shareholder-owned electric utilities, associates, and international affiliates. Our U.S. utility members provide energy to over 70 percent of all consumers of electric power in the U.S. The generation and delivery of electricity involves extensive uses of land and water. In order to deliver vital electric power to commercial users and individual citizens, electric utilities maintain more than 670,000 miles of transmission line rights-of-way (ROW). These ROWs represent an important land resource that provides habitat to endangered species. Likewise, hydroelectric projects often preserve significant project lands that can benefit various plants and animals. In addition, the generation of electricity depends on water resources for cooling water, makeup water, and other operations essential to providing reliable electricity. In the case of hydropower, the weight of falling water generates the electricity.

Our companies have often been in the forefront of trying to manage utility lands and water uses in a manner that promotes the health and sustainability of species and ecosystems, and one of our member companies was the first to execute a multi-species HCP with the State of California and the Department of the Interior. Nevertheless, our companies have found operation under the Endangered Species Act to be challenging at best. The approach taken by the Endangered Species Act to habitat protection is not well suited to linear facilities, such as electricity and other rights-of-way. Furthermore, the ESA provisions on habitat conservation plans as to private lands and section 7 consultations as to Federal lands no not mesh well, and are causing difficulty not only for linear rights-of-way, but hydropower projects as well.

EEI would welcome an opportunity to share with the Subcommittee, through an appropriate member company witness, industry concerns about how habitat conservation plans are developed and implemented, their effectiveness, the incentive structure associated with the process, and the efficiency with which the Services are able to administer the program.

Because of our companies having a continuing obligation to meet the public need for safe and reliable electric energy, they have a strong interest in finding ways to achieve improved species protection while fulfilling their primary mission. The Endangered Species Act should not be an impediment to that objective. In fact, utility lands and rights-of-way can provide important habitat for endangered, threatened, and other species. EEI looks forward to working with the Subcommittee and the National Endangered Species Reform Committee, of which EEI is a member, on the upcoming HCP hearings. Meg Hunt, EEI's Director of Government Affairs (202–508–5634), will contact you for further discussions.

Sincerely,

E. JOHN NEUMANN,
Vice President, Governmental Affairs.

HABITAT CONSERVATION PLANS

WEDNESDAY, NOVEMBER 3, 1999

U.S SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON FISHERIES, WILDLIFE, AND
DRINKING WATER
Washington, DC.

The committee met, pursuant to recess, at 10:05 a.m., in room 406, Dirksen Senate Office Building, Hon. Michael D. Crapo (chairman of the subcommittee) presiding.

Present: Senators Crapo, Thomas, Reid, and Boxer.

Also present: Senator Baucus.

OPENING STATEMENT OF HON. MICHAEL D. CRAPO, U.S. SENATOR FROM THE STATE OF IDAHO

Senator CRAPO. The hearing will come to order.

We appreciate the presence of the witnesses who will participate today. We hope we are going to be able to find a strong bipartisan path forward to meaningful reforms—"win-win" solutions for species, the environment, private property owners, and the economy.

I would like to take a few minutes as we begin this hearing to indicate that this is the first hearing of this committee since Senator Chafee passed away. I know it is the first hearing of this subcommittee.

I just wanted to indicate that it is a different world. As we walked in here today, some of us were visiting about the fact that Senator Chafee was always here with that bright positive attitude that he had about finding solutions. He was always very interested in the issue of the hearing. He was particularly interested in finding a solution in the Endangered Species Act arena, and so I am sure that he would be glad to see this hearing going forward so promptly.

I know that my predecessor as the chairman of this subcommittee, Senator Kempthorne, was working on these efforts, and Senator Chafee literally accompanied him around the country to identify issues and find solutions. I want to indicate that we all have a different feeling today because we miss him, but we know that he is with us in spirit as we proceed on these issues which were so dear to his heart.

I don't have further comments. We have all given statements on Habitat Conservation Plans, but Senator Reid, would you like to make any comments?

OPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator REID. Thank you, Mr. Chairman.

One of the unique experiences that I've had was Senator Chafee's funeral. That was really quite a celebration. I was so impressed with his wife—her whole attitude during and after the funeral. It spoke well of their great family. We will miss him here. He had a great working relationship with our former chairman, now Ranking Member, Senator Baucus; they worked well together. They were partners in many things and I am sure that Max has a unique perspective. He worked with him more than anyone else on our side of the aisle.

As I mentioned at our last hearing on this subject, I believe that Habitat Conservation Plans are a useful creative tool for the protection of both endangered species and private property rights. They have not been a perfect answer, but they have moved us in the right direction. I think a fresh look at what we have learned is a beneficial exercise.

Joining us today are a wide array of professionals from the environmental community, State governments, private property owners, forest products industry, the Clinton administration, and one from a regional water authority in Nevada.

David Donnelly is a Deputy General Manager of the Southern Nevada Water Authority and is one of the chief Nevada negotiators in the Lower Colorado River Multiple Species Conservation Program. In this latter capacity, David has worked extensively with counterparts in Arizona and California to develop a Conservation Management Program that balances the needs of species and the needs of millions of residents in the Southwest. The Colorado River is our lifeline in southern Nevada; without water from the river there would be little population in southern Nevada, instead of now the 1.5 million people that live there. As such, it is absolutely necessary that we do everything that we can to protect the Lower Colorado's ecosystem for future generations. David is going to describe in great detail the tri-State efforts that are under way to do just that. I am very happy, as I indicated to him prior to the meeting beginning that David is here.

I am sorry that I am going to have to go to the Floor. We are trying to move that Caribbean Basin issue and I have got to get some time limits on the amendments and try to move that bill along.

In addition to David Donnelly's perspective on the Multiple Species Conservation Program, we in Nevada, I think, have also gained experience from which people can learn about endangered species, generally in southern Nevada, especially with the Desert Tortoise.

So I look forward to working with you further in this committee and also look forward to specifically moving this legislation.

Senator CRAPO. Thank you very much.

Senator Thomas.

OPENING STATEMENT OF HON. CRAIG THOMAS, U.S. SENATOR FROM THE STATE OF WYOMING

Senator THOMAS. Thank you Mr. Chairman.

I too am interested in the hearing today; we have had several. I am particularly pleased that the Director will be here today.

I understand that the hearing is to examine potential solutions to concerns about how HCPs are negotiated and implemented, the appropriateness and the adequacy of conservation measures in HCPs, and generally how to improve HCPs to provide greater conservation benefits and make them accessible. That has been the purpose of all of these hearings, but I must tell you I am not sure we've gotten to that. I hope that you who are testifying today can address these points.

We hear that HCPs have become an important tool to help conserve listed species that depend on private property, and to provide needed flexibility. I have to tell you, in my State, I don't think that is true. I don't see that as an alternative. I don't know that there are any successful examples of this. We have talked about it a lot, since 1982, as an alternative, supposedly to accomplish our goal, without having to place a species on a protection listing. I am anxious for you to level with us on how successful that has been. If it hasn't, why not? We get many speeches, but the bottom line should be fairly simple.

Senator CRAPO. Thank you very much, Senator.

Senator Baucus.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Mr. Chairman, I appreciate your continuing on with this subject.

I do think it is important to remember our late chairman as we proceed, not only in this subject but in all subjects of this committee.

As you know, Mr. Chairman, our full committee chairman was so interested in trying to find a resolution to this subject that he attended all the subcommittee hearings, but for one. He always sat at your right. He was fully present, not only in body but in spirit. In energy and drive he tried to find a solution to the Habitat Conservation Plans and the Endangered Species Act. Generally, he worked with groups to find a positive, constructive solution, not one that would drive down peoples' throats, but rather one that was agreeable and it made common sense to people. He was a great man. I urge us all to proceed in that same spirit, that spirit of "carrying on," that spirit of, "no naysayers." We knew John, he did not like naysayers. He wanted people to figure out a solution to a problem.

I will never forget, Mr. Chairman, many times he'd call me up and say, "Max, I want to come over and see you."

I'd say, "John, you are the chairman. I will come over to your office."

"Oh, no, no, no, I want to come over to your office, I'll come and see you."

And we'd have a good-natured argument over that, and sure enough, he'd prevail and he'd come over to my office, and we'd chat a little bit.

Sometimes I'd go to his office as some of us have, and he would always be sitting there with his tea and honey. He always pour

honey in his tea. Those of you who knew John, remember that was something that he liked to do. He'd always be there in good cheer, bright attitude, positive, constructive, upbeat.

We would try to solve a problem, whatever it was; it could have been the TEA–21 highway bill. It could have been the Clean Air Act, Clean Water Act—John tried to put a solution together.

Something else I admire him for is that he would always start our hearings on time.

[Laughter.]

Senator BAUCUS. When I first came to the Senate a long time ago, the rule was that hearings would always start, on average, maybe 20 or 30 minutes after the appointed time. And gradually, we kind of started a little more on time. But with John, maybe it was the Navy or the Marines; I don't know what it was, but he was on time. John was here and started exactly on time, and if the rest of us weren't here, that was that. I take a little credit for that because I suggested to him that he might think of that.

When Senator Mansfield was Majority Leader, years ago, he'd hold a hearing at a certain time and if the Senators didn't arrive but the staff were there, it didn't make any difference; he just started the hearing. Or he started the meeting in his office, even if there were no Senators. Well, pretty soon the Senators got the idea and arrived on time. I hope, Mr. Chairman, that you continue the subcommittee chair in that same tradition.

I also want to take this time to congratulate our new full committee chairman, who is not here right now. The chairman of the full committee is Senator Smith, and I very much expect this committee to continue to work in that same cooperative spirit shown by Senator Chafee when he was the chairman.

I know we all look forward to a new era. Times do change. Nothing is permanent. Nothing is fixed, but we go on with the attitude of "can do," and "get things done."

I hope that the witnesses at our hearing, have that same attitude. How can we figure this out, instead of dig in to one point of view. That is not going to work. The only thing to work is to start like in "To Kill A Mockingbird," to put ourselves in the other guy's shoes and walk around in his or her shoes a little bit, and see the problem from his or her perspective.

Frankly, I have found that to work at home. Let me give you an example—it is really on this subject. Some of us as Senators have work days; we start at 8:00 a.m. and we have a sack lunch and we are there to work all day long. I worked in saw mills, waited tables, and went into the mines. I did this for years. One day, my work day was at the Jeff Witt ranch in Montana. The whole point of the work there—and this had been ongoing for about a week—was to rechannel a stream to a conserve habitat for Bull Trout spawning. This was at a ranch, and as we all know, in the old days, ranchers would take a stream and they would just virtually channel it to get rid of the brush so that they could use it for irrigation, or they could use it for watering; just for practical purposes. Well, of course it took away all the Bull Trout spawning habitat.

So there we were. There was the rancher, Trout Unlimited, and residents of the community. A contractor from a local town donated his equipment, and we spent the whole time there rechanneling

this stream. We were going to put it back to where it was. We could see where the old stream bed was. We moved boulders, planted willows, and stumps, and all kinds of things so that the stream would start to meander again. The point is, this was not a top-down solution. This was a solution that was provided there, right on the ground to help us in Montana, find a way not to be under the strictures of the Endangered Species Act.

I believe, Mr. Chairman, that the Habitat Conservation Plans are right down this road. Of course there are going to be questions, and I very much appreciate the questions asked by my good friend from Wyoming. But I'd say, "Let's move ahead." In the spirit of John Chafee, let's find answers to these questions and not let these questions become problems. Let's turn them into solutions. I just hope that we just keep remembering John Chafee, and we are going to do it.

Thank you.

Senator CRAPO. Thank you.

Senator Boxer.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. Thank you so much, Mr. Chairman. It is nice to see you.

I just want to say a couple of words about John Chafee and then a couple of words about the subject before us.

To me, Senator Chafee's legacy is his kindness, his decency, his bipartisanship, and his dedication to the environment. And I think, if we all look at that, it is a great model for all of us. So, this is our first hearing where he isn't among us, and I feel him in the room. And I see him sitting right next to you, Senator Crapo, where he normally does when the subcommittee was hearing a subject he cared about. And I think that as, Max Baucus has said, his spirit does resonate in this room and I think will, for a very long time to come.

On the subject of Habitat Conservation Plans, Senator Chafee did come out to California about a year and a half ago and he saw what was happening on the ground.

Habitat Conservation Plans are very prevalent in our State and are, for the most part, embraced by both parties, elected officials of both parties are trying to work together to make it happen and I think, as Senator Baucus has stated, that Senator Chafee wanted to make it all work.

Senator Chafee began his work 20 years ago on this committee. And we look at every one of our major laws, environmental laws: Clean air, water, safer food, drinking water, more diverse wild life, and grander open spaces, he was involved in all of those.

Just a few weeks ago, Senator Chafee delivered a key-note address at the Annual Conference of the National Trust for Historic Preservation, and he received a standing ovation from the 2,000 people who gathered at Washington's National Cathedral for the event. The year before he had received the organization's award for Outstanding Achievement in Public Policy for his work on an issue close to my heart: Historic preservation. It was a fitting tribute.

You know, life is such a puzzlement because each of us has to find within us, the reasons why we are here, and what is it about, how do we make a difference, whatever our philosophy is. I think if we seriously look back on those who served in public life, who have really been remembered, it is those who have made life better for people. That may take on different philosophies, but I think he made life better for people. And that is what I'll always thank him for.

In terms of the subject that is before us, earlier this year, President Clinton announced a proposal that would remove the American Bald Eagle from the list of threatened and endangered species under the ESA. With that announcement, the eagle joined other formally imperiled species such as the Paraguayan Falcon, the Gray Whale, the Aleutian Canada Goose, and the Gray Wolf that the ESA has helped to bring back from the brink of extinction.

Now while this was all very good news, many of the over 1,100 species listed as threatened or endangered under the Act, have not joined the eagle, whale, and wolf on the road to recovery. Because about 90 percent of listed species make their home on private property, it is critically important to ensure that Habitat Conservation Plans are designed to promote, not only the survival of the species but the recovery of the species. Now, I may be in a minority in this committee in drawing this distinction, but I really feel we should think about it. If the doctor says, "You are going to survive," it is different than, "You are going to recover." You are going to recover, you are going to be back to normal, you are going to be thriving. You are going to survive, maybe you're going to lie in a hospital bed you know, with tubes up and down you. So there is a big difference between those two words and so when I quibble over those words, Mr. Chairman, I feel it is important.

I believe that not all HCPs are held to the recovery standard. They are held to the survival standard. So, I come to it in a fashion to try to strengthen them.

The other issue I know we have to face is, what happens when a landowner completes the HCP but then, it is not working, and we don't have this recovery? Perhaps we don't even have survival. Do we then say to the landowner, "Well, you did what we thought you had to do," or do we sit down again, roll up our sleeves and try to work it out. Clearly I would like to see us keep our eye on our goal which is to bring these species back.

So, I think that seriously, that we can do better with better standards. I know we are going to have debates over this, but I would like to see the standard be for recovery. And, Mr. Chairman, you have always been most gracious to me and I appreciate that, and I look forward to working to with you on this and many other issues.

Senator CRAPO. Thank you very much.

Senator BAUCUS. Mr. Chairman, if you don't mind, I got so carried away talking about John Chafee that I forgot to mention just a couple of points on the subject, if I could, please.

Senator CRAPO. Sure.

Senator BAUCUS. Just give me a second. Thank you.

I just want to list the questions which I think that we have to focus on. How do we establish a ''no surprises'' policy when as scientists constantly remind us, that nature is full of surprises?

Second, how do we create adequate safeguards so that the public has a say in the development of large HCPs?

Third, how do we provide some consistency so that landowners are treated pretty much alike?

Fourth, what is the standard? Are we trying to merely stave off extinction, or promote recovery, the point that Senator Boxer raised? And what as a practical matter, is the difference? In addition to the philosophical, it is the illogical that matters.

Next, how do we monitor, to make sure that the plan doesn't just look good on paper, but also works on the ground?

Next, how do we adapt a plan to changed circumstances, or new scientific information?

And finally, how do we make the benefits of HCPs available to small landowners?

Those are my questions.

Senator CRAPO. Thank you very much Senator, and those are good questions to answer.

We will begin with our first panel now, panel No. 1 is Ms. Jamie Rappaport Clark, the Director of Fish and Wildlife Service, and Mr. Don Knowles, Director of the Office of Protected Resources at National Marine Fisheries Service.

And while Ms. Clark and Mr. Knowles are taking their seats, I would like to again remind them, and all witnesses today, that we have a time clock and as I have said many times before, the clock is going to run out before you feel that you have finished saying what you have to say, and we ask you to be very careful to pay attention to that because we would like to have the opportunity to engage with you in some questions and answers to the maximum extent possible.

I can assure you we and our staff very carefully and thoroughly review your written testimony and so, if it is in your written testimony, it hasn't been lost on us and we'd like to ask all witnesses to be sure to follow the time clocks. I believe the yellow light comes on with 1 minute to go and when the red light comes on, we ask you to wrap up your thought at that point as quickly as you can and let us get onto either the questions or the next witness.

With that, Ms. Clark, we will start with you.

STATEMENT OF JAMIE RAPPAPORT CLARK, DIRECTOR, FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR, WASHINGTON, DC.

Ms. CLARK. Thank you, Mr. Chairman and Members of the Subcommittee. I am pleased to be here today to talk about the Habitat Conservation Planning Program.

But before I begin my oral statement, I would like to say a few words in memory of Senator John Chafee, if I could. He chaired the full committee during my entire tenure as Director of the Fish and Wildlife Service.

Senator Chafee was a very special friend to me, a wonderful role model, when provided me with important guidance both before and after I became Director. Our agency will dearly miss both his lead-

ership and his friendship. I am particularly pleased that Congress has renamed the Pettaquamscut Cove National Wildlife Refuge for Senator Chafee with the support of the Fish and Wildlife Service. The John H. Chafee National Wildlife Refuge will remind us of all of his many contributions for the environment and to natural resources.

Let me turn now to the topic of this hearing, Habitat Conservation Plans. The Service believes that HCPs are essential tools for the conservation and protection of threatened and endangered species. When President Clinton took office, the Service had only approved about 14 incidental take permits and associated HCPs. Today, the Service has issued more than 260 incidental take permits covering approximately 20-million acres of land, 200 listed species, and many unlisted species. The Service anticipates being involved in the development and implementation of an additional 300-plus plans by fiscal year 2001. While this phenomenal growth is a testament to the popularity and utility of the program, it certainly brings with it additional challenges. Greatest among these challenges is that demand is exceeding our ability to effectively deliver the program as we would like.

The major strength of the HCP program is that it is based on the development of local solutions to wildlife conservation. By encouraging the development of regional, landscape HCPs to cover many habitats, we have provided incidental take authority for many different land uses and landowners.

The Service has shown creative and flexible approaches in assisting landowners to develop HCPs that fit unique circumstances presented in each case. We are committed to using a flexible approach in addressing each HCP with the type of innovative thinking that has proven successful.

At the same time, the foundation of the HCP program is, and has to remain, sound science. We base our determinations on the best scientific and commercial data available. We develop our policies to balance concerns of applicants and species conservation, yet strive to reduce procedural burdens. We have taken action to improve and clarify the program by working with our colleagues in the National Marine Fisheries Service to publish the HCP handbook, to issue the "no surprises" final rule, and to propose the Five Point Policy to improve administration of the program.

I'd like to address a suggestion raised at the October 19 hearing before the subcommittee that section 7 consultations should not be conducted on HCPs. We support continuing to conduct section 7 review of HCPs because it fulfills two important laws. First, it provides for review by other Service biologists, not directly involved in the development of the HCPs as independent reviewers, and second, it insures that the HCP will not result in jeopardy or adverse modification of critical habitat for other listed species that are not covered by the plan.

Applicants look to the Service to provide leadership, therefore the success of the HCP program is contingent upon the Service being thoroughly involved in the development, implementation, and monitoring of these plans.

A central element in delivering an effective program is our ability to hire and train qualified staff to meet the increasing workload

associated with monitoring existing HCPs and assisting applicants in the development of new plans. We are also finding it increasingly difficult to recruit qualified staff and to retain our experienced workers. The consequence of this is less than desirable levels of service as reflected in some of the testimony that you heard 2 weeks ago.

In addition, the demand will continue to grow for the Service to provide adequate monitoring and adaptive management that will improve more and more of these HCPs. It is important that we have adequate funding to be able to fulfill these important responsibilities.

Trying to deliver our commitments to the program and to respond to the increased workload, the Endangered Species Program budget for consultation HCPs experienced a decrease in fiscal year 1996, and only modest increases in 1997, 1998, and 1999.

We have requested increases and we hope that they will be addressed.

As you have heard in the previous hearing, smaller governments and operators often don't have the staff to support the planning and coordination necessary to develop HCPs. We are devoted to assisting these communities in the development of their plans, and the President's 2000 budget request of $10 million to support HCP development grants within the Land Legacy Initiative will provide the financial assistance necessary to launch these community-based multi-species plans. However, this request was zeroed out in both the House and the Senate.

The President also requested, in year 2000 as part of his Lands Legacy Initiative, to support the Land-Acquisition Grants, a request that was not met in total.

In conclusion, the Service is implementing an HCP program that empowers the applicants to integrate endangered species conservation into their activities, while using the best available science and approaches.

I am proud of the ideas and of the hard work that is strengthening the HCP Program, but remain deeply concerned about the escalating workload without significant increases in resources.

Mr. Chairman, this concludes my testimony and I will be happy to respond to any questions.

Senator CRAPO. Thank you very much Ms. Clark.

Mr. Knowles.

STATEMENT OF DON KNOWLES, DIRECTOR, OFFICE OF PROTECTED RESOURCES, NATIONAL MARINE FISHERIES SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, SILVER SPRING, MD

Mr. KNOWLES. Thank you Mr. Chairman.

Members of the subcommittee, this is my first testimony here. I appreciate the opportunity to testify about HCPs. There are positive aspects and there are challenges.

My name is Don Knowles. I am the Director of the Office of Protected Resources in the National Marine Fisheries Service, which is an agency of the National Oceanic and Atmospheric Administration. From 1980 to 1988, I was a staff member on the Appropriations Subcommittee for Interior and had some opportunity to inter-

act with the chairman of the authorizing committee at that time and Senator Chafee was always a force to be reckoned with, and someone to contend with, in those battles, but I too enjoyed a good relationship with him, and we too will miss him.

I have been in this position, my current position now, for about 6 weeks. The perspective I bring is perhaps, a bit of a fresh one as a result, because while I have known about HCPs and worked on them a bit over the past years, this is really the first time I have been involved with them on a day-to-day basis.

Coming most recently from the Pacific Northwest, I have seen firsthand the benefit of coordinated Federal approaches and I am committed to working with the Fish and Wildlife Service to deliver one Endangered Species Act Program.

My observation is that the Administration has done an excellent job breathing life into language that really sat on the books for a decade, largely unused.

We know that we can't provide for biological diversity or species conservation on Federal lands alone. The General Accounting Office tells us that over 70 percent of the species listed have over 60 percent of their habitat on non-Federal lands. Over 35 percent of the species listed have essentially all of their habitat off of Federal lands. Incidental take permits are really the only vehicle currently available that provide incentives for non-Federal landowners to protect listed species. The National Marine Fisheries Service is responsible for over 50 species listed under the Endangered Species Act including marine mammals, sea turtles, plants, salmon and other fish. It is my belief that we can meet the challenge of recovering these species only when we cooperate with non-Federal landowners such as States, Tribes, and local units of governments.

We have issued permits associated with HCPs for two large scale projects in Washington and California that cover almost 3 million acres. We have issued 10 incidental take permits associated with low-effect projects. And we are a party to five implementing agreements for HCPs. We are currently negotiating something like 35 additional HCPs in the Pacific Northwest and California. So far, all of the large scale NMFS HCPs developed by applicants involve Pacific salmonids. And this experience sharply colors our perspective and is a bit of a contrast with the Fish and Wildlife Service and the range of species that they have had to deal with.

At the hearing in July we testified about the role of science in the development of HCPs. And I'd like to emphasize that the Endangered Species Act requires the Services to use the best available science in making its determinations, including the HCP application process. NMFS spends a significant part of its budget on insuring that our scientists stay up to date in their respective fields. In fiscal year 1999, we spent about $8 million on science out of a budget of about $23 million, over a third of our budget.

It's not a simple matter to provide for ecosystem protection in species across large landscapes. While we are comfortable that we have solid, reliable, quantitative information for some things like temperature, water flow, and fish passage, there are other things that we have less precise information about, such as nutrient cycling, food chain dynamics, biodiversity, population genetics, cli-

mate change. Few practical tools and methodologies have emerged today to help us with those.

My statement has a number of examples of some of our successes, and our current HCPs in progress. Let me skip over those and talk a bit about our future challenges. We recognize the need to strengthen both our management and our science support. To me, it is readily apparent that one of our problems is that our HCP program is just not adequately funded. It is not receiving the funding set out in the Administration's request as necessary for future successes. In 1999, we have about $23 million available. The year 2000 budget was for an increase of around $24 million and it looks like we are going to get something less than $5 million of the increase in order to deal with the issues. I mean, don't get me wrong, we are grateful for what we have. We intend to do the best job that we can with it, but truly we feel like we could do a better job for folks all across the landscape if we had a bit more capability to deal with some of the issues.

So in conclusion, we think the HCP program has many benefits. It is a program still in development. Our conservation planning efforts under 4(d), complement it well, and we are going to continue to work on that.

Thank you for the opportunity to testify. I'll be glad to answer any questions you have.

Senator BAUCUS. Mr. Chairman, I regret I must leave, but I do have a quick comment, if you would allow. I have a lot of questions, but don't have time to ask them all.

I also wish that I could be here for the testimony of Jim Riley. With all due respect to you, Mr. Chairman, Jim Riley and you too may both think he comes from Idaho——

Senator CRAPO. He is from Idaho.

Senator BAUCUS [continuing]. But actually we claim him in Montana, he is a real Montanan.

Anyway, I wish Jim the best and know he will give great testimony as will all the other witnesses. Thank you.

Senator CRAPO. Thank you very much. Now we do have the opportunity as I'm sure you are aware, to submit written questions. We would welcome those.

Senator BAUCUS. Thank you.

Senator CRAPO. I would like to thank both of you for your testimony and I'll start out with a couple of questions.

I really wish that Senator Boxer were still here, she had to leave to another committee meeting that she had on her schedule. She raised the question of recovery versus survival from her statement, I think she and I are coming from a little different perspective on that issue and I would like to see an engagement on that.

But, Mr. Knowles my first question is for you and it's on that issue. Section 10 of the Endangered Species Act provides that the Habitat Conservation Plans must not appreciably reduce the likelihood of the survival and recovery of the species in the wild. And this has been interpreted to be consistent with the jeopardy standard provided under section 7 of the Act. In other words, an HCP must not jeopardize the continued existence of the species. Regionally however NMFS has taken the position that Senator Boxer was discussing, that HCPs must meet the higher standard of enhancing

the conservation of the species, in other words, the recovery. As I see it, NMFS is unilaterally imposing now a recovery standard on private landowners. What is the legal authority for NMFS's position with respect to this standard for approving an HCP?

Mr. KNOWLES. We don't think we have a recovery standard, Mr. Chairman. Section 10 of the ESA applies a no-jeopardy standard that is expressed in terms of survival and recovery. When we are dealing with severely depleted wide-ranging species such as salmon, where in a lot of cases habitat is seriously depleted or degraded, it is difficult to draw a bright line between those habitat features needed for long term survival and those habitat features needed for recovery. Our scientists have worked on this, and we don't think there is a bright line that distinguishes the two.

Senator CRAPO. So are you saying that there isn't a difference between a recovery standard versus a survival standard?

Mr. KNOWLES. I think that as a practical matter, what we are trying to do is to achieve a properly functioning condition of these aquatic riparian habitats. As a practical matter, our scientists tell us that they are not able to draw a line that would distinguish a survival standard from a recovery standard given the long time nature of the permits that we are developing.

Senator CRAPO. Well, I am not sure that I can agree with that, but I am certainly willing to engage further with the scientists. It seems to me that—assuming a situation in which we have a species in decline and a private landowner approaches the Service with a proposed HCP and requests an incidental take permit, that the actions that the landowner proposes should not cause any further decline to the species. At the end of the day, the species is not in any worse condition after the landowner's actions than it was before. Why could that not be sufficient? In other words, why should that landowner in addition be given a burden to improve the circumstances of the species?

Mr. KNOWLES. Well, I really think it has to do with the key being the continued existence of the species. I think that is the key or the essence of the survival standard. If the habitat conditions are such that you are not going to be able to provide for long-term continued existence of the species, we think there is a problem with that standard.

Senator CRAPO. Let me ask a question in a conceptual framework. Would you agree or disagree that if a private landowner wants to undertake an activity that will not harm the species, that there is no good reason why we should not allow the landowner to undertake that activity. Is an argument being made that because the landowner acts, he should be given a duty to recover a species?

Mr. KNOWLES. Well clearly, we don't think private landowners have the responsibility to recover species. The Federal Government has assumed that responsibility, and what we have here is essentially an exchange between the Government in the form of an incidental take permit and conservation actions by landowners. Our concern is that we don't make an exchange that threatens the continued survival of the species. So our habitat standard has been clear, it has been consistent since 1997, I think, and we base that on the best science. We need to stick with the best science that we have. I too would be glad to have further discussions about it be-

cause, again, with my exposure to this, I am confident that I will learn additional things by further discussion. But based on our policies to date, this is where we are.

Senator CRAPO. If I understand your testimony correctly, the Service makes a distinction that a landowner can't have an action that simply doesn't hurt the species. It is either going to hurt the species or help recover the species, but it can't just be neutral.

Mr. KNOWLES. Can I speak hypothetically for a second?

Senator CRAPO. Sure.

Mr. KNOWLES. Just from a hypothetical point of view, what if a private landowner had land conditions or habitat conditions that were above some threshold, that were a pristine habitat? I mean, if you are asking, "Could private landowners impact that habitat in a way to reduce benefits?," I think we would have to sit down and try to determine exactly what is proper functioning condition in that circumstance. But in general, that is not the condition that we face. In a practical sense, what we are trying to do is to provide habitat that provides for survival, which is long-term existence, which is very close to recovery.

Senator CRAPO. I think my 5 minutes is probably up, and with just two of us here we may get further opportunities, but Senator Thomas would you like to ask some questions?

Senator THOMAS. All right. Thank you. Thank you very much.

Ms. Clark, I just listened to your testimony. The only problem that you see is not enough money. Is that right?

Ms. CLARK. That is certainly a big part of the problem——

Senator THOMAS. No, is that the only problem that you are going to deal with, is just more money?

Ms. CLARK. Well, in bringing on additional qualified staff, but certainly, Senator, money is the over-arching issue because it is compromising our ability to be responsive. I would agree with some of the exchange between Senator Crapo and Mr. Knowles that we still have some policy issues that need honing but clearly, with this exponential growth, the biggest compromise to the Fish and Wildlife Service is our ability to——

Senator THOMAS. Why isn't there any exponential growth where I live, do you know?

Ms. CLARK. A couple of reasons. First of all we are not seeing the exchange, and I know that you probably aren't going to necessarily believe this, particularly based on our conversations but, the direct collisions between economic growth and species conservation in Wyoming, like we are seeing in other parts like the Southwest or in California, we are not in some areas, equipped to provide that technical assistance.

And so, what concerns me is in parts of the country, we are almost at the meltdown situation before we are trying to negotiate out a mutual beneficial solution to supporting continued growth and species conservation. So a lot of it has to do with our ability to be responsive, to educate the local public or private landowners on, this as a tool and we are going to get direct collisions.

Senator THOMAS. Aren't most of these where you have large landowners and timber companies and various kinds of things, instead of a series of small landowners?

Ms. CLARK. Well, certainly the larger landowners are better equipped to deal with it.

Senator THOMAS. And that's where most of the habitats are, isn't it?

Ms. CLARK. A lot of them are there, but we do have a lot of small landowners. That is one of the reasons that we have spent a lot of time working on statewide HCPs. There are HCPs that reduce the burden on a whole series of individual small landowners or small operators. It is not very reasonable to expect a whole series of small landowners to knock the capability to deal with individual HCPs, so we have looked at other ways to accommodate them through either statewide HCPs, like the bill in the State of Georgia, or some of these umbrella HCPs that small landowners can tie into.

Senator THOMAS. Well the fact is that it isn't widespread and it isn't involved with smaller landowners and it would seem to me that would be more of a problem you might talk about resolving, instead of just money.

Ms. CLARK. Absolutely.

Senator THOMAS. Speaking of money, when a small city in Wyoming had a sewer outage and a water outage and had to make a very small repair, your group spent the whole summer before allowing them to go ahead because of the jumping-mouse thing. Now is that the way you spend your dollars?

Ms. CLARK. Well, I don't know the specific case that you are referring to, Senator, but I will say that it is certainly our obligation to address species needs and to insure low jeopardy. I would be happy to look at what you are talking about.

Senator THOMAS. Well, you should because here was a situation where the town was threatened by not having adequate water supply for their citizens. They were working on this thing across the river and it only took a few yards on each side, and took the whole summer to get a section 7 consultation and a permit.

Now when you come to us and you talk about needing more money, and you spend that kind of money doing those kind of things, it makes it pretty darn difficult.

Ms. CLARK. I would agree that is very frustrating. Listening to your story, I would certainly agree with that.

But again, oftentimes our ability to be responsive and to have a quick response is a function of limitation of resources. And so, if we have the people ——

Senator THOMAS. I don't agree with that at all. I just don't agree with that at all. You have an emergency opportunity in the law to do some things.

Ms. CLARK. I agree.

Senator THOMAS. And you didn't do them, so not having the opportunity—I just get really frustrated when you come up and you think that all you need is more money but that isn't true. For instance, these are supposed to be cooperative kinds of things but most of the people who are involved say, "Gee, that's cooperative, but it is about 90 percent on the side of the Agency and 10 percent on everyone else's side." A command and control problem. We're supposed to be sort of working together on these, aren't we?

Ms. CLARK. Yes, we are, I agree.

Senator THOMAS. I think you are going to hear today some evidence that is not the case. What are the incentives you talked about that you are going create for the landowners?

Ms. CLARK. Well, I was referring to a couple of them before. The incentives, long-term certainty, but mechanisms like umbrella HCPs or statewide HCPs which are the larger more comprehensive planning, regional planning opportunities that will obviate the need for individual HCPs for each small landowner, or each individual operator, that would, I think, accelerate the compliance issue of what allows, reduce the amount the expenditure for each individual landowner to address their HCP opportunity.

Senator THOMAS. I just agree with the idea of having an opportunity to encourage landowners to do some things that will avoid having to list. I can tell you that a lot of the folks I work with are scared to death because they know that the Agency is going to tell them exactly what they have to do. It is going to be run by someone who is not the landowner and they will not be much better entering into that arrangement than they would be by listing.

Ms. CLARK. I am not sure, Senator, what worked, cause I am obviously not talking about the same thing you are. Let me see if I can clarify it from my perspective.

Negotiating HCPs, the trigger for an HCP is the likelihood that "take" will occur in its listed species. Some of the work that was done earlier when the mouse was dealt with in the candidate conservation arena, and that was trying to work out mutually agreeable plans so that the threat could be removed and therefore there would be a potential that we wouldn't have to list. So, we have two different issues. You have candidate conservation agreements that front end a listing decision, and then you have HCPs which deal with the granting of that listing. And we are probably talking about a combination of both, but I would agree that certainly we have a responsibility and an obligation to look for not only incentives, but streamlining mechanisms to address——

Senator THOMAS. Would 4(d) rules get into that thing?

Ms. CLARK. 4(d) rules are listing, absolutely.

Senator THOMAS. Well that is right and that's where we all despise listing. I am trying to share with you that the optimism you expressed in your statement with the exception of financing, is not shared generally by a lot of the people. So we need to take a long look at that. Thank you.

Ms. CLARK. Certainly.

Senator CRAPO. Thank you. I'd like to ask another couple of questions.

Mr. Knowles, getting back to you, after my first round of questions to you, I was reminded that we have heard that several landowners have in fact, suspended HCP negotiations because NMFS is in fact requiring a recovery standard. From your testimony today, I understand that there may be a terminology difference here that we are talking about, but I'd like to get it clarified on the record today that NMFS does not impose a recovery standard. Is that correct?

Mr. KNOWLES. I think that is correct.

Senator CRAPO. And so in those types of HCP negotiations, they can rely on a record of this hearing if NMFS officials begin trying to impose a recovery standard?

Mr. KNOWLES. And if I am wrong, I am sure I will hear about it.

[Laugher.]

Senator CRAPO. Well, we are going to rely on that today.

Mr. KNOWLES. Just one comment. In general, the objective of NMFS is the same in every HCP, which is to achieve during the term of the plan, the essential habitat functions required for long-term survival of anadromous fish in exchange for allowing for incidental take. That is our objective HCP by HCP.

Senator CRAPO. I understand and we do probably have a difference of opinion on whether there is a distinct and identifiable difference between simply avoiding jeopardy or avoiding injury to the survival of the species as opposed to recovering it.

Mr. KNOWLES. If I can ask ——

Senator CRAPO. Yes, go ahead.

Mr. KNOWLES [continuing]. If you will provide some details about that, I will try to follow up for you, if you would like.

Senator CRAPO. On those other cases?

Mr. KNOWLES. Yes, sir.

Senator CRAPO. Yes, I'd be glad to do that.

Does the Fish and Wildlife Service agree with the standard that HCPs should restore functioning ecosystems, and if so, what is the legal basis for that standard?

Mr. KNOWLES. The Fish and Wildlife Service or NMFS?

Senator CRAPO. Oh, excuse me, NMFS.

Mr. KNOWLES. OK. Functioning ecosystems includes a very broad sort of concept and what we are trying to do HCP by HCP is provide the kind of essential habitat functions required in the HCP, for the long-term survival of listed species, and also to allow for incidental take. So, we are not asking individual landowners to take care of the ecosystem in the broadest terms, we are asking landowners to provide a properly functioning condition to provide for long-term survival of the listed species.

Senator CRAPO. So, if I understand you correctly, even though in your testimony you indicated that NMFS takes the view that HCPs should restore functioning ecosystems, you are not imposing that on the landowners?

Mr. KNOWLES. Within the context of the HCP, we are asking for properly functioning conditions. That is correct. Maybe semantically that is trying to restore functioning ecosystems, but I always think of ecosystems as broader than under the control of any individual landowner.

Senator CRAPO. Well what we may be getting at here, both in this context as well as in the recovery debate context, is I'm very confident that what Congress intended in authorizing HCPs was that private landowners be enabled to undertake activities on their lands through an HCP arrangement as long as they did not engage in an incidental take or as long as they were not further endangering the species. But the Congress did not intend for private landowners to be given the duty that is the responsibility of the Federal Government to recover the species.

And frankly there is a concern on the part of some of us in what we are hearing from the field in terms of what is happening. That some of the agencies, and NMFS in particular, may be using HCPs as a method to achieve other objectives of the Act. And using the HCP opportunity to further other objectives into forcing landowners to participate in either ecosystem recovery or recovery of species, which is not something that was intended by Congress to be placed at their doorstep. Could you comment on that further?

Mr. KNOWLES. Our goal, again, is long-term survival. We are having 50 years and longer HCPs. We think, we know, what salmonids need for long-term survival, and its properly functioning conditions, and that is our goal. Our scientists tell us that we are not able to draw a bright line between the standards required for long-term survival and the standards required for recovery.

Senator CRAPO. You are imposing a long-term survival standard on HCPs?

Mr. KNOWLES. Yes, sir.

Senator CRAPO. Perhaps we ought to explore that a little further because, it seems to me, let's assume again, a situation in which a species is in decline and if nothing is done, the species is not going to survive.

Mr. KNOWLES. That's right. That is why it is listed.

Senator CRAPO. A landowner who has private property in which there is an involvement with that species, makes a proposal about something that isn't going to change the current situation in any way. In fact in the terms of the statute he will not appreciably reduce the likelihood of survival. Now the species is still going to be extinct, but the landowner is not causing that and his actions are not accelerating it. Is the landowner then going to be given the responsibility to assure the long-term survival of the species?

Mr. KNOWLES. My understanding is that what the landowner wants is, the protection on the incidental take side, and so it is clear that the action proposed by the landowner would further reduce the survivability of the species.

Senator CRAPO. Are you saying that the landowner's actions will further reduce?

Mr. KNOWLES. That's the nature of the permit that we are providing them, an incidental take permit.

Senator CRAPO. So you are saying that the language of the statute cannot occur. I mean, the statute accommodates circumstances in which the landowner would not appreciably reduce the likelihood of survival. But you are saying that if he is seeking an incidental take permit, that he is going to reduce the likelihood of survival?

Mr. KNOWLES. No, I am saying that the reasonable landowner is negotiating with us for an incidental take permit and an HCP, as an action that they'd like to undertake. They need to submit a conservation plan that indicates the kind of actions and the kind of mitigations. Our review standard is: Are the actions as mitigated going to appreciably reduce? Our goal is to provide proper functioning conditions for the life of those permits so as to provide for the long-term survival of the species, and not reduce the likelihood of that long-term survival.

Senator CRAPO. So that we understand ourselves here, are you equating incidental take with jeopardy?

Mr. KNOWLES. I don't think so.

Senator CRAPO. OK, so——

Mr. KNOWLES. I mean pragmatically, again, these species are listed, depressed, we know that in most cases the cause of that has been the lack of properly functioning conditions and habitat. So our goal, as part of the HCP process, is to work in that direction.

Senator CRAPO. Well, I want to be sure that I understand today what your position is, which is why I keep hitting at this, but again, the statute clearly contemplates that a private property owner can undertake an activity that will not appreciably reduce the likelihood of survival. I mean, that is the wording of the statute.

Clearly, that is understood in the context of an incidental take permit because that is the whole concept of HCPs.

Mr. KNOWLES. Right.

Senator CRAPO. But I am hearing you say that if the landowner is going to be seeking an incidental take permit, therefore, he is reducing the likelihood of survival, which means that what is in the law NMFS takes the position can never happen—a landowner seeking an incidental take permit in the context of an HCP that would not appreciably reduce the likelihood of survival. You are saying that if there is an incidental take, there is a reduction of the likelihood of survival. Am I correct?

Mr. KNOWLES. I don't think that is what I meant to say.

Senator CRAPO. Well, why don't you make a stab at it and try to clarify it for me.

Mr. KNOWLES. Section 10 applies a no-jeopardy standard expressed in terms of survival and recovery. We are considering the severely depleted, wide ranging species such as salmonids. Our goal in these HCPs is to achieve during the term of the plan the essential habitat functions required for long-term survival. The conservation plan submitted by the applicant would lay out for us how the effect of the action would be mitigated.

If the question is, does any additional incidental take trigger the threshold, I'm not sure how to evaluate that theoretically. It is very difficult for us to draw a line between those actions, or to draw a line between those prescriptions needed for survival over the long term and those prescriptions needed for recovery.

I'd be glad to try to follow up with you, if I can, and try to give you a more on-point response.

Senator CRAPO. Well, we may need to do that. I think that I am understanding you but, if I understand you right, I think that either Congress was wrong or NMFS was wrong. And either Congress was asking for something that cannot happen or NMFS is saying something can't happen that really can.

Mr. KNOWLES. Well, in that case I am confident that I have misspoken.

Senator CRAPO. We'll explore that further.

Let me shift to you, Ms. Clark, and without going into the whole series of questions again, do you have any comments on this dialogue that we have been having here in terms of the context of Fish and Wildlife?

Ms. CLARK. Let me see if I can try to wade in.

Senator CRAPO. I am inviting you to wade in.

[Laughter.]

Ms. CLARK. I am trying to figure out where to start. The standard of section 10 does not appreciably reduce the likelihood of survival and recovery of the species in the wild.

Senator CRAPO. Right.

Ms. CLARK. Recognizing that in the specific circumstances that Don is referring to, especially the salmonids, those species are really on the brink, in real serious trouble, very close to extinction, in severely degraded habitats, poor returns, and one could argue, are real close to extinction. When you have a species like that, and it is like that for some of the species that we deal with, like some of the Colorado River Fish for instance, we're sitting on what I term a jeopardy baseline. That these species are in trouble, their survival and recovery in the wild is already in question. And so, when you have an action, a Federal action, which would be the approval of a permit to incidentally take a listed species, we are obliged to insure that any action that we approve, which would be to grant an incidental take permit under section 10. The granting of an HCP doesn't jeopardize the species. The way that I will presume to interpret what NMFS is saying, what would certainly make sense to me, is that when you have a severely depleted species, you have a species sitting on a jeopardy baseline, and that we are charged with insuring low jeopardy.

The National Fisheries scientists are looking at the salmonids, particularly for wide-ranging salmonids, to describe what a properly functioning condition would look like. And that's the tack or the threshold or the status of the landscape that they are trying to achieve to ensure equity across the rule to the species.

Mr. KNOWLES. That is correct.

Senator CRAPO. I think that I am understanding you but if I understand you correctly, then what you're saying is HCPs are basically not an option, in that circumstance.

Ms. CLARK. Not necessarily. The one issue that I will agree with is that that doesn't appreciably reduce the likelihood of survival and recovery in the wild. You have that clarifier. If that is the jeopardy standard, then for species that are sitting on a jeopardy baseline, we have to create a mechanism to ensure or create a lift in the landscape, if you will, to ensure that those species are not further compromised.

So, Mr. Chairman, it is certainly a greater challenge for species that are on the brink, but I don't believe that it is impossible.

Senator CRAPO. Let's see if we can reach agreement on one policy issue, leaving aside whether as a practical matter it is achievable. Even in the situation that you discuss where there is a species on the jeopardy baseline, if a private landowner could show that a proposed HCP plan that the landowner was offering would not appreciably reduce the likelihood of the survival of the species, would not take it any further below the jeopardy baseline or whatever, would that as a property matter qualify for an HCP that shouldn't be approved?

Ms. CLARK. If the action that the private landowner was endeavoring to undertake on internal review by the Fish and Wildlife Service, for instance, would be determined to not appreciably re-

duce the likelihood of survival and recovery in the wild, that action would go forward, that action would be passed.

Senator CRAPO. OK, and it would not be proper for you, or any agency to go further and impose a higher standard of action on the part of the landowner. Again, leaving aside for now the debate as to whether that's possible or not, but as a policy or theoretical matter, there is no basis in law for imposing a higher standard on the landowner, is there?

Ms. CLARK. The standards are as they are on section 10. Correct.

Senator CRAPO. Do you agree with that Mr. Knowles?

Mr. KNOWLES. I think so. The standards are as they are on the statute, clearly I do agree with that. I think our concept is if the habitat conditions are below properly functioning condition at the current time, if nothing happened over the long term, the conditions would return or improve to properly functioning condition. Essentially, the activities covered by the incidental take permit slow down the rate at which conditions return to our goal, our long term survival goal of proper functioning condition. So, I think the answer is yes.

Senator CRAPO. All right. We still probably have a big debate over what is achievable, but I want to be sure that we aren't in disagreement over what the statute says the standard is.

Ms. Clark do you agree that the role of HCPs is to restore functioning ecosystems?

Ms. CLARK. No. I don't, but I also don't believe that National Marine Fisheries Service is saying that either. The role of HCPs is to ensure the appropriate balance between economic growth or economic development, and species conservation; the standards of which are set out. I really do believe this small segment that is causing this knot in the discussion is for those species that are in real deep trouble, in dire straights, and sometimes when you are sitting on a jeopardy baseline for a species, it actually might be necessary to try to improve the ecological condition to prevent extinction. And I think that might be what we're dealing with some of the species that we deal with and certainly probably very clear in the salmonid situation.

That is different than the "big functioning ecosystem issue," but I think, these debates get more focused on a case-by-case basis, and especially with salmonid, that the National Marine Fisheries Service is dealing with.

Senator CRAPO. Aren't you glad they've got those?

[Laughter.]

Ms. CLARK. Yes I am.

Mr. KNOWLES. Yes, we are too.

[Laughter.]

Senator CRAPO. I have a lot more questions but I also have a lot less time for the next two panels than I would like to have, as well. So, I believe that we will excuse this panel.

Wait a minute, I'm sorry, I do have one more question that I want to ask of both of you before we go on.

There is a common concern that has been raised to us by other witnesses and others who we've been working with what I wanted to ask both of you to comment about. And it is a question that is raised in a very pragmatic sense about the fact that as we are ne-

gotiating HCPs between private landowners and agency personnel, that staff changes or a lack of staff, which you have raised here earlier, make it very difficult to negotiate.

The indication we've received is that every time there is a staffing change which is far too often, the process seems to just go back to, not maybe to zero but way back down the chain and start pretty much over again and start moving forward. And the problem with delays and consistency in working with the agencies is becoming one that is constantly being brought to our attention.

First of all, I guess my question is, are you aware of this, and do you have a suggestion as to how we can address it?

Ms. Clark, do you want to start out?

Ms. CLARK. I would be happy to. I am painfully aware and share the frustration that many of the applicants are expressing, because I have seen it happen and it is starting to happen at an alarming rate. We are losing folks due to the sheer enormity of the workload and the pressure of this demand. Staff are either leaving or changing to other jobs just because of workload stresses. The transitioning of staff in and out of the program is extremely frustrating, not only to us who are trying to provide that consistency and streamlining, but I am sure that it is very frustrating to those that are on the receiving end.

We have done other things, first of all we have the flexibility of trying to improve our bench strength by providing backup in some of these cases, but that doesn't exist, particularly it doesn't exist in most of the country except for in some focused areas.

We are also, through our National Conservation Training Center in Shepherdstown, WV, been putting on a series of training courses to try to get more folks more broadly and quickly trained, in not only the area of habitat conservation planning, but in the areas of technical negotiations and teamwork, to try to better equip folks for some of these complex negotiations. But we are looking for ways to address this retention challenge in the program all the time.

Senator CRAPO. Well, thank you. I encourage you to do that and to work closely with us as we address not only the funding issues, but the structural management issues as well.

Ms. CLARK. Absolutely. Be happy to.

Senator CRAPO. Mr. Knowles.

Mr. KNOWLES. We have between 20 and 30 people in the Northwest region and the Southwest region working a combination of full-time or part-time on various conservation activities, including 4(d)s and HCPs. And if one assumes a normal turnover rate, it is inevitable that we are going to have some of these problems.

Notwithstanding that, our goal on the management side is to reduce the frustrations that private landowners suffer at our hands in the HCP process. Currently we can't achieve our goals without landowners feeling like they're getting good customer service, and that they are getting clear guidance in a timely way. That is our challenge. Frankly, more funds would help. I don't think they're the only answer, but I do think they'd make a significant contribution.

Issues like bench strength, and adequate planning and lead time would be very much easier to accommodate with these changes.

Senator CRAPO. One suggestion that has been brought to our attention is the idea that perhaps HCP Swat Teams could be put together, and I don't know if you've heard them called that but, these are teams for specific species or specific regions who could work together in negotiating HCPs, in other words use their expertise and common experience so that they could bring rapid response to a species or a region without having to sort of recreate the world every time we get into an issue.

Is this something that you are both familiar with and what are your thoughts about it?

Ms. CLARK. I am. We, in actuality do call in Swat Teams, actually. It has worked with a fair degree of success in the Northwest. I will tell you, Mr. Chairman, that we just don't have the luxury of Swat Teams when we are one deep. We are one deep over most of the country and you've probably heard that from Senator Thomas, that we just don't have the bench strength to be as responsible as we'd like. Certainly as you migrate east it gets more challenging.

When we do have Swat Teams, they work interactively with each other and provide that backup in the event that there is transition out of the program, or there is a need to focus in a specific area. They get accustomed to the kinds of HCPs, the kinds of habitats and the kinds of species. So in areas of California and the Northwest, that has been working much better than in areas where we don't have SWAT teams. So I am very supportive of them.

Senator CRAPO. Thank you.

Mr. Knowles.

Mr. KNOWLES. Yes, I would agree with that. I think we have something like 35 HCPs that we are currently working on and I think we have got fewer people than that. So the concept of Swat Teams needs to be taken in that context.

Senator CRAPO. Well, thank you. I do have a lot more questions. Maybe I will submit them to you in writing and get your written responses to them and I appreciate your taking the time to come here today. Something I omitted at the outset which I intended to say was that we know that you have become a new mom since the last time you were here, Jamie.

Ms. CLARK. I have.

Senator CRAPO. And we congratulate you on that.

Ms. CLARK. Thank you. I appreciate that.

Senator CRAPO. And I hope everything is going well.

This panel is excused. Thank you once again for your attention.

Our second panel is Mr. Jimmy Christenson, Council for the Department of Natural Resources of the State of Wisconsin, and Mr. David Donnelly, Deputy General Manager of the Southern Nevada Water Authority.

Gentlemen, thank you for coming. I assume you heard the instructions about the lights and we ask you to please try to pare down what you say so we can have some give and take. And I again reassure you that we do very carefully review your written testimony and it will be very carefully reviewed.

Mr. Christenson, would you like to start?

STATEMENT OF JIMMY CHRISTENSON, COUNSEL, DEPARTMENT OF NATURAL RESOURCES, STATE OF WISCONSIN, MADISON WISCONSIN.

Mr. CHRISTENSON. Mr. Chairman, Members of the subcommittee. My name is Jim Christenson. I am an attorney for, and am appearing on behalf, of the Wisconsin Department of Natural Resources.

And we thank you for the opportunity to appear before you today.

My testimony is largely based on my experience with the recently completed grant to the statewide Karner Blue Butterfly Habitat Conservation Plan in Wisconsin.

HCPs often suffer from lengthy review processes and delays, very high non-federal financial costs, and difficulty in gaining the participation of private landowners. Wisconsin's Karner Blue Butterfly HCP demonstrates this need not be the case.

I can admit that the HCP process can and does work to provide further conservation efforts for endangered and threatened species, especially on private lands. But we must work to remove obstacles pertinent to achievement of this success. A couple suggestions: Delays—Agency staff must treat HCP processes as a high priority. They must embrace the vision that partnerships can accomplish what agencies cannot do alone, and they must participate early in the process. I am glad to say that in Wisconsin we enjoyed that.

Federal agencies must seek and encourage participation in the State conservation agencies. They are the resident species managers in the State. And I suggest that they also should seek funding and provide it where needed to continue the process and keep it moving so as to reach completion. State agency funds are limited, we must depend on partnerships and we sometimes need help to keep it going. Their delays will undermine both the enthusiasm and commitment of partners to this process, and we witnessed that with the Karner Blue Butterfly Conservation Plan.

How do we gain partnership?

Excuse me, first let me talk about financial costs. From the Karner Blue process, the cost of developing and implementing the HCP is significant but need not be out-of-pocket dollars.

Landowners often have significant knowledge about species on their land and how their management may affect them. Their contributions of land management with consideration of species and participation in HCP implementation oversight is invaluable. This kind of contribution must be considered as adequate funding mechanisms under the incidental take provisions of the Endangered Species Act.

How do we gain partnership with private landowners? I submit that we can gain partnership when the species allows, through the incorporation of conservation measures and strategies into their land management rules and land use consistent with their objectives, as long as they are incorporated in a manner that will not significantly interfere with those objectives. In this manner we can achieve not only conservation but gain long term land stewardship.

Those real estate agents who are the leaders of the HCP process must be willing to commit necessary time and assistance to potential landowners to gain their participation and their trust. Time and trust are invaluable tools we cannot do without.

Participating State conservation agencies in the process can often help by bringing to the collaboration scientific expertise, biological information, facilitation capabilities, and long-term administrative commitments to a conservation plan.

A correction which has been discussed much today. The Wisconsin Department of Natural Resources as a conservation agency, views recovery as ultimate success. We must be cautious about pursuing it through an HCP unless participants are willing when seeking private landowner participation, and they in my experience balk at committing to recovery. We must, of course, recover species, and I believe that we will continue on that road. I believe that many landowners will participate with us, but that is later in the process.

Again, Mr. Chairman and the subcommittee, I thank you for this opportunity to testify and I am available for questions.

Senator CRAPO. Thank you Mr. Christenson.

Mr. Donnelly.

STATEMENT OF DAVID DONNELLY, DEPUTY GENERAL MANAGER, SOUTHERN NEVADA WATER AUTHORITY, LAS VEGAS, NV; ACCOMPANIED BY JEFF KITELINGER, THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA AND CHRIS HARRIS, THE ARIZONA DEPARTMENT OF WATER RESOURCES

Mr. DONNELLY. Thank you Mr. Chairman. Again my name is David Donnelly. I am with the Southern Nevada Water Authority in Las Vegas.

Accompanying me today is Mr. Jeff Kitelinger with the Metropolitan Water District of southern California, and Mr. Chris Harris with the Arizona Department of Water Resources.

For many years in this committee's hearings and in bills reported out of committee related to species and habitat conservation, we have endorsed public private partnerships to preserve habitat. This committee has worked to encourage worthwhile Federal, State, and local habitat conservation programs. The Lower Colorado River Multiple Species Conservation Program is just such an effort. We want to take this opportunity today to familiarize you with our project and to ask that this Committee and this Congress help make this ambitious habitat conservation concept a reality.

But why is the MSCP important?

The Lower Colorado River is the lifeblood of the Southwest. Over 1.8 million acres of agricultural land is irrigated with its waters. Twelve billion kilowatt hours of power are generated from its flows. Twenty-two million people receive their drinking water from the Colorado River. Billions of dollars in recreational benefits are derived from the river, and while we are trying to satisfy all of those needs, we are also trying to find a balance to help conserve the river's ecosystem.

On August 2, 1995, the United States and the States of Nevada, Arizona, and California entered into a historic agreement to develop a Lower Colorado River Multi-Species Conservation Program. The MSCP participants include the water, power, fish, and game agencies of Nevada, California, and Arizona; The Department of Interior, Native American Tribes, local governments, and other stake-

holders. Nearly one hundred species and their habitat will be addressed in this program.

While much is known about some of the species in the MSCP; there is little information about a number of others. To fill the gap in our knowledge we must have a program that can integrate adaptive management techniques into the active conservation measures.

The MSCP will identify and conserve critically-needed habitat including back waters, marsh, and riparian Mesquite habitats. It will seek to recreate and restore historic ecosystem functions.

Mr. Chairman, I know you are very aware of the character of water development and delivery in the Western United States. In the West we have a mix of Federal, State, and private development of water resources which sometimes result in a substantial inequity among users on the River. This is particularly true in the Lower Colorado River. The Secretary of the Interior is the water master for the Lower Colorado River, and the Federal Government has significant holdings and trust responsibilities along the River. But some water users who receive water from a conveyance with a Federal nexus, the classic certainty that exists in section 10 of the Endangered Species Act for Habitat Conservation Plans does not exist. These water users sometimes with identical needs, identical commitments to habitat conservation, and identical financial commitments as their neighbors do not receive the section 10 "no surprises," but rather continuing uncertainty of a section 7 consultation for the Bureau of Reclamation.

We believe that a plan to provide conservation equity should be developed. As you are aware, those whose livelihood depends on a Federal facility are subject to uncertainties of continuing consultation under section 7 of the Act. Conservation equity would assure the same level of certainties among Federal and non-Federal parties.

As you can appreciate, the development and coordination of the Lower Colorado Multi-Species Conservation Program is a major undertaking. It is at times difficult to keep all the participants committed to the MSCP process. This is particularly true when the efforts under the ESA are not certain.

We need congressional support for this ecosystem-based-approach to ESA conservation. We need Congress' endorsement of the cooperative partnership reflected in the MSCP. Authorizing statutory language to ratify the ecosystem-based approach agreed to by the parties and extended regulatory assurances to resource users of the Lower Colorado is needed. Federal participation in the MSCP must also be funded. Together we can conserve habitat and develop the resources of the Lower Colorado River benefiting both species at risk and citizens who rely on that resource.

Thank you.

Senator CRAPO. Thank you very much Mr. Donnelly. I appreciate your coming here to testify.

Mr. Christenson, I will start out with you. First of all, I thank you for the Karner Butterfly pin which I am wearing. We hope there are successes and achievements across the country on species that will generate these types of focus.

I'm sure you heard the testimony and the exchange between myself and the first panel on recovery issues. Could you tell me what role recovery plays in the Karner Blue Butterfly HCP, and did recovery raise issues with the other partners?

Mr. CHRISTENSON. Well as I mentioned in my statement, the issue of recovery especially by the private landowners was a very sensitive issue. From the first day, 5 years ago, anytime recovery was raised as an issue by the Fish and Wildlife Service staff, they basically went through the ceiling—primarily based upon this issue: of what is the role the HCP is intended to achieve and what role should non-Federal partners play in recovery? In fact in our plan, Wisconsin DNR is committed to recovery. We've had a lot of successes; we are going to have more in the future and there is no doubt in Wisconsin if it's not recovered already, it will be, we think within the permit period.

Probably the biggest issue that we have in the State of Wisconsin is that we still do not have a final recovery plan. We have spent 5 years engaged in the HCP and we have now completed it. There is a draft but no final recovery plan, which does make it somewhat difficult to immediately try to gain commitments from private landowners for recovery.

I might also add though, that a number of the 26 partners we have including DNR, including a number of county forest participants, the Nature Conservancy has committed to do recovery activities. Again the process is somewhat stagnant at this point in time because we don't know exactly what the target is.

One other issue that we are struggling with is invertebrates, because invertebrates, by the law are treated range-wide. There is no opportunity for distinct population-segment treatment. In Wisconsin we couldn't even meet the threshold to list the Karner Blue Butterfly as a State threatened or endangered species. We have an abundance of butterflies. So in terms of recovery and where we go in the future, those are a couple issues that we have to deal with. How successful can we be in Wisconsin, and secondarily how does that play in to a range-wide listing of invertebrates?

Senator CRAPO. Do you think the private landowners would have ultimately agreed to the HCP if the recovery standard had been enforced?

Mr. CHRISTENSON. No, I would assume that the majority of the partners would not have, at least private landowners. Again, we are lucky we have quite a bit of public land but the private landowners would have gone there. I will say, that I think once we have an HCP and once we have demonstrated how successful this can be, I am pretty confident that some of those private landowners will help and assist with recovery. But they have to be able to demonstrate that commitment they are making at this time to their shareholders, or to their managers, or to themselves in terms of what they can do in the foreseeable future. But again, I have had some of them tell me that once they have met their commitment they will probably go beyond that but they certainly can't sell to their businesses or their shareholders any more at this point in time. I don't mean reluctance to engage willingly, and that was our threshold.

Senator CRAPO. And the lead agency you were dealing with was Fish and Wildlife Service?

Mr. CHRISTENSON. Fish and Wildlife Service, Region 3, in the Green Bay Field Office. They were well-equipped to deal with that.

Senator CRAPO. Did Fish and Wildlife raise recovery efforts or seek to impose recovery standards?

Mr. CHRISTENSON. Oh, absolutely. Absolutely. And we still have biologists working on the project that will seek to discuss that every chance they can get. We understand where they are going on this. But we have been very firm that as we want recovery in Wisconsin, we're not there with this process. This process will probably help but we're not there.

Senator CRAPO. Did the Department have a complete understanding of the magnitude of the commitment it was making when it agreed to the HCP?

Mr. CHRISTENSON. Well I don't believe so. I think the management of the Department met with the Region 3, 5 years ago and probably thought this might be a quick deal. But as one of the people who have devoted 30 to 40 percent of their time in the last 5 years, I don't think anybody understood that it would take that kind of time. But it is a commitment.

Senator CRAPO. Did the length of time that it took to negotiate and achieve the HCP impact or create any particular problems that you could advise us about?

Mr. CHRISTENSON. Well I think the biggest issue is the fact that if you are involved in a long-term process, people come and go. The attorney we dealt with Fish and Wildlife Service who really was very instrumental in getting us where we wanted to go left. We really didn't engage in any problems trying to get a new attorney involved, but the staff both in the Green Bay Field Office and Region 3 have been there consistently. There was a scare that the program coordinator may leave last year but she did stay around. In addition, some of the people that we had as potential partners left. I think the issue becomes how long can you keep it on the front burner? And some of them decided that they were not going to wait around.

Senator CRAPO. I want to ask a question about that, but I wanted to indicate to you that I very strongly agree with your testimony about the value of partnerships rather than a command and control decisionmaking process. I am very committed to seeing if we can work this into Federal and environmental law as a process in many other arenas as well as this one.

I do want to ask you one last question. With regard to the exchange that we had with the first panel, there is a distinction between not causing—I am forgetting the statutory language now—but between the recovery standard and basically not causing further jeopardy. Do you agree that distinction is achievable, that we can in negotiating HCPs work off of that policy distinction.

Mr. CHRISTENSON. Well, we do. The goal of the Karner Blue Butterfly HCP is basically no-net-loss of habitat. That is where we start. Some of the partners will be involved in long-term enhancement which we think is a little different issue, and probably more of a mitigation issue than a recovery issue. But we think that we

can start there by not appreciably reducing the likelihood of recovery.

Again, we are absolutely committed to recovery. That is our goal as a conservation agency and many of our partners'. But we still see this HCP process as getting these people to the table and working with them. We didn't think when we get to the recovery efforts they will probably be with us. But we've got to demonstrate that we can work on conservation.

Senator CRAPO. I agree with you, and it gets back to the notion of either a collaborative decisionmaking process that involves partnerships or a command and control decision making process that involves suspicion.

Mr. CHRISTENSON. Exactly. Worse.

Senator CRAPO. Mr. Donnelly, you have testified that the Lower Colorado Multi-Species Conservation Plan is using an ecosystem-based approach.

Mr. DONNELLY. Yes.

Senator CRAPO. Could you explain what this means and why it is a useful concept for application to your efforts and why you believe that authorizing legislation would be helpful in that approach?

Mr. DONNELLY. Certainly. In the ecosystem approach, what we are trying to do is try to just restore the historical ecosystem of the whole river system and consequently we think this will provide benefits to a number of species, not only the currently listed species. And the goal of our program is to move toward recovery, we think this will do this.

This Lower Colorado River is several hundred miles long. The regulation that deals with each species through section 7 just doesn't work. We need a more comprehensive program.

Senator CRAPO. Do you have suggestions on what statutory language might be needed?

Mr. DONNELLY. The biggest concern we have is that we are spending millions of dollars on the various agencies and at the end of the day there are really no assurances because the section 10 "no surprises" doesn't extend to section 7. So consequently a big issue for all the stakeholders is that they need some assurances that activate a defenses program, spend these millions of dollars, that there will be some assurances.

Senator CRAPO. I know that in your written testimony the section on conservation equity that you discuss—I wanted to let you know that I agree very strongly with your notion there that, well, not only that in the MSCP arena, that we need to have some type of certainty as you describe.

I also picked up in your testimony a distinction between how we are treating landowners and issues relating to water. Water is the lifeblood of virtually all of our communities. In fact if you think about it, in the Pacific Northwest or even just in the West, where do people live? Where the water is. That is what they use for drinking, for recreation, for species, for quality-of-life issues, for flood control matters, for power generation, and for transportation. It seems that there is virtually no aspect of our lives that isn't directly related to water. I think that you raise a very good point in that context.

Do you believe that as we address conservation equity, that the approach that we to achieve HCPs, namely "no surprises," is the right direction?

Mr. DONNELLY. Yes, I think that some type of assurances in the section 7 process is necessary. Again, when you deal with millions of dollars, taking years to develop these programs, you need some sort of assurance that there won't be another species listed and then you'd be back to square one. That is what a lot of the stakeholders see happening with the current framework.

Senator CRAPO. One other issue was central in our last hearing. How do we as a Nation impose or successfully enact a "no surprises" policy when we don't know what the future will bring—whether there will be another species identified that is in jeopardy or whether there will be environmental circumstances that we did not take into consideration as the plan was being developed. How do you respond to that issue?

Mr. DONNELLY. Well we have a program, not a plan, we think there is a big difference. And our program is to be adaptive. We have goals. And one of the goals that I mentioned a second ago is to prevent future listings. One of the goals is to move toward recovery. And there is a whole list of other goals. Through this adaptive route we think we can address that. As the situation changes, our plan changes but our goal stays the same. We just have to maybe get to it in a different direction.

Senator CRAPO. Now what happens if, as the situation changes and you adapt your plan, some of the people who have signed off on the previous plan don't agree with the adaptation. Are they then caught in a process that sweeps them along to the new change or can they step out at that time if they don't agree?

Mr. DONNELLY. Well, we haven't reached that point in the process yet, so I am really not sure how they would respond to that, but certainly, assurances are what people are looking for right now. We want to know that if we move forward today that we have some assurances that at least for the short term, and for what we know today, that we can get some protection.

Senator CRAPO. Would you agree, or would you state that the assurances or the certainty that the participants in this plan are seeking, is key to its success?

Mr. DONNELLY. Absolutely.

Senator CRAPO. All right, as with the other panel, I do have a lot of other interesting things that I would like to go through but we are already working on a timeline here.

I would like to thank you both for your participation, both on the panel as well as your written testimony. And I invite you to keep us informed as insights come to you or as issues arise that you believe we should address.

I believe that we are going to move forward and make some significant progress on this issue as we build this collaborative process here in Congress to try to move forward.

Thank you very much.

Mr. DONNELLY. Thank you.

Mr. CHRISTENSON. Thank you.

Senator CRAPO. We now invite our third and final panel to come forward. Ms. Maureen Frisch, the vice president of the Public Af-

fairs of the Simpson Investment Company; Mr. Dan Silver, coordinator of the Endangered Habitats League; Mr. James Riley, executive director of the Intermountain Forest Industries Association, and Mr. Michael Bean, Environmental Defense Fund.

We thank all of you for joining us.

I remind each of you also, once again, to please follow the lights so that we can have an opportunity for an exchange.

And we will start out with you, Ms. Frisch. Please proceed with your statement.

STATEMENT OF MAUREEN FRISCH, VICE PRESIDENT, PUBLIC AFFAIRS, SIMPSON INVESTMENT COMPANY, SEATTLE, WA

Ms. FRISCH. Good morning. Thank you Senator. It is a pleasure to be here.

Senator CRAPO. Thank you.

Ms. FRISCH. My name is Maureen Frisch. I am vice president of Public Affairs for Simpson Investment Company, which is headquartered in Seattle, WA. Simpson Investment Company is the holding company for Simpson Timber Company. We are a privately-held company, owned and managed by the same family for almost 110 years. We own approximately 870,000 acres of timberland in California, Oregon, and Washington.

I am here today testifying on behalf of Simpson; The Foundation for Habitat Conservation, which is headquartered in Seattle; and a similar organization, The Coalition for Habitat Conservation, located in Laguna Hills, CA.

The entities I am representing strongly support viable voluntary habitat conservation planning under the ESA. HCPs are an increasingly important conservation tool, however I must stress that HCPs will remain viable only if they are allowed to provide reasonable certainty at a reasonable cost, blending both scientific credibility and business sensibility.

Making your way through the HCP process is extremely challenging for the regulator and the regulated. As a private landowner we simply ask that we keep the focus on finding a balance, one that reflects not only the very real need to protect species and habitat, but one that also enables private landowners to maintain viable businesses. Science and common sense both have an important role to play in this process.

Some of the best applied science being done today is in the context of HCPs, however it is important to recognize that HCPs are more than scientific documents. They are also management and business plans. Science, as I said, needs to play an important role in formulating an HCP, but ultimately the plan must balance the minimization of impacts to habitat with the notion of practicability. That minimization having to do with any direct impacts the private landowner may have on that species, under the course of his or her business.

Adaptive management as an important component of many HCPs, the ability to monitor what is happening, conduct further research, learn and make necessary changes as we implement the provisions of the HCP are designed into the plan.

I'd like to talk about a couple of very important successes. And there are some successes out there which I think we need to duly

note. Since I'm from the other Washington, I feel compelled to mention a recently crafted, statewide conservation agreement specifically designed to address both ESA and Clean Water Act issues. Anticipating the listing of Chinook Salmon and other aquatic species and having had an up-close and personal experience several years ago with the Northern Spotted Owl, the State Forest Products Industry began planning in 1996 for a new round of what we call in the State, Timber Fish and Wildlife negotiations. Lots of discussions and use of the most current research available led to what has now become known as the Forest and Fish Agreement. Under this agreement, onwards of 8 million acres of forestland have committed to a substantively improved set of forest practices for all of the State's non-federal forest landowners. Over $2 billion of timber and tree growing capacity is being set aside to provide effective stream side buffers and habitat protection to ensure cool clear water for fish and other aquatic species. This significant and volunteer commitment would not have been possible if not for the ability and willingness of the National Marine Fisheries Service and the Fish and Wildlife Service to offer long-term certainty to landowners. The Forest and Fish agreement also recognizes the difficulty small industrial landowners have in meeting stringent requirements of the ESA and a special compensation element was included in the legislation to compensate small landowners for lands restricted under their agreement.

At the same time, Simpson was the first private landowner to obtain an HCP for the Northern Spotted Owl, covering our California lands. In its sixth year of implementation, we have banded almost 1,100 owls, on or near our primarily secondary forests in Humboldt and Del Norte Counties in northern California. The owl seems to be doing just fine, thank you, in forests in which the early scientists told us that they could not survive. And we have been able to carry out a successful timber operation that provides hundreds of jobs in rural communities in California's North Coast. Strong agency leadership, desire to get it done made a big difference to this process in the early 1990s.

That same leadership has also made a big difference to Simpson in Washington State where it recently submitted a draft habitat conservation plan for a multi-species aquatic-approach covering 261,000 acres of our ownership in Washington State. This is also a plan that will bridge the ESA and the Clean Water Act serving as a draft TMDL once it is approved. Once again, we had tremendous cooperation at the regional levels in a number of agencies, NMFS, the Fish and Wildlife Service, the Environmental Protection Agency, and numerous State agencies that needed to be involved in this process.

With ongoing and hopefully successes in the HCP area, Simpson has also experienced some troubling challenges with the program as have others, and our experience is in California. Over 5 years ago, we began the process of developing another HCP covering aquatic species on our California lands. We are still in that process; we remain committed to it but we have noted a lot of difficulties there and challenges that many other landowners have also had to address. Many of those have been mentioned, I have detailed several of them in my testimony. But let me just cover a few of them.

One is having to do with timeliness. One solution could be to require agencies to commit up-front to specific timetables in writing, for HCP processing and deliverables. Progress, comments, and concerns, and an action plan be addressed efficiently and should be routinely provided to both the agency staff and the HCP applicant.

Agencies should also be required to provide written examples of what the agency would consider to be reasonable alternatives to specific issues in the applicant's plan that need to be addressed.

Make "no surprises" the law. It is the most important element to ensure the program's success.

Volunteer support for multi-species plans, minimize conflicts created by overlapping jurisdictions and try to streamline the process, perhaps explore approaches to identify single lead agencies or even the special SWAT teams we talked about earlier that can address HCPs on a regional basis.

Keep the focus on science at all times, and make sure the HCPs are affordable and can be completed in a timely manner.

Thank you. I'd be happy to answer any questions.

Senator CRAPO. Thank you very much Ms. Frisch. I appreciated that and you got through it all pretty well, pretty fast.

[Laughter.]

Senator CRAPO. I was following along here. You did a good job of that.

Mr. SILVER.

STATEMENT OF DAN SILVER, COORDINATOR, ENDANGERED HABITATS LEAGUE, LOS ANGELES, CA

Mr. SILVER. Good morning Mr. Chairman. For the last 9 years I have been at the front lines of habitat conservation planning in southern California.

In 1991 the listing of the California Gnatcatcher was predicted to cause an economic meltdown. Instead responsible people from all sectors took a risk that a cooperative approach was better than confrontation.

Collaborative efforts have occurred under the California Natural Community Conservation Planning or NCCP program. NCCP is basically a large-scale HCP for multiple species, a Federal-State-local partnership with stakeholder involvement. People from all sides are likely to call these path-breaking efforts a qualified success, which says a lot. A large scale HCP provides streamlined permitting, it provides certainty for the ecosystem, and open space for people. In fact, the preserves are often touted as environmental infrastructure, by elected officials, as necessary for future regional competitiveness as more traditional infrastructure.

In Orange County a 37,000-acre preserve covering 39 species is in place. In San Diego County a 172,000 acre preserve involving hundreds of landowners is approved, covering 85 species. Comparable programs are underway in Riverside, Southern Orange, northern San Diego, and these efforts have both business and environmental support. It can be done.

What have we learned? A regional scale is critical. For example, piece-meal HCPs will not achieve recovery objectives, also a multiple rather than a single species scope is necessary to get ahead of the listing curve. With sufficient scale, sound scientific principles

can be applied. State-Federal-local partnerships are essential. For example, local Land Use Authority helps assemble preserves. Federal planning funds have provided the means to undertake the efforts. I stress partnership rather than delegation. Only with intensive stakeholder involvement will implementable mechanisms be crafted to put the plans into place. In fact, in southern California stakeholders often drive the process. Given the opportunity people will work together and solve problems. However, only actual listings provide sufficient motivation for the parties to come to the table. The ingredient of independent scientific input is also important and an open process in which data is shared continuously establishes confidence. Assurances to species must be commensurate with assurances to applicants. To justify "no surprises," HCPs should be large-scale, multiple-species, meet recovery objectives, have adaptive management, and scientific input. However for HCPs which rely primarily on managing renewable resources, changes in management may be a private sector responsibility.

One of the most important factors for success in Southern California was linking species protection to related public purposes. That's open space and recreation provided by a preserve system to help a community achieve a vision for its future.

Finally the provision of public land acquisition funds is an absolutely urgent need, despite significant mitigation from the private sector. Reaching biological goals requires major land acquisition. Perhaps this gets to your question, in the simplest terms, private mitigation gets us survival. Public funds get us recovery. And I think that if we keep that as a framework, I think we can really get somewhere.

In conclusion, I urge you to reinvigorate the HCP process through large-scale-multiple-species HCPs and by allowing the public sector to do its share financially. I simply cannot stress the funding aspect enough. In my view, if you are serious about HCP reform, you will permanently and fully fund the Land and Water Conservation Fund. I have to tell you the frustration felt by people of all sides who have worked long and hard to produce solutions. But if you fully fund Land and Water, you will provide stakeholders the essential tool for HCP success and allow our shared conservation values to flourish.

Thank you.

Senator CRAPO. Thank you very much, Mr. Silver.

Mr. Riley.

STATEMENT OF JAMES RILEY, EXECUTIVE DIRECTOR, INTERMOUNTAIN FOREST INDUSTRIES ASSOCIATION, COEUR D'ALENE, ID

Mr. RILEY. Thank you, Senator Crapo. I am Jim Riley. I am the executive director of the Intermountain Forest Industry Association in Coeur d'Alene, ID. We also have a biology office in Missoula so I can claim credit for two States.

Senator CRAPO. Well, he's not here so you don't need to go into it.

Mr. RILEY. OK, I'll be careful then. I am particularly honored to share the panel today with Michael Bean. A lot of our current thinking on how to bring HCP benefits to landowners in Idaho and

Montana come from discussions Michael and I had some 3 or 4 years ago on some very cold days in Missoula. We were sitting around and talking about how to revise this entire Act, so I want to give credit where credit is due.

I am here today to talk, not about the lag part of landowner HCPs that have been so well discussed before this committee, but to talk about how perhaps we've been thinking about bringing HCP benefits to the smaller landowners particularly the smaller forest landowners in Idaho and Montana. Pontica Timber Company, for example, is working on the most current HCP for native fish in these States. They have got 2-million acres, they spent 2 years and invested $2 million and still have not brought this to conclusion. And we are talking about landowners who have far less than that and perhaps might be able to amass $20 to invest in the outcome.

Our thinking really is about fish; it is about native fish, those are the listed species or the candidate species in the States that impact private land, and our thinking really begins with efforts in both States led by the Governors' offices to see if we could develop conservation plans for the Bull Trout and other fish, long prior to their listing. Our goal then was to see if we couldn't arrive at voluntary actions by all landowners to preclude a listing, a goal that has proved to not be reachable in either State.

So, we are today with a listed species of the Bull Trout and the potential petition listing for other cold water native fish that we are trying to deal with. Our thought is to see if uniquely we can bring about a voluntary enrollment umbrella HCP that private landowners could examine as standards, and then voluntarily choose to enroll their lands or not, under that program. If they enrolled, compliance with those standards would be mandatory. They also—if they enrolled, the assurances afforded other landowners through HCPs and the long-term certainty of their management programs would be assured. We think that this is accomplishable because of the science that has been developed so far both by large private landowning companies and by our previous efforts on conservation agreements.

The science really supports two general conclusions. The first is that there is not a "take" occurring in the classic sense by existing forest practices in either State. It is not a question of trying to define a baseline "no take" standard, but a question of what more can be done to enhance the habitat for these species. The second conclusion is exactly that. Are there reasonable measures that private landowners of any size can follow to provide a better habitat for the species on their lands without commitments of their assets or the investments? If such measures are available, the landowners who enroll the opportunity should be provided HCP assurances.

So that began our work on a voluntary-enrollment HCP idea. We've had lengthy discussions within our membership, among Federal Government agencies, and particularly with the State governments about how to do this. It's inconceivable as you heard about the Karner Blue Butterfly example on the other panel, which was one of the examples we looked at, to view the voluntary enrollment HCP without the partnership of State government. They are the ones that help form the standards, and also the ones that help

bring about implementation in enrollment in a program as we are thinking about.

So I am pleased to report that in both States, in both Idaho and Montana, we have the strong commitment of the Governors of both those States to help us in this endeavor to try to evolve this type of program.

The conflict we believe offers some pretty important benefits. The first, it's the quickest way to bring about improvements for the species across all landownerships.

Second, it focuses attention on action rather than disputes.

Third, it provides an incentive-based plan, not a regulatory tap-down directive plan for private landowners.

And fourth and perhaps most importantly, it expands the range of choices available to private landowners and provides them the certainty that they are looking for.

As requirements to get this done I mentioned the partnerships with the State; that is going to be essential. We often need the active support and cooperation of the Federal agencies.

And you need to get past these naughty questions that have been addressed and the other problems about how one defines ''take'' versus recovery, versus survival, versus some other concepts here that come into play. I think with some careful thinking and some reasonability about that we can do that.

We need to assemble the necessary resources, and I want to thank the leadership of this committee as well as Senator Baucus for the effort in this appropriation cycle that resulted in the $300,000 appropriation in the next years Appropriation bill to the State of Montana so that they could do some work on this. We are still seeking a similar appropriation for the State of Idaho and are working on that at this time.

And forth, and essential to the key to success is the ability to get over some of these legal questions to be sure that we can extend with certainty the legal assurances to landowners who enroll.

I want to tell you I have great hope that this program will create some new ground and will provide a framework that everybody can participate in, both species recovery and HCP assurances.

As a final matter, I would mention as my time is up, is that one of the most pressing issues now that I hope this committee will address itself to, is the nature of the interaction of the Clean Water Act and its standards with HCPs for fish. Under a recently proposed rule by the Environmental Protection Agency, reraises the whole questions of what assurances really exist, if you just deal with Endangered Species Act HCPs.

That concludes my oral statement. I'd be happy to answer any questions as they might arise.

Senator CRAPO. Thank you very much, Mr. Riley.

Mr. Bean.

STATEMENT OF MICHAEL BEAN, ENVIRONMENTAL DEFENSE FUND, CHAIRMAN AND SENIOR ATTORNEY, WILDLIFE PROGRAM, WASHINGTON, DC.

Mr. BEAN. Thank you, Senator Crapo.

If I may, I'd like to begin with a brief remembrance of Senator Chafee. I started my career with the Environmental Defense Fund

the same year he began his career as a Senator and so I had many opportunities to interact with him in this committee. I have many fond memories, but the one I'll share concerns a symposium that the Smithsonian Institution held about 10 years ago on the occasion of Earth Day. It was a weekend symposium on the subject of conserving biological diversity. Senator Chafee was the keynote speaker. I have to admit, I don't remember what he said in his speech but that speech was given on Friday night and on Saturday morning the working part of the conference began. It was a beautiful spring day in Washington; the sort of day you ache to be outside. None of us expected to find Senator Chafee there the next morning, but he was there as Senator Baucus pointed out, right on time, and he sat through the entire day taking copious notes as one speaker after another spoke about the various technical issues. Frankly, in the more than 20 years here in Washington, I've never seen another Senator do that and probably never will. So he was a very special man and I certainly miss him and know that you do as well.

Senator CRAPO. Thank you.

Mr. BEAN. Let me briefly summarize some of the points that I've tried to make in my testimony.

I have basically offered a number of recommendations, some of which are frankly directed at the agencies and can be done administratively, and some by the Congress. I'll quickly summarize those.

Senator Baucus made the point that there is a need for consistency among HCPs and there certainly is a perception of inconsistency in how mitigation requirements among various HCPs are derived. I think one thing that the Services can do is to develop what I have called "mitigation principles," or mitigation standards, either for individual species or for groups of associated species. They have done that for just a handful of species, but where they have done it, it has been helpful in letting regulated parties know in advance what their responsibilities are likely to be and I think it will reduce the cost of HCPs for participants.

I've also made an argument in my statement for not allowing mitigation to be accomplished on Federal land. I think that is an unfortunate trend that has become established in a few cases and I think it is undesirable and should not be pursued.

The third point I make is that increasingly Habitat Conservation Plans are utilizing the tool of conservation banking, or mitigating banking as it is sometimes called, as an element of the mitigation strategy. The problem with that is that at this point, neither the Fish and Wildlife Service nor the National Marine Fisheries Service has any guidance at all on that topic. As members of this committee know, there is a fairly long history now of the use of mitigation banking in the wetland context and it took the development of interagency Federal guidance in 1995 to regularize that and to put that on an even keel. I think the Fish and Wildlife Service needs to catch up in the endangered species context by putting out some clear guidance and policy on the use of mitigation banking in HCPs.

The fourth point I have addressed is the standards for approval of HCPs. There was quite a discussion of that this morning. I think I can shed some light on the history of the confusion there but I

prefer to do that after the lights go out since it will take a little time to do that.

Senator CRAPO. I will give you a chance.

Mr. BEAN. OK.

[Laughter.]

Mr. BEAN. The last point I would make is to echo what a number of speakers have already said about the real need for resources. When I have talked to landowners and business interests, the common complaint that one always hears is that the Fish and Wildlife Service can't respond in a timely manner to their needs. I don't think that's because the Fish and Wildlife Service is simply "stiffing" them, I think the Fish and Wildlife Service simply is stretched so thin that it can't often deliver timely responses. And it is not just landowners and regulated interests. My organization is right now negotiating, with the Fish and Wildlife Service, hard for a permit to enhance the survival of endangered species on behalf of a number of rural landowners. It is a permit that will be helpful to endangered species, something the Fish and Wildlife Service recognizes will serve their interest, if it happens. Yet, because of their resource demands, it is extremely hard for us to get enough of their attention in a timely enough fashion to move this forward quickly.

The last point that I would make is in reading the testimony of the American Farm Bureau Federation from 2 weeks ago, I noticed that they commented favorably on the Safe Harbor HCP that was developed for forest landowners in North Carolina, but they erroneously characterized that as the only safe harbor agreement that has been approved to date, and suggested that it may be a solution that only works there. In fact, there are now quite a number of safe harbor agreements around the country, many of which include rural landowners and small landowners. If I may, I'd like to submit for the record, a brief publication that we have prepared in collaboration with the National Cattleman's Beef Association, explaining this new tool and pointing out how it can, in fact address many of the concerns of rural and small landowners.

Senator CRAPO. You certainly may, we'd welcome that.

Mr. BEAN. Thank you.

Senator CRAPO. Does that conclude your testimony?

Mr. BEAN. That concludes my statement. Thank you, Sir.

Senator CRAPO. Thank you very much. Let me go back and just start over at the beginning again. Ms. Frisch. In fact this comment goes with regard not only to you, but virtually to all of the witnesses today. I appreciate the testimony because not only has it been helpful on the specific issues that you were asked to present information on, but it has contained a significant amount of specific suggestions about how we can improve either the Administration or the policy with regard to HCPs. Yours, Ms. Frisch did so very well.

One of my first questions for you is, what kind of restrictions did the forest products companies agree to, in the Forest and Fish Agreement?

Ms. FRISCH. Well, in the Forest and Fish Agreement, let me note that it was a process of well over almost 2 years of negotiations between all of the stakeholders. The Fish and Wildlife process in the State is a process that is finalized; it has been in place for a num-

ber of years. It brings together numerous stakeholders to talk about and negotiate difficult conservation issues.

In looking at current State rules in the State, an assessment was made that the rules were not adequate to protect water quality, primarily in the Riparian Management Zones, and that changes needed to be made, and so this is what brought the group together.

So through a long series of discussions, lots of science, and certainly having every stakeholder with an important role at the table, a new package of rules is now working its way through the legislative process that will increase buffer zones, address water quality issues, some harvest-management issues, and it also has a very significant adaptive management component. Over time, as we learn more by doing and learning, we can make some changes to that plan to address the conservation goals of the plan itself in the agreement. So it is a plan. It is also based on continuous improvement but the restrictions are pretty significant; we are looking at significant "leave-behinds" of trees in riparian zones.

Senator CRAPO. Thank you.

In your testimony you indicate that the significant supply industry to conserve fisheries resources would not have been possible had you not had a willingness of the Services to offer long-term certainty to the landowners.

The question I had is, what assurances were they able to provide without issuance of an incidental take permit?

Ms. FRISCH. Well, what will happen with this plan, eventually, the life of the plan is 15 years. There are assurances there for protections against changing regulations in the future, but I want to admit also, that there is this adaptive management component. This is an agreement now, that has moved its way through the legislature, it has been signed into law by the Governor; it is now in the regulatory process. It is now being examined as an urgency rule, then a final rule, ultimately it will be a 4(d) rule, we understand that it will be part of the statewide recovery plan and a 4(d) rule that will be a draft 4(d) rule that will be introduced or released in mid-December in the State, and then eventually it will be a statewide HCP, with an incidental take permit. So it has a long way to go.

It took us a couple of years to get where we are now, and we see a lot of work ahead. But we are hoping that we can keep the parties true to the agreement, which will be important for everyone to stay true to what we agree to probably many years before it ends up being a fundable HCP. That will be our challenge over the next several years, I think.

Senator CRAPO. Why is that going through the emergency rule route and so forth, rather than going directly to negotiate an HCP chosen?

Ms. FRISCH. We had to do that. We had to make changes at the regulatory level, at the rural level, to be prepared to move into a 4(d) rule, and then an HCP.

We also realize that it is going to take us, probably 3 or 4 years to negotiate an HCP, that it is going to be a very complex process. We wanted to make sure that we had provisions in place that could offset potential litigation which we think will be coming as a result of Chinook Salmon listings in that region, and other species, and

also to address, frankly, section 7 consultation issues, moving forward to make sure that we could operate with a certain level of certainty over a period of time.

Senator CRAPO. You have testified that long term certainty is critical for the success of this effort but you have also testified about adaptive management and how that is, I assume, built into the concept of what you are working on. Could you clarify that, a little bit?

Ms. FRISCH. Well, the adaptive management, the components that we are agreeing to actually manage research and perhaps open up for changes, are agreed to and negotiated to up front. So there are some side bars in what will happen as a result of that. So, we seek the long term certainty of the regulatory process.

The plan, the Forest and Fish plan does bridge, once again, the ESA and the Clean Water Act, so there is some certainty there on the water quality side, and yet we have negotiated an adaptive management component that is confined within the agreement itself and will stipulate when and what changes, what kinds of studies are needed, and how the plan will be modified in the future with the agreement of the stakeholders. So, that is a key component of it also, that the stakeholders who got us to this point win part of that process going forward with an adaptive management component.

Senator CRAPO. Now you say that the plan bridges the Endangered Species Act and the Clean Water Act. How? What I am getting at is that there isn't any process under the Clean Water Act is there, that gives you the kind of certainty that you need?

Ms. FRISCH. We were able to work with the Environmental Protection Agency and the Department of Ecology in the State to, because of the water quality component, to the plan itself, and the protections that are included there, and the benefits we think that we will accrue on that plan, we were able to seek some assurances on TMDLs, on processing TMDLs, a period of time where we would have an assurance that the current rules would satisfy, and that at some point down the future, of course, when we normally review, that it would go through that process.

Senator CRAPO. And the EPA did that voluntarily?

Ms. FRISCH. Yes. They did the same thing, by the way, or a similar approach in our draft HCP, which appears in the Federal Register a week or so ago, where this draft HCP will serve also as a draft TMDL, once approved.

I really do want to comment on the tremendous cooperation we had out there in the region from the EPA office, Chuck Clark in particular, and others who really provided a lot of leadership. They wanted to show that the Acts could be compatible, that we could craft a plan that could bridge them and this will be the first individual plan to do that and we hope it will serve as a good model for others and perhaps lead the way for similar agreements.

Senator CRAPO. We all hope so, too. It looks like something that could really be a model that could be used.

One last question, we have heard a lot about "one-size-fits-all" concerns. On the other hand we are starting to see that there are a lot of areas in which standardization or the wisdom of previous negotiations and actions can be very beneficial in developing HCPs.

Do you have any thoughts about where a greater standardization and approach might be helpful or appropriate?

Ms. FRISCH. Well, I think certainly we can learn from the plans that are working well, that we've crafted in the past. Standardization and processing perhaps some models in how to actually do it, how to process it, some efficiencies that could be used. I think it is important to recognize though, that the landowners' obligation under the ESA is to mitigate direct impacts on the species.

I think it is also important to recognize that conditions are different depending on where your lands are located, habitat conditions, past activities, and current conditions. So, we feel it is important to stress, that though we appreciate the fact that standardization helps in some ways, and where it can be a benefit, that is great, but science needs to drive us and we really need to be able to craft plans that respond to and reflect the conditions and the mitigation steps that we are trying to impact on that land.

Senator CRAPO. Well, thank you very much. You provide us the materials that you've been working on with Secretary Babbitt.

I assume those negotiations or those discussions with Secretary Babbitt are ongoing?

Ms. FRISCH. Yes, they are.

Senator CRAPO. I would welcome you to keep us informed of their progress and if there are further ideas that are generated from that.

Ms. FRISCH. We'd be happy to. Thank you.

Senator CRAPO. Thank you.

Mr. Silver, you, in your testimony indicated that, let me put it this way, there is a big concern among environmental community folks with respect to the "no surprises" policy. And you have testified that you don't really have a strong objection to the kinds of assurances being given that are being discussed in this debate, as long as there is a commensurate protection for species that is assured as well. Could you explain a little more about what you have in mind there, and what assurances-policy might be able to be developed that could be acceptable from both perspectives?

Mr. SILVER. Sure. To provide a little bit of background, I think there is a distinction between the type of HCPs we are doing in southern California which are permanent preservation, permanent loss, and the sort of HCPs that are done on forest lands, or in renewable resources, water systems, which are in essence management plans. I can't really comment on "no surprises" for that type of HCP.

Senator CRAPO. I understand.

Mr. SILVER. I can comment on the type we're doing. And in the type we're doing, what really matters, is how good the plan is on day one. In fact, that is the only thing that matters. Fifty years from now, if there is a surprise in southern California, I don't care whose responsibility it is, fundamentally you are not going to be able to do anything about it because we are having permanent conservation and permanent loss. So, the important thing is how good the plan is on day one. It is not who pays for a surprise, and that is my own personal perspective. So how to get the plan as good as it can be on day one, a list of things: It needs to be large scale; it needs to cover multiple-species; it has to have that comprehen-

sive approach; I believe it needs to meet recovery objectives because for a large-scale plan, in essence, that is the extent of conservation in that plan area, so you need to do your recovery objectives in the plan; you have to have adaptive management, scientific input. If those things happen, I have absolutely no problem with giving the "no surprises" assurances to the landowners. So, there is disagreement within the conservation community on that point, but it is my own belief that the people who are disagreeing with it are not as close to the ground as I am.

Senator CRAPO. It seems to me that the type of HCP you are talking about is much more of an ecosystem-based HCP. Am I correct?

Mr. SILVER. Definitely. But I also want to say that I do see a difference with the HCPs which are management. And I am not sure that it makes sense, it may be that changes in management over time, should be a responsibility of the private sector as time goes on in a management-of-renewable-resource type HCP.

So, what I am saying is that when I am talking about my position on "no surprises" it applies to the type of HCP I'm doing, it may not apply to these forest plans, which seem to me to be fundamentally different. And I would leave it to others who have expertise in that.

Senator CRAPO. I think that you have raised an interesting distinction that I hadn't focused on heavily before, and that is that there may be different brands of HCPs. We've always talked about large-scale versus small landowner and so forth, but there may be some fundamental differences there that may require a differential treatment. Is that what you are saying?

Mr. SILVER. I believe that there may be. Yes.

Senator CRAPO. How are the large-scale HCPs addressed to the needs of the small landowner?

Mr. SILVER. Every place is different. Typically in the plans we are doing, there is, a biological mitigation ordinance crafted so that when any property owner comes in, they can simply read the ordinance, figure out how it applies to their property, and they know exactly what their obligations will be.

These plans in southern California apply even to thousands of property owners. Typically, if it is a low-value habitat, the person will have a mitigation ratio that is known in advance. It is just written down; this is your ratio. If it is in a high value area, there may be an avoidance requirement, you "avoid" as your primary step. But it applies across the board to these landowners, large or small, and because we have a framework for conservation we can understand how it all fits together. Without that framework it is chaos. But these multiple-species plans have given us a framework in which to plug in the small property owner and see how that land fits in, and I think it is working.

Senator CRAPO. You indicated that you think that recovery is a proper standard for HCPs, and I am taking you to say that in the context of the type of HCP that you are talking about?

Mr. SILVER. Yes, I think we almost need a new term. I mean, I agree that the standard for an HCP is not to appreciably reduce the likelihood of survival and recovery. I am kind of using the term large-scale HCP to really mean something else, a different "ani-

mal," as it were. A natural community conservation plan, or a different sort of plan that has a private contribution and a public contribution.

In my view, the private contribution gets you the survival. There is a rough proportionality, there is a nexus test. They can only do so much. When you bring in the public contribution which is local, general public, State, and Federal, then you can get to the recovery objectives. And this new "animal," you call it a large-scale HCP or you call it an NCCP or some other name perhaps; that is the recovery standard. Then you can get to the recovery standard. I agree with you completely. An HCP is not a recovery standard. Period. But to get to that in my view, you need this partnership approach. The individual property owner does their share, the public does their share.

Senator CRAPO. And in the context that we are talking about here, I am understanding you to say that as you move to this new "animal," or new plan, it is determined by whether we are dealing with multiple species, full large-scale ecosystems, and the like, and has the participation of multiple landowners of different governmental entities or public sectors and so forth, and you start then, evolving into more of an ecosystem-management approach as opposed to a landowner activity that needs to be addressed. Is that the distinction that you are trying to get at?

Mr. SILVER. Yes, absolutely. Absolutely. And I think we almost need a new name for this, because the term HCP really is confusing in that context.

Senator CRAPO. All right, thank you very much. I appreciate that.

On another point that you raised, I agree with your premise that the process has to be transparent at each step, and can you talk for just a minute about your experiences in which participation and a transparent process have been successful?

Mr. SILVER. Sure. For example right now in Riverside County, we are working on a plan. It is extremely stakeholder driven. The advisory committees are almost the primary policy vehicle because the elected officials realize that if the stakeholders can't agree, we are probably not going to implement a plan.

And in terms of scientific input, the County of Riverside has contracted with the University of California to provide a scientific review panel. That panel will review data at a series of milestones. They will have written reports available, publicly; this will all be on the Internet. It will be transparent at every step. There will be scientific review, not at the end, but at every step along the way. We'll have scientific review of preserve design methodologies, we'll have scientific review of preliminary rationales for species coverage. And what has happened in southern California is that we have kind of had a learning curve. The early plans weren't very good at this, but as time has gone on we've gotten better.

Senator CRAPO. All right. Thank you very much.

Mr. Riley, once again, thank you for being here with us.

Being the Senator from Idaho, I should have given you the big introduction at the beginning. But I didn't and I apologize.

Mr. RILEY. No apology needed.

Senator CRAPO. It seems to me that the most prevalent theme in your testimony is the need to assure that the HCPs are voluntary and that we give the necessary assurances to achieve that voluntary status. I know that most Senators on the committee understand that HCPs are already considered a voluntary process of negotiation with the Fish and Wildlife or NMFS, and that no obligation attaches to a private property owner from the negotiations. But why is it that considering the voluntary nature of the process, you focus so much on the voluntariness issue? I think there is something here that needs to be brought out further.

Mr. RILEY. Again, there are different types of these HCPs, as it has been talked about. An umbrella HCP, or a set of standards that would be available to landowners like the Washington State Agreement, some people think about visiting those upon landowners in a mandatory fashion, where the concept I have advanced to you, is that it would be required that it would be voluntary.

Senator CRAPO. I see what you mean. So as we look at possibly a distinction between the broader larger-scale HCPs versus the smaller-scale HCPs, what you are saying is that we have to remember as we move into the broader arena, that it still is a voluntary program?

Mr. RILEY. That is correct. And so it has got to be the individual landowner's decision whether to sign up for those standards, to operate by other standards, or to negotiate for themselves maybe a different HCP. But it is not the intent of this concept to visit upon landowners mandatory standards.

Senator CRAPO. In your earlier remarks, you indicated, and I don't remember it exactly, but you had maybe some further thoughts on how to get past this "naughty" problem of defining the difference between survival and recovery, and take and jeopardy, and so forth. Could you elaborate a little further on what you were thinking about there?

Mr. RILEY. Well, you know, we have struggled with that quite a bit. Here is how I view it.

Taking an action which is not inconsistent with recovery or with survival is a thoughtful position, I think, to rest the obligation of a private landowner in the HCP standard. Not inconsistent with those things.

Senator CRAPO. You can debate at great length how to write, particularly umbrella standards, that will ensure survival, ensure recovery. And the reality is that the science is uncertain. The response of the situation is uncertain. And in the case of fish, that we only control a small piece of what happens to the population dynamics. You might do exactly what is necessary for the habitat, but find that the fish is harmed, or otherwise doesn't recover for a whole lot of reasons that are not a result of the habitat. So how do you form a standard and how do you track participation in this standard?

Mr. RILEY. The frustration of this process becomes, as you heard from the first panel, when the parties at negotiation, can't agree as to what they are negotiating for. There is the feeling of distrust, and other problems that develop because you just don't know how to get there. The goal post always moves on you.

Senator CRAPO. In your involvement with the Bull Trout and other species, have you experienced the agencies that you are dealing with, seeking a recovery standard, sort of speak, as opposed to the standard that you describe?

Mr. RILEY. I have talked enough with the agency folks that we hoped that we would be working with and evolving this concept to know that their aim, which we would share, their goal which we would share, is doing reasonable things for landowners which can be accomplished to improve the habitat for these fishes, without having to get tangled up in the question as to whether that is recovery or not, or——

Senator CRAPO. So just avoid the debate.

Mr. RILEY. Right. Because, interestingly enough, with the fish, we know where they are. They are inside the banks of the stream, it is not as though they wander all over the land that we are on. And we know that there are things to do, that will make those fish better off than any other fish that are in there. And so, this is a difficult process. It would be much easier if we could define those terms more precisely, but that is what we rest the premise of our discussion on now.

Senator CRAPO. And you indicated also in your testimony that we need to find a way to deal with the Clean Water Act as well as the Endangered Species Act, as we move through this process. From the recent actions in the Silver Valley out in Idaho, it is very obvious that, that, as well as maybe other Federal statutes, like Superfund and so forth, get brought into these issues, on occasion. Could you give further ideas as to how we would approach this question of bridging the Clean Water Act and Endangered Species Act, or encompassing them in a comprehensive approach to put a system together here that would work?

Mr. RILEY. I think that as a starting point, the work that has been done that Ms. Frisch identified, both with her company's HCP and with the Washington State process about how to try to address the compliance with the Clean Water Act, is the first step.

Part of the burden, as I look at this, is the multiple agency problem. Looking at the HCPs we're thinking about for these small landowners, we're going to have three agencies involved once we get through with EPA, the National Marine Fisheries Service, and the Fish and Wildlife Service. You have sort of three different points of view about what compliance actually means. And then you have some real legal questions about how you ensure compliance, particularly with the Clean Water Act when it is done.

And so I don't know if I have a precise answer to that yet, but I would tell you that I am most troubled by this new rule proposal that would require a Federal permit under some circumstances for a small private landowner, even one that we might have encouraged to enroll their lands in an HCP, that I have talked about, to take care of fish—before they cut a Christmas tree down in the back forty of their property. That is a very frightening prospect.

Senator CRAPO. Well, it is something that we see regularly here, not just in the environmental arena but I do find a problem under the rivet of one statute which is being administered by one agency or whatever; and then we fix that, and another statute which is managed by another agency hasn't been fixed, and the other agen-

cy has a different point of view on how to achieve the objectives of their statute that they are working under. And hopefully we are going to be able to lasso everything here into the same solution and get results. So, I encourage your future thoughts and input on that.

Mr. RILEY. I'll be happy to provide that for the record.

Senator CRAPO. Thank you.

Mr. Bean, the environmental community has, in large part, been pretty critical of the "no surprises," or the assurances policy, and in fact they have challenged it in court at this point. Could you imagine a scenario in which the, and I'm not speaking about one entity, but the general environmental community that is opposed to "no surprises," could you imagine a scenario in which that community would embrace or support an assurances policy of some kind? Is there something that we could do to alleviate the objection?

Mr. BEAN. Well, I can't speak for everybody in the environmental community but I would say that I think there are a couple of important considerations. One is the point that Dan Silver made a moment ago. It is critically important that on day one the plan be as good as it can possibly be. And I think that takes us directly to the question of what the standards for approval of the plan are. So if there are good standards for approval of the plan, then I would say if there is some reasonable assurance that when surprises do occur, as they almost certainly will occur, that there will be resources available from the Federal agencies, if the Federal agencies have agreed to take the responsibility to address those surprises, then the whole controversy about the "no surprises" policy becomes a whole lot less important. It is important today, largely because the standards for approval are perceived to be not very strong, and because the likelihood that the Federal Government will, in fact, be able to step in at the breach when a surprise occurs, is viewed as very small.

Senator CRAPO. There is no assurance of that either? In other words, if you could have a "no surprises" policy on that side, you might feel more comfortable.

Mr. BEAN. I think you need to think of it as reciprocal assurances. It is certainly the case for landowners and private businesses, that having some certainty as to what their future obligations will be, is a strong incentive for them to participate in these HCPs. At the same time however, unless there is some assurance that the HCP or the mechanisms that are put in place in the event of its shortcoming, are adequate to address the surprises that will occur down the road, then there is no assurance that we are actually doing what the Endangered Species Act says is its goal: Protecting those species.

Senator CRAPO. Do you agree with the distinction that Mr. Silver was drawing with regard to the larger-scale HCPs being literally a different thing than the small-scale HCPs?

Mr. BEAN. Yes, I do agree with that. I also think it is important to recognize some important distinctions between HCPs in what I call the working-landscape context, the context of forest lands, ranch lands, and farmlands, versus the urbanizing context. What Dan has worked in, and I think has done a very good job in, is the context where we are converting natural or semi-natural habitat

into concrete, and it will be lost forever. The solutions, and indeed the approach that one takes in that context are different, I believe, from the solutions and the approach that are called for in the working landscape context. There the question is not whether you are going to sacrifice for all time the value of a particular habitat, but rather whether you can manage your land for forestry or ranching or farming purposes in a way to achieve the objectives of the landowners while at the same time, advancing the objective of conserving endangered species. That is a fundamentally different task.

Senator CRAPO. I think those are both very helpful distinctions. And may give us a way to address some of these very difficult controversies or disputes that we find ourselves in with regard to HCPs.

You indicated in your testimony that you had some thoughts on this discussion we had with the first panel. Why don't you share those thoughts with us?

Mr. BEAN. Yes, I listened very carefully to the questions you were putting to the witnesses, and I think I can put my finger on the problem here.

This is a very confusing issue and it is confusing because the interpretation of the statutory language has never quite squared with what it appears to say. Or at least it hasn't squared recently with what it appears to say. Also, the agencies have not always been consistent in how they have interpreted it. But, meaning no disrespect to him, I think that the confusion has its origins in a legal opinion that a former assistant solicitor of the Interior named J. Roy Spradley issued in 1981. At that time, Mr. Spradley was trying to work through the jeopardy standard which is in section 7, and which was interpreted through a set of Fish and Wildlife Service definitions which are now found in the Statute as the standard for approval of HCPs; that is "not appreciably diminish the prospects for survival and recovery."

Mr. Spradley came up with a very novel, and I think wrong interpretation of what that meant. Basically his idea was as follows:

> If you think of a species as occupying a space somewhere between recovery "up here," [motioning] and a hopeless lost cause, "down here," if the species is somewhere in between that continuum, then what the standard of "not appreciably diminishing the prospects for survival and recovery" means, is that you can push that species down lower and lower and lower until you get to that floor, but you can't go beyond that floor.

And that was his legal opinion in 1982 and it has continued to be reflected in the actual implementation of this standard, not only in section 7, which is what Mr. Spradley was talking about in his opinion but, later in section 10 for HCPs.

The statute has rarely, if ever, in practice meant what it appears to say, and what you in your questions assumed that it must mean, and that is that diminishing a species from where it now is, runs afoul of that standard. Mr. Spradley's notion was, "No it doesn't, it only runs afoul of that when it hits this floor, and to go below that floor you run afoul of standard." That introduced the fundamental confusion in this.

I think the National Marine Fisheries Service, which for many years had very few endangered species, very little to do frankly, under section 7 or section 10, has suddenly taken a look at the way

in which the Fish and Wildlife Service has historically interpreted this and said, "That doesn't make any sense. It can't mean what they have been interpreting it to mean all these years, it has to mean something else."

Whether NMFS has come up with the right solution, I don't know, but I do think it is quite clear that the fundamental confusion is what I have just described, because frankly, many HCPs with which I am familiar, clearly result in species having a much reduced chance of survival from what they had before hand.

I know that when Jim Christenson spoke a minute ago, he said that the goal of the Wisconsin HCP was no-net-loss of habitat for the Karner Blue Butterfly. That is not a goal that very many HCPs can meet. Almost all of the HCPs with which I am familiar do contemplate a net loss, indeed, a rather substantial net loss, not only of habitat but of the likelihood of survival of the species.

Senator CRAPO. And that has come about as a result of this 1982 decision and its implementation by Fish and Wildlife?

Mr. BEAN. That is my opinion. Yes.

Senator CRAPO. Well, that might explain some of the conflict that we see coming from the fact that that interpretation was wrong. However a lot of the input that we are receiving is, and this probably comes from the NMFS reaction, is that it is trying to push the bar up, require the landowners to push that level up closer to the top. Would you also agree that is not the right interpretation?

Mr. BEAN. What I'd like to agree with, is what Mr. Riley here, my friend Jim Riley, said a moment ago. It is probably more fruitful to figure out what you are going to do, than to agree on what you are going to call it.

My sense is, that Jim was right when he said a moment ago that, "They know what is necessary to make the fish better off than they now are." And if HCPs can accomplish that, that will be a very worthy thing for HCPs to do, whether somebody says, "that is recovery," "that is survival," or something else, is of less consequence to me than if the net result of these HCPs is that we at least don't make these species any worse off, and if we possibly can, in the context of these larger-scale HCPS, particularly the ones that embrace a very substantial portion of the entire range of the species, actually make those species better off. That is what I would prefer to see as the outcome, and indeed I would recommend that Congress try to make clear that is the objective of HCPs. I think it is an achievable objective, not only in the Bull Trout example he described, but in many others. It is an eminently achievable objective, and I would suggest that ought to be the goal.

Senator CRAPO. You know I think, that as I listened to the testimony today from the first panel to this point, it seems to me that, that point of view may carry more weight the closer you get to the type of large-scale HCP that Mr. Silver was talking about. And frankly, I think it carries less weight the closer you get to the individual landowner and the need for that landowner to know just what he or she can do on his or her land without having to get arrested, or run afoul of and get into some enforcement action. And there is a continuum there.

As we get to a situation in which we have multiple governments, and multiple public sector or private sector, multiple landowners,

multiple species, and large areas of land being managed, you clearly get into more management-oriented decisions that are focused on just not doing harm, and actually improving the situation as opposed to trying to allow a narrow exception of activity for a private landowner, and just not do any harm.

So, I think that distinction in this whole discussion has raised an interesting perspective on how to develop a good approach to HCPs, and it may have to be an approach that creates more than one type of solution depending on what we are doing, and recognizes that there are real differences not just in finding different ways to solve problems for different species, but real differences between the types of plans that might actually make them different things. And that is something we will have to struggle with. But it does seem to me that we are at a practical level right now, just being bombarded with complaints from the private sector about how this just isn't working, and bombarded with complaints from the environmental community about how frankly, in a lot of areas it is not working, or what is being proposed is not going to work and is going to make it worse. And maybe we are just missing; the communications are about different things.

And so an idea has come out of this hearing today as to whether we should be more specific in the way we address the terminology and the context and the concepts.

I have already run over into the next meeting at which I am supposed to be, and apologize to all of you that we can't have an even longer discussion, but invite you to continue the discussion that we were having, in whatever context. If you have further thoughts, or suggestions as to how we can either better elaborate a concept that we've been discussing or identify a solution that hasn't yet been identified, please share those with us as we work forward.

I am convinced that in the line of what was said earlier by some of the other Senators when they were here in terms of wanting to build a collaborative step forward, which can be bipartisan and can have broad-based support in the community, that there are ways to do that. I share the positive attitude that Senator Chafee brought to these issues and believe that we can do it. It is not going to be easy. And there are those who say that we can't. But we will not accept that answer and we are going to move forward to try to find a solution and we encourage your participation.

Again, thank you all for coming and for your patience, and this hearing is adjourned.

[Whereupon, at 12:41 p.m., the subcommittee was adjourned, to reconvene at the call of the chair.]

[Additional statements submitted for the record follow:]

STATEMENT OF JAMIE RAPPAPORT CLARK, DIRECTOR, FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

INTRODUCTION

Mr. Chairman and Members of the Subcommittee, I am pleased to be here today to talk about the Habitat Conservation Planning program. The Fish and Wildlife Service believes that habitat conservation plans (HCPs) are essential tools for the conservation and protection of threatened and endangered species. My testimony will discuss our commitment to this successful program and the challenges we are facing.

HABITAT CONSERVATION PLANNING IS AN INNOVATIVE AND SUCCESSFUL PROGRAM

In direct response to this Administration's goal to reconcile conflicts between development and conservation, the Habitat Conservation Planning program has expanded tremendously during the 1990s. When President Clinton took office, the Service had approved only 14 incidental take permits and associated HCPs. Today, the Service has issued more than 260 incidental take permits covering approximately 20 million acres of land, 200 listed species, and many unlisted species. The Service anticipates being involved in the development and implementation of about 300 additional plans by fiscal year 2001. HCPs cover more area, more activities, and more species than ever before due to the incentives we have created. While this phenomenal growth is a testament to the popularity and utility of the program, it brings with it additional challenges. Greatest among these challenges is that demand is exceeding our ability to deliver the program as effectively as we would like.

The major strength of the HCP program is that it is based on the development of local solutions to wildlife conservation. By encouraging the development of regional, landscape HCPs to cover many habitats, we have provided incidental take authority for many different land uses and landowners. Here are just a couple of success stories.

Kern Water Bank.—In Kern County, California, the Kern Water Bank Authority's HCP illustrates how the Service can help the agricultural community and the State accomplish both water conservation and environmental objectives. The goals of the HCP are to allow the economic development of water recharge and recovery facilities; preserve compatible upland habitat and other sensitive natural areas; conserve the area's 161 covered species; provide a conservation bank for third-party mitigation; and permit farming. This HCP received two incidental take permits—one for the operation of the water bank; the other allows the transfer of incidental take authority to third parties through purchase of mitigation credits in a conservation bank. The plan streamlines ESA approval for small landowners within the service area of the HCP.

La Rue Housing HCP.—The University of California, Davis, received an incidental take permit for their low-effect HCP. The project involved the construction of student housing and a plant science teaching center. The application was received in January 1999, and the permit was issued in March 1999. In order to minimize and mitigate the take of the valley elderberry longhorn beetle, the HCP called for the planting of elderberry shrubs at a mitigation site that is protected in perpetuity and owned by the University. The University will also monitor the mitigation site to ensure that the conservation goals are being achieved.

The Service has shown creative and flexible approaches in assisting landowners to develop HCPs that fit the unique circumstances presented. Though we strive for consistent application of the HCP program, we have learned from experience, no one template fits all HCPs. The benefit to affected species, the nature and extent of the habitat covered, and the concerns and limitations of the landowner will vary from HCP to HCP. The specific circumstances will determine whether a single species, multiple species, or landscape scale HCP will be appropriate. The duration of the permit, the use of adaptive management, and the incorporation of other key components also will vary. We are committed to using a flexible approach and addressing each HCP with the type of innovative thinking that has proven successful.

The Sonoran Desert HCP is a good example of the innovative, successful merging of conservation and development. When completed, this plan will address the needs of threatened and endangered species throughout Pima County, Arizona. This visionary planning effort will actually help to shape urban development within Pima County while providing for the protection of natural and cultural resources. Listed species that will be protected include the jaguar, Sonoran pronghorn, desert pupfish, cactus ferruginous pygmy-owl, pineapple cactus, and Mexican spotted owl. Pima County and numerous public and private entities actively support the planning effort, recognize their ESA responsibilities, and are eager to join in.

The creativity that has served the HCP Program so well is also leading to innovative solutions for small landowners. The Lewis County Forest Stewardship HCP, which is under development, would establish a programmatic approach to cover small timber operations. This approach would enable small timber operators to receive incidental take coverage by adopting management practices. It will greatly enhance our ability to work with small landowners by reducing the need to negotiate each HCP individually. Similarly, the Statewide Conservation Plan for red-cockaded woodpeckers in Georgia, which was recently released for public comment, will provide all landowners in the state the opportunity to participate in two options for receiving incidental take coverage. The Wildlife Resources Division of the Georgia Department of Natural Resources elected to pursue a statewide Plan to cover private

land in an effort to resolve continuing conflicts over management of small, isolated red-cockaded woodpecker populations on private lands. The agency sought an approach that would offer benefits to red-cockaded woodpeckers and flexibility to landowners. The resulting plan provides two options to landowners: (1) mitigated incidental take—the HCP option, and (2) management agreements—the Safe Harbor option. Other States within the range of the red-cockaded woodpecker are considering using this Plan as a model for providing private landowners a flexible, streamlined process for resolving conflicts with conservation.

The foundation of the HCP program is sound science. We base our determinations on the best scientific and commercial information available. We also must approach the use of science on an HCP-specific and species-specific basis, so that general principles are not translated into "cookbook" approaches that may be misapplied across a range of HCPs and fail to conserve species.

WE ARE ACTIVELY MANAGING THE HCP PROGRAM

The HCP program has seen a lot of change since its beginning in 1983. The ideas generated by the Service, applicants, the environmental community, and other concerned individuals and groups have strengthened the HCP program. We remain open to learning from our experiences and considering new ideas in developing and revising our regulations, policies, and guidance. We develop our policies to balance concerns of applicants and species conservation yet strive to reduce procedural burdens. The collective knowledge gained from past experience is available to the public in a joint Handbook for Habitat Conservation Planning and Incidental Take Permitting Process (HCP Handbook). The goals of the handbook are threefold: (1) to ensure that the goals and intent of the conservation planning process under the Endangered Species Act are realized; (2) to establish clear guidance and ensure consistent implementation of the section 10 program nationwide; and (3) to ensure that the Service and NMFS offices retain the flexibility needed to respond to specific local and regional conditions and a wide array of circumstances. Specifically, the HCP Handbook gives, among other things, instructions for processing permit applications, hints for approaching different issues, suggestions for helping applicants develop their HCPs, and guidance for meeting regulatory and statutory standards of the HCP program. The HCP Handbook not only provides consistent guidance to Service staff; it is a popular and useful resource for applicants.

Since the HCP Handbook was finalized, the Service has continued to provide national direction for the HCP Program. As the program has matured, the Service and NMFS recognized that a clearer policy regarding the assurances provided to landowners entering into an HCP was needed, and subsequently codified those assurances into regulation with the No Surprises final rule (63 FR 8859; February 23, 1998). The Service and NMFS also recognized a significant need to elaborate on the principles included within the handbook, so we issued a draft addendum to the HCP Handbook, which is commonly known as the "five-point policy." The policy requires all HCPs to include biological goals and objectives; provides additional guidance on the role of adaptive management strategies in HCPs; encourages those developing HCPs to involve the public in the planning process; clarifies the role of the Service, NMFS and permittees in conducting compliance and effectiveness monitoring; and provides clarification on how to determine an appropriate duration for incidental take permits. We have reviewed the public comments that were submitted and are in the process of addressing them. We expect to issue the final policy shortly.

Beyond issuing written policies and regulations, the Service manages the HCP program by facilitating communication about HCP issues. We hold annual national HCP workshops that foster consistency within the national HCP program, provide for the exchange of experiences among regions, and facilitate discussions of solutions. The Washington office holds monthly conference calls with the regional HCP coordinators and instructors for our National Conservation Training Center's HCP course to discuss current topics. We are providing more information to the public through the Internet and are starting to announce public comment periods and provide HCP documents electronically. The National HCP webpage is currently under revision and will be maintained to provide up-to-date program information and access to the National HCP database. The regions hold regional workshops for the purposes of advanced training of Service staff or for introducing potential applicants to the HCP process. For example, the Southwest Region recently held a workshop for State and county officials, and other stakeholders involved in the Sonoran Desert Conservation Plan.

The Service's National Conservation Training Center (NCTC) is also playing an active role in managing the HCP program. NCTC puts on one or more sessions each year of the HCP course and these sessions are often attended by potential appli-

cants or State agency officials in addition to Service employees. In addition, NCTC offers many other courses that support Service biologists working in the HCP program. Example courses include: Interagency Consultation (section 7); Scientific Tools for Endangered Species Conservation; Introduction to Conservation Biology; Natural Resource Law; Natural Resource Policy; Complex Environmental Negotiations; Community-Based Consensus Building; Extraordinary Customer Service; Conserving Endangered Species on non-Federal Lands; and Scientific Principles and Techniques for Endangered Species Conservation.

We recognize the pivotal role private lands play in conserving threatened and endangered species and the necessity of creating incentives for non-Federal landowners to engage in conservation activities. The numbers of HCP applicants today clearly shows that these incentives are effective. We are also committed to reducing burdens to the applicants. For instance, we are developing guidance regarding the role of section 7(d) in the HCP program. Section 7(d) of the ESA states that after consultation has been initiated, the federal agency or permit applicant "shall not make any irreversible or irretrievable commitment of resources . . ." A recent district court decision [*Environmental Protection Information Center* v. *Pacific Lumber Company*, 1999 WL 669191 (N.D. Cal)] asserts that section 7(d) applies to formal and informal consultation conducted under section 7(a)(2) of the ESA. As a result of this ruling, potential HCP applicants are concerned that entering into discussions with the Service or NMFS regarding an HCP will result in their ongoing activities being halted. This type of response from the private sector may have a negative effect on the development of some HCPs, so the Service and NMFS recognized the need to clarify how section 7(d) and the HCP process should interface.

The Service disagrees with a suggestion raised at the October 19 hearing before the Subcommittee that section 7 consultations should not be conducted on HCPs. We support continuing to conduct section 7 review of HCPs because it fulfills two important roles: (1) it provides for review by other Service biologists not involved in the development of the HCP to ensure that the taking will not appreciably reduce the likelihood of the survival and recovery of the covered species in the wild; and (2) it ensures that the HCP will not result in jeopardy or adverse modification of critical habitat for other listed species that are not the target of, or covered by the plan.

In some cases reinitiation of consultation may be required. I want to clarify that reinitiation of consultation or any meaningful reexamination of the HCP does not nullify the No Surprises assurances attached to an incidental take permit. The Service and NMFS will not require the landowner to provide additional mitigation measures in the form of additional land, water, or money if they are properly implementing their HCP. However, additional mitigation measures can be provided by another entity. Similarly, the No Surprises rule does not preclude the Service or NMFS from shifting emphasis within an HCP's operating conservation program from one strategy to another in an effort to enhance an HCP's overall effectiveness, provided that such a shift does not increase the permittee's costs. Moreover, if the Service or NMFS reinitiates consultation on the permitting action, and if additional measures are needed, we will work together with other Federal, State, and local agencies, Tribal governments, conservation groups, and private entities to ensure additional measures are implemented to conserve the species.

Our commitment to the HCP program was affirmed earlier this year by the Secretaries of Interior and Commerce in a memorandum directing both the Service and NMFS to make the HCP program work for both species and landowners. We will continue to advance the Administration's commitment to forging ESA partnerships through HCPs, by adhering to the following principles:

Timeliness.—We must demonstrate that HCPs can, and will, be developed and processed efficiently and without undue delay by working with applicants at the outset of the process to establish and implement an agreed upon work plan and joint time line for developing each HCP.

Credibility.—We expect applicants to bring meaningful proposals to the table and to deal with Federal officials in good faith. For each HCP, we will abide by the commitments and agreements made throughout the development process and not revisit old issues once agreement has been reached. If ongoing and new information is expected to emerge during the negotiation process, the agency officials must explain this at the outset and discuss the effect the information could have on the process.

Coordination.—The Service and NMFS will coordinate their efforts whenever possible. Interagency teams must ensure that all involved players on the Federal side coordinate their review efforts and assert consistent positions.

*Efficiency.*Agency officials need to coordinate and process each HCP application without undue delay or cost and ensure that the information being requested of the applicant is truly necessary to the process. Efficiency is important at all phases of

HCP development. However, the agencies must continue to ensure that the quality of HCPs is paramount.

Creativity.—In the past, both the Service and NMFS have demonstrated creative and flexible approaches in assisting landowners to develop HCPs that fit the unique circumstances presented. Agency officials are encouraged to retain this approach and view each HCP with a commitment to the type of innovative thinking that has proven successful.

Commitment to Success of Permits and HCPs.—The creativity required for development of HCPs must also be applied to the implementation of the permit. The Service and NMFS remain committed to the success of each and every incidental take permit issued.

Sound Science.—The foundation of the HCP program is sound science. In reviewing proposed HCPs, the Service and NMFS must ensure that the best available science is taken into account and exchanged with the applicant.

Public Participation.—The draft Five-Point Policy Initiative calls for increased public participation in the HCP process by extending the public comment period of most HCPs and reaffirming the Service and NMFS' commitment to encouraging public notification and involvement. We appreciate that this commitment increases the complexity of the HCP process, but expanding our public outreach will advance support for our HCP program.

Communication.—Applicants look to the Service and NMFS to provide leadership in HCP negotiations in the form of forthright, explicit guidance. Effective communication by the agencies does not overshadow efficiency and the use of sound science, but facilitates the HCP process and improves the agencies' credibility.

The challenges to accomplishing the goals of the ESA are constantly growing. The Federal Government's response must rise to this task. The points presented in the Secretaries' memorandum represent the direction for the Service and NMFS to meet the challenges of promoting cooperative partnerships to advance the goals of the ESA through this innovative and critically important program. The Service is making a concerted effort to advance these goals.

DELIVERING A HIGH-QUALITY HCP PROGRAM REQUIRES ADEQUATE FUNDING AND STAFFING

Applicants look to the Service to provide leadership, and, therefore, the success of the HCP program is contingent upon the Service being thoroughly involved in the development, implementation, and monitoring of these plans. An essential element in delivering an effective HCP program is our ability to hire and train qualified staff to meet the increasing workload associated with monitoring existing HCPs and assisting applicants in the development of new plans. However, while trying to deliver our commitments to the HCP program and to respond to this increased workload, the Endangered Species Program's budget for consultation and HCPs experienced a decrease in fiscal year 1996 and only modest increases in fiscal years 1997, 1998 and 1999. For example, in FY 1999, we requested $36.5 million for consultation and habitat conservation planning but were appropriated only $27.2 million. Similarly, for FY 2000 we requested $37.4 million but the recent House-Senate conference report provides less than $31 million after subtracting new earmarks and uncontrollables.

Funding at the levels requested by the President is essential to the continued success of the HCP program. Because of the increasing demand for HCPs and the increasing complexity of the program, our HCP biologists are pushed to their limits. We are finding it increasingly difficult to recruit qualified staff and to retain our experienced workers. The consequence of this is less than desirable levels of service, as reflected in some of the testimony this committee heard two weeks ago. In addition, the demand will continue to grow for the Service to provide adequate monitoring and adaptive management, as we approve more and more HCPs. It is important that we have adequate staff and funding to be able to fulfill these responsibilities.

As you heard in the previous hearing, smaller governments and operators often do not have the staff to support the planning and coordination necessary to develop HCPs. For instance, Foster Creek Conservation District is coordinating the development of an HCP with wheat farmers in Douglas County, Washington. These farmers are enthusiastic about proactively planning for the protection of wildlife in their County while receiving assurances for their farming activities. However, it has been difficult for them to find the planning resources necessary to develop a regional, multispecies plan. Similarly, small timber operators in Lewis County, Washington also wish to develop a regional, multispecies plan so that they can receive the same benefits as large timber corporations. Smaller, less wealthy counties, such as Laramie County, Wyoming, are hesitant to embark on regional HCPs because of the de-

mands placed on their existing planning staff. The Service is devoted to assisting these communities in the development of their plans. The President's FY 2000 budget request of $10 million to support HCP development grants within the Land Legacy Initiative would provide the financial assistance necessary to launch community-based, landscape-level, multispecies plans that would benefit the small landowners within these communities. However, this request was zeroed out in both the House and Senate.

The President also requested $26 million in FY 2000, as part of his Lands Legacy Initiative, to support HCP Land Acquisition grants that could be used by States to support approved HCPs. This popular program is a significant tool in our toolbox and provides tangible assistance to HCP permittees and the species that are covered by the plans. The demand for this program has rapidly grown during the program's three years of existence. In FY 1997 we requested, and received, $6 million. For FY 2000, the President's Budget requested $26 million, unfortunately, the House-Senate conference provided only $8 million.

CONCLUSION

The Service is implementing an HCP program that empowers the applicants to integrate endangered species conservation into their activities while using the best available science and approaches. I am proud of the ideas and the hard work that has strengthened the HCP program, but remain concerned about the escalating workload without significant increases in resources. In facing the challenge of managing the HCP program, we will continue to enlist the support of others in the HCP process, including environmental and scientific communities, state, local and tribal governments, landowners, and other stakeholders. In doing so, we will enrich species conservation and accommodate economic development. All of us involved in species conservation must continue to look for new and better ways to improve the HCP program.

Finally, I cannot emphasize enough the importance of funding the HCP/Consultation program as requested in the President's budget. The increasing demand for development of new plans, combined with the needs associated with implementing and monitoring the approved plans, is seriously straining our ability to provide the high-quality customer service that the American people deserve.

Mr. Chairman, this concludes my testimony. I would be happy to answer any questions that the Subcommittee may have.

STATEMENT OF DON KNOWLES, NATIONAL MARINE FISHERIES SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE

Mr. Chairman, my name is Don Knowles and I am Director of the Office of Protected Resources in the National Marine Fisheries Service, an agency of the National Oceanic and Atmospheric Administration (NOAA). Thank you for the opportunity to testify on our program for approving Habitat Conservation Plans (HCPs) submitted to our agency in application for an incidental take permit under the Endangered Species Act (ESA), as well as some of our concerns.

THE IMPORTANCE OF HCPS IN SPECIES CONSERVATION

I have been in my position for about six weeks. The perspective I bring is, maybe, a fresh one because while I have been aware of the HCP program peripherally for a few years, I have not worked on it on a day-to-day basis until now. My observation is that this Administration has breathed life into language that sat mostly unused on the books since 1982.

The HCP program allows landowners, states, Tribes, and others to take the initiative and submit proposals. It encourages local, inventive approaches to balance the needs of species with the goals of private citizens. It offers landowners something of value (an incidental take permit) in exchange for providing something of value (long-term conservation benefits). It is new enough that improvements are still possible. It does not compel private citizens to do anything unless they want an incidental take permit. The voluntary nature of the program ensures that landowners who want to can work with the Services to improve the certainty the landowners need.

We cannot provide for biological diversity, or even species conservation, on Federal lands alone. The General Accounting Office estimates that over 70 percent of species listed under the ESA have over 60 percent of their habitat on private or other non-Federal lands. Over 35 percent of these listed species are totally dependent on these lands for their habitat. Incidental take permits under section 10 (a)(1)(B) of the ESA are one of the vehicles currently available that provide incen-

tives for non-Federal landowners to protect listed species on these lands. With the benefits provided by the Federal government's HCP program, landowners are provided an incentive to commit land and resources to better species protection and recovery. The only alternative would be to enforce the ESA "taking" prohibition on individual properties.

If the goals of the ESA are to be achieved, it is widely accepted that HCPs will play a pivotal role. The National Academy of Sciences view HCPs as a vehicle for achieving a regional conservation approach which is more consistent with the principles of conservation biology than a project-by-project or species-by-species approach.

NOAA is responsible for over 50 species listed under the ESA, including marine mammals, sea turtles, plants, salmon and other fish. It is my belief that we can meet the challenge of recovering these species only when we cooperate with non-Federal landowners such as states, Tribes, counties, and private entities to do this important job.

For example, we have the enormous challenge of ensuring the survival and recovery of salmon across an area of land and water that spans the Pacific coastline from the Canadian border to Los Angeles. The highly migratory nature of Pacific salmon places them in many areas in numerous states, impacting large numbers of stakeholders, many of whom are private citizens who hold large tracts of land valued as commercial property as well as salmon habitat.

The long-term management of habitat, such as that done through most HCPs with non-Federal landowners, has proven to be one of the most effective means of conserving species. HCPs are a popular tool for both the private property owner and NMFS. We have issued permits associated with HCPs for 2 large-scale projects in Washington and California that cover almost 3 million acres. We have issued 10 incidental take permits associated with low-effect projects such as state fish hatcheries, and we are a party to 5 Implementing Agreements for HCPs. We are currently negotiating about 35 additional HCPs in the Pacific Northwest and California. So far, all of the large-scale HCPs developed by applicants involve Pacific salmonids.

To meet the challenge of processing HCPs and their accompanying permits and agreements, NMFS has issued joint guidance with the FWS on how to assist applicants in developing HCPs. Our HCP handbook describes the information applicants need to submit for us to evaluate whether these plans will be effective and accomplish their goal of minimizing and mitigating, to the maximum extent practicable, the effects of taking threatened and endangered species. The Services assist the applicant in exploring alternatives, and we try to be flexible when prescribing mitigation measures.

We work with applicants to ensure that their HCP meets the criteria specified under the statute and our regulations. However, we tailor each one to fit the biological needs of the species as well as to accommodate the landowner's special requirements. For example, if an applicant provides an unusual, but scientifically credible analysis of effects, or a creative but effective solution for mitigating the effects of incidental taking, we seriously consider that approach.

Our 5-point policy addition to the HCP handbook, which is in final preparation with the U.S. Fish and Wildlife Service, reflects the experience gained by the Services over the past few years during the tremendous growth of the HCP program. The 5-point guidance covers biological goals, adaptive management, monitoring, permit duration and public participation.

One of the important aspects of this policy is adaptive management which is an essential component of HCPs when there is significant uncertainty or an information gap that poses a significant risk to the species. Rather than delay the process while sufficient information is gathered to predict the outcome accurately, the Services and applicants jointly develop an adaptive management strategy, aimed at assuring all parties of a suitable outcome. For example, a cautious management strategy could be implemented initially, and through exploration of alternate strategies with an appropriate monitoring program and feedback, the permitter could demonstrate that a more relaxed management strategy is appropriate.

Flexible implementation of the ESA has become the hallmark of this Administration's efforts to conserve species, and it is evidenced no where more emphatically than in the HCP program.

SCIENCE

At the hearing in July, NOAA testified about the role of science in the development of HCPs. I would like to emphasize that the ESA requires the Services to use the best available information in making its determinations, including all HCP permit decisions. This means that our agency is legally required to utilize the best

available science—data, analysis, models, and synthesis. NMFS spends a significant portion of its budget on ensuring that our scientists stay up-to-date in their respective fields, and use state-of-the-art analytical techniques and methods to assess and understand the species and ecosystems to be managed under HCPs. In fiscal year 1999, NMFS spent about one-third of its salmon budget on science.

It is not a simple matter to manage areas, particularly when this management includes significant human alterations from resource extraction to infrastructure human alterations development. While we are comfortable that we have solid, reliable, quantitative information on the temperature, water flow, fish passage, and water quality needs of salmon, there are other aspects of ecosystem processes and functions that will determine the long-term success or failure of ecosystem and endangered species management. Some of these are only beginning to be understood. Our knowledge of nutrient cycling, food chain dynamics, biodiversity, population genetics, and climate change is at an emerging stage, and few practical tools and methodologies have emerged to date.

We recognize this uncertainty in the documents we issue in association with HCPs. Therefore, we design our permits and agreements to manage biological risks. Where we have solid, quantitative information, such as the temperature needs of juvenile salmon, we can set specific, quantitative temperature targets that the management regime must achieve. In areas where the science is less developed, HCPs typically include more qualitative goals, such as a multi-tiered forest canopy with a diverse age structure or maintenance of insect prey biodiversity. Because we are at the limits of our scientific capability and knowledge for some species, extensive monitoring and adaptive management strategies are essential. If the applicant and the Services do a good job of monitoring, and if adaptive management has been provided for in an HCP, our successes and failures can be applied in the future implementation of this HCP and others.

HIGHLIGHT OF CURRENT HCPS COMPLETED AND IN PROGRESS

At this time, I would like to discuss some of completed HCPs and those that are in progress.

The pace of implementation of the Pacific Lumber (PALCO) HCP in northern California, issued in February 1999 by NMFS and FWS, is picking up. Federal and state agencies, as well as PALCO, are hiring multiple staff to assist with review of timber harvest plans and formalizing watershed analysis and monitoring programs. The foundation of this plan rests upon watershed analysis, which is the process used to tailor site-specific prescriptions to conserve salmon on a watershed by watershed basis.

The Mid-Columbia River draft HCP now under development is an excellent example of how NMFS is using performance-based goals in addition to prescriptive measures. This HCP focuses on improving survival of salmon migration through the Mid-Columbia segment of the Columbia River near Wenatchee, Washington. Historical fish losses at the Mid-Columbia dams have been significant—an average 15 percent loss of juvenile salmon per dam. The goal of the HCP is no net impact to salmon from the three hydro-electric dams and associated reservoirs operated by two Public Utility Districts (PUDs), Douglas County PUD and Chelan County PUD. Specific methods to attain the 91 percent project survival target are not described, but are left to the project operators for the first five years of the HCP, after which it will be a joint process with the PUDs, NMFS, and FWS.

NMFS is also working with FWS on implementation of a multi-species HCP associated with a permit issued to the Washington Department of Natural Resources. The HCP covers over a million acres of state-owned forest lands west of the Cascades. NMFS recently added 5 species of anadromous fish to the permit.

CHALLENGES AHEAD

We recognize the need to strengthen both our management and scientific programs in support of HCPs. In my short time in my current position, it is readily apparent that of the funding set out in the Administration's request, this new, innovative and creative locally-driven program is not receiving what is necessary for future success. It seems particularly obvious that land-owner's complaints about our lack of timeliness, staff turnover, lack of follow through on monitoring and other concerns will continue as a direct result of inadequate support of the Administration's budget requests.

For example, in FY 1999, NMFS spent about $23 million to foster the recovery of Pacific salmonids. This included recovery planning, section 7 consultations, and HCP development. The NMFS FY 2000 ESA salmon recovery budget initiative re-

quests $24.7 million in new funding to strengthen our management and scientific capabilities.

Without these increased resources, the pace and scope of HCP development will be greatly constrained.

CONCLUSION

Our HCP program has as well as Federal agencies; however, it is still a work in progress. HCPs are one of the major actions we are taking to meet the challenge of recovering salmon and other endangered and threatened species. While HCPs may not be the perfect vehicle for landowners, they are certainly more constructive than any previous approach to working with non-Federal partners to protect listed species.

Mr. Chairman, thank you for this opportunity to testify. I look forward to answering any questions.

STATEMENT OF JIMMY S. CHRISTENSON, WISCONSIN DEPARTMENT OF NATURAL RESOURCES

INTRODUCTION

Thank you for the opportunity to appear before you today. I am testifying on behalf of the Wisconsin Department of Natural Resources (WDNR). The focus of my testimony is the process by which state agencies and public and private landowners can achieve limited immunity against the "take" of an endangered or threatened species while applying conservation measures to lands through their ongoing management and use. My experience, and that of the agency I represent, is based on the recently completed Habitat Conservation Plan (HCP) for the Karner blue butterfly. An incidental take permit was issued in September, 1999. That HCP/EIS may be viewed at *http://www.dnr.state.wi.us/org/land/er/publications/karner.*

The Karner blue butterfly (KBB) HCP is a statewide conservation plan. The WDNR applied for the incidental take permit in collaboration with 25 other private and public partners. Their resource management strategy is to assure the long-term sustainability of KBB habitat and the persistence of KBB on the Wisconsin landscape. The partners include:

Industrial Forest Companies

Consolidated Papers, Inc.
Georgia-Pacific Corp.
Johnson Timber Co.
Thilmany-International Papers
Wausau-Mosinee Paper Corp.
Wisconsin River Power Co.

Wisconsin State Agencies

Department of Agriculture, Trade and Consumer Protection
Department of Natural Resources
Department of Transportation

Utilities

Alliant
ANR Pipeline Co.
Lakehead Pipe Line Co.
Northern States Power Co.
NW Wisconsin Electric Co.
Polk-Burnett Electric Co-op
Wisconsin Gas Co.
Wisconsin Public Service Corp.

County Forests

Burnett County
Clark County
Eau Claire County
Jackson County
Juneau County
Monroe County
Washburn County
Wood County

Non-Profit Conservation Organization

The Nature Conservancy

In addition to the partners, development of the HCP relied heavily on people representing various associations and organizations. These organizations have contributed extensive and continuous time and effort to the process and include groups such as the Sierra Club, the Wisconsin Audubon Council, the Wisconsin Woodland Owners Association, and the Wisconsin Paper Council.

The conservation plan is built on individual plans and strategies committed to by partners through a separate Species and Habitat Conservation Agreement entered into between the partner and the WDNR, who is the Permittee. The WDNR developed the same type of conservation strategies for its lands and efforts and included them in its Implementation Agreement it entered into with the U.S. Fish and Wildlife Service (USFWS).

This innovative approach to endangered resources conservation is designed to move industry and the regulated community beyond compliance and into efforts to proactively apply conservation measures on the land. After all, Congress, in establishing the incidental take permit (ITP) provision of the ESA, expressed the hope that it would encourage creative partnerships between the public and private sectors and among governmental agencies in the interest of species and habitat conservation and provide a framework to permit cooperation between the public and private sectors. Those goals are achieved, in my opinion, in the KBB HCP and arise out of a solid and diverse grassroots effort in Wisconsin.

The KBB is dependent on continuous disturbance regimes or management programs designed to assure that the habitat is not lost because of the natural succession of competing vegetation. The HCP, with its biological approach, focuses on geographic areas and activities which provide the highest potential to safeguard or enhance KBB habitat. The participation strategy seeks to reach all landowners and users, but will vary in approach and process. It is an effort designed to gain and incorporate the support of landowners and land users throughout Wisconsin. It identifies which landowners or land users are required to apply to the WDNR for inclusion and obtain a Certificate of Inclusion from the USFWS. It also identifies landowners and land users which are covered by the Permit and do not need additional process for coverage. Those landowners or users needing a Certificate of Inclusion include larger forest land owners; those involved with the development or maintenance of corridors, such as utilities or highway development and maintenance entities; and those involved in activities that will permanently destroy habitat, such as construction of buildings, parking lots, etc. Landowners or land users not requiring further process for coverage will be subject to extensive public outreach, education and assistance efforts to gain their voluntary support of and participation in this conservation effort.

The KBB HCP, in addition to its participation strategy, is built upon a sound scientific and biological foundation, a strong public participation process, a sound monitoring plan, a commitment to adaptive management, a reasonable funding plan, and a review process to assure the goals of the HCP are being achieved.

The WDNR also prepared, with appropriate review by the USFWS, the EIS on the HCP for purposes of compliance with the Wisconsin Environmental Policy Act (WEPA) and the National Environmental Policy Act (NEPA). The USFWS provided funding for printing and dissemination of the HCP/EIS and coordinated public comment on it.

THE HCP PROCESS AND VALUE TO WISCONSIN'S KBB HCP

The collaborative HCP for the KBB is a demonstration that the HCP process can offer to private and public landowners and users the opportunity to proactively conserve a species while engaging in ongoing land management and use.

The KBB HCP is innovative and flexible and is consistent with the Endangered Species Act (ESA) in moving the focus away from the small land parcel to a broader statewide approach. The finite resources available, including funding, to state and federal agencies to develop and implement conservation plans do not lend themselves to an individual landowner or user approach.

The USFWS staff at the Regional and Green Bay Field Offices were cooperative in accepting this innovative approach and worked responsibly in their assistance and review of the HCP.

PROBLEMS WITH AND SOLUTIONS TO THE HCP PROCESS

Length of Process

The Wisconsin KBB HCP took 5 years to develop. A great deal of that time was spent on public participation and creating trust between the partners and participants. The trust relationship is extremely difficult to build between federal and state agencies, its regulated communities, and other public and private competitors and land managers. We were fortunate that the USFWS staff were responsive. However, their limited staff resources required that the partnership work to keep the KBB HCP on USFWS staff's priority list. Without that pursuit of priority treatment, I am confident that a minimum of one year could have been added to the process. The enthusiasm of conservation partners and cooperators will die, or at least diminish, during extensive delays. We witnessed this dynamic in the KBB HCP.

The process time for HCP's can be reduced if USFWS staff are able to give priority time and assistance to the process. It appears that staff reluctance and caution in putting the final stamp of approval on an HCP and incidental permit application is a contributor to the already lengthy process. Case by case treatment to each HCP process, adequate federal agency staff availability, and a vision of flexibility and creativity should reduce the length of time necessary to complete an HCP.

Partnerships Rather Than Command and Control

All too frequently progress on HCPs may be hampered by the USFWS' feeling that administering the ESA and HCPs process they must be a command and control process. Some view this approach as a "preservation" mode rather than one of proactive conservation.

Conservation of endangered and threatened species must be applied on private lands. Regulatory protection for the species do not and cannot proactively address the needs of the species and their habitat. Collaborative approaches to conservation involving partnerships between public and private agencies, landowners, and users can.

State conservation agencies can be a valuable, and sometimes essential element in a successful HCP or conservation plan. State agencies can bring valuable assets to the plan. Those assets may include biological and scientific expertise, knowledge of state flora and fauna they manage and protect, facilitation skills, and possible long-term administration of a conservation plan. However, for state agencies, or other public agencies, some funding is needed. State agencies recognize this. Currently, the International Association of Fish and Wildlife Agencies, through Pat Graham, Chair of its Threatened and Endangered Species Committee, is considering how state conservation agencies can or should be involved in or further multi-state and multi-species conservation plans.

Opportunities that may be presented by agencies, entities, and individuals must be captured. Capturing the opportunities will likely require significant time and effort being spent with the landowner or user, whether in the board room or across the kitchen table. This attention is needed to gain their trust and, ultimately, success.

Funding

In the case of the Wisconsin KBB, funding beyond the resources of the WDNR, and not available from the other partners, was needed. Activities such as research and the development of a scientific monitoring strategy were funded with assistance from the National Fish and Wildlife Foundation. The printing and dissemination of the HCP/EIS, although drafted by the WDNR, was funded by the USFWS. This type of funding to facilitate development of an HCP and conservation effort is likely to be needed for development and implementation of an HCP and is a very good investment in proactive conservation that cannot be achieved by the USFWS alone. The need for funding may be alleviated or reduced by in-kind contribution of expertise and application of conservation strategies on the land. Conservation plans that interfere with land management and use threaten the landowners and often result in outcries of regulatory takings or interference with their investment. Conservation plans that are built upon, and are consistent with, land management and use offer long-term stewardship in favor of the species.

The Wisconsin HCP builds its plan on long-term private land cooperation. Millions of dollars worth of in-kind services have and will be directed to this conservation plan. Few dollars will be spent out-of-pocket by the partners. The history of expenditure of significant dollars for consultants and other services common to limited development projects need not be the template for landscape HCPs in the future.

Flexibility and Creativity

The USFWS or other federal agency administering the ESA must recognize that a "one-size-fits-all" strategy is not reasonable for rare and unique species conservation. HCPs address natural systems. Such systems are dynamic. They are species driven. As such, an HCP must address not only the pertinent species but the opportunities that may be present to apply to the conservation effort. The vision of federal agencies administering the ESA, therefore, must be flexible and creative enough to capture the opportunities in each conservation plan. What seemed to have worked in another setting or with another species may be totally inappropriate for the species being addressed in a new effort.

The development of Handbooks and other guidelines, and implied requirements that they be followed, can work a severe disservice to conservation. A vision of flexibility, creativity, and partnership to scientifically address conservation is more appropriate. Strict adherence to "guidelines" by federal staff is an interpretation or application that must be challenged. Guidelines like the Handbooks are just that, guidelines.

Focus on Conservation Not Recovery

Our goal as conservation agencies is to recover species. That is true success. However, federal agencies administering the HCP provisions must be cautious in its zeal to address recovery by forcing recovery activities in an HCP. Recovery is the responsibility of the federal agencies. Although a conservation effort under an HCP may not interfere with recovery of a species under the law, nonfederal participants collaborating on it are not responsible for recovery. Federal agency staff have implied that an HCP not including recovery efforts might be inadequate.

Federal agencies administering the provisions of the ESA respecting HCPs should make very clear the role of the HCP in recovery and explain to the participants the pertinent recovery goals and how they may be reached. Landowners may voluntarily commit to recovery efforts. They more likely will not participate in recovery efforts if pressed to engage in them under threat that an HCP will not be approved. The opportunity to recover and delist a species is incentive enough for many to participate in recovery. Again, the availability of federal funding for voluntary recovery or restoration efforts is necessary to gain the support of willing landowners without resources, or a willingness, to lend to them to recovery activities.

SUMMARY

Success in proactive conservation of endangered and threatened species depends on partnerships between agencies and public or private landowners. They have the potential to be far more successful if conservation strategies are consistent with ongoing management and use objectives of landowners. Landowners may then become natural stewards of the lands by applying long-term conservation efforts for the species. Partnerships are difficult to establish. They require commitment of all concerned and often require an extensive commitment on behalf of federal and state agency staff to make them work.

Thank you for the opportunity to testify. Although I was asked to discuss problems and solutions respecting habitat conservation planning, our experience with the KBB HCP process was and remains very positive. The HCP process may continue to be a valuable and very important process to achieve the cooperation of private landowners and the application of conservation measures to their land. Their bottom lines, whether they be related to a business venture or an individual's investment in the land, must be recognized. Proposed conservation efforts will be jeopardized if they significantly interfere with landowner objectives. Our challenge as conservation agencies is our commitment to obtaining mutually satisfactory stewardship plans that will benefit the species and be acceptable to private landowners.

TESTIMONY OF DAVID DONNELLY, DEPUTY GENERAL MANAGER, SOUTHERN NEVADA WATER AUTHORITY

INTRODUCTION

Mr. Chairman, my name is David Donnelly, and I am the Deputy General Manager, of the Southern Nevada Water Authority. The State of Nevada is a member and supporter of the Lower Colorado River Multiple Species Conservation Program (MSCP). The MSCP is an innovative and forward-looking approach to conservation management. We are attempting to find the balance that the stakeholders believe lies between the needs of species and the needs of the millions of residents of the southwest United States. The stakeholder participants have invested substantial

funding and a great deal of time to put active conservation to work in this region because we recognize the need to protect species and people too.

The scope of this project and the needs that this project addresses are sometimes difficult to conceive. The Lower Colorado River provides over nine million acre feet of water to the Southwest United States. Over 1.8 million acres of agricultural land is irrigated with this water resource. 12 billion kilowatt hours are generated from its flow. 22 million people get their daily drinking water from the Lower Colorado River. Billions of dollars in recreational benefits are derived from this river that is the lifeblood of the desert southwest. And while we are trying to satisfy all of those need, we are also trying to find the balance that helps restore the ecosystem of the river.

For many years, in this Committee's hearings and in bills reported out of Committee related to species and habitat conservation, you have endorsed public/private partnerships in the preservation of habitat for species. This Committee has worked tirelessly to encourage worthwhile Federal/State and local habitat conservation efforts. We believe that the MSCP is just such an effort. We wanted to take this opportunity to familiarize you with our project and to ask that this Committee, and this Congress, work with us to make an ambitious dream of habitat conservation a reality.

THE LOWER COLORADO RIVER MULTI-SPECIES CONSERVATION PLAN

On August 2, 1995, the United States and the States of Nevada, Arizona and California entered into a historic agreement to develop a Lower Colorado River Multi-Species Conservation Program. The intent of the MSCP is to conserve habitat and work toward the recovery of species included in the plan within the Lower Colorado River floodplain pursuant to the Endangered Species Act (ESA). The parties agreed to work together to reduce the likelihood of additional species listings under the ESA while at the same time accommodating the current water diversions, power production and optimizing opportunities for future water and power development.

The MSCP participants include the water, power and fish and game agencies of the states of Nevada, Arizona and California; the United States Department of Interior; Native American Tribes; local governments and other stakeholders. The geographic area of the MSCP encompasses the mainstem of the Colorado River below the Glen Canyon Dam to the southerly international boundary, including the 100-year flood plain. (A more complete list of MSCP participants can be found in Appendix A to this statement.)

The MSCP is directed through the Program Steering Committee. The Steering Committee is composed of federal, state, local, tribal and private governments and corporations which operate on a consensus based approach to joint decision-making. The parties agreed to pursue an ecosystem-based approach in developing the MSCP for interim and long-term compliance with applicable endangered species and environmental laws and to implement conservation and protection measures for included species and habitats.

THE CONSERVATION CHALLENGE

The Lower Colorado River habitat is diverse and extensive. The focus of the MSCP is to move threatened and endangered species toward recovery and to prevent the future listing of "at risk" species. More than 50 Federal-or state-listed, candidate and sensitive species and their associated habitats, ranging from aquatic, wetland and riparian habitats to upland areas, will be addressed. (See Appendix B for a list of species). Even though the federal government has a significant role in the river, the states of the lower basin all retain trust responsibility for fish and wildlife resources within each of the respective states.

The extent and complexity of this task is complicated by the fact that while a great deal is known about several of the listed species in the MSCP area, there is little information about a number of other species that would benefit from the MSCP. Consider for a moment the plight of the southwestern willow flycatcher and the opportunities such a program could have on its future. Historically, the range of the southwestern willow flycatcher included all of the American Southwest, from Western Texas to Southern California. Until recently, the southwestern willow flycatcher was thought to be extirpated as a breeding species along the lower reaches of the Colorado River. All breeding populations of southwestern willow flycatchers are considered regionally significant. The total number of remaining flycatchers is estimated at approximately 300–500 pairs. The threats to the flycatcher remain and the declines are continuing. The factors responsible for the decline of the southwestern willow flycatcher in the United States include the loss

and degradation of native riparian habitats, parasitism by brown-headed cowbirds, increased predation and other threats.

Prior to formulating management needs for this species, surveys of potential habitat to determine population status and life history studies are needed. However, so far these studies have been unfunded. Parenthetically we should state that, like the Pacific Northwest salmon, no matter how much we do to conserve, protect and restore the ecosystems in the United States, there are critical elements of flycatcher recovery which are outside of the United States. Progressive deforestation and development in Central and South America is destroying winter habitat for the flycatcher and Congress needs to be aware that we can spend untold millions of dollars to restore breeding habitat for a species that is being extirpated outside our boundaries.

We can only make educated guesses about their habitat needs and their place in the biological diversity that makes up the Lower Colorado River ecosystem. Additionally, habitat restoration technology is generally in an early stage of development. In order to fill in the gaps in our present knowledge we must develop a program that can integrate adaptive management techniques into active conservation measures. By doing this we can approach active conservation as a scientific experiment with a clear statement of expected outcome; carefully designed controls and MSCP monitoring that will permit scientific analysis of process and results. As data is collected and analyzed, the new information is then used to modify elements of the project in order to test and utilize the new information.

THE PLAN APPROACH

The MSCP will develop two classes of species: priority species—those that are federally or state listed threatened or endangered species and indicator or "planning species"—those that are prevalent in the general vicinity or in a particular microhabitat.

Priority species in this group will effectively "drive" the planning process and development of conservation alternatives. Species in this group are a priority for receiving incidental take permits and will be analyzed individually, with consideration of species-specific locations and species-specific management and monitoring measures, to determine if federal and state standards for issuing take permits are met by the plan. Species in this group meet all *three* of the following criteria:

1. The species is federally or state listed, proposed for listing or a candidate for listing or has a high likelihood of being listed during the planning horizon of the MSCP.
2. The species has regionally significant populations in the study area that is dependent on the resources in the study area.
3. The species or subspecies is likely to be affected by the MSCP.

Planning species are indicators of very specific habitat types or micro-habitats and will require species-specific or site-specific conservation, management, and monitoring actions. Thus, these species will be considered in ensuring a truly ecosystem-based conservation effort. Like the priority species, these species will be analyzed for coverage under the plan, based on adequate conservation and management of species-specific locations or of locations having appropriate microhabitats. Species in this group may be listed or not listed.

The MSCP will use information on habitat requirements and limiting factors from the species to focus scientifically based planning and management decisions. These planning and management decisions will pursue the biological objectives for each species. The MSCP will protect, conserve, and enhance all priority and planning species and, in particular, work toward recovery of listed species and attempt to reduce the likelihood of additional species listings under the Endangered Species Act.

Our preliminary goals for species are based on reasonable assumptions, extrapolated from our knowledge of other similar species. As part of the planning process, alternative conservation strategies will be evaluated based on a number of factors, including level of conservation, available opportunities, cost, feasibility, impacts on land and water use and other resources, and overall plan objectives.

CONSERVATION EQUITY

Mr. Chairman, I know that you, perhaps better than any member of Congress, are aware of the character of water development and delivery in the Western United States. In the West, we have a mix of federal, state and private development of water resources, which sometimes results in a substantial inequity among users on the river. This is particularly true along the lower Colorado River. The Secretary of Interior is the "watermaster" for the lower Colorado River and the federal government has significant holdings and trust responsibilities along the river. For some

water users who receive water from a conveyance with a federal nexus, the "classic" HCP certainty that exists in Section 10 of the Act does not exist for them. These water users, sometimes with identical needs, identical commitments to habitat conservation and identical financial commitments as their neighbors do not receive section 10 "no surprises", but, rather, the continuing uncertainty of a section 7 consultation for the Bureau of Reclamation.

We believe that a theory of "conservation equity" should be developed. "Conservation equity" would assure that same level of certainty available to some private property owners under section 10 of the ESA would be shared by western water users who rely on a water conveyance with a federal nexus and therefore exposed to the uncertainty of continuing consultation under Section 7 of the Act.

PUBLIC INFORMATION

Because of our commitment to keeping the public informed, in July of this year the Steering Committee published a public information plan (PIP). The goals of the PIP are to:

(1) Develop a program to provide information to the public about the MSCP and its potential impacts on the physical, biological, and social environment.

(2) Establish a framework to provide meaningful opportunities for the public, Native Americans, and appropriate agencies to identify and discuss potential issues that affect them.

(3) Identify key issues that must be addressed in the environmental review process.

(4) Provide access for all interested and affected parties, groups, and agencies.

(5) Provide forums for the solicitation and exchange of ideas and divergent views.

(6) Actively engage interested parties in the development and evaluation of proposed conservation measures and Lower Colorado River MSCP alternatives, including alternative formulation criteria.

(7) Develop a public involvement process that is visible to and understood by interested or affected parties.

This preliminary PIP has been developed with input from the joint Federal lead agencies and the other stakeholders. This PIP is intended to address public outreach during each phase of the process. The PIP will be reviewed during each phase to ensure that the intent and goals of the PIP are being met and that the needs of the public and affected agencies are being addressed.

CONSERVATION OPPORTUNITIES

We have identified 22 potential conservation areas within the Lower Colorado River western river corridor as an inventory of sites. From these, we will select core conservation areas to serve as initial habitat conservation research sites for priority and endemic species.

We intend these core areas to be developed as adaptive management conservation sites under a conservation plan. The MSCP will identify and select the core areas that will serve as living research laboratories on which to apply adaptive management techniques that will best serve to develop data on habitat conservation, improvement, development, restoration and maintenance.

The MSCP will focus on developing critically needed habitat for priority and a range of sensitive species, including backwaters, marsh, riparian and mesquite habitats to recreate and restore historic ecosystem function to theses sites and to test or research other habitat conservation and restoration technologies or methodologies. The MSCP shall identify the most appropriate habitat restoration technologies and methodologies for implementation through a Lower Colorado River conservation plan.

CONGRESSIONAL ACTION

Unfortunately, as you can appreciate, the development and coordination of the MSCP for the Lower Colorado River is a major undertaking. As with any such undertaking, it is important that the stakeholders remain committed to the program. Considering the uncertainty over the efficacy of the HCP effort in the ESA, maintaining this commitment is all the more important. The level of support from federal sources, particularly the Bureau of Reclamation, has been severely lacking. We need Congress's support for this ecosystem based approach between the parties. We need Congress's endorsement of the cooperative partnership between the United States and the States, Tribal and local governments and the participation of the private and public sectors in developing and supporting the MSCP.

Authorizing statutory language, to ratify the ecosystem-based approach agreed to between the parties with sufficient assurances to provide the resource users of the

Lower Colorado certainty, is needed. Federal participation in the MSCP must be funded. Together we can protect the habitat and develop the resources of the Lower Colorado River benefiting both the species at risk and the citizens who rely on that resource.

Mr. Chairman, thank you for the opportunity to bring the Lower Colorado River Multi-Species Conservation Plan to the attention of the Committee. Clearly, we are a solution in search of a partner.

APPENDIX A

LOWER COLORADO RIVER MULTI-SPECIES CONSERVATION PROGRAM PROGRAM MEMBER AGENCIES

U.S. Department of Interior

U.S. Bureau of Reclamation
U.S. Fish and Wildlife Service
Bureau of Land Management
Bureau of Indian Affairs
National Park Service

U.S. Department of Energy

Western Area Power Administration

State of Arizona

Arizona Game and Fish Department
Arizona Department of Water Resources
Arizona Power Authority

State of California

California Department of Fish and Game
Colorado River Board of California

State of Nevada

Colorado River Commission of Nevada
Nevada Division of Wildlife

Lower Colorado River Basin Indian Tribes

Colorado River Indian Tribes
Cocopah Indian Tribe
Chemehuevi Indian Tribe
Fort Mojave Indian Tribe
Fort Yuma-Quechan Indian Tribe
Hualapai Indian Tribe

Lower Colorado River Basin Water and Hydroelectric Power Resource Management Agencies

Central Arizona Water Conservation District
Coachella Valley Water District
Imperial Irrigation District
Los Angeles Department of Water and Power
Metropolitan Water District of Southern California
Nevada Power Company
Overton Power District No. 5
Palo Verde Irrigation District
San Diego County Water Authority
Silver State Power
Southern California Public Power Authority
Southern Nevada Water Authority
Valley Electric Association
Wellton-Mohawk Irrigation and Drainage District

Environmental and Conservation Organizations

Five Seats Not Currently Occupied

Invertebrates

California Floater
Grand Wash Springsnail
Kanab Ambersnail
MacNeill's Sootywing Skipper
Moth Lacewing
White Desertsnail

Amphibians

Arizona Toad
Colorado River Toad
Couch's Spadefoot Toad
Lowland Leopard Frog
Northern Leopard Frog
Relict Leopard Frog

Fishes

Bonytail Chub
Colorado Squawfish
Desert Pupfish
Desert Sucker
Flannelmouth Sucker
Humpback Chub
Moapa Dace
Moapa Speckled Dace
Mohave Tui Chub
Razorback Sucker
Roundtail Chub
Totoaba
Virgin River Chub
Virgin Spinedace
Woundfin

Birds

American Bittern
American Kestrel
American Peregrine Falcon
American White Pelican
Arizona Bell's Vireo
Bald Eagle
Belted Kingfisher
Burrowing Owl
California Black Rail
California Brown Pelican
California Clapper Rail
California Condor
Clark's Grebe
Common Barn Owl
Common Black-hawk
Common Nighthawk
Cooper's Hawk
Elf Owl
Ferruginous Hawk
Fulvous Whistling Duck
Gila Woodpecker
Gilded Flicker
Great Blue Heron
Great Egret
Greater Roadrunner
Great Horned Owl
Harris' Hawk
Large-billed Savannah Sparrow
Lesser Nighthawk
Light-footed Clapper Rail

Loggerhead Shrike
Long-eared Owl
Merlin
Mississippi Kite
Mountain Plover
Northern Harrier
Osprey
Prairie Falcon
Red-tailed Hawk
Rough-legged Hawk
Sharp-shinned Hawk
Short-eared Owl
Snowy Egret
Southwestern Willow FlycatcherSummer Tanager
Swainson's Hawk
Turkey Vulture
Western Least Bittern
Western Snowy Plover
Western Yellow-billed Cuckoo
White-faced Ibis
Yuma Clapper Rail

Mammals

Allen's Big-eared Bat
California Leaf-nosed Bat
Cave Myotis
Colorado River Cotton Rat
Desert Pocket Mouse
Fringed Myotis
Greater Western Mastiff Bat
Houserock Valley Chisel-toothed (Marble Canyon) Kangaroo Rat
Hualapai Southern Pocket Gopher
Long-legged Myotis
Mexican Free-tailed Bat
Occult Little Brown Bat
Pale Townsend's Big-eared Bat
Prospect Valley Pocket Gopher
Searchlight Pocket Gopher
Small-footed Myotis
Southwestern River Otter
Spotted Bat
Vaquita
Yuma Hispid Cotton Rat
Yuma Myotis
Yuma Puma (Yuma Mountain Lion)

STATEMENT OF MAUREEN S. FRISCH, ON BEHALF OF SIMPSON TIMBER COMPANY

INTRODUCTION

My name is Maureen Frisch. I am honored to have the opportunity to testify on Habitat Conservation Plans.

I am vice president of public affairs for Simpson Investment Company, which is headquartered in Seattle, Washington. Simpson Investment Company is the holding company for Simpson Timber Company. We are a privately held company, owned and managed by the same family for almost 110 years. We own approximately 870,000 acres of timberland in California, Oregon and Washington and operate several wood processing facilities in California and Washington. Simpson was the first private landowner to obtain a Habitat Conservation Plan for the Northern Spotted Owl, and, we have just recently submitted a draft HCP and Implementation Agreement covering primarily aquatic species on 261,000 acres of our timberland in Washington State. This draft HCP, when approved, will also serve as a draft TMDL for our lands, thus bridging, for the first time in an individual HCP, the Endangered Species Act and the Clean Water Act. We are also working on a multi-species plan, once again with great focus on aquatic species, covering our California lands.

I am testifying today on behalf of Simpson, the Foundation for Habitat Conservation, headquartered in Seattle, and a similar organization—The Coalition for Habitat Conservation—located in Laguna Hills, California.

I am pleased to appear before the Committee today to discuss Habitat Conservation Plans and the opportunities and challenges these plans face. The entities I am representing today strongly support viable voluntary habitat conservation planning under the Endangered Species Act (ESA). HCPs are the primary mechanism through which private landowners can effectively and legally address listed species residing on their lands, to both preserve those species and their habitat, by crafting management approaches that strike a balance between species and habitat protection and maintaining a viable business entity. HCPs are an increasingly important conservation tool, with more than 240 such plans in place around the country, protecting more than 400 species on 18 million acres of land. However, I must stress that HCPs will remain viable only if they are allowed to provide reasonable certainty at a reasonable cost, blending both scientific credibility and business sensibility.

THE FOUNDATION FOR HABITAT CONSERVATION

The Foundation for Habitat Conservation (*www.habcon.org*) is a not-for-profit (501(c)(6)) organization formed in April of 1998. The Foundation supports Habitat Conservation Plans and related voluntary private conservation efforts through research, education and communication. Membership is open to holders of HCPs, scientists and consultants who work on HCPs, and other interested parties who support HCPs.

The Foundation's purpose is to "research, communicate, and support the workings, role, and benefits of habitat conservation plans and related, incentive-based private conservation initiatives." The Foundation has participated in a number of forums discussing HCPs and ways to improve them. The Foundation has recently produced a Habitat Conservation Plan Resource Guide, which was distributed to the Committee at a hearing held in July of this year. This resource guide recaps 18 HCPs around the country, covering deserts, cities, forests and ocean dunes. Some of these plans protect a single animal species while others cover hundreds of species of wildlife and plants.

The Foundation's members include a number of landowners that either hold HCPs, are developing HCPs, or both. At present, the members of the Foundation have over 820,000 acres of land managed under HCPs in three states, and have HCPs in final stages of development on over 2 million additional acres in a total of seven states. Foundation members own timberland and focus mainly on forestry HCPs, while the Coalition for Habitat Conservation includes large land developers who develop property covered by current and proposed regional HCPs.

THE COALITION FOR HABITAT CONSERVATION

The Coalition for Habitat Conservation is a group of Southern California property owners and public utilities that together own more than 300,000 acres of land in Orange, Riverside and San Diego counties. It was formed in 1991 as a 501(c)(6) corporation to pursue the mutual interests of its members in finding solutions to endangered species issues that are sound environmentally and economically.

The Coalition has supported California's Natural Communities Conservation Planning Act as a vehicle to create large-scale HCPs that protect multiple species, and has promoted these plans in forums throughout the region. Coalition members have participated in several HCPs that involved the creation of habitat preserve systems totaling more than 210,000 acres in Southern California, and are currently participating in the development of plans that will cover significant additional acres. A signature of these plans is that, while landowners make large contributions of private lands to the HCPs, others are able to participate as well. In the case of the Orange County Central & Coastal Natural Communities Conservation Plan, for example, a private landowner contributed 21,000 acres and 17,000 acres were contributed by a transportation authority and state and local jurisdictions. All of these public and private entities are dedicated to the success of the plan.

HCPS FOSTER VOLUNTARY, PRIVATE CONTRIBUTION TO SPECIES

HCPs facilitate voluntary contributions to species by many private landowners. In every region of our country, significant populations of threatened and endangered species are found on privately owned lands. Section 10 of the Endangered Species Act is the only mechanism currently available that gives incentives, primarily in the form of regulatory certainty, to the private sector to voluntarily provide extensive land and resources to protect threatened and endangered species. Without the ESA-

related certainty that the government can offer a private landowner through the HCP program, few if any landowners could afford or justify making the kinds of commitments that have and are being made in the context of HCPs.

Before proceeding, I would like to emphasize that we know there are many talented, dedicated and highly professional people working at the state and federal level to effectively implement the Endangered Species Act and all of the complexities associated with the Act. We know this because we have worked with many of them over the past several years. Making your way through the HCP process is extremely challenging for the regulator and the regulated. As a private landowner, we simply ask that we keep our focus on finding a balance one that reflects not only the very real need to protect species and their habitat but one that also enables private landowners to maintain viable businesses. Science and common sense both have an important role to play in this process.

I would also like to acknowledge earlier testimony to this committee and the House by Steve Quarles who represented the American Forest & Paper Association and Jim Johnston, of the Perkins Coie law firm in Seattle, who testified before the House Committee on Resources earlier this year on behalf of the Foundation and Coalition. My testimony incorporates many of the points each made, while also emphasizing some outstanding successes associated with the HCP program.

MULTI-SPECIES HCPS AND SINGLE-SPECIES HCPS ARE VIABLE OPTIONS FOR LANDOWNERS

Many current landowners, including Simpson, are working on multi-species plans. Such plans are a particularly valuable part of the HCP program, as they are most likely to focus management or development of property from the broadest possible fish and wildlife habitat perspective. And, by covering unlisted species, they provide certainty to long-term land managers that financial and conservation investments made today are likely to result in meaningful returns tomorrow.

From the perspective of fish and wildlife, multi-species plans also provide tangible benefits to species that are not yet listed and for which no regulatory or "take" restriction exists. I don't want to infer, though, that single or limited species plans are not viable. These plans must also remain an option for landowners. They are equally appropriate in some settings either because of landscape-specific circumstances, landowner and agency priorities or simple landowner preference.

ADAPTIVE MANAGEMENT IS A CRITICAL COMPONENT OF MANY HCPS

Many current and proposed HCPs include an Adaptive Management component. Adaptive management provisions are appropriate and critical elements of many long-term HCPs. Adaptive management—referred to also as "learning by doing"—can result in more efficient and effective management techniques. Adaptive management applies the concept of experimentation to the design and implementation of natural resource and environmental policies. As such, adaptive management can provide a reliable means to assess and evaluate the HCP's mitigation measures, improve ecological knowledge, and develop appropriate modifications in planning elements. This can result in the HCP performing more effectively as we learn more—by improving results without increasing burdens on the HCP holder beyond that incorporated into the adaptive management provisions established during development of the HCP.

Of course, adaptive management must be based on something measurable. These measurables include research and monitoring, setting thresholds for triggering corrective action, analyzing causative actions and modifying the plan's management and mitigation elements. In other words, setting the framework for continued acquisition of data and plan modification, based on credible science and documentation.

Some of the best applied science being done today is in the context of HCPs. However, it is important to recognize that HCPs are more than scientific documents. They are also management and business plans. Science should play an important role in formulating an HCP, but ultimately the plan must balance the minimization of impacts to habitat with the notion of practicability. With adaptive management as an important component of many HCPs, the ability to monitor what is happening, conduct further research, and learn and make necessary changes as we implement the provisions of the HCP are designed into the plan.

I would now like to point out just a few of the successes we are experiencing and by doing so, attempt to highlight what has worked, while recognizing that the HCP program faces some very real challenges.

THE WASHINGTON STATE FORESTS AND FISH REPORT

Since I am from the other Washington, I feel compelled to mention a recently crafted statewide conservation agreement specifically designed to address the Endangered Species Act and Clean Water Act. Many of the members of the industry and Foundation in Washington State have been active participants in the development of a collaborative state-private-federal-tribal effort to establish a new regulatory template in the state.

Anticipating the listing of Chinook salmon and other aquatic species, and having had an "up close and personal" experience several years ago with the Northern Spotted Owl, the state's forest products industry began planning in 1996 for a new round of what we call in the state, Timber, Fish & Wildlife negotiations. The Timber, Fish & Wildlife process is a negotiating forum through which key stakeholders come to the table to frame issues and try to reach consensus on regulatory changes needed to address the protection of public resources such as fish, wildlife, water quality, and capital improvements. Months of discussions and use of the most current research available led to what has now become known as the "Forests & Fish Report," an agreed upon direction for future management of riparian and aquatic resources. This Report was the basis for legislation that was approved by the Washington Legislature this year and has been signed into law by the Governor. The Report is now being considered in the state and federal regulatory process; first as an emergency forest practices rule package, then as a permanent forest practices rule package, then as a Federal 4(d) rule and finally, we all hope, as a Habitat Conservation Plan.

Under the Forests and Fish Report, owners of 8 million acres of forestland have committed to a substantively improved set of forest practices for all of the state's non-federal forest landowners. Also included in the Report is an agreed to adaptive management program that will have a detailed process to ensure continuous improvement of forest practices as science dictates. Over 2 billion dollars of timber and tree growing capacity is being set aside to provide effective streamside buffers and habitat protection to ensure cool, clear water for fish and other aquatic species. The Report, in recognition of these timber values, calls for a limited tax credit to landowners for trees left standing in these riparian zones.

This significant and voluntary commitment would not have been possible if not for the ability and willingness of the National Marine Fisheries Service (NMFS) and U.S. Fish & Wildlife Service (FWS) to offer long-term certainty to landowners regarding fish and six stream-breeding amphibians that are or might become listed under the ESA. The extensive and long-lasting benefits of such a program cannot be seriously questioned. It is also difficult to imagine what other mechanism could enable the government to secure an agreement covering 8 million acres of land under what will be very effective conservation measures and an adaptive management program to guide changes as necessary.

WASHINGTON'S FORESTS AND FISH REPORT: FOCUS ON SMALL LANDOWNERS

The Report also recognizes the difficulty small, non-industrial landowners have in meeting the stringent requirements of the Endangered Species Act. A special compensation element was included in the legislation to compensate small landowners for lands restricted due to impacts on their lands associated with the Forests & Fish Report. Under the Forests & Fish Report, a Small Forest Landowner Office, whose work will be funded by state funds, will be created within the Washington State Department of Natural Resources. This feature of the Report calls for applying the same riparian and related buffers to small landowners as applied to all other forest landowners, but provides partial compensation to those small landowners that volunteer to enter into easements covering riparian areas. This program is intended to help maintain the viability of non-industrial forest landowners and to provide an incentive to keep the small landowners' forestland base in forestry.

The Small Forest Landowner Office will serve as a resource and focal point for small landowner concerns and policies. It will also administer the Forest Riparian Easement program, through which small landowners will be compensated for lost forest values attributed to restrictions imposed as part of the Forests & Fish Report. In addition, the office will recommend rules pertaining to the valuation of easements for small landowner compensation purposes; contract with qualified consultants to appraise the timber as needed to implement the easement program, and make technical guidance available to small landowners.

This small landowner feature was critical in winning support from many such landowners in the state. The Report's success is a tribute to the dedicated efforts of private industry, both small and large, and state, local, federal and tribal govern-

ments, working cooperatively to address the habitat of threatened fish species in the Pacific Northwest.

THE SIMPSON TIMBER COMPANY EXPERIENCE

I would not be a loyal employee of Simpson Timber Company if I didn't take this opportunity to mention my company's involvement in the HCP process. Our successes with our governmental partners, as well as some frustrations with those same partners, point to what is working and to areas that need some attention.

A good measure of the value of HCPs is to compare results under them with results in their absence. Under the "no take" rules, for example, circles around owl or gnatcatcher nests are protected, but landowners are left to harvest or develop other areas, thus effectively preventing the development of new habitat over time. The "take" prohibition creates a powerful disincentive, we believe, to ever allow non-habitat to grow into habitat. However, under the Simpson Timber Company HCP in Northern California for the Northern Spotted Owl, for example, some incidental take is allowed but the HCP is devised to allow habitat to grow and increase over our ownership over time, because the HCP removed the "no take" disincentive. Owls have prospered on our ownership and owl habitat is and will continue to increase significantly over the life of the HCP. Our Northern Spotted Owl HCP was signed in 1992, and we have submitted our sixth annual report to the U.S. Fish & Wildlife Service, as required under the terms of the agreement. To date, we have banded almost 1100 owls on or near our primarily second-growth forests in Humboldt and Del Norte Counties in Northern California. The owl seems to be doing just fine thank you in forests in which the early science told us they could not survive. And, we have been able to carry out a successful timber operation that provides hundreds of jobs in the rural communities of California's north coast.

Beyond the extensive research we conducted on our own lands to prepare for the Northern Spotted Owl HCP process and the outstanding work of many of our employees, we benefited from the strong and focused commitment of U.S. Fish & Wildlife managers in the region and in Washington DC. Strong agency leadership—a desire to just get it done—made a big difference to this process in the early 90s.

This same committed leadership has also made a big difference to us over the past few years in Washington State. As I mentioned earlier, we have just submitted a "final" draft Habitat Conservation Plan and Implementation Agreement for a multi-species aquatic plan covering 261,000 acres of our ownership in Washington. Once again, we spent a tremendous amount of time learning all we could about our lands, classifying all stream channels on our properties. This is a highly prescriptive conservation management approach which we are certain will improve water quality and fish habitat over the life of the plan. This effort reflects a highly collaborative effort with three federal agencies, the National Marine Fisheries Service, the U.S. Fish & Wildlife Service and the Environmental Protection Agency, and state agencies, tribal interests and the public.

This proposed HCP, if approved, will be the first to bridge the Endangered Species Act and the Clean Water Act. The HCP will also serve as a draft Total Maximum Daily Load (TMDL) for the area covered by the HCP. I don't want to infer that this was an easy process or one without frustrations. It is also one that took four years much longer than we thought it would take when we started, but then all such complex negotiations take more time than we initially anticipate, and it involved significant costs. We'll now focus on the public comment period. If all goes well, and we believe it will, we hope to have a signed agreement early next year.

With ongoing and hoped for successes in the HCP arena, Simpson has also experienced some troubling challenges with the program, particularly in California over the past few years. Over 5 years ago, we began the process of developing another Habitat Conservation Plan covering aquatic species on our California forestlands. We began as we always have when we address key conservation and management matters; we made sure we knew more about out land and its habitat conditions than anyone else. We did this so that we could craft riparian management activities that would address specific potential impacts associated with our forestry operations, while providing necessary protections for listed species and their habitat.

I think the issues we have experienced are representative of what others have experienced and they are illustrative of why some landowners have grown weary of the process. I must point out, though, that we haven't given up on the HCP program in California, we are working hard to reinvigorate the process and to work with the Services in the state to re-focus our efforts.

The delays and program challenges we have experienced in California can be covered under broader HCP processing and program management activities and key

policy matters. We believe they can all be addressed to improve the overall HCP program.

OPPORTUNITIES AND CHALLENGES AHEAD: ISSUES AND POSSIBLE SOLUTIONS

A number of forest products industry executives have met with Secretary Babbitt over the past several months to discuss the HCP program to make numerous suggestions on how it can be improved. We raised many of the points during these meetings that I am going to share with the Committee today, along with some possible solutions. I think these points are particularly valid coming from those who have successfully negotiated HCPs, see many areas where processing and policy can be improved, yet remain committed to the program.

I would first like to recognize Secretary Babbitt's dedication and commitment to the HCP program. We appreciate his leadership in this area and we are committed to continue working with him, other federal agencies, state agencies and Congress to maintain and enhance the program.

Before meeting with Secretary Babbitt we spent quite a bit of time considering what it was that enabled such successes under the program and what needs to occur to maintain a viable and effective HCP program in the future. We saw many early successes in the program, but had been dismayed over the past few years at a lack of progress, particularly in Northern California and the Pacific Northwest regions. In fact, other than the HCP approved for Pacific Lumber Company, under what we believe were extraordinary pressures and incentives, the last HCP signed in the Pacific Northwest was the Plum Creek Timber Company HCP in June of 1996.

We now, of course, are seeing some progress in this arena, including the historic Forests & Fish Agreement and recently proposed HCPs by Simpson and Crown Pacific. But there has been a lapse, with some landowners becoming frustrated with the entire HCP program. That frustration is precisely why the group I described came together to meet with Secretary Babbitt. We believe those meetings were helpful in some cases and that the Secretary's strong and continuing commitment to the program is critical.

The areas we focused on with Secretary Babbitt included HCP program management and policy concerns covering a number of areas: HCP negotiating and processing delays, the imposition of excessive demands and extraordinary obligations on the landowner, a diminishing role for science in the process, efforts to impose a "one size fits all" approach to the process, and the loss of certainty, which is critical to the success of the overall program. *As we told Secretary Babbitt, and I am here to reiterate today, we think all of these program challenges can be addressed and we are committed to working cooperatively to find solutions.*

HCP POLICY CONCERNS

Attacks on the "No Surprises" Policy Erodes Certainty

The No Surprises Rule is the heart of the HCP program for private landowners. It represents the primary guarantee of the minimal certainty essential for voluntary conservation planning by a landowner. It also represents certainty on the part of the wildlife agencies that the plans have a sound design, and are, in effect, low-risk propositions. Yet, the No Surprises Rule is under heavy attack. Interest group and legal challenges have sought to erode its strength. Without a reasonable No Surprises Rule, voluntary HCP commitments will cease, and the effective species protections afforded by large-scale HCPs will end.

A possible solution.—Both the Coalition and Foundation believe that Congress should codify No Surprises; it is the most important element to ensure the program's success.

Section 7 Consultation Reduces Certainty

Other than an adverse outcome in the current lawsuit challenging the No Surprise Rule, Section 7 of the ESA currently poses the biggest single risk to the continued viability of the HCP program. Section 7(a)(2) requires that all federal agencies "consult" with NMFS or FWS, as appropriate, prior to issuing a permit or funding an activity whenever the agency believes that such action "may adversely affect" a listed species. The agencies see Section 7 consultation as applying to their issuance of an incidental take permit when the HCP is approved. Accordingly, the agencies "consult" with themselves before approving an HCP. Finally, the strictures of Section 7(d), and the risks presented by citizen suits associated with 7(d), add yet another "hurdle" to be overcome by HCP applicants.

The purpose of consultation is to determine whether the proposed agency action "is not likely to jeopardize" the continued existence of any listed species or result in the adverse modification of critical habitat. As covered in NMFS/FWS regula-

tions, if the determination is "no", then the agency action can proceed. If the determination is "yes", then the consulted agency must propose reasonable and prudent alternative measures that would mitigate the likely jeopardy. In developing an HCP, the applicant and agencies are engaged in the focused consideration of how to minimize and mitigate the impacts on the species to the maximum extent practicable. If an activity is found to pose jeopardy to the species, it will not meet the test under the HCP standard of ESA Section 10.

A possible solution.—If the consultation concept is believed to "add value" to the HCP process, we believe that it should be incorporated into the Section 10 HCP development and evaluative processes and eliminated as a separate step in the process.

HCP PROCESS MANAGEMENT ISSUES

Process management concerns cover many areas, all of which have the potential to add significant time delays and costs to the process.

Need for strong agency lead to manage the HCP process

Successful HCPs have a common element: a "can do" attitude, combined with strong inter-agency cooperation facilitated through a strong agency lead who served as the focal point for agency decision making and policy guidance. This becomes increasingly important as the HCP program comes under orchestrated pressure from various groups intent on undermining the program. A strong team lead can keep the momentum going and serve as a buffer between field staff and external groups pressing for restrictions and oversight beyond the appropriate scope of the HCP.

A possible solution.—Reinforce the government's strong commitment to the HCP program as embodied in the joint directive the Secretaries of Interior and Commerce issued to their agencies earlier this year.

Absence of process deadlines

An open-ended process, without clear timetables for activities and decisions can drift in what often feels like an endless pattern of delay. Without specific deadlines, the ordinary incentive for parties to reach agreement is reduced.

A possible solution.—Require the agency, in concert with the HCP applicant, to develop, during the initial stages of the process, a timeline for the process that includes key milestone dates and specific process deliverables. Updates to this timeline should be provided to agency heads and the HCP applicant on a regular basis, with discussions held to address processing concerns if and when they arise.

Inability to reach closure on key issues

In some cases, the agency and the applicant cannot reach closure on key issues, with no definitive plan or schedule to resolve the issues and no clear statements by the agency on what information they need, what kinds of mitigation measures they are seeking or why those measures are actually needed. What are we trying to fix, why and how?

A possible solution.—Require agencies to provide, in writing, reasonable alternatives to outstanding issues in the negotiating process.

Reopening of agreed upon issues

Matters definitively resolved or agreed upon are reopened later, long after landowners have evaluated and made internal trade-offs that permitted them to reach the agreement in the first place.

A possible solution.—Declare, once again in writing, closure on specific issues and define what extraordinary circumstances, if any, could reopen the issue for further discussion.

Concerns about shifting agency staffing

For some applicants, agency HCP staff have been reassigned, causing delays through staff shortages at key times, resulting in lost time and increased expenses due to transition. In some cases, the new staff have different perspectives and attempt to change prior commitments or the agreed upon "architecture" of the plan.

A possible solution.—Some personnel changes are inevitable, of course, however, issues already closed and timelines and deliverables agreed to, should not change. Written confirmation of closed issues and reports on progress to agency heads could be helpful in keeping everyone on track.

Need for more effective agency coordination

Another tremendous challenge has to do with the fact that we must deal with multiple agencies, sometimes with conflicting standards and often with duplication of effort. With the listing of anadramous fish (salmon, for example, fish that spawn

in freshwater but live part of their lives in saltwater), many of us who have been involved in the HCP program are now working with an additional agency, the National Marine Fisheries Service. If you are working on a multi-species plan that includes species that fall under the jurisdictions of both the National Marine Fisheries Service and the U.S. Fish & Wildlife Service, you must deal, of course, with both agencies. Add to this the desire to try to simultaneously address water quality issues, such as the TMDL program, and you add yet another federal agency, the Environmental Protection Agency, into the mix. Landowners are often required to deal with the agencies on a piecemeal basis on some issues, often resulting in having to go back and forth between the agencies to address the same or quite similar issues. At times, conflicting interpretations of policy may arise from different agencies. This results in additional delays, increased costs, duplication of effort, and frustration. It is also important to note that the issue of coordination is compounded where the landowner is pursuing a parallel state process and/or must also work with various state agencies with oversight responsibility concerning listed species.

Recent proposed rules by EPA highlight this multi-agency problem. Under the proposed rules, an HCP holder that has negotiated and agreed to a package of commitments protecting aquatic resources could subsequently be required to "start over" again with yet another agency EPA through implementation of an independent TMDL effort and "activity-by-activity" permitting under the Clean Water Act. Occurring independent of and without coordination with the more holistic, landscape level approach to aquatic resources management that is facilitated by the HCP process, this type of proposal has a similar impact on landowner uncertainty as the loss of No Surprises.

A possible solution.—Explore approaches to identify a single lead agency on ESA matters, with involvement, of course, from other agencies with needed experience end expertise concerning the species listed or environmental compliance issue being addressed.

All of these process management issues have the potential to add significant costs to the HCP process, not only for the HCP applicant, but also for the government, and therefore, the public. It is in everyone's interest the public, the landowner, the government, the resource and the species to make sure the HCP program remains viable and effective. I would now like to turn to some concerns about the role of science in the process and our belief that Habitat Conservation Plans must reflect the habitat conditions, potential operational impacts and conservation and management objectives of the landowner. These issues are reflected in concerns about the diminishing role of science in the process and attempts to impose extraordinary obligations on a landowner.

Diminishing role of science

There is growing concern that the important role of science in determining conservation measures is being replaced with a "one-size-fits-all" or a "comparative" approach. HCPs are voluntary and individual to each applicant. To some extent, it appears that agency personnel seek to apply measures from one HCP to another. While consistency in policy matters is a laudable goal, plans must be tailored to the particular landscape, past management practices, and landowner involved. A good example of this is that some landowners are experiencing demands for wide, fixed-width buffers with little regard to what scientific data and on-the-ground research shows is reasonably sufficient.

In other cases, an effort has been made to take what one landowner agreed to in one situation and make it the "baseline" for another—without regard to what the resource conditions appear to be. Simpson has run into this troubling approach in Northern California, as we encounter regulators at both the state and regional office level who have tried to overlay certain provisions of the Pacific Lumber Company HCP on our management activities, regardless of the conditions on our lands. We feel strongly that HCPs must reflect each landowner's unique habitat and water quality conditions, resource management objectives and the need to mitigate specific impacts associated with the landowner's management activities. In other words: *How will the landowner's management activities impact the listed species and what must the landowner do to effectively address those impacts?*

We understand how challenging the ESA arena can be and the pressure agency staff face in the HCP process; it's challenging for all of us. However, "one-size-fits-all" is an easy way out if you are doing the regulating, but it can be an excessive, unnecessary and costly imposition for a private landowner that is willing to participate in the HCP process, but unwilling and unable to accept matrix-like fixes that don't address real impacts.

Multi-species HCPs appears to be diminishing

Landowners are often required to provide such extensive amounts of species-specific data that multi-species plans are becoming less feasible. For some applicants, dropping species out of the HCP becomes the only viable option. This negates the ability of landowners to develop landscape approaches to conservation planning and narrows the focus of the plans. This discourages habitat-based plans for a broad range of species.

Requiring landowners to accept extraordinary obligations

The mitigation burden imposed on each landowner in the HCP permit process is intended to be entirely dependent upon the impacts caused by the landowner's future activities and to be proportional to those impacts. Requiring landowners to assume responsibility for—and agree to correct—landscape conditions not caused by the applicant or to develop "ideal" or "properly functioning habitat" conditions on their ownership, regardless of the extent of the impacts on the species, often results in the imposition of an enormous burden on some applicants and adds significant costs to the HCP.

We believe that HCPs offer the most constructive way for private parties to contribute to the ultimate goal of recovery, while meeting their requirements to mitigate impacts to the species on their lands. We do this, of course, for the privilege of obtaining an incidental take permit. While recovery is the government's responsibility, care must be taken not to let that overall governmental goal become translated into the standard for HCP approval. I do want to stress, though, that many HCP holders and applicants willingly exceed current regulatory requirements. We do so to secure some type of negotiated element of the plan and to gain greater regulatory certainty. I believe all of these plans will, over time, result in improved habitat conditions over the landscape and make a positive contribution to the species and the resource.

SUPPORTING A VIABLE HCP PROGRAM INTO THE FUTURE

To support a viable and effective HCP Program into the future, I would like to briefly recap some potential solutions to program challenges:

- Require agencies to commit to specific timetables for key HCP processing deliverables. Progress, processing concerns and an action plan to address deficiencies should be routinely reported to both agency leadership and the HCP applicant.
- Require agencies to provide written examples of what the agency would consider to be reasonable alternatives to specific issues in the applicant's plan that need to be addressed.
- Make "No Surprises" the law.
- Fix the Section 7 consultation issue. Either Section 7(d) should not be applicable to HCPs or consultation for HCPs should be streamlined and incorporated into Section 10 of the ESA.
- Bolster support for multi-species plans. We commend Secretaries Babbitt and Daley, along with leadership in the agencies, for their support of such plans.
- Minimize conflicts created by overlapping jurisdictions (including the Clean Water Act TMDL process and individual activity-by-activity permitting process).
- Keep the focus on science in listing, recovery, de-listing and HCP development activities.
- Make sure HCPs are affordable and can be completed in a timely manner.
- Find creative, workable approaches to address small landowner interests. (Perhaps the Washington Forests & Fish Report's small landowner focus could provide some helpful insight. Copy provided to staff.)

Mr. Chairman, both the Foundation and Coalition are working on solutions to these issues and stand ready to assist you in whatever manner we can. Thank you for the opportunity to testify.

STATEMENT OF DAN SILVER, ENDANGERED HABITATS LEAGUE

Good morning, Chairman Crapo and Subcommittee Members. I am Dan Silver, of the Endangered Habitats League (EHL) in Southern California. For the last nine years, I have been "in the trenches" of habitat conservation planning under section 10(a) of the Endangered Species Act. Southern California is the epicenter of extinction in the continental United States. With our rapid growth, the potential for economic conflict is high. In fact, in 1991, the listing of the California gnatcatcher was predicted to cause an "economic meltdown." What occurred was far different. Responsible people from all sectors took a risk-a risk that a cooperative approach

would yield greater benefits to all interests than would continued confrontation. This venture is working, but also needs your help.

These cooperative efforts have occurred under the State of California Natural Community Conservation Planning, or NCCP, program. An NCCP is basically a large scale habitat conservation plan for multiple species, organized as a federal-state-local partnership, with stakeholder involvement. With them, we are well on are way to getting ahead of the listing curve, and along the way, found more consensus than anyone thought possible. People from all sides are likely to call these path-breaking efforts a qualified success, which says a lot. Yet, because lack of land acquisition funds has produced serious flaws in preserve design, Congress should urgently address this problem.

The goals of the NCCP program are various. An NCCP provides streamlined permitting for development, certainty for ecosystem protection, and open space and quality of life for the human population. In fact, the preserves are often touted as "environmental infrastructure" by elected officials—as necessary for the future economic competitiveness of our region as more traditional forms of infrastructure. The obstacles to such planning—multiple jurisdictions, thousands of properties, contentious interest groups—have all been all overcome.

An overview of the Southern California efforts is as follows:

In Orange County, the Central/Coastal NCCP is complete. In this part of Orange County, a single, massive ownership allowed for relatively orderly development and for a reserve system with relatively unfragmented lands. The reserve design process involved a "gap analysis" between already-planned open space (exactions obtained through the land use process and earlier purchases) and maps of overall habitat quality and "target species" presence. The result-a preserve of 37,378 acres "covering" 39 species—combined the pre-existing open space with smaller, though important, new additions. There are also connectivity improvements and new management obligations.

The covered species list of the Central/Coastal NCCP relies upon umbrella species methodologies, upon variable amounts of survey data, and upon judgments of habitat sufficiency. When planned restoration of agricultural lands is factored in, the result is particularly defensible for coastal sage scrub. As in all the NCCP plans, monitoring and adaptive management are major program components.

Another huge ownership is involved in the Southern Orange County NCCP. An absence of already-planned land uses in this area makes it a test case for the NCCP program. Progress here has been much slower than anticipated due to complex wetlands planning, but there is outstanding conservation potential.

In San Diego, the logistically and politically daunting Multiple Species Conservation Program, or MSCP, involves multiple jurisdictions and hundreds of landowners. After extensive public and stakeholder participation, a 172,000 acre preserve, covering 85 species across a full range of habitats, has been approved at the framework level and by three of the five jurisdictions involved. Included are 90,000 acres of currently private lands, two thirds of which will derive from development exactions, and the remainder acquired at an estimated cost of $300,000,000 (to be shared by local, state, and federal sectors).

The preserve design process appropriately began with the compilation of standards and guidelines for preservation of vegetation communities and for maintaining "viable populations" of 90 target species of plants and animals. Due to incomplete survey data, a habitat quality map was prepared using a matrix of indices, and then a map of "biological core areas and linkages" was produced. After adding in local land use factors, preserve design alternatives were developed, and evaluated for species coverage.

All together, about three-fourth's of the best remaining habitat is slated for protection, and maintaining connectivity across an already fragmented landscape is a very significant benefit. The San Diego National Wildlife Refuge has been created in the most intact remaining landscape, and is helping assemble landscape-level units. Large parts of the preserve is to be assembled over time according to predeterrnined criteria, such as mitigation ratios.

In the fragmented landscape of northern San Diego County, five cities are finishing work on the Multiple Habitat Conservation Program, or MHCP. This plan will patch together smaller habitat patches and provide connectivity into Camp Pendleton Marine Base.

In Riverside County, county government is leading an ambitious and visionary effort to simultaneously integrate a Multiple Species Habitat Conservation Plan with comprehensive land use and transportation planning. The habitat plan will provide greenbelts between communities in this rapidly growing county. The multiple species reserve will build upon an earlier, single species preserve which, by limiting its scope to the Stephens' kangaroo rat, did not resolve economic or environmental

problems. The stakeholder Advisory Committee is considering market mechanisms to assemble the preserve system and fiscal incentives for agricultural interests.

Progress on an NCCP in the Palos Verdes Peninsula in Los Angeles County has been slow. In San Bernardino County, the local governments unfortunately have not put together a multiple species effort, which could have averted many of the difficulties associated with the endangered Delhi Sands flower loving fly.

I would lilac to summarize the lessons of the Southern California experience:

• *Only a regional scale allows biological objectives to be met.*—The goal of the ESA is ecosystem protection and recovery of species. A multiplicity of small, piecemeal HCPs will not meet these objectives. Large scale HCPs should meet recovery objectives, as they will probably define the full extent of conservation which ultimately occurs within their boundaries.

• *A multiple species focus allows proactive conservation and the avoidance of future listings.*—Long term certainty for economic and environmental interests alike is provided by a comprehensive scope, covering both rare and common species.

• *Sound science can be demonstrated when the scale is large and multiple species are targeted.*—Nature is complex, and it takes a comprehensive approach to truly achieve ecosystem protection. Only at a large scale can the basic scientific tenets of preserve design be realized.

• *HCPs should be tailored to individual, local circumstances.*—A large scale HCP in an agricultural area will be far different from that in an urbanizing area, requiring flexible approaches.

• *Partnerships with state and especially local agencies are essential.*—The most important yet underappreciated aspect of the NCCP program is its partnership with local government. Only local government has the land use authority necessary to build an interconnected preserve system on private lands. For example, the U.S. Fish and Wildlife Service cannot easily regulate unoccupied habitat on private land, although such habitat may be a crucial wildlife corridor. A critical aspect of the partnership, however, is the provision of federal planning funds to state and local agencies.

• *Listings are necessary to bring the parties to the table.*—Without actual listings—the California gnatcatcher in San Diego or quino checkerspot butterfly in Riverside—there is simply insufficient motivation for parties to undertake and carry out multi-year, difficult planning processes. Also, in our experience, delegation to the states, without the federal government as a full partner, will not be successful.

• *The process must be transparent at each step.*—If the preserve design process is subject to continual scrutiny from its earliest stages, it can be understood and accepted. Alternative preserve designs and species coverage rationales must all be open to review early in the process, where citizen input can still have an effect. Building-in independent scientific review is extremely important. To this end, Riverside County is contracting with the University of California.

• *Stakeholder involvement is a precondition for success.*—Implementing large scale HCPs is challenging, and varies in each unique area. Only the skill and knowledge of the affected stakeholders can shape implementation so that it serves everyone's needs. If you give people of different interests the opportunity, they will rise to the occasion, work together, and solve problems.

• *Assurances to private parties are acceptable if commensurate certainty exists for species.*—In order to justify "no surprises" assurances, HCPs should be large scale, multiple species in scope, meet recovery objectives, and have adaptive management and scientific input. In the type of plan we are doing in Southern California—a balance between permanent conservation and permanent loss—it is only the size and quality of the plan on "day one" which will really make a difference 50 years later. This is different, though, from HCPs which consist of managing renewable resources, such as forests or rivers. There, changes in management over time may well be an appropriate responsibility of the private sector.

• *The biological goals to related public purposes.*—Species protection produces precious open space in developing areas. All the preserve systems in Southern California are open to low-impact recreation, and they have a much greater chance of adoption when tied to such compatible objectives. A large scale HCP can help a region achieve a vision for its future, as is happening in San Diego and Riverside Counties.

• *The provision of public land acquisition funds is an urgent priority.*—Despite very significant exactions from the private sector, reaching biological goals will require large sums for land acquisition. Some properties simply cannot be split down the middle. Species cannot be "mitigated" into recovery. Particularly damaging has been the lack of early acquisition funds, because timing is often a critical factor. There is local, state, and national benefit to the preservation of America's heritage

through HCPs. Funds from each of these levels of government are needed, and must be reliable and adequate.

In conclusion, I urge you to reinvigorate the HCP process in two major ways. First, pursue large scale, multiple species HCPs with the characteristics I have described above. These should be prioritized, and federal planning funds provided to local agencies. Secondly, the public sector must do its share financially. Funding is needed for the federal government's fair share of the multiple species plans. It is also needed for an expansion of the National Wildlife Refuge system, which is another way that biodiversity can be protected before the crisis point is reached.

I cannot stress the funding aspect enough: If you are serious about HCP reform, you will, in my view, fully and permanently fund the Land and Water Conservation Fund on an urgent basis, before this session of Congress is over. I want to tell you the sense of frustration people of all sides feel, people who have worked for years to produce potential solutions which will achieve national conservation objectives and also make their communities better places to live. We have been let down. However, if you fully fund the Land and Water Conservation Fund, you will provide stakeholders the essential tool for HCP success, and allow our shared values for conservation to flourish.

Thank you for allowing me to testify today.

TESTIMONY OF JAMES RILEY, EXECUTIVE DIRECTOR, INTERMOUNTAIN FOREST ASSOCIATION

Mr. Chairman, my name is Jim Riley and I am the executive director of the Intermountain Forest Association. The focus of my testimony will be on our recommendations for changes to Section 10 of the Endangered Species Act (ESA) and how the Habitat Conservation Plan (HCP) process can be used to solve the problems facing private property owners and States in complying with the ESA. The Intermountain Forest Association is a professional association of foresters and the forest industry in Idaho and Montana committed to sustaining forests and the forest businesses, jobs, products, water, wildlife and recreational opportunities that forests provide.

BACKGROUND

Of the 53 million acres that is Idaho, 41 percent, or 22 million acres, is forested. Some 14 million acres of those forested lands are considered commercial forest, lands capable of growing repeated crops of commercially valuable timber, and not used for any other commercial purpose.

We at IFA are committed to finding the balance between productive use and natural sustainability. We recognize that there is a rising tide of "environmental chauvinism" in this country that has had a very serious impact on our businesses and is actually harmful to the forests it claims to benefit. What we call environmental chauvinism is the preference, in some quarters, for the importation of minerals or timber from countries without laws to protect workers or the environment. It is the fulfillment of our national need for these products while implicitly participating in the literal destruction of global ecosystems. We at IFA stand ready to provide American jobs in an environmentally responsible fashion.

Idaho's timber businesses employ 16,500 people, and from Boise northward, approximately 40 percent of the economy is dependent upon timber. Although much of the forested land in Idaho is owned and regulated by the Forest Service, a portion of state land is also in productive use as well as private timber landholdings. Over three million acres, or 23 percent, is privately owned by commercial and non-commercial private landowners. The State of Idaho and other smaller public ownerships account for about 1.6 million acres of forested land.

As a responsible Sustainable stewardship" association, IFA supported this Committee's bill in the last Congress. In no small part, one of the reasons we supported that legislation is because of the emphasis that legislation placed on Habitat Conservation Plans (HCPs).

MAKING THE ACT WORK FOR SPECIES AND PEOPLE

It is indisputable that the Endangered Species Act needs improvement. We must work to make the Act more effective for species and for people. Every member of this Committee, the Secretary of the Interior and the business and environmental communities all agree that pragmatic reform of the Endangered Species Act is a necessity. I was always struck by the testimony delivered by Michael Bean of the Environmental Defense Fund in the 105th Congress that the only alternative to habitat conservation was no habitat conservation.

Although there are many areas of the Act that need reform, the testimony that has been offered to this subcommittee reflects the critical need for reform of Section 10, the Habitat Conservation Plan provisions of the Act, in this Congress. Congress has a responsibility to address the attacks that have been levied against a policy that remains, in the words of the subcommittee chair, "one of the few options to property owners in the Act."

1. Making the Act Work Better for Small Landowners

A bill to reform Section 10 of the ESA should allow smaller landowners to get a tried-and-true conservation plan—an affordable plan already made for the wildlife in their backyards that will allow him or her to build a house or harvest trees without the threat of interference. It should provide for natural systems and multiple species conservation plans that would allow landowners to negotiate comprehensive agreements so that they can conduct activities (usually on large sites) that will affect more than one spears.

2. Providing Certainty

A bill to reform Section 10 of the ESA should provide landowners, and any non-federal person, the assurances they need to be enticed by such a plan. The bill must authorize a no surprises policy included in all conservation plans. Without the certainty of no surprises, no private landowner would agree to the potentially endless mitigation requirements of an incidental take permit. With no surprises, landowners know that they will not be required to do anything else for species included in a conservation plan. Without that certainty, the law would continue to disenfranchise private landowners and place more and more reliance on public lands to save species. This committee is aware that the no surprises policy is being attacked in litigation in the Federal District Court in D.C.

3. A Commitment to Planning

A bill to reform Section 10 of the ESA would revive the commitment to habitat conservation and the HCP process which once existed in the Administration but has been lost over the last few years The direct result of this loss of direction has been extended delays in developing and completing HCPs, and the issuance of incidental take permits. The Fish and Wildlife Service and the National Marine Fisheries Service (the Services) are widely viewed as lacking the early momentum that they had to complete HCPs in a timely manner. Staff turnover, reassignment and reprioritization have slowed the process. Lack of commitment to the process means lack of ownership in the results. The record is replete with complaints about HCP science issues, once resolved, being revisited and previously agreed upon management or mitigation measures being re-reviewed.

Without a commitment from Congress, the Administration's commitment to HCPs will continue to flag. The cost of HCPs will be pushed higher and away from private landowners who might see HCPs as a viable alternative to their existing disenfranchisement. Instead of trying to address an agency's perceived problem with a particular HCP, landowners may be left to "stab in the dark" by submitting a new proposal with little or no guidance.

Furthermore the existing permit process includes no mandatory deadline established by statute or regulations. This must be changed in the reform act. Although the "Habitat Conservation Planning Handbook" calls for HCPs to be completed in less than 10 months, negotiating periods as long as 3 to 6 years are becoming more frequent.

A bill to reauthorize the ESA must re-establish the commitment to multi-species HCPs. Multi-species HCPs, and Natural Systems HCPs are cost effective for large landowners and can deliver the highest quality of habitat conservation. In Idaho's forests, a multiple species plan to protect different species of non-anadromous fish as well as indicator species of fish prey species could have an enormously beneficial effect on the habitat of the watersheds. Multi-species HCPs save money because they are self-sustaining without having to be amended for each new species which is added to the plan.

Unfortunately, because of the criticism the Services have taken from HCP opponents, they have begun to require extensive data on each specific species. Landowners are considering limiting the scope of their HCPs to limit the cost of the plans. This decision results in less protection for landowners, less conservation for species and, ultimately, duplication of effort for the Services if the landowner chooses to amend the plan to add species at a later date.

4. A Commitment to Science

Sometimes the Services substitute standardization for science. We have been told of a rhetorical comment by one of the Services to a Senate office that the Service

would reject innovative solutions to problems if it would cost them more time or more effort to verify the result than it would to impose a pre-existing "one-size-fits-all" solution.

5. Avoiding Disincentives

A bill reforming Section 10 of the ESA must avoid the temptation to impose a recovery standard in HCPs. I can think of no disincentive more persuasive, no greater invalidation of HCPs as a workable system for habitat conservation than the imposition of a recovery standard for HCPs. I know that this committee has received testimony from people who support such a standard. These people compare mitigation for an incidental take permit with other activities where the, "federal government regulates third party activities that are deemed potentially harmful to societal interests" (Testimony of Eric Glizenstein, Senate Environment and Public Works Committee, Subcommittee on Fisheries, Wildlife and Drinking Water, October 19, 1999)."

A property owner is required by the statute to minimize or mitigate the impact of his or her activities on private property. A property owner is not required, nor should they be required, to mitigate against the past acts of untold numbers of parties, over untold numbers of years, which might have lead to the listing of a species on the Endangered Species List. To require this of an individual property owner shifts the burdens of societal mismanagement on to one party. To require this is not to regulate Third party activities that are deemed potentially harmful to societal interests", but, rather, to ignore the actual impact of contemplated third party activities in order to find a deep pocket for federal priorities.

6. Assuring Voluntary Participation

In Idaho, and elsewhere in the West, there are people who are deeply suspicious of HCPs. There are many reasons for this distrust. Some reasons are valid. HCPs can be extremely expense and time consuming for small landowners. Without the technical expertise necessary to compete with federal negotiators, some people might feel that they would be overwhelmed at the bargaining table.

For others, distrust of HCPs is not borne out of fact but of unreasoned fear. Many in the West feel abused by the Act and the administration of the Act by those responsible for its regulation. Many feel that any agreement with federal regulators is tantamount to federal interference and cannot be tolerated. Unfortunately, that unreasoned fear only results in a failure to respond to challenges and fosters a fortress mentality that will deprive public policymakers of initiative and innovation. There is no way to reason with this fear. But we can assuage it.

We must make it clear that the HCP negotiation process is voluntary. This fear may be borne out of a lack of familiarity with HCPs, but we cannot emphasize this issue enough. Although it may be clear to those of you who deal with policy in Washington D.C. that the HCP negotiation process cannot be imposed on any individual, there is a deep fear that will become mandatory. The strictly voluntary nature of the HCP negotiation and application process must be reinforced.

THE CHALLENGE OF BULL TROUT

The bull trout in Idaho and Montana was listed on the Endangered Species List on June 10, 1998. Native to the Pacific Northwest the bull trout has some of the most demanding habitat requirements of any native trout species because it requires water that is cold and clean.

The listing of the bull trout on the Endangered Species list has placed the State of Idaho in a very difficult position. In Idaho alone, of the 2,629,633 acres of state-owned endowment land, over half, more than 1.5 million acres, is bull trout habitat. This area comprises an area larger than Rhode Island or Delaware.

State endowment land in Idaho is cared for professionally and used productively. Were it not for non-native fishes that compete with bull trout, its future would be bright. At the same time, receipts from the public and private use of statement endowment land are used to fund public education in Idaho. Every school child in Idaho, every institution of higher learning, has a vested interest in the responsible and productive use of state endowment land. Timber sale proceeds from state lands go into the state's "endowment fund." Much of the earnings from this fund, approximately $27.9 million in 1989, supports Idaho public schools.

Despite this win-win situation, the ESA gives environmental chauvinists the opportunity to claim that any human activity in the habitat of these species violates Section 9 of the ESA, claiming those actions result in a "take" of a member of a listed species. Given the current science of forestry and fish, such a claim would be difficulty to support. However, the vagaries of the "take" standard and the time and expense involved in defending this position are not appealing. Further, the resources

required to defend such a case would be far better employed if invested in active enhancement of habitat and fish populations. Timber harvest, mining operations, grazing or any other activity on state land could bring an accusation of violating the "take" prohibition. The Fish and Wildlife Service, or any citizen litigant, could seek an injunction in court prohibiting further use of this land until the state proves that there is no "take". This is a difficult and time consuming burden particularly in the face of a recent listing.

Until a court finds that the activities complained of do not create a Take" of the habitat of a member of the species, the state could be enjoined from allowing uses of state land which might modify habitat. It will be expensive to defend these cases, despite the strong professionalism of Idaho's forest managers. The attendant revenue stream to the state from state land use could be temporarily, or permanently, halted. The ramifications to the educational system in the State of Idaho, from a challenge by an independent third party to activities that permit a "take" of habitat of this species as a result of state land uses, are very serious.

The State of Idaho, and the State of Montana have been active in finding ways to save the bull trout. But the sheer size of the habitat, over a million acres in Idaho alone, means that finding ways to move quickly enough to address the needs of the fish and the needs of the schools is beyond the ability of just one state. Including personnel and direct expenditures, the State of Idaho last year spent approximately $400,000.00 on bull trout recovery. This expenditure does not include many of the ongoing activities of state agencies working on habitat reconstruction, water quality, best management activities, etc., which would benefit bull trout.

Faced with the above facts, Idaho's Governor Dirk Kempthorne came to the inescapable conclusion that an HCP with an incidental take permit under Section 10 of the Endangered Species Act, negotiated with the Fish and Wildlife Service, administered and monitored by the state, would be appropriate and necessary in Idaho to protect an educational system that is funded from receipts from the state endowment fund.

The preferred strategy is to have the State of Idaho negotiate an HCP for state lands. There would be no requirement that once negotiations have begun that an HCP would be agreed to. If the federal agencies demand more mitigation than the states are willing to offer, the states could terminate the negotiations and would be no worse off than they are in today.

The state-negotiated HCP would not include private property owners. However, private property owners could still negotiate their own HCPs, as Plum Creek has chosen to do, or choose to proceed without an HCP.

The goal is to have the State of Idaho successfully negotiate an HCP, simultaneously with development of a voluntary enrollment HCP available to private landowners, that would include state-owned land for which the state would receive an incidental take permit. The state would administer and monitor the private land enrollment program. Private landowners who wished to participate in the HCP for their private land would be eligible to subscribe into the HCP and recede and incidental take permit by complying with the mitigation requirements, and other requirements, in the state land HCP.

I am pleased to announce that just such a plan has been included in the FY 2000 Interior Appropriations Bill for the State of Montana. The money will allow Montana to explore a partnership plan with federal and state agencies to negotiate and implement a voluntary, statewide HCP for the threatened bull trout and other cold-water fish. The plan also would be available on a voluntary basis to private forest interests.

This plan will be a way for Montanans to work together to protect an important species in a common-sense way that encourages small landowners to get involved. It will also help the Montana highway program because the listing of the bull trout has caused concern about the potential effect on highway construction. By providing clear guidance, the habitat conservation plan should ensure that the bull trout and the state's highway program both can thrive.

Montanans have long recognized the need to balance their dependence on renewable natural resources with the necessity to maintain wildlife habitat, like that of the bull trout. The bull trout HCP will allow us to use sound scientific principles to preserve important habitat, while also preserving a way of life that many Montanans depend on.

Mr. Chairman, I feel confident that in the not too distant future Idahoans will also be able to share in the opportunities provided by such a program and will do so in a way that protects species, jobs and school kids. It is a very promising opportunity. Starting with the foundation of good science, we are eager to begin exploring ways to provide good fish habitat while still allowing other forest uses. Our environ-

mentally responsible forest practices can continue to guide habitat management where bull trout and our members live.

STATEMENT OF MICHAEL J. BEAN, ENVIRONMENTAL DEFENSE FUND

Habitat conservation plans often cost landowners and regulated interests more than they should, while accomplishing less than they could for the conservation of imperiled species. Reform of habitat conservation planning should aim to reduce its cost and increase its effectiveness. Not only are these two goals compatible, but achieving both of them is the only way for all sides in this controversy to come out ahead. And without that, Congress is unlikely to achieve the consensus that has eluded it for the past seven years.

How can the cost of habitat conservation planning to landowners and regulated interests be reduced and its conservation effectiveness increased? The testimony that follows offers five suggestions that, I believe, will do so. Three of them require action that the Services (both the U.S. Fish and Wildlife Service and the National Marine Fisheries Service) can take under existing authority. One requires legislative change and the last requires money.

DEVELOP "MITIGATION PRINCIPLES" TO GUIDE HCP EFFORTS

What we have come to call "habitat conservation plans" are, in most instances, really mitigation plans. They attempt to mitigate the negative effects of an environmentally harmful, and generally prohibited activity the taking of an endangered species, usually through destruction of its habitat. Mitigation requirements can be developed in either of two ways: as an entirely ad hoc exercise in which the depth of a permit applicant's pockets, or his political connections, often influence how much or how little mitigation will be required; or as a more principled exercise in which mitigation requirements are determined in accordance with preexisting standards or criteria. In practice, the Services have developed such standards or criteria for virtually none of the species, or associations of species, for which they are responsible. As a result, the mitigation requirements in any given HCP often appear to be pulled from the air, inadequately explained, and inconsistent with the requirements imposed in other, seemingly similar, situations. The absence of clear mitigation standards or principles also means that mitigation requirements are negotiated afresh in each new HCP, prolonging (and making more expensive) the planning process and introducing considerable uncertainty into it.

To overcome these problems, the Services ought to develop clear, and clearly explained, mitigation principles that will guide permit applicants, and the Services' own field staffs, when developing subsequent HCPs. Such principles are especially needed for those species, or associations of species, that, because of where they occur, are likely to be the subject of several different HCP efforts. Implementing this recommendation is neither easy nor cheap, but it will make HCPs more predictable, less costly to develop, and better insulated from inappropriate pressures.

DISALLOW HCP MITIGATION ON FEDERAL LAND EXCEPT WHEN NO OTHER OPTIONS ARE FEASIBLE

In a number of HCPs, mitigation takes the form of a payment by a private landowner to a federal land managing agency so that the federal land managing agency can undertake some action beneficial to the affected species. Several HCPs pertaining to the red-cockaded woodpecker are of this variety. The rationale for this type of mitigation appears to be that federal land managing agencies lack sufficient appropriated funds to carry out positive conservation actions for imperiled species, so mitigation payments derived from private parties can help meet the budget shortfall. As a result, beneficial actions that might never have been undertaken, or that would have been significantly delayed, can be carried out quickly.

One of the dangers of this seductive logic is that it is likely to become a self-fulfilling prophecy. Federal land managing agencies have an affirmative duty to further the conservation of endangered and threatened species on their land by carrying out actions and programs that help move those species toward recovery. Congress has placed this affirmative duty squarely on the shoulders of these agencies. The funding to meet this congressionally-imposed duty ought to come from congressional appropriations, not from private parties who have their own, separate duties to mitigate for harmful actions they carry out.

A further reason to question the propriety of this form of mitigation is that it becomes impossible, as a practical matter, to assess the efficacy of HCP mitigation. Mitigation fees are seldom, if ever, segregated from other sources of funding for con-

servation efforts on federal land. As a practical matter, it is nearly impossible to sort out the contribution of private mitigation payments to the success or failure of conservation efforts undertaken on federal lands.

For all these reasons, HCP mitigation should generally not be allowed on federal land. There may be limited circumstances where such mitigation is the only feasible option. In those limited situations, an exception to the general prohibition may be allowed, but even then special care must be taken to identify and evaluate the efforts funded by such mitigation payments, separate from other efforts being undertaken by the federal land managing agency.

PROMULGATE A CLEAR POLICY REGARDING THE USE OF MITIGATION BANKS IN HCPS

Several recently approved or recently proposed HCPs entail the use of "mitigation banks." Mitigation banks are a mechanism under which mitigation "credits" can be earned by preserving, restoring, or enhancing endangered species habitat in advance of any action requiring mitigation. Those credits can then be used by the party whose action created them, or sold to third parties, to meet the mitigation requirements of subsequently approved projects. Mitigation banking is a familiar, though controversial, practice in meeting the requirements of the wetlands program under Section 404 of the Clean Water Act. It is of much more recent vintage under the Endangered Species Act.

The first endangered species mitigation bank, the Carlsbad Highlands bank in San Diego County, is less than five years old. Until quite recently, nearly all the endangered species mitigation banks were in California, where most were created in response to the state's 1995 formal policy on what California calls "conservation banking." Increasingly, however, mitigation banking is being made a part of HCPs elsewhere. Some recent examples include: the announcement this year by the North Carolina Department of Transportation that it had established a mitigation bank to meet red-cockaded woodpecker mitigation requirements for future road projects; a pending HCP that would establish a mitigation bank for the nightingale reed-warbler on the Island of Saipan; a pending HCP that includes a mitigation bank for future development projects affecting the Delhi Sands flower-loving fly; a pending HCP that calls for both public and private mitigation banks to meet the needs of several different endangered species in San Joaquin County, California; and a recently approved International Paper Company HCP that contemplates the establishment of a mitigation bank for the red-cockaded woodpecker.

Despite the clearly increasing level of interest in the use of mitigation banking under the Endangered Species Act, the Services have no written policies or guidance on this topic. If one lesson can be drawn from the experience with mitigation banking under the Clean Water Act, it is that having a clear, uniform policy on the topic is very important to ensure that mitigation banking proposals are well conceived and properly evaluated. The continued development of endangered species mitigation banks in the total absence of any written policy on the topic runs the risk that poorly conceived banks will be approved, and that those potentially interested in establishing banks will be uncertain of the requirements for approval of them. These problems are especially important in light of the fact that a California bank, intended to meet mitigation requirements under both the California and federal Endangered Species Acts, was recently sidetracked by litigation brought in state court. Therefore, the Services should promptly fill this void by issuing a clear and detailed policy regarding the use of mitigation banks under the Endangered Species Act. Appended to this testimony is a suggested policy that the Environmental Defense Fund, in cooperation with Sustainable Conservation, prepared as part of a project on mitigation banking undertaken with the support of the National Fish and Wildlife Foundation. We commend it to the Subcommittee and to the Services.

REQUIRE THAT LARGE-SCALE AND CERTAIN OTHER HCPS ACHIEVE A NET IMPROVEMENT IN THE PROSPECTS FOR SPECIES SURVIVAL.

At present, many HCPs encompass very large areas. Even some smaller ones encompass all or most of the range of the species they address. Like all HCPs, they are being reviewed and approved under standards that allow a species to end up with a reduced likelihood of survival and little realistic prospect of recovery. It is rather surprising to me that the single most controversial aspect of habitat conservation planning appears to be the "no surprises" policy initiated in 1994. Far more important, in my view, is the fact that the standards for approval allow already imperiled species to be left worse off as a result of an HCP than they were without it. Current law allows a species to be made worse off by an HCP, provided only that it not be made so much worse off as to jeopardize its continued existence. So long as an imperiled species is not pushed below this very low floor, an HCP

applicant's only duty is to minimize and mitigate the adverse impact to the species "to the maximum extent practicable." In practice, that is a standard that can and does allow an HCP to leave a species considerably worse off than it was originally.

In 1982, when Congress launched its HCP experiment, no one could clearly foresee how these standards would work in practice. With the benefit of seventeen years of experience, it is appropriate that they be reexamined. In doing so it is important to keep in mind that the model on which Congress constructed the HCP idea was a California plan (the San Bruno Mountain HCP) that Congress itself described as improving the chance of survival of the species it affected, even while allowing some of the habitat they occupied to be permanently destroyed. That was possible because the San Bruno plan promised not just to leave a portion of the habitat undeveloped, but to manage that undeveloped portion actively so as to combat invasive, non-native grasses that threatened to render even the undeveloped portion unsuitable as habitat for the rare species. Thus, as both the plan's proponents and Congress characterized it, the San Bruno plan had a net positive impact on the prospects for conservation of the species it covered. While offering this as the model for future HCPs, Congress failed to articulate standards that would assure that future HCPs would have the same net positive impact as the model.

The adequacy of the standards for approval of HCPs is especially important now that a policy of providing regulated interests with long-term assurances has been made a part of the HCP program in order to induce their participation. Providing such assurances for plans that have high impacts on the survival prospects of the species they affect, low approval standards, and no assurance that the government will have the resources needed to step in when an unforeseen problem arises puts at risk the very species that the ESA seeks to protect. To address this problem, it is imperative to improve the conservation standards by which HCPs are judged.

Requiring that large scale HCPs achieve a net improvement in the conservation prospects of affected species will not impose a difficult or unreasonable burden. In most cases, it can be accomplished by ensuring that HCPs meaningfully address the many threats to species survival that lie beyond the reach of the ESA's prohibition against taking endangered species. Large scale HCPs that include substantial programs to control exotic species, restore fire or other natural disturbance regimes to protected lands, connect isolated habitat fragments, restore rare species to formerly occupied sites, and otherwise actively manage protected areas should have no difficulty meeting this standard.

PROVIDE THE SERVICES WITH THE RESOURCES NECESSARY TO DO THE JOB YOU HAVE GIVEN THEM

One of the most frequently heard complaints from landowners and local officials developing HCPs is that the Services lack the resources to participate effectively, and in a timely fashion, in the development of HCPs. Repeatedly, business representatives have said to me that for them, time is money, and that if they could only get decisions more quickly, they could commit more to conservation up front. The Services know this, but are unable to do anything about it, for a simple reason: they lack sufficient resources. Unless Congress recognizes and remedies this problem, the result will be that landowners and regulated interests will continue to suffer the frustration of waiting—and bearing the carrying costs of financing for their projects—while an underfunded and understaffed Service makes its way through a never-diminishing backlog of permit applications, interagency consultations, listing petitions, recovery plan drafts, and a myriad of other duties Congress has given it. From my vantage point, it has often appeared that some in Congress have sought to keep the Services from having the resources they need to carry out their statutory responsibilities as a way of hamstringing the Services. Ironically, however, they have ended up hamstringing the very landowners and business interests whom they purport to champion.

RECOMMENDED POLICY ON THE ESTABLISHMENT, USE, AND OPERATION OF MITIGATION BANKS UNDER THE ENDANGERED SPECIES ACT

INTRODUCTION AND PURPOSE

This draft policy provides guidance for the establishment, use, and operation of mitigation banks for the purpose of mitigating adverse impacts to threatened or endangered species under the Endangered Species Act (ESA). Although Section 9 of the ESA generally prohibits the "taking" of endangered or threatened species, Section 10 authorizes the issuance of permits allowing such species to be taken incidental to the carrying out of otherwise lawful activities. To issue such a permit, the

Service (either the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, depending on the species affected) must find, among other things, that the permit applicant has prepared a conservation plan that "will to the maximum extent practicable, minimize and mitigate the impacts of such taking." In implementing this provision, the Service has, on several occasions, allowed the requirement to mitigate the impacts of authorized taking to be met by the purchase of credits from various "mitigation banks." In addition, Section 7 of the ESA requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of listed species or adversely modify or destroy their critical habitat. To meet this requirement, federal agencies (or those whom such agencies authorize or fund) often include a mitigation component in their proposed activities, and the Service has sometimes encouraged them to establish mitigation banks as a means of anticipating and minimizing the impacts of their future activities.

The interest in, and use of, mitigation banks to meet the ESA's requirements are growing. At present, however, the Service has neither a formal policy nor any official guidance pertaining to the establishment, use, or operation of mitigation banks for endangered species conservation purposes. Without policy or guidance, decisions about mitigation banks have been ad hoc and uncoordinated. To provide better coordination within the Service and more consistent and useful information to parties outside the Service, the Service proposes to adopt the Policy on the Establishment, Use, and Operation of Mitigation Banks Under the Endangered Species Act.

In preparing this draft policy, carefully consideration was given to the 1995 interagency Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks under the Clean Water Act and the Food Security Act. The 1995 Guidance addresses the mitigation requirements of those laws with respect to wetlands and other aquatic resources. Also considered was the Policy on the National Wildlife Refuge System and Compensatory Mitigation Under the Section 10/404 Program, published on September 10, 1999. This latter draft policy also pertains only to mitigation requirements relating to wetlands and other aquatic resources. Although the interagency guidance and refuge policy consider many issues common to any form of mitigation banking, their conclusions are not necessarily transferable to endangered species mitigation. There are important differences between wetlands and endangered species and the goals and requirements of the laws pertaining to each, differences that often dictate different policies governing mitigation banking for wetlands and endangered species.

PART 1. SCOPE OF THE POLICY

This draft policy applies to the use of mitigation banks by nonfederal parties to meet the requirements to minimize, mitigate, or compensate for adverse impacts to listed species of authorized activities under the ESA. Such activities include those authorized by permits under Section 10(a)(1)(B) and those reviewed under Section 7.

PART 2. MITIGATION BANKS AS DISTINGUISHED FROM OTHER FORMS OF MITIGATION

Mitigation under the ESA has many forms. In some cases, to compensate for adverse impacts to listed species, land (or water) is deeded to a public or nonprofit agency for conservation purposes. In other cases, land remains with its current owner, but its use is restricted in some manner to benefit listed species. In still other cases, mitigation takes the form of monetary payments to a public or nonprofit agency, with the payments used to acquire land for conservation purposes, to manage already acquired land, or to perform some other specific task. Mitigation also can be through the purchase of defined "credits" from an approved "mitigation bank."

Several features distinguish mitigation banks from other forms of endangered species mitigation. Typically, in a mitigation bank, the mitigation is carried out before the action that causes the impact to be mitigated. Mitigation banks are therefore anticipatory, established in anticipation of some future demand for mitigation to compensate for the effects of future actions. Mitigation banks are also typically designed to provide a means of mitigating, at a single, larger site, the impacts of future activities at many smaller sites. Thus, mitigation banks are aggregative; they consolidate at a single site the mitigation for activities that may be widely dispersed. Mitigation banks can be designed to meet the future mitigation needs of either those who establish them or third parties. When mitigation banks have been established to meet the future mitigation needs of third parties, the sale of the bank's credits to third parties is typically at a price dictated by the market and is negotiated between the bank and the third party. Once the Service has approved mitigation through the purchase of bank credits by a third party, the legal respon-

sibility for the mitigation, including the responsibility to remedy any failings of the mitigation efforts, is assumed by the bank.

Some habitat conservation plans have features that superficially resemble mitigation banking but differ in other ways. For example, many habitat conservation plans allow individual landowners to meet their obligations by paying a local government a fixed, per-acre assessment on land they develop, with the proceeds used to finance a conservation program by the local government. These payments are sometimes called "wildlife impact fees." The rationale of these plans is that because the local government has authority over land use within its jurisdiction, it shares the legal responsibility for any incidental taking of endangered species that results from permitted development. In mitigation banking, however, the banker typically has no control over or legal responsibility for the actions of others. Only by selling credits to others does it assume their responsibility for mitigation. In habitat conservation plans financed by special local assessments, mitigation is also typically carried out either concurrently with or after development. The core idea of a mitigation bank is that the mitigation is accomplished first and "banked" for use later. These differences are what set mitigation banks apart from many local or regional habitat conservation plans.

Mitigation banks should also be distinguished from arrangements in which the party carrying out an action that requires mitigation simply pays a set amount into an established fund operated by a natural resources agency or nonprofit conservation organization. These arrangements are commonly referred to as in lieu payment programs, because a payment is made in lieu of actually taking any specific mitigation measures. Payments into such funds are generally intended for future conservation actions by the party administering the fund, not for a specific, identifiable mitigation activity.

PART 3. DEFINITIONS

For purposes of this policy, the following terms have the following meanings:

a. *Bank sponsor.—A bank sponsor* is any public or private entity responsible for establishing a mitigation bank.

b. *Creation.—Creation* refers to the establishment of habitat for an endangered or threatened species where no such habitat previously existed.

c. *Credit.—A credit* is a unit of measure representing the accrual of conservation benefits for an endangered or threatened species at a mitigation bank.

d. *Debit.—A debit* is a unit of measure representing the loss of conservation benefits at an impact or project site.

e. *Mitigation bank.—A mitigation bank* is a site where habitat for endangered or threatened species is preserved, created, or restored for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources elsewhere.

f. *Preservation.—Preservation* refers to the protection, usually in perpetuity, of habitat for an endangered or threatened species through the implementation of appropriate legal and physical mechanisms.

g. *Restoration.—Restoration* includes activities designed to restore habitat for an endangered or threatened species at a site where it formerly existed, as well as activities designed to improve the quality of degraded habitat for such species.

h. *Service.—Service* refers to either the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, or both.

i. *Service area.—Service area* refers to the designated geographic area or areas within which the credits associated with a particular mitigation bank can be used to compensate for authorized impacts on endangered or threatened species.

PART 4. PLANNING CONSIDERATIONS

Carefully designed and appropriately sited mitigation banks can contribute to the conservation of threatened or endangered species. Threatened or endangered species often face a wide array of threats, only some of which fall within the scope of the ESA's prohibition against taking such species. Conservation prospects can be improved by securing management commitments that effectively address those other threats (e.g., invasive exotic species, disruption of natural disturbance regimes, cowbird parasitism), increasing the likelihood that sites currently occupied by threatened or endangered species will remain occupied. Currently occupied sites may be too small or too distant from other occupied sites for listed species to be likely to survive in them over time. Mitigation banks that effectively enlarge such sites or buffer them from external threats thus can improve conservation prospects. Mitigation banks can also protect sites that are not currently occupied by listed or threatened species but that may be important to the future recovery of such species.

Two issues of paramount importance in planning any mitigation bank are the siting of the bank and its management program. Persons contemplating the establishment of a mitigation bank should confer in advance with the Service about both. Although recovery plans for individual species will rarely, if ever, identify particular parcels as desirable sites for mitigation banks or other conservation actions, they often identify broader areas within which recovery efforts will be focused. By siting mitigation banks in these areas, banks can create mitigation opportunities that both increase the options available to regulated interests and contribute to the conservation of the species. For species without recovery plans, or with plans that do not clearly identify those areas where recovery efforts will be primarily focused, conferral with the Service is especially important, to identify those areas it regards as of particular value in conserving the species.

For many species, individual mitigation banks are seldom large enough, by themselves, to support a viable population of a threatened or endangered species over the long term. But if the bank is located next to an existing area managed for the conservation of that species, even a small mitigation bank may increase the likelihood that a viable population can be maintained there. Similarly, if banks are sited to encourage dispersal between two areas managed for the conservation of the species, the bank may increase the likelihood of the species surviving at both locations. In some instances, banks may be able to provide replacement habitat for species currently occupying nearby unmanaged habitats at risk of becoming unsuitable because of succession. Sites that otherwise appear to be good locations for mitigation banks may turn out, on closer examination, to be inappropriate because of anticipated land-use changes in the surrounding area. These and other considerations relevant to the siting of a mitigation bank should be taken into account at the outset and discussed with the Service to ensure that the would-be banker's objectives and the Service's objectives for the species are compatible.

No less important than siting is the bank's management program. This, too, should be the focus of early discussion with the Service. Seldom will the needs of a threatened or endangered species be met on a completely unmanaged piece of property. More commonly, an active management program—to control invasive exotic species, replicate natural disturbance regimes; prevent an area's use by off-road vehicles, illegal garbage dumpers or others; and address myriad other threats—is essential to ensure that the potential conservation value of a particular property is realized and maintained. These management needs should be anticipated and provided for in any mitigation banking agreement.

As with siting considerations, recovery plans provide a logical starting place for identifying needed management measures for a proposed mitigation bank. Because actual management needs at any site depend on its particular circumstances, early conferral with the Service to identify appropriate management measures at that site is advisable.

PART 5. DEVELOPMENT OF A MITIGATION BANKING AGREEMENT

A mitigation banking agreement between the bank sponsor and the Service documents the agency's agreement with the objectives, proposed administration, and management of the bank. The agreement should describe in detail the physical and legal characteristics of the bank and how the bank will be established and operated. In general, the following information should be included:

a. The bank's goals and objectives, including identification of the species for which the bank is to be primarily operated.

b. An accurate legal description and map of the bank property and identification of the bank's owners and managers.

c. A detailed description of existing conditions at the bank site, including the nature and extent of its use by the species for which it is to be primarily operated.

d. A description of the specific management measures to be carried out at the site for the conservation of the species for which it is to be primarily operated.

e. The methods for determining credits within the bank and debits outside the bank, setting performance standards to calculate the availability of credits, and devising accounting procedures to track the creation and use of such credits.

f. The geographic service area within which credits from the bank can be used to mitigate the impacts of other activities.

g. Provisions for long-term management and maintenance.

h. Monitoring, inspection, and reporting requirements.

i. Contingency and remedial action responsibilities in the event that the sponsor does not fulfill the obligations of the agreement or the bank is transferred to another entity.

j. Financial assurances.

k. Provisions for amending the banking agreement.

PART 6. COORDINATION WITH OTHER LEVELS OF GOVERNMENT

Mitigation banks covered by this policy are those established to meet the requirements of the ESA. State or local laws may also impose requirements that can be met by the measures provided for in a mitigation bank. When that is the case, the Service requires that the relevant state or local government entity be given an opportunity to participate in the development of a mitigation banking agreement and to become a party to it. The Service will endeavor to coordinate its requirements with those of state or local government entities to the extent possible in order to minimize expenses, burdens, or duplicative requirements for bank sponsors, project proponents, and other governmental agencies. Although the Service will encourage the appropriate state and local governmental agencies to participate in the development of mitigation banking agreements and to become parties to them, the failure of such other agencies to participate in developing, or to sign an agreement that otherwise meets the requirements of this policy and of the ESA, shall not preclude the Service from entering into such an agreement.

PART 7. PUBLIC REVIEW AND COMMENT

Section 10 of the ESA requires that for applications for permits authorizing the taking of listed species, notice must be published in the Federal Register and an opportunity for public comment provided. Establishing a mitigation bank will not ordinarily necessitate an application for a permit. However, the use of credits from an established bank to mitigate subsequently approved actions will require a permit application, notice, and opportunity for public comment, if done pursuant to Section 10. If there are significant public concerns about the design or operation of a mitigation bank, it is better to discover them before approving a banking agreement than afterward. Therefore, before entering into a mitigation banking agreement under this policy, the Service will publish in the Federal Register advance notice of its intent to do so and invite public comment on the proposed agreement in the same manner as it does with respect to applications for permits under Section 10. In some instances, a mitigation banking agreement may be considered at the same time as a related permit application. When that is the case, the notice and comment requirements for each may be combined.

PART 8. SERVICE AREAS

Every mitigation banking agreement must specify the geographic area within which credits earned by the bank can be used to mitigate the effects on listed species of actions authorized by the ESA. Service areas should be determined with a view to using mitigation banks to advance the conservation of the affected species. Thus, banks generally should be located within areas designated in recovery plans as focal areas for recovery efforts, and their service areas should correspond to the recovery areas in which they are located. If there is no applicable recovery plan, banks should be sited, and service areas should be designated, to serve a comparable purpose.

Two exceptions to the preceding general guidance should be noted. First, some projects may be located outside a designated focal area for recovery. Banks located within areas designated as focal areas for recovery efforts should be able to provide credits for such projects. In such situations, the project to be mitigated will have little or no detrimental impact on recovery prospects, and the mitigation bank will aid those prospects.

A second exception to the general guidance regarding service areas concerns projects located in focal areas for recovery efforts and undertaken after the recovery objectives for those areas have been achieved. Such projects should be able to buy mitigation credits from banks located in other recovery focal areas. Allowing such projects to do so will help achieve the recovery objectives in the focal area where the bank is located, without hurting these objectives in the area of the project requiring mitigation.

PART 9. CREDITS, DEBITS, AND ACCOUNTING PROCEDURES

Credits and *debits* are the terms used to designate the units of trade (i.e., the currency) in mitigation banking. Every mitigation banking agreement should specify the methods for determining credits within the bank and debits outside the bank, setting performance standards to calculate credit availability, and devising accounting procedures to track the creation and use of such credits. If several mitigation banks are created for the same species, the Service will use a consistent methodol-

ogy for determining credits in each of them and make that methodology publicly available. That methodology should also be consistent with the methodology used to determine mitigation requirements for activities mitigated by means other than the purchase of credits from mitigation banks.

Credits associated with a mitigation activity (as well as debits associated with an activity requiring mitigation) should reflect an assessment of the degree of beneficial (or detrimental) impact of the activity on the prospects for the affected species' survival. In theory, population viability analyses could be used to quantify the degree of impact on survival prospects. In practice, however, the information needed for rigorous population viability analyses is often unavailable. As a result, the units of currency may take the form of surrogates for the extent of impact on population viability, such as occupied acres or nesting pairs beneficially or detrimentally affected. In determining credits or debits, the same types of activities may be weighted differently depending on where they occur (e.g., nearby or far from existing protected areas), or other factors (e.g., quality of habitat at the affected site). The rationale for any differential weighting schemes should be clearly articulated in the mitigation agreement or elsewhere.

In some instances, banks may be designed to conserve habitat types that are typically used by several listed species. In such cases, it usually is necessary to determine that the species of concern generally associated with the habitat type do in fact use the mitigation bank site. If some of the species typically associated with a particular habitat type do not actually use the mitigation bank site, it may be inappropriate to mitigate the impacts of activities affecting that habitat type elsewhere by using credits from the mitigation bank.

In general, three types of activities of mitigation banks can generate credits: (1) habitat preservation (the preservation of specified, existing habitat through a conservation easement, transfer of fee title ownership to a conservation entity, or other appropriate means); (2) habitat restoration (the restoration of habitat for an endangered or threatened species at a site where it formerly existed or the restoration of a degraded habitat to an improved condition); and (3) habitat creation (the creation of a specified habitat where it did not previously exist). When deciding whether the preservation of existing habitat is appropriate as the sole basis for generating credits at a mitigation bank, consideration should be given to whether that habitat is under a demonstrable threat of loss or substantial degradation due to activities not otherwise likely to be effectively controlled (such as invasion by exotic species or ecological succession due to the absence of natural disturbance regimes). Typically, mitigation banks involving either habitat creation or restoration activities also require preservation of the restored or created habitat. Some mitigation banks encompass all three types of activities. The mitigation banking agreement should identify both the activities that will produce the credits and the methodology for quantifying them. In the case of habitat creation and restoration activities, the banking agreement should specify the performance standards that, when met, will result in credits being created at the bank site.

Credits "mature" and become available for use at different times, depending on the nature of the activity producing the credits. In general, credits for preserving existing habitat are available for use as soon as an easement, title transfer, or other satisfactory mechanism ensuring dedication of the site to conservation and management in accordance with a particular plan is in place. Credits for creating or restoring habitat are available for use only after the creation or restoration activities have been successfully implemented and an easement, title transfer, or other satisfactory mechanism ensuring dedication of the restored or created habitat has been put in place.

The price of credits sold to a third party shall be agreed on by the bank sponsor and the third party; the Service will play no role in setting the price of credits. The mitigation banking agreement should require that the bank sponsor establish and maintain an accounting system (i.e., a ledger) to document all transactions involving bank credits. Each time a bank makes an approved credit/debit transaction, the bank sponsor should submit a statement to the ServiceThe bank sponsor should also submit to the Service an annual ledger report for all mitigation bank transactions.

PART 10. PROVISIONS FOR LONG-TERM MANAGEMENT AND MAINTENANCE

In general, mitigation banking agreements should provide that the habitat resources in such banks will be conserved and appropriately managed in perpetuity through mechanisms such as conservation easements or transfer of title to a governmental resource agency or nonprofit conservation organization, accompanied by an adequate endowment for long-term management. When conservation easements are used to ensure permanent protection, they should effectively restrict harmful activi-

ties that could jeopardize the purpose of the bank, but they need not restrict activities or uses that are compatible with the bank's purposes. In appropriate circumstances, real estate arrangements may be approved that provide for less than permanent protection of the habitat resources in a bank (such as when the adverse effects of the project requiring mitigation are temporary or the habitat resources at the site of the project requiring mitigation are unlikely to remain there for long, with or without the project). An alternative and generally preferable way of dealing with these latter circumstances is to adjust the amount of credits required to compensate for the anticipated adverse effects (i.e., the mitigation ratio) in light of the expected duration of those effects.

PART 11. USE OF A MITIGATION BANK VERSUS ON-SITE MITIGATION

This policy does not presume that the use of a mitigation bank is generally preferable to on-site mitigation, or vice versa. Rather, the purpose of the policy is to ensure that mitigation banks are sited and managed so as to contribute to the conservation of the affected species. Unless mitigation opportunities at the site of the proposed project are also likely to improve the conservation prospects of the species, a mitigation bank should be preferred to on-site mitigation.

PART 12. USE OF PUBLIC LANDS AS A MITIGATION BANK

Federal land management agencies, like all other federal agencies, have an affirmative responsibility, under Section 7(a)(1) of the ESA, to use their various authorities to advance the ESA's purposes by carrying out programs for the conservation of listed species. This affirmative duty is independent of any separate duty of nonfederal persons to mitigate the adverse effects on listed species of activities that they carry out. Accordingly, mitigation of the adverse effects of nonfederal actions should, whenever possible, be carried out on nonfederal lands, and mitigation banks should not be sited on federal lands. Mitigation banks may be sited on other public lands (such as state or local government lands). Mitigation credits generated by banks of this nature should be based solely on those values in the bank that are supplemental to the public program already planned or in place. Existing values represented by ongoing or already planned public programs, including preservation value, should not be counted toward bank credits.

Similarly, federally funded conservation projects undertaken by a separate authority and for other purposes, such as the Wildlife Habitat Improvement Program or the Partners for Fish and Wildlife Program, cannot be used for generating credits in a mitigation bank, at least during the period that the landowner is required to maintain the projects. However, these other authorities typically allow a landowner to remove restored or created habitat at the end of a specified period. If a landowner agrees to preserve such areas beyond the term of the original agreement, mitigation credits may be issued for doing so. Similarly, a landowner's agreement to protect in perpetuity habitats originally created or restored pursuant to endangered species safe harbor agreements can serve as the basis for credits in a mitigation bank.

PART 13. MONITORING REQUIREMENTS

The bank sponsor is responsible for monitoring mitigation banks based in whole or in part on habitat restoration or habitat creation activities, in accordance with the monitoring provisions in the mitigation banking agreement to determine the level of success and any problems requiring remedial attention. Monitoring provisions should be specifically described in the banking agreement and be based on scientifically sound performance standards prescribed for the bank. Monitoring should be conducted at time intervals suitable for the particular project type and until such time as the Service has decided that it has been successful. The bank sponsor should submit annual monitoring reports to the Service.

In addition to the monitoring activities required of the bank sponsor, the mitigation banking agreement must allow for the Service's right to enter bank lands in order to evaluate compliance with the banking agreement, the results of habitat creation or restoration activities, and the implementation of required management activities.

PART 14. REMEDIAL ACTIONS

The mitigation banking agreement should stipulate the general procedures for identifying and implementing remedial measures at a bank. These remedial measures should be based on both information in the monitoring reports and the Service's inspections. The Service, in consultation with the bank sponsor, will decide on the need for remediation.

PART 15. FINANCIAL ASSURANCES

The bank sponsor is responsible for securing sufficient funds or other financial assurances to cover contingency actions in the event of the bank's default or failure. In addition, the bank sponsor is responsible for securing adequate funding to monitor and maintain the bank during its operational life and to endow its proper management thereafter. The total funding requirements should reflect realistic cost estimates for monitoring, long-term management, and contingency and remedial actions.

Financial assurances may be in the form of performance bonds, irrevocable trusts, escrow accounts, casualty insurance, letters of credit, or other approved instruments. Such assurances may be phased out or reduced once the bank has demonstrated that it has met its performance requirements as described in the banking agreement.

THE ENVIRONMENTAL DEFENSE FUND, PREPARED IN COOPERATION WITH THE NATIONAL CATTLEMEN'S BEEF ASSOCIATION

SAFE HARBOR: HELPING LANDOWNERS HELP ENDANGERED SPECIES—INTRODUCING A NEW CONCEPT IN ENDANGERED SPECIES CONSERVATION ON PRIVATE LANDS

Conservation comes naturally to many landowners. America's farmers, ranchers, and other landowners know that if they exhaust the soil, abuse the land, or pollute the waters, their fields, pastures, streams, and woodlots will become less productive. And so, for generations, they have tried to be good stewards. They embrace conservation because it makes economic sense to them and because they love their land.

Many landowners have also worked diligently to attract wildlife to their property. Whether because they enjoy hunting, fishing, or just watching and listening, most landowners are happy to share their land with wildlife. Indeed, the chance to have interesting plants and animals close by has long been one of the real joys of land ownership.

Today, however, some of these landowners are wondering whether they should keep the welcome mat out for wildlife. it's not because they no longer enjoy wildlife, but because they fear that the presence of some animals—especially endangered species—could restrict what they can do with their land. There is an unfortunate irony to this. Most endangered species will need more and better habitats if they are to recover, and who better than America's landowners to provide those places? Yet if landowners believe that creating these habitats threatens their own future, they are not likely to do so. And who can blame them?

A lot of ideas have been put forth to address this dilemma. This handbook describes one very effective and flexible approach: "safe harbor" agreements. All sorts of landowners are taking part in these easy-to-negotiate agreements, including farmers, forest landowners, resort owners, and even residential and corporate landowners. Together, they are making hundreds of thousands of acres of privately owned land available to America's disappearing wildlife and are doing so without new government regulations. This handbook describes safe harbor agreements and the way in which they work. It aims to help you decide if a safe harbor agreement makes sense for your land. Safe harbor agreements aren't appropriate in every situation. Nor, as this handbook will explain, will they solve every problem faced by landowners whose property is home to endangered species. But they can solve some important ones and, in doing so, assure landowners that their continued stewardship won't lead to land-use restrictions.

WHAT IS A SAFE HARBOR AGREEMENT?

The basic idea behind a safe harbor agreement is that people who do good deeds shouldn't be punished for doing them. And so, in a safe harbor agreement, a landowner commits to doing a "good deed" for endangered wildlife—usually by restoring or enhancing habitats for endangered species—and the government pledges not to "punish" the landowner for doing that good deed. This may seem lilac such a sensible idea that there shouldn't be any need to enter into an agreement to accomplish it. But, actually, there is.

The reason is that under Federal law (Endangered Species Act), and sometimes under state law, the presence of an endangered species on a property may result in restrictions on activities undertaken on that land that may be harmful to that species. Thus if landowners were simply to restore wildlife habitats on their property, and those habitats became homes to endangered animals, they might find

themselves in a predicament. A landowner might, for example, have to apply for a permit to cut the stand of trees he planted, to drain the wetland he created, or to convert the prairie he restored into productive cropland.

A safe harbor agreement avoids dilemmas like these. It assures landowners that if they do what they have agreed to do (e.g., plant the stand of trees, create the wetland, or restore the prairie), they won't incur any new restrictions on the use of the land if their actions result in endangered species taking up residence. That is, they are free to develop that land, even if endangered species have shown up there in the meantime. Note, however, that safe harbor agreements don't affect any preexisting restrictions that mall append to a property as a result of endangered species already living there. This is an important point for landowners to understand, and it is discussed in greater detail elsewhere in this handbook.

Safe harbor agreements are a relatively new conservation tool and have never been formally tested in the courts. However, since the first safe harbor agreement was developed in 1995 to protect red-cockaded woodpeckers in the Sandhills of North Carolina, the idea has been praised by many landowner and environmental groups alike. In an arena where controversy has been all too common, safe harbor agreements to protect endangered species have generated uncommon enthusiasm.

Safe harbor agreements come in two basic forms. One is an individual agreement between a landowner and the Federal agency responsible for conserving the species (the agency is usually the U.S. Fish and Wildlife Service, but for some fish species is the National Marine Fisheries Service). The landowner agrees to do something beneficial for endangered species in exchange for a guarantee of being subject to no additional regulatory restrictions related to the newly restored or enhanced habitat. The other is an "umbrella" agreement. In this type of agreement, an intermediary (which can be a state fish and game agency, state or Federal agricultural agency, or even a private conservation organization) develops a safe harbor program for a specific area, such as a county or group of counties. Once the Fish and Wildlife Service or the Marine Fisheries Service approves that program, the intermediary works with individual landowners to develop written agreements that are covered by the intermediary's umbrella agreement. The result for the landowners is exactly the same—they can now restore habitats for endangered species without fear of new regulations—but much of the red tape is handled by the intermediary that holds the permit.

Woodpeckers in the Sandhills of North Carolina

The license plate on Dougald S. McCormick's Nissan truck bore an eye-catching message: "I EAT RCWS." The "RCWS" part of that message referred to red-cockaded woodpeckers, an endangered species found in the longleaf pine forests of the Sandhills region of North Carolina, where McCormick's family has long owned about 5,000 acres of forestland. Like many landowners in the Sandhills, McCormick was once wary of having this rare bird on his property. But not any more. Now Dougald McCormick is one of nearly two dozen landowners in the Sandhills who have enrolled their land in the nation's first safe harbor program. By doing so, he has put out the welcome mat on his own property for this elusive bird. Satisfied that the safe harbor program protects his interests as well as those of the bird, he now says, "I want to see this succeed."

The red-cockaded woodpecker inhabits mature southern pine forests and requires periodic fire to regenerate the fire-resistant pines and to suppress the growth of hardwood trees in the understory. The woodpecker's numbers have declined dramatically throughout its range as a result of the logging of mature pine forests, the suppression of fires, and other threats. Many landowners in the Sandhills and elsewhere were concerned that by allowing their pines to mature or by utilizing fire or other means to control hardwood undergrowth, they could attract woodpeckers to their property and potentially incur land-use restrictions as a result of the birds' presence.

Yet many Sandhills area landowners were more than willing to undertake activities to improve the woodpecker's habitat were it not for this concern. For example, many landowners rake the needles shed by the longleaf pines and sell the pine straw as a landscaping mulch. In Sandhills forests, in fact, pine-straw production is often more lucrative than timber production. Managing forests for pine straw creates ideal woodpecker habitat. In addition, many golf courses in the Sandhills contain mature pine forests with relatively open understories. Both course managers and golfers value the aesthetic appeal of park-like pine forests. However, even though improving woodpecker habitat was consistent with their land-management objectives, pine-straw producers, golf course owners, and other landowners were nervous about doing anything to attract endangered species to their properties. The safe harbor program was established with these landowners in mind.

Under the Sandhills safe harbor program, landowners enter into an agreement with the local office of the Fish and Wildlife Service under which they pledge to protect habitat for any woodpeckers that may already be on their property and to restore or enhance habitat that additional woodpeckers may use. In return, the landowners are assured that they will not be subject to any new restrictions if the population of woodpeckers increases on their property. In addition, neighboring landowners are protected against additional regulations if new groups of woodpeckers are attracted to the participating landowners' property and utilize habitat on the neighboring property.

Two dozen landowners with over 19,000 acres have enrolled in the program. They include Jerry Holder, a leader in the North Carolina Pine Needle Producers Association, who earns income by raking pine straw from his own land and that of other landowners with whom he contracts. The land enrolled in the Sandhills safe harbor program supports approximately 50 family groups of woodpeckers and has enough habitat for perhaps twice that number. The landowners have enhanced red-cockaded woodpecker habitat by using prescribed burns, drilling artificial nest cavities for woodpeckers, mechanically removing hardwood undergrowth, lengthening forest rotations, and other actions.

Safe harbor not only has been beneficial to the woodpeckers, but also has fostered better relations between the Fish and Wildlife Service and landowners. In the fall of 1996, for example, Hurricane Fran roared through the Sandhills, taking many old pines with it. One of them, on the property of a participating landowner, had a nest cavity for the woodpeckers. This landowner promptly called the Fish and Wildlife Service to request that a biologist be dispatched to drill an artificial cavity in another tree so as not to lose the woodpeckers on his property.

Those who have joined the Sandhills safe harbor program include the owners of small woodlots, horse farms, and even some of the nation's best known golf courses. According to Brad Kocher, maintenance director at the famous Pinehurst Golf and Country Club, "Everybody wins with this."

WHAT CAN A LANDOWNER DO UNDER A SAFE HARBOR AGREEMENT?

Landowners can do many things to help endangered wildlife under safe harbor agreements. The possibilities are as varied as the species and their needs. For example, a lot of endangered species occur in habitats that are created or maintained by fires. Such animals include Kirtland's warblers in Michigan, which nest exclusively in stands of young jack pines; Karner blue butterflies in New England and the Great Lakes states, whose caterpillars feed on only lupines in sunny clearings; Plymouth red-bellied turtles in Massachusetts, which require open, sunny pond shores for successful egg-laying; and red-cockaded woodpeckers in the Southeast, which live almost exclusively in open, park-like pine forests, where hardwoods are kept at bay by frequent fires. In many of the places where these species occur today, regular prescribed burning or other actions (mechanical or chemical management of hardwoods, controlled grazing, regulated timber harvesting) that replicate the effect of fires are used to maintain and enhance the habitats. Pledging to carry out such management practices may qualify a landowner for a safe harbor agreement, as in the case of several dozen forest landowners who have enrolled their land in safe harbor programs in North and South Carolina. In other cases, landowners have agreed to forgo cutting trees on a portion of their property for a specified period of time so that the trees can grow old and tall enough to be of value to species that depend on older forests. Thus safe harbor agreements can eliminate the incentive for "panic cutting" that has prompted some landowners to cut their woodlots sooner than they otherwise would have, just to avoid the possibility of facing harvest restrictions if endangered species showed up on their property.

Landowners can also actively restore prairies (sometimes by using livestock grazing as a management tool), riparian zones, and other lost or degraded habitats that may become suitable once again for endangered species. Returning former cropland or a tree farm to naive vegetation may also provide needed habitats for rare species, as can the removal of noxious weeds and other non-native plants and animals. All these types of activities may qualify for a safe harbor agreement because, in all cases, the landowners are performing good deeds for endangered species that they are not obligated to perform under any law or regulation.

Finally, safe harbor agreements can be used to reintroduce an endangered species into areas where it formerly occurred. Texas ranchers are doing just this for the northern aplomado falcon, the rarest falcon in North America.

Northern Aplomado Falcon

Safe harbor not only is a useful way to encourage private landowners to undertake land-management activities to benefit endangered species, but also can be used

to reintroduce endangered species to areas where they Once occurred without subjecting landowners to increased regulation. Witness the case of the rarest falcon in North America: the northern aplomado falcon.

The northern aplomado falcon once roamed the grasslands of Arizona, New Mexico, and Texas south to northern Central America. By the middle of this century, the falcon was all but gone from the United States, with the last documented nesting pair recorded in New Mexico in 1952. In 1986, the falcon was officially listed as endangered by the Fish and Wildlife Service.

The disappearance of the falcon in the United States is believed to be largely a result of the conversion of grassland savannas to agriculture and other uses. The widespread use of certain pesticides, such as DDT, also may have contributed to the falcon's demise. In addition, the suppression-of fires allowed dense brushy vegetation to overtake the open grasslands required by the falcon. Interestingly, livestock grazing maintains suitable open habitat for the northern aplomado falcon; consequently, falcons continue to live in and around cattle ranches in Mexico and Central America.

The future of the northern aplomado falcon in the United States relies in large part on a captive-breeding program established by The Peregrine Fund, a nonprofit conservation group, in the 1970's. The first captive-bred falcons were released on public lands in southern Texas in the 1980's. Yet early on in the program, both The Peregrine Fund and the Fish and Wildlife Service saw the need to reintroduce the birds on private ranch land, which composes the overwhelming majority of the bird's potential habitat in southern Texas. Unfortunately, ranchers were unwilling to allow such releases after the bird was added to the endangered species list for fear of becoming subject to increased land-use restrictions. Peter Jenny, a biologist with The Peregrine Fund, explains the ranchers' reluctance: "[Landowners] were scared to death that the [Endangered Species] Act would limit their land-use options. The key to unlocking it was safe harbor."

Under a recently initiated safe harbor program, northern aplomado falcons are to be released or, 1.24 million acres of ranch land in southern Texas. Some of the released birds have even begun nesting in the wild. The program is administered by The Peregrine Fund so the landowners work directly with the fund's biologists. Landowners simply agree to allow the biologists access to their land and to permit the fund to construct release towers where the falcons are first acclimated and then released. In addition, Peregrine Fund biologists are granted extensive access to the release sites in order to monitor the young falcons. In return, participating landowners don't have to worry about the Endangered Species Act as it applies to the falcon. If they eventually decide to develop or alter their property in any manner they wish, the presence of the birds will not prevent them from doing so. Moreover, because northern aplomado falcons are so rare, some landowners may be able to charge birdwatchers for the privilege of viewing falcons on private ranches. And, of course, thanks to safe harbor, the northern aplomado falcon is free to once again soar over the grasslands of southern Texas.

WHAT CAN A LANDOWNER NOT DO UNDER A SAFE HARBOR AGREEMENT?

Safe harbor agreements do not free landowners from the obligation to avoid harming those endangered species that already are present on their property. In other words, safe harbor agreements do not allow landowners whose property already supports red-cockaded woodpeckers, Karner blue butterflies, or any other endangered animal to develop or alter the existing, occupied habitat in ways that are harmful to the species (they might be able to do so under a different type of permit, but that is a subject outside the scope of this handbook). But landowners who are interested in creating new habitat for endangered species or enhancing existing habitat will not face any new regulations or restrictions under the Endangered Species Act on the habitats they create or improve. In some cases—for example, when a landowner creates a wetland—there may be requirements stemming from other laws, such as state or Federal statutes that regulate the filling of wetlands, that affect the landowner's future obligations. You should inquire about this possibility before deciding to enter into a safe harbor agreement.

WHEN IS A SAFE HARBOR AGREEMENT APPROPRIATE?

Safe harbor agreements make sense whenever landowners are interested in restoring or enhancing habitats for endangered species, but are concerned about incurring additional regulatory restrictions on the use of their land. Of course, the Fish and Wildlife Service will expect a landowner to do something that is reasonably likely to benefit the conservation of an endangered species before it approves a safe harbor agreement. A property owner cannot simply put up a birdhouse in her backyard

and expect the Fish and Wildlife Service to enter into a safe harbor agreement for her entire farm or ranch. But if she makes a serious effort to create new habitats or improve existing habitats for endangered species, she should have no trouble meeting the requirements for a safe harbor agreement. Obviously, the more substantial the undertaking, the more likely it is to receive priority attention from the Fish and Wildlife Service. The Service may not have the resources to respond to every landowner's request for such an agreement and may have to choose among them.

Species that inhabit ecosystems that are created or maintained by fire are good candidates for safe harbor agreements because landowners can often use prescribed burning or mowing to create new areas for them. Species whose habitats are being destroyed by non-native weeds or feral animals are also appropriate subjects for safe harbor because landowners can restore or improve the endangered animals' habitats by pulling up the weeds or keeping the feral animals out of sensitive areas. There are many examples along these lines. The key point is that, in all cases, landowners are going out of their way to better the lives of endangered species by improving habitats. In some cases, these improvements have other benefits as well. In the Hill Country of Texas, for example, creating habitat for the endangered black-capped vireo will also provide an excellent environment for white-tailed deer, a valuable game species. And in southern Texas, restoring coastal prairie for the very rare Attwater's prairie-chicken can improve the range land for cattle.

Bear in mind that not all habitats can be readily restored or enhanced, and not all endangered species will respond quickly to favorable management. It may take decades or even centuries to grow a forest suitable for northern spotted owls. And even if a landowner creates the habitat, the endangered species may not come, especially if the nearest surviving populations are far away. Thus it makes sense for landowners to discuss their plans with knowledgeable people before investing lots of time or money in restoration projects.

Attwater's Prairie-chicken

The endangered Attwater's prairie-chicken, once a common inhabitant of the coastal prairies of Louisiana and Texas, is now one of the rarest birds in the world. Although it was one of the first species added to the endangered species list in 1967, its numbers have steadily declined in the intervening 32 years. Presently, fewer than 50 remain in the wild. A more substantial population is maintained in captivity.

Like most other endangered species, the prairie-chicken is threatened by the destruction of its habitat. The conversion of native prairie to crops and other land uses, the poor management of livestock, the suppression of fires, and the invasion of alien woody plants, including Chinese tallow and McCartney rose, have resulted in the loss and degradation of the bird's preferred habitat.

Like that of many other endangered species, much of the prairie-chicken's habitat is on privately owned land. Thus for it to recover from its perilous state, it will need the cooperation of private landowners willing to restore native prairie. Thanks to a safe harbor program administered by the Sam Houston Resource Conservation and Development Area (SHRCD), the bird's future may be measurably brighter in Texas.

Under this safe harbor program, ranchers and corporate landowners are restoring native prairie along the Texas coast. Prairie restoration not only will improve habitat for the prairie-chicken, but also will provide better forage for cattle. That's right—by restoring native prairie, ranchers expect the amount and quality of forage to increase. Thus, there is an economic reason for them to join the safe harbor program. Even so, restoration can be an expensive task and require technical expertise that not all landowners have. Therefore, SHRED is providing landowners with technical assistance and cost-share money to help them in prairie restoration.

Since the program was initiated in 1995, 11 landowners have enrolled over 31,000 acres of land in the program. They have received more than $100,000 of cost-share money to assist them in restoring habitat for the prairiechicken. Yet the benefits of safe harbor for this bird and other endangered species cannot be reduced simply to the number of landowners enrolled or the acreage of habitat protected or the amount of cost-share money distributed. Safe harbor has produced less tangible, but no less important, benefits. In particular, safe harbor has generated considerable good-will among landowners toward the conservation of endangered species. Brian Dinsmoor, who manages the Amoco Corporation's Chocolate Bayou chemical plant, is enthusiastic about his company's participation in the program: "This is a great way to enhance the environment around our plant without restricting future use of the land."

HOW DOES A LANDOWNER ENTER INTO A SAFE HARBOR AGREEMENT?

If you think that a safe harbor agreement might be appropriate for your property, the first steps to determine if there are endangered wildlife species in your area and if your land contains suitable or potentially suitable habitat for such species. If you don't know, you may want to contact your state fish and game department, the nearest Natural Resources Conservation Service office, the Fish and Wildlife Service, The Nature Conservancy, or another knowledgeable organization Consulting foresters or consulting biologists can often provide this information as well. If your land contains suitable or potentially suitable habitat for endangered species, you should learn more about the types of actions that could benefit them (again, biologists with these organizations and agencies should be able to assist you). If such activities are consistent with your land-management objectives for your property, you may want to pursue a safe harbor agreement. The fish and game department of your state will know if an umbrella safe harbor program is already in operation in your area and whether it covers the species that may utilize your property. If there is no umbrella agreement, you should contact the Fish and Wildlife Service office in your region.

You may be reluctant to contact the Fish and Wildlife Service until you are sure that a safe harbor agreement will be in accord with your land-management objectives. If this is the case, it may be preferable to work closely with a state agency or a consultant that you know well and trust to evaluate your property before going forward with a safe harbor agreement.

DETERMINING THE BASELINE

If you own land on which an endangered wildlife species lives, a safe harbor agreement could be just as useful as it is for land without such a species. It may be possible, for example, to create ore habitat for that species or to improve the habitat that already exists, both of which undertakings qualify for a safe harbor agreement. The safe harbor agreement, however, must reflect the fact that an endangered species already inhabits the property. The existing populations become part of your ''baseline.'' A safe harbor agreement doesn't change preexisting baseline responsibilities (in other words, it doesn't change the responsibilities you may have toward the animals and their habitats that are already present on your property), but it does guarantee that you won't incur any added obligations as a result of helping those endangered populations increase in number.

If you think that you may have an endangered species on your land, you may want to have an independent biologist visit your property before deciding to enter into a safe harbor agreement. If you decide to go forward with a safe harbor agreement, the Fish and Wildlife Service will want to know how much land is occupied by endangered species and the condition of that land so that these baseline conditions can be written into the agreement. For example, if you have five families of red-cockaded woodpeckers on your property and you want to create enough habitat for three more, a safe harbor agreement will allow you to eliminate the habitat for those three new families at a later date, if you choose to do so. But the safe harbor agreement will not permit you to eliminate the habitat of all eight families because five of them were already on your land before you signed the agreement and began to create more woodpecker habitat.

The baseline often is expressed in terms of the number of acres of habitat of a particular type and quality, rather than in terms of the number of individual animals on the property. Red-cockaded woodpeckers are somewhat unusual in that they tend to remain in the same locations for many years. Other species move around from year to year, or their populations rise and fall in response to the weather, the availability of food, and other factors. For these types of animals, it is a lot easier (and more sensible) to express the baseline as some quantity of existing habitat that is currently being used by an endangered species. As this brief discussion makes clear, determining a baseline can involve some fairly technical issues. Be sure to speak to employees of the Fish and Wildlife Service or other knowledgeable people about your baseline responsibilities and how they will be measured.

Identifying the species that already are on your property may be useful for several reasons. At the very least, it will clarify your existing responsibilities. Often, landowners have felt frustrated about their inability to get straightforward information about what they should or should not do on their land because of the possible presence of endangered species. With a clear baseline in a safe harbor agreement, landowners know their rights and obligations.

ADJUSTING THE BASELINE

Sometimes endangered species disappear from an area for reasons beyond a landowner's control. A hurricane may knock down the pine trees inhabited by red-cockaded woodpeckers; a prolonged drought may eliminate an isolated population of rare butterflies living in a wet meadow; or predators, disease, or other unanticipated events may decimate a small and isolated population of endangered animals. If that happens to all or part of the baseline population of endangered species on your property, it may be possible to get the Fish and Wildlife Service to reduce your baseline responsibilities.

Assume, for example, that your land supports a baseline of five families of red-cockaded woodpeckers. If a storm knocks down all the trees inhabited by two of those families and renders the habitat unsuitable for them, the Fish and Wildlife Service will reduce your baseline responsibilities to three families. This does not affect your ability to destroy or develop at a later date the habitat you create for any additional woodpecker families under your safe harbor agreement. It's important, however, to discuss any baseline adjustments with the Fish and Wildlife Service long before you contemplate developing your property to avoid any misunderstandings. Indeed, it's a good idea to contact the Fish and Wildlife Service as soon as possible after the fire, flood, drought, or other natural disturbance has struck your property if you thinly that it has resulted in the loss of baseline habitat.

As discussed later in this handbook, under certain circumstances, you might voluntarily agree to adjust your baseline upward. Such a modification may serve as mitigation for activities carried out by you or another landowner. Indeed, it may be possible to generate income from having successfully restored or enhanced habitat for endangered species (see "Marketing safe harbor 'credits' ").

ACCESS TO THE LAND

Most landowners restrict access to their land in some manner. Safe harbor agreements do not require landowners to allow public access to their property for hunting, fishing, camping, hiking, birdwatching, or any other purpose. Landowners can permit as much or as little public access to their land as they please.

Safe harbor agreements do, however, necessitate that landowners allow access to their property for the limited purposes of determining the baseline, ascertaining compliance with the agreements, and perhaps capturing and relocating species at the expiration of the agreements. In order to determine the baseline, some type of survey by a qualified person is generally necessary. This baseline survey can be carried out by an employee of the Fish and Wildlife Service or by a qualified person acceptable to the service and the landowner. If an umbrella safe harbor program is in place for a particular area, baseline surveys are often done by the intermediary that holds the umbrella permit.

Many landowners are understandably reluctant to allow employees of the Fish and Wildlife Service onto their land to survey for endangered species. There are a couple of ways to handle the baseline survey if you do not want it to be conducted by the Fish and Wildlife Service. You can hire a consultant, provided that his or her expertise is acknowledged by the Fish and Wildlife Service. Or you can ask your state fish and game department to perform the survey. The important step is to discuss the issue of access with the Fish and Wildlife Service early in the process, before you spend money on a consultant. Remember that the Fish and Wildlife Service wants property owners to improve habitat for endangered species; its staff should be eager to accommodate you, although their limited time may necessitate that they give first priority to the most significant projects.

Bear in mind, too, that the baseline survey need cover only the particular species in question. It is not an invitation to the Fish and Wildlife Service, the state fish and game department, or anyone else to conduct a search for any and all endangered species on your property. You can ask the person conducting the survey to focus on only the endangered species whose habitat you intend to restore or enhance. If you want to help Karner blue butterflies, for example, the survey need address only Karner blue butterflies. The one exception to this rule is that the Fish and Wildlife Service cannot approve a safe harbor application that purports to help one endangered species by harming another. In other words, the Fish and Wildlife Service will not let you convert important habitat for bald eagles into habitat for red-cockaded woodpeckers as part of a safe harbor agreement. But this situation has not arisen in any of the safe harbor agreements that have been developed or proposed to date.

Once an agreement is finalized, it will be necessary for the Fish and Wildlife Service or the intermediary (under an umbrella permit) to visit the property to make sure that the landowner has complied with the terms of the agreement. The

timing, frequency, advance notice requirements, and other aspects of such visits can be individually negotiated.

Some safe harbor agreements stipulate that if landowners decide to use the habitat that has been restored or enhanced under the agreements, such that endangered species are likely to be harmed by that activity, the landowners will give advance notice of their intention to do so. They must allow the Fish and Wildlife Service or its designee to try to capture and relocate any animals in harm's way. Thus access for such rescue and relocation efforts may also be required in a safe harbor agreement.

CONFIDENTIALITY

The willingness of landowners to enter into safe harbor agreements might depend on the baseline calculation. But many landowners won't necessarily know in advance what the survey is likely to reveal. As a result, they may reason that if the baseline turns out to be high, they would prefer to keep that information to themselves and perhaps not enter into safe harbor agreements. Is there a way for landowners to find out what their baseline responsibilities would be while keeping that information confidential? The answer is yes.

These concerns about confidentiality can be addressed to the satisfaction of most landowners. A landowner who is particularly concerned about what a baseline survey might reveal can simply hire a competent biologist to examine the property carefully in advance of the official survey. The preliminary survey should give the landowner a pretty good idea of what species reside on the land and thus what the baseline survey is likely to discover. The landowner can then decide whether to go forward.

If a landowner is considering enrolling his land under an umbrella safe harbor agreement, the agency or organization that is acting as the intermediary for that agreement may be one with which he has worked and in which he has a high degree of trust. The landowner may be able to enter into an agreement with the intermediary to keep the results of the baseline survey confidential unless he decides to participate in the umbrella agreement.

One other aspect of confidentiality requires mention. If an individual landowner enters directly into a safe harbor agreement with the Fish and Wildlife Service or the National Marine Fisheries Service, the agency is required by law to publish notice of the proposed agreement in an official government publication called the Federal Register. Anyone who wants to comment in writing on the proposed agreement may do so, usually within 30 days after publication. If an intermediary agency or organization wants to establish an umbrella safe harbor agreement, the agreement is subject to the same procedure: publication of a notice in the Federal Register, followed by an opportunity for written comment. Once an umbrella agreement is in place, however, the subsequent agreements between the intermediary and individual landowners don't have to go through this process. Records kept by Federal agencies about either type of agreement are public records and are generally subject to disclosure.

WHAT IS THE DURATION OF A SAFE HARBOR AGREEMENT?

Two closely related questions pertain to the duration of a safe harbor agreement: How long is a landowner obligated to carry out or maintain the positive improvements required by a safe harbor agreement? How far into the future does the right to undo those improvements extend, notwithstanding that endangered species may have come to occupy the improved areas? There is no one fixed answer to either of these questions. The answers to both can be individually negotiated between the landowner and the Fish and Wildlife Service. The service will want to be sure that the positive actions to be undertaken by the landowner extend over a long enough period of time to be beneficial to the animals. How long that will be depends on a number of factors, including the endangered species in question, the type of habitat it requires, and the planned improvements to that habitat. Some habitat improvements, such as restoring certain types of wetlands, can be completed in a single season and will offer conservation benefits for decades; other improvements, such as prescribed burning in some habitats, must be repeated every couple of years to offer significant conservation benefits. Thus in the former case, a safe harbor agreement may obligate a landowner to restore a wetland only in the coming year, whereas in the latter case a safe harbor agreement may obligate a landowner to carry out a triennial prescribed-burning program for at least 15 years.

It is important to understand that although the landowner's obligation under a safe harbor agreement will be to undertake or maintain certain improvements for a specified period of time, her right to undo those improvements will extend over

a longer period of time. This timeframe is also subject to individual negotiation. Both the landowner and the government have good reasons to want the safe harbor rights to continue well into the future. No conservation benefit is served by requiring a landowner to eliminate the habitat improvements that she has made in order to protect her rights. Typically, the government will want the duration of the safe harbor assurances to last as long as the habitat improvements can reasonably be expected to offer conservation benefits to the affected species.

Because the duration of safe harbor agreements is so flexible, there is room for creativity. For example, one possibility is a continually renewing agreement. That is, an agreement could be for a certain period (say, 20 years), but each year it automatically renews for another year-thus always extending 20 years into the future unless one party elects not to renew it. Safe harbor agreements can deal in a variety of ways with situations in which a landowner chooses to terminate his agreement prematurely. Assume, for example, that a landowner who agreed to conduct biennial prescribed burns over a specified number of years experiences a change in circumstances and wants to stop earlier. In general, the authority conferred by a safe harbor agreement for a landowner to do whatever he wishes on his land regardless of its impact on endangered species applies only if the Andover has complied with all the terms of the agreement. In some circumstances, however, an agreement may allow a landowner to terminate it early and still enjoy the full benefit of safe harbor assurances, especially if the agreement contemplates that a landowner will carry out specified actions over an extended period of time. Landowners should be sure they understand their obligations if the agreement is terminated prematurely.

HOW IS A NEIGHBOR'S LAND AFFECTED BY A SAFE HARBOR AGREEMENT?

Landowners who wish to restore the habitats of endangered species on their property sometimes wonder how their actions might affect their neighbors' lend. Fortunately, safe harbor agreements typically include provisions to minimize any conflicts with neighboring landowners that might result from the participating Landowners' actions to improve the habitat of endangered species on their property. The terms of the agreements can vary from situation to situation, so landowners should make sure that they understand the stipulations of their particular agreements.

The Fish and Wildlife Service, for example, customarily expects landowners to protect a specified amount of forested land within a certain radius of the nest trees of each family of red-cockaded woodpeckers. What happens, therefore, if a family of woodpeckers becomes established just inside the boundary of the property of a landowner who is participating in a safe harbor program? Does that landowner's neighbor, who may not have enrolled in the program, have to protect her forests on behalf of the woodpeckers? This question has been addressed in several safe harbor agreements thus far, and the answer is no. In those particular agreements, neighbors are not responsible for providing habitat for woodpeckers that are part of a safe harbor program on adjacent property.

Another question concerns the movement of endangered species that are released on a parcel of land enrolled in a safe harbor agreement. If those animals move onto a neighbor's land, and the neighbor is not enrolled in the safe harbor program, is he obligated to protect them? Once again, a safe harbor agreement can be written to address this possibility. In the Southeast, for example, biologists are trying to establish new populations of red-cockaded woodpeckers by moving birds onto the properties of landowners enrolled in a safe harbor program. Each of the translocated birds is tagged with a unique combination of colored bands placed on its legs. Should any of these banded birds show up on a neighbor's property, they are recaptured and returned to the safe harbor property. Under safe harbor agreements approved thus far, if the banded birds persist in moving onto the neighbor's land, the neighbor is not obligated to provide habitat for them.

There is another way that neighbors' potential concerns can be addressed. They, too, can enter into a safe harbor agreement and thereby help conserve endangered species without incurring new restrictions on the use of their property. If you are concerned about how your enrollment in a safe harbor program might affect your neighbors, be sure to raise this issue with the Fish and Wildlife Service. There is usually a way to work things out.

CHANGING CIRCUMSTANCES

What happens when the land is sold?

Safe harbor agreements are effectively transferable from owner to owner. The buyer of land enrolled in a safe harbor agreement can arrange with the Fish and Wildlife Service to take over the agreement, simply by signing a new, identical agreement with the same original baseline and management actions. This is good

news for the seller, whose property does not necessarily drop in value as a result of the creation of more habitat for endangered species. It might even enhance the value of the land if the buyer is conservation-minded and wants a property that supports unusual wildlife.

If you are planning to sell your property, contact the Fish and Wildlife Service office that issued the permit to discuss how to make sure that the agreement remains in effect. In the case of an umbrella agreement, contact the agency or organization that holds the permit.

What happens when a landowner dies?

Not only are safe harbor agreements effectively transferable from owner to owner, but the rights and duties they confer can be passed down from generation to generation. Those who inherit property that is under a safe harbor agreement will have the same rights and responsibilities as the landowner who originally enrolled the land in the safe harbor program.

SAFE HARBOR AND OTHER INCENTIVES PROGRAMS

Landowners who participate in other conservation incentives programs may find it desirable to use safe harbor agreements in conjunction with those programs. For example, property owners who are restoring streamside forests or otherwise creating wildlife habitats using funds from the Conservation Reserve Program of the Department of Agriculture may wish to enroll their land in a safe harbor agreement in case any endangered species move into the newly restored habitats. Without such an agreement, it may be difficult to put the restored habitats back into agricultural production at a later date if they have been colonized by endangered species. The same applies to landowners enrolled in the Wetlands Reserve Program, Wildlife Habitat Incentive Program, or Partners for Wildlife Program of the Fish and Wildlife Service. Of course, there is little reason to pursue a safe harbor agreement if the types of habitats being restored are unlikely to attract endangered species. Contact the Natural Resource Conservation Service, the Fish and Wildlife Service, the state fish and game department, or an outside consultant if you are unsure whether the improvements you are planning are likely to attract endangered species.

MARKETING SAFE HARBOR "CREDITS"

It may even be possible to earn money by participating in a safe harbor program. Once you have signed a safe harbor agreement and completed the management actions specified in it, you have essentially received permission from the Fish and Wildlife Service to develop the habitat of an endangered species. Of course, it's habitat that you created and that wouldn't exist without your hard work. But it's habitat all the same, and you have the right to develop it. Now suppose that another landowner in your community has the same type of endangered species on her property but wants to develop her land nonetheless. Assuming that her property isn't covered by a safe harbor agreement, she has only two choices: she can forgo her plan to develop the land, or she can ask the Fish and Wildlife Service for permission to do so, notwithstanding the harm it will cause the endangered species. Under Section 10 of the Endangered Species Act, the Fish and Wildlife Service can grant her permission to develop her land, but only if she agrees to some type of mitigation for the loss of habitat. This compensation can take the form of the landowner paying you not to exercise your right to develop the land that you have enrolled in the safe harbor agreement. In other words, she can pay you to increase your baseline. You now become obligated to protect a larger amount of habitat for endangered species, she can develop her property, and the endangered species is none the worse off.

This scenario may seem pretty far-fetched, but, in fact, it is beginning to happen. You shouldn't count on a safe harbor agreement as a money-making proposition. But if you think that you might be willing to forgo developing the safe harbor portions of your land in exchange for money, you can advise the Fish and Wildlife Service that you would sell your safe harbor rights if the service found a suitable buyer.

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