

# BLACKWATER NATIONAL WILDLIFE REFUGE

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## OVERSIGHT FIELD HEARING

BEFORE THE  
SUBCOMMITTEE ON FISHERIES CONSERVATION,  
WILDLIFE AND OCEANS

OF THE  
COMMITTEE ON RESOURCES  
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

April 19, 2001, in Cambridge, Maryland

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**INVASIVE SPECIES AND THE MAINTENANCE  
BACKLOG AT THE BLACKWATER NATIONAL  
WILDLIFE REFUGE, MARYLAND**

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**Thursday, April 19, 2001**

**U.S. House of Representatives**

**Subcommittee on Fisheries Conservation, Wildlife and Oceans**

**Committee on Resources**

**Cambridge, Maryland**

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The Subcommittee met, pursuant to notice, at 10:10 a.m., in the Visitor's Center, Blackwater National Wildlife Refuge, The Honorable Wayne T. Gilchrest [Chairman of the Subcommittee] presiding.

Mr. GILCHREST. The Subcommittee on Fisheries Conservation, Wildlife and Oceans will come to order.

There is a few more seats in the room, actually quite a few more seats, so if there is anybody in the back that wants to move up a little bit or if you don't want to stand for the hearing, there is plenty of room.

**STATEMENT OF THE HONORABLE WAYNE T. GILCHREST, A  
REPRESENTATIVE IN CONGRESS FROM THE STATE OF  
MARYLAND**

Mr. GILCHREST. I want to thank everyone for coming today. This is a field hearing of the Subcommittee on Fisheries Conservation, Wildlife and Oceans. The Subcommittee exercises the House Resources Committee legislative jurisdiction over fisheries and wildlife, including refuges, marine affairs, and oceanography. On the executive side that translates into jurisdiction over most Fish and Wildlife Service programs and the coastal and ocean programs of the National Oceanic and Atmospheric Administration.

Recently the Subcommittee held a hearing on the operational and maintenance needs of the National Wildlife Refuge System. This hearing follows up and uses the Blackwater Refuge as an example of specific operational and maintenance needs and how well those needs are met by the Fish and Wildlife Service.

Given the importance of refuges such as Blackwater in maintaining the health of the Atlantic Migratory Bird Flyway, we think it is a perfect example to review in more detail. The fact that I represent Dorchester County, where the refuge is located, made the decision even easier.

Today's hearing is on the operation and maintenance of the Blackwater National Wildlife Refuge. The Subcommittee is particularly interested in hearing about three items: the operational and maintenance needs of the refuge; the control of harmful invasive species at the refuge, particularly nutria; and the recreational opportunities that provide people an opportunity to visit the refuge.

We are fortunate to have a panel of witnesses today who have extensive knowledge of this refuge and the management of conservation lands. I look forward to hearing their testimony concerning the operation and maintenance needs, invasive species control problems, and recreational uses of Blackwater, and in a broader context the management of conservation lands throughout the United States.

And I also truly welcome the panel this morning. We look forward to the testimony the witnesses will give us. I also want to thank Glenn Carowan for his hospitality in the beautiful Blackwater Refuge in Dorchester County on the Eastern Shore of Maryland. This is a magnificent place, and we want to thank all of you in the room: the Friends of Blackwater; the refuge managers; and all of the people that have come together to make this place an inspiration for visitors to have some sense of the beauty, the magnificence, the gentleness, the harshness of the natural system that this refuge represents, the ecosystem, the food web, the natural course of nature that this refuge is trying to represent, the way it used to be before John Smith came.

Now, it is nice since John Smith came. We have improved the quality and the standard of life for human beings, extended their life, provided habitat for we as people, food and shelter and clothing. What the refuge attempts to do is to provide habitat, food, shelter, and some place to raise their young, for wildlife. And I think as human beings we have the skill and the intelligence to be able to do that, sort of a suburb for birds.

But as in other suburbs, there are certain things that we don't need there or shouldn't be there. And in part of the testimony that we will hear this morning is some of the invasive species that we find at Blackwater, and do we have the skill, the will, the determination, and the resources to do something about these invasive species, notably our little friend over here, the nutria.

But, at any rate, I want to thank all of you for coming. We look forward to your testimony, and we will take it back and try to make good use of it.

[The prepared statement of Mr. Gilchrest follows:]

**Statement by The Honorable Wayne T. Gilchrest, Chairman,  
Subcommittee on Fisheries Conservation, Wildlife and Oceans**

Thank you for coming today. This is a field hearing of the Subcommittee on Fisheries Conservation, Wildlife and Oceans, which I chair. The Subcommittee exercises the House Resources Committee's legislative jurisdiction over fisheries and wildlife, including refuges, marine affairs and oceanography. On the executive side, that translates into jurisdiction over most Fish and Wildlife Service programs, and the coastal and ocean programs of the National Oceanic and Atmospheric Administration.

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- 1) the operational and maintenance needs of the refuge;
- 2) the control of harmful invasive species at the refuge, particularly nutria; and
- 3) the recreational opportunities provided by the refuge.

We are fortunate to have a panel of witnesses today, who have extensive knowledge of this refuge and the management of conservation lands. I look forward to hearing their testimony concerning the operation and maintenance needs, invasive species control problems, and recreational uses at Blackwater and in a broader context of the management of conservation lands throughout the United States.

Mr. GILCREST. Our first witness this morning is Mr. Dan Ashe, Chief of the National Wildlife Refuge System, U.S. Fish and Wildlife Service. Welcome, Mr. Ashe.

**STATEMENT OF DAN ASHE, CHIEF, NATIONAL WILDLIFE  
REFUGE SYSTEM, U.S. DEPARTMENT OF THE INTERIOR**

Mr. ASHE. Thank you, Mr. Gilchrest. That was a tough act to follow. I have to tell you, too, when I was walking out the door this morning at 0-dark-30, my wife said, "Now where are you going today?" And I said, "I'm going over to Blackwater." And she said, "You don't look like you're going to Blackwater."

[Laughter.]

I think this is the first time I have ever worn a tie on a unit of the National Wildlife Refuge System.

Mr. GILCREST. Well, Dan, if you want to take it off, you shed your tie.

[Laughter.]

Mr. ASHE. It is really a pleasure to be with you here at Blackwater, and I really think this does provide a great setting for us to consider the future of America's National Wildlife Refuge System as it approaches its 100th anniversary in 2003. I agree with you, Blackwater is a magnificent refuge, and I think looking at Blackwater and our management here really does provide insights into the challenges that face its 534 sister refuges.

It also provides an outstanding example of how we can use innovative and science-based management to address even some of our most intractable problems like invasive species control. It is also a great place for us to reflect on the crucial role that comprehensive planning, volunteers, and community support groups like the Friends of Blackwater are playing in helping us to build a better future for the Refuge System as a whole.

The President's budget for Fiscal Year 2002 reinforces our commitment to take care of our refuges by including a \$10 million increase for refuge maintenance. That increase will help us hire essential maintenance workers, deal with numerous deferred maintenance projects, and perform annual maintenance to further slow the growth of our deferred maintenance backlog. And as we talked about a couple of weeks ago in Washington, that backlog now stands at about \$830 million.

As you look around Blackwater, you can see the difference that our attention to maintenance has made. The facilities I think provide a safe environment for both our employees and our visitors. They are in significantly better condition than they were five years ago. We are making similarly impressive progress throughout the Refuge System in the maintenance of our facilities.

But Blackwater, like many other refuges throughout the system, has a razor-thin margin of flexible operating funds that support our managers in dealing with complex management issues that they face, like invasive species control. I think the example here at Blackwater of nutria provides a great example. If we are not able to effectively address the threats posed by invasive species like nutria, then the situation worsens and the long-term cost of dealing with those issues increases substantially.

That story repeats itself again and again on refuges throughout the country, and at over 50 percent of our refuges today, invasive species problems are preventing us from attaining our population and habitat goals at those refuges. At Loxahatchee Refuge in Florida, part of the Florida Everglades system, the exotic melaleuca and the Old World climbing fern are choking out the native plants. At Bosque del Apache in New Mexico, the salt cedar has all but eliminated the native cottonwoods there, and we are fighting to restore them literally acre-by-acre.

In our wetlands we are fighting purple loosestrife. In our forests in the Southeast we are battling Chinese tallow. At our prairie refuges and waterfowl production areas we are struggling against invaders like leafy spurge and exotic thistles. In the lakes and rivers on our refuges we are swimming against a current of invasives, including zebra mussel, giant salvinia and water hyacinth.

I was at North Delta Refuge at Stone Lakes in the Central Valley of California last week, and talking to those managers about the problems there with water hyacinth and the challenge they have in dealing with that. You add toads and starlings and sparrows and rats and moths and ants and even exotic bees, and you begin to see through the eyes of our refuge managers: the problems that they are facing are daunting.

I think today invasive species probably represent the most serious challenge to the biological integrity of the Refuge System and one of our most pressing operational needs. A couple of weeks ago when you held your hearing on Refuge System operations and maintenance, we discussed our \$1.1 billion in operational needs. That total includes about 300 projects totaling \$120 million to address invasive species challenges, and with leadership from Members like yourself, Congress has been providing us with increased funding to address these issues. But we have much work to do.

So I will suspend there, Mr. Chairman, and conclude by thanking you for holding this hearing today to help bring more attention and understanding within the Congress and the public at large to the needs of America's National Wildlife Refuge System. Our managers and employees like Glenn Carowan and his staff are the best in the world at what they do, and they do it with precious few resources. Their jobs are already challenging, and additional challenges like nutria and the hundreds of other invasive exotics are making it just about impossible.



So thank you again for holding this hearing and helping us get to the place where we need to be.

[The prepared statement of Mr. Ashe follows:]

**Statement of Dan Ashe, Chief, National Wildlife Refuge System,  
U.S. Department of the Interior**

Mr. Chairman, thank you for this opportunity to discuss the operational and maintenance needs of the National Wildlife Refuge System. Blackwater National Wildlife Refuge provides a great setting to consider the future of the Refuge System as it nears its 100th anniversary, in 2003. This magnificent refuge provides not only insights into the challenges facing the Refuge System, but also outstanding examples of how innovative, science-based management can address many of the threats to our nation's wildlife heritage. This refuge is the perfect place to consider the crucial role that volunteers and community support groups, like the Friends of Blackwater, must play if we are to succeed in accomplishing our wildlife conservation mission.

Our first priority is taking care of what we have: the maintenance of the facilities and equipment we need to accomplish our mission. The Refuge System has \$7 billion worth of buildings, utilities, dikes and levees, roads, fences, dams, vehicles and tools, that we must maintain to protect their value and keep them safe and in good working order.

Refuge maintenance is addressed in three different but related programs: 1) Refuge Operations supports salaries for maintenance workers, laborers, and equipment operators; 2) Construction supports large and complex maintenance and capital improvement projects that normally cannot be accomplished in one year; and 3) the Refuge Maintenance program which supports annual maintenance, equipment repair and replacement, and deferred maintenance backlogged projects. In addition, since TEA-21, the Federal Lands Highways program helps address additional maintenance projects.

Thanks to your support, the efforts of the Cooperative Alliance for Refuge Enhancement (CARE), our Five Year Deferred Maintenance and Equipment Replacement list, and our Maintenance Management System database, Have made progress addressing the highest priority needs of our facilities and equipment over the past few years. I'm pleased to say we have slowed the rate of growth in our maintenance backlog from 30% just a few years ago to 7% today. We currently estimate a backlog of deferred maintenance projects, including 8,092 projects, totaling roughly \$830 million, including \$172 million for equipment replacement and repair. In Fiscal Year 2001, Congress appropriated a total of \$75 million for Refuge System maintenance (\$56 million in Title I and \$19 million in Title VIII) and we are receiving \$20 million annually in TEA-21 funds through the Federal Lands Highways program. Therefore, in total, we have \$95 million available for refuge maintenance during the current fiscal year, and with this level of funding we will make additional progress toward our ultimate goal of reducing the maintenance backlog.

The President's Budget request for Fiscal Year 2002 reinforces the need to take care of what we have by including a \$10 million program increase for refuge maintenance. This increase will address the most critical annual and deferred maintenance projects. The Fiscal Year 2002 request will also enable us to implement a three-step approach to reducing the deferred maintenance inventory by increasing funding to hire essential maintenance workers, performing additional annual preventative maintenance, and performing additional deferred maintenance, including a \$1.8 million increase for condition assessments and improving the Maintenance Management System.

As you look around Blackwater National Wildlife Refuge, you can see the difference the investment in maintenance has made. While we still have work to do, we have made progress in reducing the deferred maintenance backlog. The facilities provide a safe environment for both our employees and visitors. They are in better condition than they were five years ago. With a continued commitment to addressing these maintenance needs, we are making similar progress throughout the Refuge System.

This is important, because we have pressing operational needs on refuges. Blackwater, like many other refuges throughout the System, has a razor thin margin of flexible, operational funds that managers need to address the dynamic resource management challenges they face. For example, meeting the challenges of combating invasive species requires a substantial commitment of operational resources. The example of nutria here at Blackwater and throughout the Chesapeake Bay provides a great example.

Nutria are an exotic invasive rodent, native to South America, that have been introduced in 22 states nationwide, and affect over 1,000,000 acres of the National Wildlife Refuge System. Among areas with high nutria populations is the lower Eastern Shore of Maryland, including Blackwater National Wildlife Refuge. Blackwater has lost over 7000 acres of marsh since 1933, and the rate of marsh loss has accelerated in recent years to approximately 200 acres per year. Although there are many contributing factors (e.g., sea level rise, land subsidence), nutria are a catalyst of marsh loss due to their habit of foraging on the below-ground portions of marsh plants. This activity compromises the integrity of the marsh root mat, facilitating erosion and leading to permanent marsh loss. In light of the damage caused by nutria, the Service and 22 other Federal, state, and private partners joined forces in 1997 to identify appropriate methods for controlling nutria and restoring degraded marsh habitat. The Partnership prepared a 3-year pilot program proposal, which was subsequently approved by Congress, including authorization for the Secretary of the Interior to spend up to \$2.9 million over three years beginning in Fiscal Year 2000 (Public Law 105-322).

The Service received \$500,000 in Fiscal Year 2000 to implement the three-year pilot study, Marsh Restoration: Nutria Control in Maryland in and around Blackwater Refuge. The funding came from both Refuge Operations (\$300k) and the Partners for Fish and Wildlife Program (\$200k) funds. An additional \$500,000 was provided in 2001 and the 2002 budget also includes a request for \$500,000.

The 3-year pilot program was initiated in July 2000 with the hiring of a crew of four. Trapping is occurring on nine study sites in Maryland, three of which are on Blackwater Refuge. The initial focus is on live capture of animals as part of a study that will help formulate effective strategies for eradicating nutria. In January 2002, intensive harvest will be implemented on three study sites, while no harvest will occur on the remaining sites. This approach will allow monitoring of biological responses of nutria to intensive harvest, and will provide answers to many questions regarding effective nutria control.

The damage nutria cause to the marshes of Chesapeake Bay can be helpful in understanding the operational needs of the Refuge System. If we do not address the threats posed by invasive species, the situation worsens, and the long-term cost of addressing the problem increases. This is a story that repeats itself over and over again throughout the Refuge System. At Loxahatchee Refuge in Florida's Everglades, the exotic melaleuca tree and the Old World climbing fern have infested thousands of acres of the refuge, out-competing the native plants. As these species become more widespread, the complexity and the cost of controlling them increases. From coast to coast, from the prairies to the mountains, each State and every ecosystem of our country has its own suite of invasive species threatening the health of the land.

Other major terrestrial plant invaders on refuges include salt cedar, leafy spurge, whitetop, Brazilian pepper, purple loosestrife, Australian pine, Chinese tallow, and exotic thistles. Problem aquatic plants include giant salvinia and water hyacinth. Aquatic vertebrate invaders include tilapia, Asian carp, Asian swamp eels, and nutria; Terrestrial vertebrates include marine toads, European starling and English sparrow, and feral goats, pigs, and cats. Aquatic invertebrates include the zebra mussel. Terrestrial invertebrate invasives include the gypsy moth, imported fire ant, and Africanized honeybee.

The problems are daunting, yet in most cases we know what needs to be done. We use a variety of strategies including outreach and education to minimize spread by humans, inventory and risk assessment, mechanical controls such as machinery or water level manipulation, pesticide applications, biological controls using natural predators, grazing, and prescribed fire.

The need to address the threats that invasive species pose to the biological integrity of the Refuge System is just one example of the operational needs on refuges. Nationwide, refuge staff have identified, categorized and prioritized \$1.1 billion in refuge operational projects. There are over 300 projects totaling \$120 million to combat invasive species. Congress has provided increased resources to address invasive species each year since Fiscal Year 1998, under the improve habitat component of Refuge operations. Increases totaling \$2.7 million have been provided since 1998, and each year Congress has funded high priority invasive species projects. Refuge operational needs and opportunities, if implemented, will forward our mission in managing refuge lands. These needs and opportunities are entered into our Refuge Operating Needs System (RONS) as they are identified by refuge staff.

To better understand the most pressing operational needs on refuges, Congress directed us—in the Committee report accompanying the Fiscal Year 2000 Interior Appropriations bill—to develop a tiered approach to identify priority operating needs; aspects of refuge management—staff, equipment, and supplies—that are

basic components of carrying out management of the Refuge System. We have responded to that Congressional direction and tiered the RONS database and now have a comprehensive view of the most pressing operational needs of the Refuge System. For instance, many of our refuges do not have a full-time biologist, law enforcement officer, or the resources to support monitoring wildlife populations and habitat conditions. In some cases a full-time biologist or a law enforcement officer may not be necessary to fulfill the mission of a particular refuge; however, in many other cases, they are an essential part of the successful operation of a refuge. In addition to priority operating needs, there is a wealth of opportunity to do good things for wildlife within the Refuge System. These opportunities are included in the second tier of identified refuge operations projects.

Additionally, we have unmet needs associated with establishment of new refuges that are categorized in the RONS database, in order to respond to GAO's report entitled, Agency Needs to Inform Congress of Future Costs Associated with Land Acquisitions. That report recommended that the Service estimate future operations and maintenance costs for each new refuge.

Mr. Chairman, we appreciate your support in helping us meet our operating needs. Since 1997, funding for refuge operations has increased from \$155 million to \$225 million. Our people continue to do great work on the ground and to manage our refuges to provide tremendous benefits to wildlife and spectacular opportunities for Americans to get outdoors and enjoy their wildlife heritage. We are getting increasingly important work from a growing volunteer workforce. We are getting expanding support from our Refuge Friends groups and cooperating associations. We are growing our fee demonstration programs. In short, we are being innovative in meeting our needs, which I believe has always been a hallmark of refuge managers and the Refuge System.

The Refuge System has made substantial progress in identifying and categorizing its priority operation and maintenance needs and opportunities, an important step in developing a long-term plan for meeting those needs. In the coming months, the Service will present its findings to the Department of the Interior and OMB, and work towards developing a long-term plan to address these needs and opportunities.

Mr. GILCREST. Thank you, Mr. Ashe. We will continue to partner with Fish and Wildlife on the Refuge System, and we appreciate your attendance here this morning.

Ms. Edith Thompson, Invasive Species Coordinator, Maryland Department of Natural Resources. Welcome.

**STATEMENT OF EDITH THOMPSON, EXOTIC/INVASIVE SPECIES COORDINATOR, MARYLAND DEPARTMENT OF NATURAL RESOURCES**

Ms. THOMPSON. Thank you, Mr. Chairman.

The Maryland Marsh Restoration and Nutria Control Partnership thanks you for asking us to testify before the Subcommittee about our efforts to address the growing population of nutria on Blackwater and the rest of the Chesapeake Bay and the damage it continues to inflict upon important marsh habitat. We appreciate your interest and support for the marsh restoration and nutria control pilot program that we are currently conducting, and our urgent need to apply what we learn from that pilot program to a broader eradication and marsh restoration program in the Delmarva Peninsula.

Nutria is a large, as you can see, semi-aquatic rodent native to South America. It was imported to the United States early in the 20th century to provide a fur resource. Since its escape or release in Blackwater in 1943, it has contributed to the loss of over 7,000 acres of marsh in the refuge alone.

Continued conversion of this marsh habitat to open water is removing significant habitat for commercially valuable waterfowl, shellfish, and finfish, and is decreasing the ability of the refuge to

meet its goals, its conservation goals, the purpose of the refuge, to conserve native species and systems. Nutria is consequently impacting native species in a way that is addressed in the 1999 executive order on invasive species and their control on Federal lands.

Control measures to date have been limited in their effectiveness because of the prolific nature of nutria and its ability to move into pockets of marsh where we have been successful in eradicating a population. The continued removal of this marsh from Blackwater and the surrounding area results in an environment that may no longer support marsh restoration because the substrate, the silt, the sediment, is gone.

So, to protect the marsh, nutria eradication has to be conducted aggressively and effectively, with good information. And to protect the marsh, damaged marsh has to be restored while the nutria is being eradicated.

To accomplish this, the Maryland Marsh Restoration and Nutria Control Partnership was formed through a Memorandum of Understanding in 1997. With 17 initial partners, including the Fish and Wildlife Service, the Maryland Department of Natural Resources, the Maryland Cooperative Fish and Wildlife Research Unit, and the University of Maryland Eastern Shore, the partnership comprises a management team which has done an amazing amount of work getting grants and doing research necessary in this pilot program.

The partnership also includes actually a total of 24 partners now, including the National Aquarium in Baltimore, the U.S. Department of Agriculture is a very important partner, Tudor Farms, the Salisbury Zoo, and many others. In 1998 the partnership drafted this proposal for the pilot program, and its purposes are to develop methods and strategies to reduce nutria populations in Blackwater and in the Chesapeake Bay to a level where the population cannot be sustained biologically; to develop marsh habitat restoration methods and strategies; and to promote public understanding of the importance of marsh habitat in the Chesapeake Bay and the threat that is posed to it by nutria.

The pilot program was fully implemented in January 2001, and will run through 2003 in December. It is being conducted on Blackwater; on Fishing Bay Wildlife Management Area, which is a State area; and Tudor Farms, which is a private farm in this immediate area. Each area has one treatment site and one control site. Each of those is about 400 acres.

Baseline data is being conducted in those study areas prior to conducting intensive nutria control, which we expect to begin in January of 2002 on those treatment sites. The control sites will be unharvested and will be used to measure the kind of reproductive response nutria has to control and eradication on the treatment sites. It is feasible, in other words, that control and eradication could make their response, reproductive response greater.

So we have hired 12 trappers and a trapping supervisor, and they were hired in summer of 2000. Seven of them are local people. Two University of Maryland Eastern Shore graduate students are collecting this baseline data on population levels and the reproductive status of nutria. The data, as I said, are needed to formulate effective strategies for eradicating nutria.

We have captured, marked and released 1,832 nutria so far. The recapture history of the animals will help us estimate more closely population size and annual survival. It is important to understand that in population control, annual survival has to be less than mortality in order to make the population go down. Radio collars have been deployed on 144 animals. The monitoring of these animals will help us understand peak activity times and locations, so we can concentrate our trapping efforts.

The U.S. Army Corps of Engineers, Baltimore District, provided \$30,000 in Fiscal Year 2001 to support preliminary studies of marsh restoration at Blackwater, and they are scoping a multiyear effort to restore about 150 acres here. The big challenges are funding challenges, as you know.

The proposal that the partnership put together had, in Fiscal Year 2000, \$1,350,000 that we needed. We received \$500,000 in the congressional earmark as part of your legislation, \$100,000 from the U.S. Department of Agriculture, and \$50,000 from the National Fish and Wildlife Foundation. There were \$150,000 in unanticipated costs, so the unmet needs were \$850,000 for that year.

In Fiscal Year 2001 we projected needing \$757,000. We received \$500,000 in a budget line item for the U.S. Fish and Wildlife Service, \$100,000 from the U.S. Department of Agriculture, and another \$50,000 from the National Fish and Wildlife Foundation. There were again \$150,000 in unanticipated costs, making the total for the two years that we did not get or manage to get, \$1,077,000.

Projected costs for the third year of the pilot program were \$774,000. The USDA grant will provide \$100,000 again, making the total funding needed for the completion of this pilot project \$1.9 million.

The funding that we have received so far is only for nutria research and control. We have not received funding, other than the \$30,000 that the Army Corps of Engineers has provided for Fiscal Year 2001, for marsh restoration. No funding has been available for the public outreach and education goal of this project.

Beyond this pilot program, the current objective is to implement a large-scale nutria eradication effort on the Eastern Shore after the completion of this pilot program, using this data. We are really nervous about estimating what that is going to cost, but we are currently estimating at least twice the number of employees working, so we have 12, that would be 24, and the salary costs we estimate at \$1 million annually, with support costs of \$300,000 annually.

The Army Corps of Engineers estimates that it would cost approximately \$4.5 million to restore 150 acres of marsh at Blackwater, but the methods haven't been worked out very well yet, and it is kind of a new science, so it is hard to estimate those costs.

Finally, the last point I want to make is that nutria is found throughout the Delmarva Peninsula, and Maryland is doing its work to get the information to eradicate the animal here, but if similar effort is not made in Virginia and Delaware, and we are really successful in eradicating the animals here, the animals from the other States will just move right in here and we may as well

have done nothing. So it is important that those two States also work with us.

In conclusion, the partnership is committed to long-term goals of nutria eradication in Maryland, but this can only be accomplished, and I say this again, with the full complement of information generated by the pilot program. The partnership reflects a broad diversity of extremely skilled professionals, highly regarded scientific organizations and individuals, and can complete this pilot project if they have the resources.

We urge Congress to appropriate sufficient funds, that is \$1.9 million, to help us finish this project, and to continue to support the broader eradication efforts with funds and necessary legislation on Federal lands throughout the Delmarva Peninsula.

Mr. GILCHREST. Thank you very much, Ms. Thompson.

[The prepared statement of Ms. Thompson follows:]

**Statement of Edith R. Thompson, Exotic/Invasive Species Policy  
Coordinator, Maryland Department of Natural Resources**

Mr. Chairman and Members of the Subcommittee:

The Maryland Marsh Restoration/Nutria Control Partnership thanks you for asking us to testify before the Subcommittee on our efforts to address the growing population of Nutria within the Blackwater National Wildlife Refuge (BNWR) and the Chesapeake Bay and the destruction that it continues to inflict upon important marsh habitat. We greatly appreciate your interest in and support for both the Nutria/Wetland Restoration Pilot Program (Pilot Program) that we are currently conducting and our urgent need to apply what we learn from it to a broader eradication and wetland restoration effort on the Refuge and in surrounding wetlands.

Nutria, a large, semi-aquatic rodent native to South America, was imported to the United States early in the 20th Century to provide a fur resource. Since its escape or release in the marshes of the BNWR in 1943, Nutria has contributed to the loss of over 7,000 acres of marsh habitat on the Refuge alone. The current population of nutria on BNWR is estimated to be 35,000 to 50,000 animals. Continued conversion of marsh habitat to open water is removing significant habitat for commercially important waterfowl, shell and finfish species and decreasing the ability of the refuge to support a diversity of native plants and animals. Consequently, nutria negatively impacts the conservation purposes of the BNWR and creates the kind of negative impact on native species and habitats addressed in the 1999 Executive Order regarding Invasive Species and their control on federal lands.

Control measures to date have had limited effect because the highly prolific nutria immediately fills in pockets of marsh where a population has been eradicated. The continued removal of marsh from BNWR and from surrounding areas could result in a change in the local environment, which could in turn prevent the restoration of the marsh. To protect the marsh, nutria eradication must be conducted aggressively and efficiently in order to prevent resettlement in treated marshes. Damaged marsh must be restored immediately in order to maintain an environment that can support marsh plants while nutria are being removed.

To accomplish this, the Maryland Marsh Restoration/Nutria Control Partnership (the Partnership) was formed through a Memorandum of Understanding in 1997 with 17 initial partners including the U.S. Fish and Wildlife Service, the Maryland Department of Natural Resources, the Maryland Cooperative Fish and Wildlife Research Unit, the University of Maryland Eastern Shore, which compose a core Management Team, as well as the U.S. Department of Agriculture, the National Aquarium in Baltimore, Tudor Farms and the Salisbury Zoo among others. The Partnership now includes 24 members. In 1998, the Partnership drafted a proposal that reflected an agreement to initiate and support a Pilot Program to:

- 1) Develop effective methods and strategies to reduce nutria populations in the Chesapeake Bay wetlands to the point where they are unable to maintain a sustainable population,
- 2) Develop effective marsh habitat restoration methods and strategies, and
- 3) Promote public understanding of the importance of preserving Maryland's wetlands and the threat that nutria poses to those habitats.

The Pilot Program was fully implemented in January of 2001 and will run through 2003. It is being conducted on BNWR, Fishing Bay Wildlife Management

Area (STATE), and Tudor Farms (Private), in Dorchester County. Each area includes one treatment site and one control site, each about 400 acres.

#### *NUTRIA ERADICATION*

Baseline data is being collected in the study areas prior to conducting intensive nutria eradication. Collection of baseline data will continue until January of 2002, after which intensive population control will occur on half of the sample sites. On the treatment sites, various trapping methods are being tested. Twelve trappers and a trapping supervisor were hired in late summer of 2000. Seven of trappers are residents of local communities around BNWR. Two University of Maryland Eastern Shore graduate students are collecting baseline data on population levels and reproductive status of nutria. These data are needed to formulate effective strategies for eradicating nutria.

To date, 1,832 nutria have been captured, marked, and released. Recapture histories of these animals during future trapping events will be used to generate estimates of population size and survival.

Radio collars have been deployed on 144 animals. Regular monitoring of these animals will reveal seasonal movement patterns, allowing control efforts to target peak activity times and locations, which will increase effectiveness of broader eradication efforts.

Preliminary analysis of reproductive status has been conducted for several animals, as well, to help measure the mechanics of nutria's reproductive capacity. They have shown a high degree of synchrony among females, which is believed to result from severe winter weather. No gross indications of disease or parasites have been identified in these animals. Marsh habitat restoration is also being examined.

In January 2002, intensive population control will be initiated on half the study sites. The remaining sites will be unharvested controls for comparison of population and reproductive responses to intensive harvest.

#### *WETLAND RESTORATION*

The U.S. Army Corps of Engineers, Baltimore District, has provided \$30,000 in Fiscal Year 2001 to support preliminary studies of marsh restoration methods at BNWR. The USFWS will disburse funds to the University of Maryland College Park to support a graduate research assistant during summer 2001. The Corps is currently scoping a multi-year effort to restore about 150 acres of marsh at BNWR. The Fiscal Year 2001 research project will refine methods to be used in this large-scale effort.

#### *CHALLENGES FACING SUCCESSFUL COMPLETION OF PILOT PROJECT*

The successful completion of the pilot project is essential to ensuring that future nutria eradication and wetland restoration efforts at BNWR are effective. The primary challenge to the successful completion of the pilot project has been the inability of the Partnership to obtain the funds necessary and projected in the original Partnership proposal.

In that proposal, projected costs for the first year (Fiscal Year 2000) were \$1,350,000.00 and the program received \$500,000 in a Congressional earmark to the US Fish and Wildlife Service, \$100,000 from the U.S. Department of Agriculture Capacity Building Grant, and \$50,000 from the National Fish and Wildlife Foundation. There were \$150,000 in unanticipated costs above what was anticipated in the Pilot proposal, so the unmet budget needs for the first year were \$850,000.

Projected costs for the second year (Fiscal Year 2001) were \$757,000 and the program received \$500,000 in as a line item in the U.S. Fish and Wildlife Service budget, \$100,000 from the U.S. Department of Agriculture Capacity Building Grant, and another \$50,000 from the National Fish and Wildlife Foundation. There were \$150,000 in unanticipated costs above what was anticipated in the Pilot proposal, making the total unmet funding needs for the two years at \$1,077,000.

Projected costs for the third year of the Pilot Program (Fiscal Year 2002) are \$770,000, making the total funding needs for the completion of the Program \$1,880,000. The Maryland Department of Natural Resources has contributed approximately \$260,000 in in-kind, nonfederal matches for the grants described above.

Funding for the Pilot Program through Congressional appropriations and NFWF grants have been available only for nutria research and control activities. Funding for wetland restoration efforts has not been available, although the Army Corps of Engineers has provided \$30,000 for Fiscal Year 2001 to support preliminary investigation into marsh restoration at BNWR. No funding has been available for public outreach and education efforts directly related to the Pilot Program.

Beyond the Pilot Program, the current objective is to implement a large-scale nutria eradication effort on the Eastern Shore after completion of the Pilot Program in December of 2003. It is anticipated that a workforce of at least twice that em-

ployed in the Pilot Project would be required for such an effort. Salary costs for such a workforce would be approximately \$1 million annually, with support costs estimated at \$300,000 annually. These figures approximate the annual budget estimates for the Pilot Program Proposal, but differ in that the workforce is doubled and there is no provision for wetland restoration.

In its Section 206 Preliminary Restoration Plan, the U.S. Army Corps of Engineers estimated restoration costs at \$4.5 million for 150 acres of restored wetland at BNWR. These costs cannot be easily extrapolated throughout the range of nutria in Maryland due to variation in mobilization costs, a significant component of total restoration costs.

Finally, nutria are found throughout the Delmarva Peninsula. Control of nutria in the BNWR and Maryland's marshes will not be successful in the long term if populations of these animals can move from other states into Maryland habitat that is made available through this nutria eradication program.

#### *CONCLUSION*

The Partnership is committed to the long-term goal of nutria eradication in Maryland, however, this can only be accomplished if the full complement of information generated by the Pilot Program is achieved. The Partnership reflects a broad diversity of credible and professional scientific organizations with individuals willing and able to complete the goals of the Pilot Program, which is necessary to ensure effective eradication of nutria in the state and in a significant portion of the Chesapeake Bay.

The Partnership urges Congress to appropriate sufficient funds to address the unmet needs of the Pilot Program, a total of \$1.9 million and to continue to support broader eradication efforts with funds and necessary legislation on federal lands.

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Mr. Tillier, Friends of Blackwater.

#### **STATEMENT OF RON TILLIER, PRESIDENT, FRIENDS OF BLACKWATER**

Mr. TILLIER. First of all, thank you very much for asking us to speak this morning. The Friends basically is the backbone of the volunteer effort here. Last year we donated approximately 11,000 volunteer hours or the equivalent of six and a half full-time employees, and those ranged in activities from manning the visitor center, operating the bookstore, administrative and clerical assistance, biological surveys and programs, conducting educational group orientations, and conducting guided refuge tours.

The visitor center is manned entirely by volunteers, since the outdoor recreation planner is the only staff person here on the premises. While the refuge presently has a temporary person at the center, we don't know how long that position is going to be funded. Over the past 10 years, the outdoor recreation planner has trained and has had 44 part-time assistants. When volunteers aren't available here, the refuge often finds it necessary to close the visitor center.

We do a lot of things here at the refuge. We handle, for example, all of the administrative detail of the annual hunt program at the refuge. At the present time, we are in process of upgrading exhibits at the visitor center. Some of the present exhibits here go back to the 1960's. This is being funded by a \$15,000 grant, with funds being matched by the Friends, and the exhibits will be in place by June of this year.

We have funded and developed an educational manual which is being printed this month and will be distributed to schools in Dorchester and surrounding counties, to encourage teachers to integrate the refuge as an outdoor classroom in their natural science programs. Through coordination with Africam, we have been able



to place video cameras on an eagle's nest and on an osprey platform. While our eagle's nest venture hasn't been successful because the nest remains unoccupied, the osprey cam is proving to be a very valuable educational tool here at the visitors center and also on-line at our web site.

Friends is presently involved in a major marsh restoration project in conjunction with the National Aquarium. This program will involve planting of marsh grasses on approximately 10 acres of land on Barren Island. Our commitment to this project involves not only the planting, which will require recruitment of 30 to 60 volunteers per day for a period of up to six days, but then will require a monitoring activity for a period of at least 10 years.

We support community members and groups where it also benefits the refuge. For example, we recently pledged the support of \$2,000 to a 13-year-old Boy Scout who put together a project involving the planting of over 1,000 trees here on the refuge. We work with other community organizations. As a result, construction will begin this summer on a butterfly garden to be located directly behind the visitor center. We are working with the Department of Tourism to install and operate a low-power AM radio station to assist in popularizing the refuge to people traveling on Route 50.

We anticipate a grant of \$15,000 which would be providing the materials for construction of a handicapped-accessible educational photo blind and observation site here in the marsh. We are also anticipating receipt of another grant this summer which will enable us to develop a canoe/kayak trail through the marsh. The group is currently involved with refuge staff in development of plans for a walking trail.

We have done some background work on the possibility of expanding and updating the visitor center. We have acquired rough drawings, and the group is presently investigating what will be necessary in order to put together a feasible capital campaign.

We conduct, in conjunction with the refuge outdoor recreation planner, a minimum of three major open houses. We will do four this year. Our most recent effort, the eagle festival was held on March 10th. We hosted over 1,350 visitors on that day here. In order to accommodate the crowd, we had to split activities between the visitor center and a rented tent, which evidences the inadequacy of this 40-year-old facility.

We recently hosted a Business After Hours program, where we presented 22 plaques to organizations in the community which made significant contributions to the refuge. We have an active Speakers' Bureau. We financed the development and production of a video which explains activities here on the refuge. The group publishes a quarterly newsletter, which is called Tidelines, which we mail to members, interested groups and community leaders from Guam to Alaska and Hawaii. We printed 1,200 newsletters last month.

We have our own web site, which was professionally prepared by a member of the Friends and is maintained by her. FOB members attend numerous educational and awareness meetings, conferences, and seminars which are deemed to be potentially helpful to the refuge. We attend community events to heighten awareness of the ref-

uge, for example, the Waterfowl Festival, the National Outdoor Show, Earth Day, those kinds of programs.

The group operates the Eagle's Nest bookstore here, which has been recognized by many as the best nature book source in the county for both adults and children. We solicit donations from individuals and organizations for funds to assist in obtaining seed to support the crop planting program for the feeding of migratory waterfowl, and this is becoming a more important program each year because of the problems with resident Canada geese and the availability of refuge funds in general. We are also involved in an active outreach program, working with the Fish and Wildlife Service in promoting the concept of Friends groups to other refuges in the system.

So, in summary, the Friends of Blackwater are totally dedicated to supporting the refuge in all of its missions. But despite a substantial cadre of very willing volunteers, refuges, if they are going to increase their interface with the public in an educational and recreational sense, will have to be better funded in terms of staff and financial resources in order to maintain the lands and the missions that have been entrusted to them.

Thank you very much for the opportunity to speak.  
[The prepared statement of Mr. Tillier follows:]

**Statement of Ron Tillier, President, Friends of Blackwater National  
Wildlife Refuge, Inc.**

Friends groups can be a tremendous assist and can offer valuable support to National Wildlife Refuges. At Blackwater, FOB (Friends of Blackwater) is the backbone of the volunteer effort. Volunteers come from as far as Philadelphia, Pennsylvania, and the Western Shore. Last year, volunteers donated approximately 11,000 volunteer hours or the equivalent of six and a half full time employees ranging in activities from manning the visitor center, operating the bookstore; administrative and clerical assistance; biological surveys and programs conducting educational group orientations and conducting guided Refuge tours. Landscaping around the visitor center and its entrance sign is done entirely by one volunteer. The visitor center is manned entirely by volunteers since the Outdoor Recreation Planner is the only staff person on the premises. While the Refuge presently has a temporary person at the Center in addition to the permanent staff person, it is not known how long this position will be funded. Over the past ten years, the Outdoor Recreation Planner has trained and had 44 part-time assistants. Volunteers working at the center provide information, assist in interpretive work run the bookstore and act as hosts to the Refuge. It is highly doubtful that the Refuge could provide the amenities of the visitor center without those volunteers. In fact, when volunteers are not available, the Refuge finds it necessary to close the Visitor Center.

FOB provides support in virtually all aspects of refuge operations at BNWR. As a 501(c)(3) organization (nonprofit), all proceeds from the operation of the refuge bookstore and all other revenues are turned back to the refuge in some form

A sampling of activities (not in order of importance or time involved) is provided here for your review:

1. Members of the Friends take part in various biological surveys, notably our annual eagle count which takes place every January. Others are actively involved with, or substituting for, Refuge personnel in the cleaning of nesting boxes in support of the Refuge wood duck program for example, (there are numerous nesting boxes for various species on the Refuge) or assisting Refuge biologists in various monitoring programs.

2. FOB handles all of the administrative detail of the annual hunt program at the Refuge. This is done by paying a qualified individual hired through an employment services bureau. The work entails developing the scope of the hunt with Refuge personnel as well as regulations, mailings, maps and distribution of information. A member of the group works very closely with this individual in development and dissemination of written materials.

3. At the present time, FOB is in process of upgrading exhibits at the visitor center. Some of the present exhibits date back to the 1960's. This is being done by vol-

unteers in conjunction with Joan Carroll Designs (a professional exhibits firm) and is being funded by a \$15,000 grant received from the Chesapeake Bay Gateways and Water Trails Network (through the National Parks Service) with funds being matched by FOB. The total expenditure will exceed \$30,000. The work will be in place by June of this year and will involve a complete renovation of the entrance interior and the east side of the visitor center. The upgrade will focus attention on the various topographical aspects of the refuge, i.e., marsh, woodlands and water. It will also feature a live beehive with extensive educational material.

4. FOB has funded and developed an Educational Manual which is being printed this month and will be distributed to schools in Dorchester and surrounding counties to encourage teachers to integrate the Refuge as an outdoor classroom into their natural science programs. The manual was developed with direct input from teachers to ensure utilization and compatibility with existing programs. In order to get teachers to attend the developmental workshops, FOB paid the schools for substitute teachers. This first manual is for use in elementary schools; however there is a Junior High School manual and Senior High School version currently under development. The group obtained funds to cover the printing of this manual from the local Wal-Mart.

5. FOB, through coordination with Africam and National Geographic, has been able to place video cameras on an eagle's nest and on an osprey platform. While our eagle's nest venture has not been successful because the nest remains unoccupied, the Osprey Cam is proving to be a valuable educational tool here at the visitor center and online at our website ([www.friendsofblackwater.org](http://www.friendsofblackwater.org)) and at the Refuge website, the Africam website and the website at a local Internet Service Provider. This project entailed getting the entire local community involved including Choptank Electric who donated electrical access County Commissioners who authorized use of a communications tower, Hurst Creek Computers who provided the technical equipment and expertise; and Maryland Towers who provided labor and equipment as well as the expertise of Refuge staff and a member of the Friends.

6. The Friends is presently involved in a major marsh restoration project in conjunction with the National Aquarium and the Friends of Eastern Neck Wildlife Refuge. This program will involve planting of marsh grasses on approximately ten acres of land on Barren Island. Our commitment to this project involves not only the planting, which will require recruitment of 30 to 60 volunteers per day for a period of six days, but then will require monitoring activity for a period of at least ten years. This project is especially important to the Refuge and to the Eastern Shore since it involves an attempt to control erosion on our fast disappearing islands in the Bay- This project is so important that it is the entire focus of a single member of the Refuge Staff. Training for monitoring the results of this program will be conducted in May in conjunction with Eastern Neck Wildlife Refuge and planting on Barren Island is planned to take place in early June of this year.

7. FOB supports community members and groups where it also benefits the Refuge. For example, it recently pledged support of up to \$2,000 to a thirteen year old boy scout named Joshua Stone who singlehandedly put together a project involving the planting of over 1,000 trees on the Refuge. The total value of the project exceeded \$8,000 but through Joshua's persistence and ingenuity the FOB contribution will be a little under \$1,500. The project actually resulted in the planting of close to 2,000 trees.

8. FOB works with other community organizations. As a result, construction will begin this summer on a butterfly garden to be located directly behind the Visitor Center. This garden, while totally constructed by the Cambridge Garden Club at substantial expense, is indicative of the type of relationship it has with other groups in the area. The garden will be a major educational and recreational addition to the Refuge and will certainly enhance its "outdoor classroom" functionality. An exhibit within the visitor center which is being funded by FOB will focus on butterflies and the garden.

9. FOB is working with the Department of Tourism to install and operate a low power AM radio station to assist in popularizing the Refuge to people traveling route 50. While funding for this project is provided through the Regional Office of the USFWS, the coordination of this project is being handled through FOB and a volunteer and FOB member. This project will require close coordination with the County, the Department of Tourism, the Highway Department, FCC and Refuge Staff.

10. FOB is anticipating a grant of \$15,000 to provide materials for construction of a handicapped accessible educational/photobind and observation site in the marsh. We are hopeful the funds will pay for the decking material with the construction being done by volunteers. This project will greatly improve accessibility to the marsh in terms of public use for educational and recreational purposes. The

group is expecting to receive a quote for materials very soon and should be prepared to begin this project in June of this year.

11. The Friends is also anticipating receipt of a substantial grant this summer which will enable it to develop a canoe/kayak trail through the marsh. This project will include partnerships with private individuals, that is, owners of a campground, and a bed and breakfast. This will be a major effort involving development of the approximately 60 miles of waterway, mapping, signage and administrative details. This project is designed to greatly increase public use/ accessibility and will be both educational and recreational.

12. The group is currently involved with the Refuge staff in the development of plans for a 5-7 mile walking trail. Once again, this is the type of project that will provide the basis for increased public use and appeal.

13. FOB has done some background work on the possibility of expanding/ updating the visitor center. It has acquired rough drawings and the group is presently investigating what will be necessary in order to put together a feasible capital campaign. As envisioned, the building would take on a second floor, with an enclosed glass viewing area, and newly added wings to provide an expanded auditorium and potentially house a local folk museum as well.

14. The group has been supportive of the Refuge's Nutria Control concerns and has hosted a public meeting on this subject to heighten community awareness of the damage being done by this invasive species. The group also talks about this subject whenever the opportunity arises whether it be through our speaker's bureau, the press or its presence at numerous community affairs and events.

15. FOB conducts, in conjunction with the Refuge Outdoor Recreation Planner, a minimum of three major open houses (four in 2001). These open houses focus largely on educational activities and feature special programs for children that are recreational as well. Our most recent effort, 'Eagle Festival' was held on March 10, 2001. We hosted over 1,350 visitors on that day. In order to accommodate the crowd, we had to split activities between the visitor center and a rented tent evidencing the inadequacy of our 40 year old facility. Adults and children took part in a myriad of programs including: Bird walk; "What Blackwater Does for the Eagle—; Eagle Eye View Children's Activity; Live Peregrine Falcon Program.; Educational Puppet Show; Eagles in Maryland presentation; Eagle Prowl; "How To" Photograph Wildlife; Children's Eagle Puppet Construction Project; Live Golden Eagle and Bald Eagle Program; Eagle Nest Production (video) at Iroquois NWR; Eagles as part of Native American Culture; Children's Arts and Crafts: What You Can Do To Help Injured Birds; How to Choose Binoculars and Scopes; Name that Tune Bird Calls; Live Owl Program; Children's Bird Feeder Construction Activity. Our annual "Spring Fling and Birding Festival" features our now well-known Children's Turtle Race!

16. The group interfaces and recognizes organizations and individuals who contribute to the Refuge; for example, it recently hosted a "Business After Hours" program in conjunction with the Dorchester Chamber of Commerce. FOB presented 22 plaques to organizations making significant contributions to the Refuge directly or to the Friends which, of course, also benefits the Refuge directly.

17. The group is very active in seeking out grant opportunities to fund its projects and has sent members to grant writing courses. It has also paid for other educational courses, for example, Newsletter Preparation.

18. FOB has an active Speaker's Bureau. The group will provide speakers to various options and has spoken to senior citizen's groups, fraternal organizations and various church and business groups. Typically, these presentations involve a combination of speaking and short video on the Refuge and the importance of the Refuge to the community,- however, the subject can be altered to fit the need of the requesting organization.

19. The group financed the development and production of a video which explains activities on the Refuge, focusing on its main missions of providing for migratory birds and waterfowl, endangered species, public interface and the land and water management programs required to support those missions.

20. The group publishes a quarterly newsletter "Tidelines" which it mails to members, interested groups, and community leaders from Guam to Alaska and Hawaii. The publication provides news of what's happening on the Refuge and attempts to provide recognition to staff members and volunteers for their efforts. We printed 1200 newsletters last month and mailed 987.

21. FOB has its own web site [www.friendsofblackwater.org](http://www.friendsofblackwater.org), which was professionally prepared by a member of the Friends and maintained by her. It is an outstanding site with access to the Refuge Osprey Cam and links to many other educational sites. A visit to the site is the beginning of a memorable educational voyage.

22. FOB members attend numerous educational and awareness meetings, conferences and seminars which are deemed to be potentially helpful to the Refuge and/or to the group itself. An example would be last year's Virginia Governor's Conference on Greenways and Blueways.

23. Members are also involved with publicity for the Refuge and are involved in writing press releases and appearing on radio programs etc. in support of Refuge activities.

24. Members attend meetings of various types which might affect the Refuge, e.g. recently we were represented at the Dorchester County Commissioner's meeting for a hearing on a proposed moratorium of antenna towers in the County. This moratorium would have adversely affected our ability to provide the educational Osprey Cam to the public; hence, we act as advocates to the benefit of the Refuge, the community, and its tourism opportunity.

25. The group attempts to be constantly attuned to legislation that has the potential to affect the Refuge and takes positions in favor or in opposition of such proposed legislation. In this fashion, it tries to stay in touch with its legislators and on issues affecting itself, the Refuge and the Community.

26. FOB attends community events to heighten awareness of the Refuge, the Friends group and associated activities. Examples of events which we typically attend and take part in are: Waterfowl Festival; National Outdoor Show; Shad Festival; Salisbury Zoo Earth Day; Picketing Creek International Migratory Bird Day; Cambridge Senior Celebration; 4-H Fair, Seafood Feast-i-Val; Dorchester Outdoor Show; National Hunting and Fishing Day Show; Horsehead Wetlands Day; and Picketing Creek Hoe-Down. Refuge activities are always featured and a booth is manned to provide information.

27. The Group operates the "Eagle's Nest" Bookstore which has been recognized by many as the best nature book source in the county, for both adults and children. The bookstore holds its own open house annually where it always has local authors available for book signings and discussions. One hundred percent of all bookstore profits are turned back to the Refuge to assist it in its operational needs. Typical items purchased with funds are: binoculars for use by children and groups during guided tours) computers, copying machines, tables, cameras, spotting scopes and other similar equipment. The bookstore has been selected by the USFWS as its national distributor of "Wild Things" poster tee shirts for the past four years. Our volunteer bookstore manager is often called upon by groups just staffing bookstores for advice and counsel.

28. Hyatt is opening a major resort in the area in December. The group has formed a committee to plan how to take advantage of the anticipated increase in visitor, to Cambridge.

29. The group assists the Refuge by soliciting donations from individuals and organizations for funds to assist in obtaining seed and associated supplies to support its crop planting program for the feeding of migratory waterfowl. This is becoming a more important program each year because of problems with resident Canada Geese and availability of Refuge Funds in general.

30. FOB is also involved in an active outreach program working with the USFWS in promoting the concept of expansion of Friends Groups to other Refuges in the System. Representatives from FOB have traveled all over the U.S. to assist Refuges and fledgling Friends groups in their early developmental stages, often accompanied by the Project Leader at Blackwater.

31. Most recently, a representative of the Friends attended a four day Invasive Plants Conference in Washington DC. Attendance at this conference should prove beneficial to the Refuge as awareness of those speck issues and their potential impact increase. The Friends will be in a better position to address the public with solid scientific information.

32. When it became apparent that storage space had to be expanded to accommodate the growing inventory of our bookstore, the Friends brought together a small group of volunteers who constructed the shed adjacent to the visitor center. There simply is inadequate space in the present building; hence volunteers and the Friends provided materials and labor to solve the problem.

In summary, the Friends of Blackwater are totally dedicated to supporting the Refuge in all of its missions. Additionally, in so doing, it has the opportunity to be of service to the community as well. To the extent the group can increase awareness of the Refuge and its programs to the general public, it will have an effect on local eco-tourism which is certainly mutually beneficial.

The most important sources of FOB revenue at the moment are the bookstore and donations. Last fiscal year, gross sales in the bookstore approximated \$70,000; however, we do not believe we can recognize any significant increases above this level due, primarily, to physical constraints. Additionally, all of that \$70,000 does not

wend its way to the Refuge because, despite the fact it is operated by a volunteer, there are numerous expenses involved. In essence, this means that we have to find new ways to increase revenue and we are exploring other means.

For two years, we had an outstanding source of revenue which required virtually no effort and represented a 100% profit. As noted above, the Refuge conducts an annual hunt program. In the past, we have had donations of a gun which we used as an item to "raffle". The cost of the tickers were borne by a local bank and a volunteer obtained a display case; hence, we had no associated costs. We began selling tickets in the Spring and awarded the gun in December. I believe that this one source of revenue has the potential to exceed the efficacy of any other revenue source. We have not held a raffle this year because we were advised by the USFVPS that a raffle is considered gambling and that gambling is not permitted on government property. The market for these donations (and we believe that the purchase of a raffle ticket is truly a "donation" and not gambling in the strictest sense of the word) is on Refuge property because that's where the hunters come to hunt and to obtain permits. We were informed that if the Secretary of the Interior would write a letter of exception, that groups such as ours would be able to use a "raffle" as a fund raising activity: The group addressed a letter to Secretary Babbitt two years ago asking that an exception be made which would allow nonprofit groups to use rakes as fund raisers. Unfortunately that letter was shuffled down to the FWS where a response was prepared that clearly did not recognize the content of our original letter. It was most disappointing since we know that groups such as ours (and their associated refuges) would greatly benefit. It is the hope of our organization that someone in the new administration will take the time to revisit this policy and allow us to maximize our fund raising efforts for the benefit of Refuges nationwide.

Despite a substantial cadre of willing volunteers, Refuges, if they are to increase their interface with the public in an educational and recreational sense, will have to be better funded in terms of staff and financial resources to maintain the lands and missions entrusted to them.

Thank you for the opportunity to present this information.

Mr. GILCHREST. Thank you, Mr. Tillier. Perfect timing.  
Mr. Johnson?

**STATEMENT OF W. LADD JOHNSON, CHAIRMAN,  
MARYLAND WATERFOWL COMMISSION**

Mr. JOHNSON. Thank you, sir. Blackwater has a special affinity to me. My uncle, Peter VanHussian, was the first manager here at Blackwater when it was founded, and since then I don't think there has been a manager here that I haven't had as a friend.

We are excited about the possibility of expanding Blackwater for recreational use. Presently about the only recreational, consumptive recreational use is deer hunting, and it is my understanding that almost everyone who applied last year got a spot to go deer hunting. What is exciting to us is that many of those people were not residents, which meant hard currency to our local economy here because they stayed in hotels, ate in restaurants, and bought nonresident licenses which help support many of our governmental programs, particularly in waterfowl.

We are excited about expanding Blackwater into turkey hunting. I don't know if many of you saw it last night, but there was a trivia question on Outdoor Life on television last night, that there are now more turkey hunters than there are waterfowl hunters, which is rather profound when you look at it. Although if you look at the National Wild Turkey Federation, it is growing much more rapidly than any other nonprofit organization in the country in the sporting field.

We see the future of waterfowl hunting on Blackwater. With the expanse of Blackwater that we have now, certainly the Nanticoke

watershed, if acquisition could be made over there on that avenue, it is a satellite area that waterfowl hunting, particularly goose hunting and duck hunting, could be expanded over there, with limited rail hunting. As far as hunting here on the Blackwater proper, where we are seated now, we do not conceive any hunting opportunities here. The agricultural lands are too important to sustaining the populations that frequent Blackwater.

On the nonconsumptive use, we are excited about that. We think that can be expanded, as the Friends of Blackwater said, certainly canoe or kayak trails through the marshes. There are plans now for a rather extensive butterfly garden just outside the picture window here at Blackwater, being funded by the Dorchester Garden Club. It will expand that use. Certainly photography and everything else can be expanded.

What I see also is a desperate need for an educational center; this close to the Nation's Capital, and the population that is here within two hours of Blackwater, that Blackwater could serve as a model for a major population up and down the Atlantic Flyway to come in and use it both as hunter education and nonconsumptive education. It could certainly be used by many organizations out of Washington that are related to wildlife.

What does concern us is a present attitude or procedure being introduced by the Fish and Wildlife Service which I have labeled as "passive wildlife management." They have a more fancier name than I do. But what it means is, the refuges will not be managed as they have in the past. They will be converted back to where they were, as you mentioned, when John Smith arrived, and I call that passive management or letting nature take its course. With wildlife today, the three most important things are food, shelter and water, and if it goes back to the passive use, of letting nature take its course and the refuge grows up in native trees and native fauna, then certainly the food source will not be there.

The private sector and many of the States have taken on another attitude, which we are very active in, in that my company designs wildlife habitat for the private sector. It is what we call "intensive wildlife management." Intensive wildlife management is planting grain crops, managing it for maximum production of food sources. And if the attitude of the Fish and Wildlife Service is to go to the passive, then certainly what I mentioned to you a while ago on the nonconsumptive use and the consumptive use of the refuges will certainly be deteriorating.

The populations of waterfowl, because of our economy and our new agricultural practices, combines are leaving less grain in the field for wildlife. Those fields that would normally have grain residues now are being plowed in the fall and planted in either barley or wheat. Now, that does serve as some green browse for Canada geese and deer and turkey, but it does not provide the energy source that is there for wildlife. So we are vitally concerned about the movement to the passive use or letting nature take its course. The only benefit it has, it costs nothing. So it all relates back to money.

On Blackwater here, my company administers a conservation seed program where we make seed available for people who will plant it for wildlife. We do about a million acres total in States east

of the Rockies. Most of it is on private land, but here on Blackwater and at Eastern Neck and over in Delaware, we provide the seed to them free of charge so they can have that seed to plant for wildlife, and we continue to do that program. We don't object to doing it. We consider it a privilege. It also serves as a demonstration area to the public who visit Blackwater, to see what intensive wildlife management can do as far as sustaining wildlife populations.

We are excited about the use of Blackwater as a recreational area. We think it can be expanded and should be expanded, and anything that we can do to assist that, we are certainly prepared to do so. Thank you.

[The prepared statement of Mr. Johnson follows:]

**Statement of W. Ladd Johnson, President, Resource Management, Inc., and Chairman, Maryland Waterfowl Commission**

Thank you for asking me to participate in this hearing. Blackwater National Wildlife Refuge has always been a favorite area for me. Its history is of particular interest since my uncle, Mr. Peter VanHussian was its first manager. Since then, I do not think there has not been a manager that I have not had as a friend.

We are excited about the possibility of Blackwater expanding its recreational use by the public. We understand that presently, the refuge offers deer hunting—archery, black powder, shotgun and youth hunting. So far every applicant has been accommodated. One statistic that is interesting is that of the approximately 3000 people who participated were non-resident hunters. This is exciting since it meant hard currency to our local economy for room rents, restaurants, sporting goods stores, etc. Also, exciting is the potential of expanding hunting activities to turkey hunting. This sport is the fastest growing hunting sport in North America and is certainly going to be paramount to sport hunting to Maryland.

Secondly, I see a future for waterfowl hunting on Blackwater. One fine opportunity is a resident Canada goose hunting. The problems created not only on the refuge but other agricultural areas by resident Canada geese are profound; any way to control their numbers and depredation should certainly be encouraged. Perhaps the expansion of the refuge to the Nanticoke River Watershed could allow the hunting of ducks and migratory geese in those areas. On the refuge proper, those areas around the agricultural fields, marshland, and woodlands, migratory waterfowl should be prohibited. The habitat in these areas is critical to sustain those migratory populations.

Other areas that could be expanded for refuge recreational use are those of "Non-Consumption Uses." Certainly, the continued use of observation/photography should be encouraged. Presently, over 500,000 plus persons use the refuge for this entertainment. One important element that could increase this type of activity is an educational center; educational classes featuring lectures on endangered species, invasive plants, etc. on a scheduled basis would create public awareness. Hunter educational classes for the youth describing how hunting is an American and a Maryland heritage along with the prescribed hunter safety courses could all be designed within the educational center.

Lastly, there are a few comments that we would like to make concerning the operations of refuge and most national refuges. We are greatly concerned with the new direction of land management on the national refuges. The present movement of land management that we have labeled as "passive management" is the virtual act of doing nothing and letting nature take its course. The USFWS has another grandiose name for it; but the definition is the same (The act of doing nothing). This type of land management is not wise as a practice of sustaining waterfowl and wildlife populations. The only benefit it has is that it cost the government nothing; it cost wildlife a great deal.

Today's agricultural practices and equipment leave very little as a nutritional food source for wildlife. Combines leave little grain residue for wildlife consumption. Corn and soybean fields that would remain after harvest are now being plowed and converted to wheat or barley. These crops do offer green browse but in harsh winter months they don't supply the necessary carbohydrates and energy sources needed to sustain wildlife.

We encourage you to please review this policy and plan budgetary funding for what we call "Intensive Wildlife Management." Presently, we provide seeds through



our "Conservation Seed Program" for food plots for wildlife. Over one million acres are planted under this program annually. Ninety percent is performed on private lands; the rest is in state wildlife management areas. The private and state sectors know the importance of "Intensive Wildlife Management" Why does the USFWS look the other way? This year, we are donating the seed to Blackwater in order that they can plant their lands. We do not object to donating this seed, we do object to the policies of the service of "Passive Wildlife Management.—

Civilization has claimed much of the habitat of our nations wildlife. The habitat that was present when the colonies were established is now gone. Therefore, we must sustain our nations wildlife on much fewer acres; the reason for active wildlife management. The service should be demonstrating by action the activities of conservation tillage, eradication of invasive plant species, reclamation of lost wetlands, and maximization of food sources for our nations wildlife.

Thank you for allowing us to participate.

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Mr. GILCHREST. Thank you, Mr. Johnson.  
Mr. Guy Willey.

**STATEMENT OF GUY W. WILLEY, SR., WILDLIFE TECHNICIAN**

Mr. WILLEY. Mr. Chairman, my name is Guy Willey, Sr. I retired after 30 years from the Fish and Wildlife Service, and I have more than a half century trapping the marshes and uplands of Dorchester County and on the Eastern Shore.

Before and since my retirement in 1985, I have been actively employed as a private and contractual trapper, working both for the Department of Natural Resources, Fish and Wildlife, and Tudor Farms. I continue to rent public marshlands for trapping purposes. I feel that I have a significant amount of knowledge to share with you today. It is therefore with great pride that I thank you for the opportunity to testify on how I believe trappers can help control invasive species such as the nutria on Blackwater and other refuges within the National Wildlife System.

I began my career as a biological technician in the late 1940's, at a time when muskrat trapping was a primary activity on Blackwater. During the early years when the refuge was established in 1933, it served as a fur experimental station. Muskrats, some of the finest in the Nation, were abundant in those years, and the annual harvest exceeded more than 25,000 from the refuge marshlands.

At that time the refuge only consisted of about 10,000 acres, 7,000 being marshlands. The three-square bulrush spread as far as the eye could see, and muskrat houses were so numerous in many places that you could step from house to house. But as you all know, we have now seen the change due to sea level rise, salt water intrusion, and the destruction by the nutria. Muskrat harvest on the refuge has decreased to an average of 4,000 a year, and the harvest continues to get less and less.

This is because the nutria that were introduced in the 1940's and '50's have destroyed much of the habitat that is so valuable to waterfowl and muskrat. Nutria were released by several of the locals in the 1950's, and the population has now grown to an estimated 35,000 to 50,000 on the refuge alone. Our most productive wetlands are remnants of their former size, and the wildlife in the area has suffered along with the local economy, which for centuries depended on extra revenue from furbearers and other natural resources.

And I could add a little bit about that. We have had, back in the 1950's and '60's we had Senators and people that have served in the Maryland House, and I am talking about Senator Malkus, who said that farming was so bad back in the early when he was going to school, after he came out of World War II, that muskrat had supported him, put him through college. And I really believe that, because of the value of the fur. As you all know, the fur prices have now decreased so that it is almost not worthwhile, with the amount of jobs available, even to have a trapper trap.

In more than 50 years experience as a trapper, I have gained knowledge of the Chesapeake Bay, the wetlands and woodlands of the Eastern Shore. Since the early '50's I have seen the human population explosion along the Bay, and I have watched many species drop to record low numbers. First we had the diving duck population, then the black ducks declined, and later the Canada goose population decreased. All these species have been placed in a position where the seasons have been closed or restricted.

However, the most alarming problems in my mind are the loss of the wetlands, both the marsh vegetation and submerged vegetation, and the growing invasion of the exotic species like the nutria, phragmites, loosestrife, gypsy moth, mute swans, and resident geese that compete with our native wildlife. These problems must be taken care of before it is too late.

The loss of wetlands affects the waterfowl, eagles, and the fish and crab life in the Bay and its waters. The economy and life of the residents of the Eastern Shore are affected. Our national wildlife refuges should not be havens for these species, and should set the example for providing the best practices for how private landowners can control the species on their land.

Probably my greatest contribution in helping deal with these problems of wetland loss caused by especially the nutria can be gained through the knowledge that I have attained over my years as a trapper. Other trappers and I were willing to work with the refuge staff to apply new methods and experiment to take care of, control these species like the nutria.

For example, since 1990 refuge trappers, working only on the incentive of \$1.50 in their bid for each nutria harvested, have removed more than 34,000, according to the refuge records. My understanding of the 3-year pilot program is that 50 percent of the current trappers employed are experienced local trappers which have demonstrated interest in the local level of attempting to deal with these problems.

It is when the pilot program has been completed that the real work will begin. I believe it will be the local trapper who will be able to take the new methods from the pilot program and use them to help achieve the goal of complete eradication. There is also the issue of access to private lands to help control invasives, such as nutria, which can subsequently reinfest the refuge even if the refuge control is successful. Therefore, local trappers must be the key in achieving success on private lands.

And I would like to add a little something. Many of the private lands, like Laddie mentioned before, are under lease to waterfowl, deer, turkey hunting. Sometimes these leases net a good return to

the owners. Therefore, the nutria removal will be in conflict with these activities.

And there are some landowners who have a dislike for the Federal and State government and may not want to cooperate. Some of the dislike has been brought on by law enforcement activities, restriction on land due to the Critical Areas Act by the State, and the problem with the Delmarva fox squirrel and eagle regulations placed on them in the Endangered Species Act.

Mr. Chairman, while I have the opportunity, I would also like to say a few words about the status of our refuges and what I see as the major issues facing Blackwater today. As a retired career employee and life resident of the area, I see things that maybe other folks don't see and hear easily, and I hope that the folks with the Fish and Wildlife Service will find useful.

Funding is needed not only to control the nutria and slow down the decline of these important habitats on the National Refuges and State and private lands, but also to properly meet the other mandates the refuges have. And I have listed in this little letter I wrote to you all, the major issues I see as the following.

Right now there is a move on I saw on TV, in Delaware, which you are not a Congressman from Delaware but it still affects, that Prime Hook was planting trees in lands that were purchased for waterfowl. Prime Hook Refuge was purchased back as a waterfowl refuge because of the decline in the duck population and the snow goose problem they had. But they had a big story on Channel 16 the other night and said that they were planting all these fields back into pine trees because this way they wouldn't have to farm, so it cuts back on the cost.

But this kind of makes it crazy to me, because if you decrease the farming operations, here we are trying to manage for the Delmarva fox squirrel, and in the years of low mast when you don't have much acorns and all, what we find, these squirrels will survive on the corn and milo left on a lot of these areas that are left for wildlife use, like many farmers will leave the edge. They leave it for deer, or they may leave it for turkey, and the squirrel is a beneficiary of it. So it kind of makes me wonder what is happening, if they are going to start planting just trees, just to plant trees.

Also here at Blackwater I feel that we should continue to fund the nutria program, provide more maintenance funds for building roads and dikes. And probably the most, the biggest problem that we have here at Blackwater is, back in the late '80's there was a break from the Chesapeake Bay that entered Parsons Creek.

And what happened, when the break happened, it cut through the upper Blackwater, and then the salt water invaded the upper Blackwater, and now the salt water flows from the Chesapeake Bay all the way back out to Fishing Bay again, and this has caused a great change in the vegetation, along with the nutria damage. And to control this problem, a dam at the upper Blackwater River could take care of this by damming off and stopping the water from coming in at Taylor's Island and coming into the refuge.

I think that the manager here has talked a lot about it in the past years, and I have kept pretty much in touch with him. But that is a problem now that should be accomplished even before we get done with the nutria population, because if you are going to re-

store the marshes, you want to be able to restore vegetation that is going to be native and not something that is going to come back in again, like we have in phragmites or salt marsh or those type of marshes.

We should continue to burn the marshes to maintain the three-square that we have left. Now, there is a lot of people that don't like burning. We have a lot of people that visit the refuge, when I left here in 1985, and they come down and they see these fires burning on these marshes and they think that is terrible. I have had people that talked real bad to me when we have been out burning marshes, and they say, "What are you doing?"

But they don't realize that it does two things. The three-square plant is a plant like the tulip, and like in the spring it is the first plant that comes up. If it doesn't get that start, then the other plants take over and that plant doesn't do as well. Controlled burning of the marshes helps keep that plant, keep the three-square plant and holds it, because the three-square plant is one that is becoming endangered not only in Maryland but I think also in Louisiana, from what I read, and that is the bulrush, three-square bulrush.

Also, we must continue to burn the woodland areas to prevent the summertime fire by reducing fuel in these areas, in these pine areas. By doing it in the winter, there is no damage to the pines. Because if we don't, then if we get a summertime fire, then it is going to destroy the habitat for both the Delmarva fox squirrel and the eagles who nest along the edge.

Also, I think we should increase the effort to control the Canada goose, resident Canada goose population. And I know the refuge has had a big problem with it, and I don't always agree with Glenn on this, and I don't like to see these birds killed, and he knows how I feel about it.

But maybe they could set up a special hunting period on the refuge in the fall, where it doesn't interfere with the public, close off the drive and say we are going to have a hunt and try to kill, knock back some of these 3,000 or 4,000 resident geese that do so much damage. If we don't do that, then they will continue to increase, because I think when I left in 1985 there was only about 1,500. Now they are up to 4,000 or 5,000 resident birds, and they continue to increase.

Another thing, too, we have created this problem, and maybe Dan don't have much to do with this, but the regulations, when we closed the Canada goose season on the Eastern Shore for the past years by the State because of the migratory birds, low population of birds, and I was in agreement with that, we have also created a problem because many of these local Canada geese were killed in the five-mile area of the refuge, and the reason we know this, because we had a lot of them collared with the white collars on them. And by not killing those birds, there is no hunting season so these birds continue to increase.

And what is happening now to the birds, why the farmers are raising so much hell, is because the birds are so tame after four or five years of not hunting, they will walk right on up to the barn. They are right in your back yard, even the migratory birds.

And what is going to happen is, if we don't have some kind of season, the migratory birds are going to be knocked back real heavy because they are going to be so dumb when they come in, in the first few years. The young will be killed off again, and then we will wonder why we don't have any migratory birds, because the younger they are will be the ones not going to be as smart.

Mr. GILCREST. Mr. Willey, I think if you are just about done, we need to move on.

Mr. WILLEY. Yes, I am done.

Mr. GILCREST. You will be able to add some more of your experience.

Mr. WILLEY. Yes, that is all. I am going to say one thing in closing. I appreciate you all letting me talk, and Glenn knew that I couldn't say what I had to say in five minutes.

Mr. GILCREST. Glenn didn't warn us about that.

[Laughter.]

Mr. GILCREST. Well, thank you very much, Mr. Willey. We appreciate your testimony, and your years of valuable experience will be important to us to help continue to manage this refuge and the Nation's refuges.

[The prepared statement of Mr. Willey follows:]

**Statement of Guy W. Willey, Sr., Wildlife Technician**

Mr. Chairman, my name is Guy W. Willey, Sr. I am a retired 30 year career employee with the U.S. Fish and Wildlife Service, and have more than half a century of experience trapping the marshes and uplands of Dorchester County and Maryland's Eastern Shore. Before and since my retirement in 1985, I have been actively employed as a private and contractual trapper working for the Maryland Department of Natural Resources, the Fish and Wildlife Service, and Tudor Farms. I continue to rent private and public marshlands for trapping purposes, and feel that I have a significant amount of knowledge to share with you today. It is therefore with great pride that I thank you for the opportunity to testify on how I believe trappers can help control invasive species, particularly nutria, on Blackwater National Wildlife Refuge and other refuges within the National Wildlife Refuge System.

I began my career as a Biological Technician with the U. S. Fish and Wildlife Service in the late 1940's at a time when muskrat trapping was a primary activity on Blackwater Refuge. During the early years after the refuge's establishment in 1933, Blackwater served as a furbearer experimental station. Muskrats, some of the finest quality in the nation, were abundant in those years, and the annual harvest often exceeded 25,000 from refuge marshlands. The lush three square bulrush marshes spread as far as the eye could see, and muskrat houses were so numerous that in many places that you could step from one house to the next. But as you know, all that has now changed due to a number of factors including sea level rise, land subsidence, salt water intrusion, and the destructive nutria. Muskrat harvest on the refuge has decreased to an average of about 4,000 a year, and the harvest continues to get less and less each year. Nutria were introduced to the area in 1943 to determine if they could survive the northern climate and cold winters, thereby stimulating the fur economy. Nutria were released by several of the locals in the early 1950's. As you know, the population quickly grew to the more than 35,000 to 50,000 that are estimated to be on Blackwater Refuge today. Our once productive marshlands are but remnants of their former size, and all the wildlife in the area has suffered, along with the local economy that has for centuries depended on the extra revenue from our furbearers and other natural resources. What was once large expanses of marshlands are now shallow unproductive waters that have high amounts of suspended sediments and support little wildlife.

In more than 50 years of experience as a trapper, I have gained a thorough knowledge of the Chesapeake Bay, the wetlands, and woodlands of the Eastern Shore. Since the early '50's, I have seen the human population explosion along the Bay and I have watched many species drop to record low numbers. First, the diving duck population, then the black ducks declined, and later the Canada goose populations decreased. All the above species have been placed in a position where seasons have been closed or restricted. However, the most alarming problems in my mind are the

loss of wetlands, both marsh vegetation and submerged vegetation, and the growing invasion of exotic species like the nutria, phragmites, purple loosestrife, gypsy moth, mute swans, and many other species that often out compete our native wildlife. These problems must be taken care of before it's too late. The loss of wetlands affects the waterfowl, eagles, and the fish and crab life of the Bay and its waters. The economy and life of the residents of the Eastern Shore are also affected. Our national wildlife refuges should not be havens for these species, and they should set the example for providing the best practices on how private landowners can effectively control these species on their lands.

I believe that my greatest contribution in helping deal with these problems of wetland loss caused by invasive species is in the knowledge I have obtained throughout my years as a trapper. Other trappers and I are willing to work with refuge staff to apply new methods and experiment with new strategies to help control invasive species like nutria. For example, since 1990 refuge trappers, working on only the incentive of \$1.50 reduction in their trapping bid for each nutria harvested, have removed 34,300 nutria according to refuge records. My understanding of the 3year pilot program is that 50% of the current trappers employed are experienced local trappers, which had demonstrated interest at the local level in attempting to deal with these problems. It's when the pilot program has been completed, that the real work begins. I believe it will be the local trappers who will be able to take the new methods and strategies that this pilot effort will provide, and use them to help achieve the ultimate goal which is eradication. There is also the issue of access onto private lands to help control invasives, such as nutria, which can subsequently re-infect the refuge even if the refuge is successful. Local trappers will be the key to achieving success on private lands.

In order to achieve this goal, we need to enlist the support and help of all landowners within the current range of nutria. What better individuals to assist in that coordination and action than the trappers and hunters which currently use those lands.

Mr. Chairman, while I have the opportunity, I'd also like to say a few words about the status of our refuges and what I see as the major issues faced by Blackwater Refuge today other than the issues with invasives. As a retired career employee and life resident of this area, I see things that others might not as easily see and hear things that others might not as easily hear that I hope you and the folks with the Fish and Wildlife Service will find useful.

Obviously funding is needed not only to control invasives and slow down the rate of decline of these important habitats found on our National Refuges, State and Private lands adjacent to the Bay, but also to properly meet the many other mandates that our refuges have.

The major issues I see today are as follows:

1. Increase the farming operations to provide more food for the DFS (Delmarva fox squirrel) as well as waterfowl. Small areas of corn, milo and soybean sometimes (in a year of low mast production) mean the difference between maintaining the endangered DFS population at a good level.

2. Provide more maintenance funds for buildings, roads and dikes.

3. Continue to fund the nutria reduction program.

4. Begin to stop the erosion of the marsh by cutting off the salt water from the bay, which is now entering the refuge from Parsons Creek, (a dam in the upper Blackwater River can accomplish this).

5. Continue to control burn the marshes to maintain the three-square marsh, so important to waterfowl. Burn woodland areas to prevent summer time fires by reducing fuels. This will maintain the adjacent wooded areas for both the DFS and the Bald Eagle population.

6. Increase efforts to control the resident Canada goose population. This may require a special hunting period in the early fall.

7. Open the season on the refuge for a small period on the snow goose population, which continues to increase on the Eastern Shore. This specie is doing damage to many of the refuges.

8. The acres of Barren Island, Smith Island and many private owned lands continue to erode in the bay. The Department of Interior must work along with the Corp of Engineers to find the best method and cost efficient way to slow down this erosion problem.

9. I believe the loss of the wetlands and shore erosion, which places a heavy sediment load in the bay and rivers. This will be the downfall of the bays production of the crabs, oysters, fish and all the other species that depend on it.

In closing, dedication by the Congress will help begin the process to restore our refuges to a higher standard and place pride back in our employees.

Thanks, for the opportunity to be heard by the Committee.

Mr. GILCHREST. I might say to some of the local farmers that have geese problems, though, a couple of shots from a shotgun every once in a while does a lot of good to scare the geese off, or just let the dog go. But, anyway, I know there is a problem with the resident geese, and that is one of the areas that we certainly want to try to cover.

What I would like to do now is to just ask the panel a number of questions dealing with a whole range of activities: the comprehensive conservation plans, how they are moving along nationwide, but in particular with Blackwater; certainly deal with the nutria problem; get some feedback between Mr. Ashe and Mr. Johnson about passive or intensive management and is one more appropriate than the other, or is a region dependent upon—the use of passive might be good for one place, the use of intensive might be better management for another area; so those kinds of things.

I would like to start, though, with Mr. Ashe, and there is never enough money, it seems. I have a daughter in college, and there never seems to be enough, quite enough money.

[Laughter]

The difference between the National Park Service funding and our refuge funding is rather dramatic, and I would like to ask you your opinion on how we could better bring that into some more, a little more equity. I mean, when you consider the number of acres in America's refuges and the number of acres in our National Park System, we have a lot more acres in the refuges, and the growing population of visitors has dramatically increased. And the importance of the refuges to wildlife, to biological diversity, to an outdoor school for us to understand ecosystems and precedents for ecosystem management is pretty extraordinary.

The other thing is, Fish and Wildlife—and I know, Dan, you didn't make up the President's budget, I don't think—are asking, the Service is asking for \$2.7 million for invasive species control. Now, if we are asking for \$1.9 million for Blackwater and \$2.7 million is requested nationwide, is that enough? Would you describe it as a pittance?

Mr. ASHE. To answer your question, no, it is not enough to address the needs. If you just look, as I said, at our refuge operating needs database, as we did in preparation for this hearing, and you query the database and say how many projects are there pertaining to invasive species (and these are projects that have been identified by our managers nationwide), there are over 300 projects totaling more than \$120 million. We anticipate that that will probably be over \$150 million by the end of this year, in terms of projects that have been identified by our managers as things they need to do in order to address invasive species.

Mr. GILCHREST. You are saying about \$150 million in identified projects, with \$2.7 million requested?

Mr. ASHE. That is correct. Clearly our needs outstrip our capacity, and so what we have to do in that context is set priorities. Your question was a large one, and I guess I would maybe back up and say, I have a lot of respect for President Bush. He made a commitment in the context of his campaign that he was going to deal with the Park System maintenance backlog.

And those of us in the Fish and Wildlife Service, every time we heard the word “parks” come out of his mouth, we wanted him to say “and refuges.” Many of us were working to try to get him to do that at that point in time. It didn’t happen, and so his budget for this year reflects his campaign promise, which was to deal with the issue of Park System maintenance.

And so what we have been and are continuing to do is to work within the Administration to try to raise the profile and the priority of the Refuge System. I think we have had good success. The dollars that we have in the budget now are there because we did push the issue within the Administration and we did get the support of Secretary Norton for the increase that we have in our budget. The Fish and Wildlife Service and the Park Service are the only two agencies within the Department of the Interior that are seeing increases for this year. So we were successful. Yet, our needs outstrip our available dollars. That is—

Mr. GILCHREST. It is a massive problem. Well, we will—

Mr. ASHE. I want to say thank you because I know you and Congressman Hansen have written to President Bush, and I know other Members are working on behalf of the Refuge System, and I think that is what needs to happen.

Mr. GILCHREST. Sure. I guess when you look at the problems with Medicare, Medicaid, education, national defense, bridges that are falling down, the whole range of Federal responsibilities, this unfortunately takes short shrift to those things. But we will continue to push to get the appropriate funding in a priority sense, and Blackwater will be one of those areas, because of the urgency that we are seeing.

Ms. THOMPSON, the State participation in this has been very well performed, and we appreciate that. I just have a couple of questions. The eradication program, you talked about, explained eradication. There are control sites and there are eradication sites.

Ms. THOMPSON. Well, they are one and the same thing. In the treatment, you mean, in the pilot program?

Mr. GILCHREST. Yes.

Ms. THOMPSON. There are generally, in a research, you know, scientific research projects, you have a control and you have an experimental measurement that you are taking. So we have control sites where we are doing nothing, and we have treatment sites where we are going to do intensive eradication in 2002 to see—

Mr. GILCHREST. And the control sites are a measure to see the reaction—

Ms. THOMPSON. Of the population.

Mr. GILCHREST. —from the actual eradication?

Ms. THOMPSON. Yes.

Mr. GILCHREST. To see if there is any extra activity as far as procreation is concerned, or change of activity or movement by the nutria?

Ms. THOMPSON. Exactly. We want to see where they go. We want to see if they run away. We want to see if they respond reproductively to the population reduction that we’re conducting there, and give us some information about—what we essentially don’t want to do is just start an eradication program and make some mistakes, expensive mistakes that are caused by the biology of the animal



which we are just, you know, trying to understand, or that are caused by environmental factors, weather, tides, et cetera.

In other words, if we had a large increase in sea level rise that eliminated some habitat for, let's say, the nutria, and we thought we were successful in eradicating them—

Mr. GILCHREST. Oh, I see.

Ms. THOMPSON. —we backed off, and that recovered, they would explode again. So we want to understand their interaction with their environment and their reproductive response to reduction in population before we implement a serious, broad eradication program, and that is why we need to get the data from the pilot program.

Mr. GILCHREST. How much money has the State of Maryland contributed to the nutria pilot project?

Ms. THOMPSON. I knew you would ask that question.

Mr. GILCHREST. And are those dollars being spent not only here in Blackwater, but places such as Tudor Farms or other areas?

Ms. THOMPSON. You know, I am not familiar with whether or not we have contributed actual dollars to the pilot project. We have contributed a lot of in-kind, so a tremendous amount of salary has gone into it.

Mr. GILCHREST. I see. So the DNR staff have spent considerable time participating in the pilot project?

Ms. THOMPSON. Yes. We had our director at the time pretty much fully engaged, so we had his—

Mr. GILCHREST. Who was that?

Ms. THOMPSON. He was Mike Slattery, and he is no longer with us as of last Thursday, and I am trying to catch up on his—

Mr. GILCHREST. We are very happy to work with you.

Ms. THOMPSON. Great.

Mr. GILCHREST. We were disappointed with Mike Slattery's change of career.

Ms. THOMPSON. Us, too. We miss him.

Mr. GILCHREST. Yes, we are all going to miss him.

Ms. THOMPSON. But we also have a furbearer biologist, and he has been working very much on this, so it is his salary as well as equipment and time and so on that we have contributed to it.

Mr. GILCHREST. I see.

Ms. THOMPSON. And how much, I would have to get back to you on that. We do have the numbers because we used them, obviously, for grant processes.

Mr. GILCHREST. We would appreciate that.

Ms. THOMPSON. I will do that.

Mr. GILCHREST. Can you just quickly tell us, or maybe somebody on the panel, how you put a radio collar on a nutria?

Ms. THOMPSON. Well, I have to go to my lifeline. Can I go to my lifeline?

Mr. GILCHREST. Sure.

[Laughter.]

Ms. THOMPSON. Where are they? Mark, Mark Sherfy.

Mr. SHERFY. Yes, Mark Sherfy from the Fish and Wildlife Service, the Chesapeake Bay Field Office. Basically, the animals are caught in cage traps or a box trap. It takes a team of two people

to handle the live animal. It is restrained with a pole that has got a cable that holds it, basically holds the animal down.

And the collar itself is really nothing more than a piece of cable that has got plastic around it, that slips over the head and it is tightened down to just the right tension so that it stays on the animal. It is not loose enough so the animal can get a foot up behind it, and it is not tight enough so that it hurts the animal. It just basically rides around the neck like a necklace, a little—with the actual radio part hanging below the chin, and the antenna back up over the back.

Mr. GILCHREST. Does it have a big range, do you know yet?

Mr. SHERFY. Some of them do. Many of the animals who have been followed stay within say a couple hundred yards. We have had animals that have moved—oh, one that was seven, and a half miles, we picked up off of Tudor Farms and headed down the river about seven miles. So there are those outliers that pick up and move long distances, and those are the ones that are really interesting from an eradication standpoint. Those are the animals we really need to understand. You know, the ones that are staying in a relatively small area are not nearly as significant from an eradication standpoint. We need to get the ones who are making large distances.

Mr. GILCHREST. Interesting. Thank you.

Ms. THOMPSON. Thank you, Mark.

Mr. GILCHREST. Can you tell us something about, I guess I would like to know a little bit more, and we probably should call the Corps on this, the Corps' participation in the restoration of the wetlands that apparently have been destroyed because of nutria or sea level rise.

Ms. THOMPSON. Yes.

Mr. GILCHREST. How engaged is the Corps in that, or the State as partnering with the Corps and Fish and Wildlife? Is that at the very early stages?

Ms. THOMPSON. Yes, it is the very early stages, and we are very engaged but I think we are at the very beginning of that. I understand the Corps wants to start their preliminary investigation of wetland restoration this summer. They are hoping to do that. I got the sense from Steve Kopecky yesterday at our meeting that we have some understaffing issues over there, as well.

But that is their intention, to start this summer, and he and I are going to sit down in the very near future to talk about the 150 acres of marsh restoration that we have been planning, I understand, for some time. They are using Federal grant money to do that, so obviously we need a non-Federal match. The State is going to be providing that non-Federal match as a budget amendment in FY '02. So we need to sit down still and talk about what our goals are and how much money the State needs to contribute in that amount.

Mr. GILCHREST. I know it is at the very early stages of that, but I would assume if you are going to restore some wetlands, that there is going to be some material moved from one place to another.

Ms. THOMPSON. Yes.

Mr. GILCHREST. And would that likely be dredge material, and where might that material be dredged from?

Ms. THOMPSON. Those are all tricky issues, and I understand we are still discussing them. From what we talked about yesterday, we are still discussing that. It is still a little uncertain.

It is also uncertain how the marsh restoration would occur in the areas where we are doing eradication, would that conflict, and we need to resolve that still. So as soon as we do, we will let you know what happened and where we are going, but we are still—

Mr. GILCHREST. And we would like to be, along with the refuge here and certainly probably with some of the people at this table, we would like to stay engaged in that process—

Ms. THOMPSON. Absolutely.

Mr. GILCHREST. —to help with whatever funding was possible.

Ms. THOMPSON. Absolutely.

Mr. GILCHREST. Certainly where the dredge material might come from, I would assume—

Ms. THOMPSON. I think what we can commit to is an update for you and all of our partners on what we are doing, what we have decided to do, both in wetland restoration and in the eradication, and what we are finding. As we move toward eradication and wetland restoration over the next year, that is going to be really important, so we will do that.

Mr. GILCHREST. Thank you. Mr. Tillier, can you comment on—you made a comment about the restoration or planting grass on Barren Island. First of all, I found your testimony fascinating in the amount of work that you and your colleagues do for America, basically, on this refuge. I was wondering if all of the people that are working with you are retired, or you do this after hours, or you get mileage or some kind of insurance coverage or however that works. But we certainly appreciate all that you are engaged in. The restoration and planting grass at Barren Island, I found that fascinating.

Mr. TILLIER. Yes, sir. This whole project really began on Eastern Neck Wildlife Refuge, where they did a pilot program, if you will, and they did some planting of marsh grasses. That was done in conjunction with the National Aquarium and also with the Corps of Engineers, who moved dredge material over there and then they planted.

Then we were approached here by the Friends of Eastern Neck, who had participated in that project, to see if we would be interested, and by the National Aquarium, who came to us as a group to see if we would be interested in doing something here locally. We also since then had an individual by the name of John Gill, who is a biologist here on the refuge, responsible for the islands, and John Gill is very much interested in this project and had been in conversation also with people at the National Aquarium, and he asked the Friends if we would be interested in doing that.

So at one of our regular board meetings, we entertained the proposal, which we understood would be to do two things: number one, to go to Eastern Neck and provide a cadre, a small cadre of people from the Friends who would learn how to monitor the results of any kind of a planting effort. That is planned for the month of May here. Then we are—

Mr. GILCHREST. So you haven't started planting grass yet?

Mr. TILLIER. No, not yet. We are going to go first to the training session with a small cadre. The board then got one of our volunteers who is really pulling together the numbers of volunteers which we are going to need, which are substantial. We are going to need 30 to 60 people a day for up to six days, and—

Mr. GILCHREST. Where would the grass come from?

Mr. TILLIER. I am really not sure where the grass will come from. Our emphasis has been on right now trying to get the people who are going to get this done.

Mr. GILCHREST. The Aquarium is providing the grass?

Mr. TILLIER. That is my understanding, but I am not 100 percent sure.

Mr. GILCHREST. This is not SAVs. This will be upland grasses?

Mr. TILLIER. Again, yes, it is upland grasses.

Mr. GILCHREST. Will there be any need for dredge material?

Mr. TILLIER. I believe that has already been done.

Mr. GILCHREST. Oh, it has been done?

Mr. TILLIER. That is in place, so at this point it is going to be a matter of getting all of these people out there, and we are beginning this planting process on June 4th, so it will run over a period of up to six days. It was done, of course, in consideration of tides, et cetera.

Mr. GILCHREST. Yes. I would like, if we have an opportunity, I would like to come down and help stick some of the shoots in the ground.

Mr. TILLIER. We will definitely—you definitely have an invitation, sir.

Mr. GILCHREST. Thank you. And we certainly appreciate all the work you have done in that area.

Mr. JOHNSON, I guess I will go to that intensive/passive. I want to thank you for all the work you have done on the refuges around the country, and I find it fascinating that you provide some of that feed for the wildlife for free.

Mr. JOHNSON. Well, the best explanation I can give you to that is, I dumbed myself into a major industry.

[Laughter.]

Mr. GILCHREST. That sounds—that is a good line—that sounds like a poor elected official.

[Laughter.]

Mr. JOHNSON. My company is called Resource Management, and we are wildlife consultants. We design wildlife habitat, and we have designed about 2 million acres for the private sector in the past 10 years.

Mr. GILCHREST. This is across the country?

Mr. JOHNSON. Across the country, yes, primarily in the South. Most of our work has been in the South, because that is where most of the sporting activity takes place. Most of our work is to enhance someone's sporting opportunity.

And in doing so, we were recommending that they plant, this crop or that crop, so I got the idea, well, some of these seed companies have to have seed left over this year, or a discontinued variety that they have to get rid of. And since it is treated for planting,

it becomes a hazardous waste to them when it is no longer on the market.

So I approached the largest seed company about discounting that seed to us, to make it available to clients. And I arrived in Des Moines, Iowa, to visit with the Pioneer Seed Company. My meeting was at 1:30 and I arrived at 11. They had scheduled a tour for me to go around to see their facilities.

We passed these huge grain bins and I said, "Gee, is that where you keep your seed?" And they said, "No, that's where we keep our out-of-date seed." And they said, "Do you know it costs us a quarter of a million dollars to get rid of that each year?" So I went to the meeting now not asking for a discount, with a proposal on how to get rid of their out-of-date seed, how to save them a quarter of a million dollars a year.

[Laughter.]

And since then we are representing about 80 percent of the left-over grain seed in North America. The seed companies donate it.

Mr. GILCHREST. This is grain?

Mr. JOHNSON. This is corn, grain sorghum, sunflowers, wheat, barley, oats, any treated seed.

Mr. GILCHREST. So when you take that grain and distribute it in various places, is it planted or is it just spread for feed?

Mr. JOHNSON. It is planted.

Mr. GILCHREST. It is planted?

Mr. JOHNSON. It is planted. It can't be put back in the food chain because it is treated. We are putting it back in the ground, which was its intended use, but instead of being planted for profit, we are planting it now for wildlife.

Mr. GILCHREST. Does this go to private landowners?

Mr. JOHNSON. Private landowners. Each person—

Mr. GILCHREST. Does any of it go to refuges or for State land?

Mr. JOHNSON. Yes, almost every Federal refuge that has a planting program is using this program, yes. The way it works—

Mr. GILCHREST. How is it—

Mr. JOHNSON. —we have designed it to go through nonprofit organizations. The Wild Turkey Federation is our largest. Quail Unlimited is second.

Mr. GILCHREST. Who distributes the seed?

Mr. JOHNSON. The various chapters of those organizations. Each person who receives one bag signs a disclaimer that he is going to plant it and leave it for wildlife; that it cannot be traded, sold or harvested for profit. And in seven years, sir, not one person has violated that.

The policing mechanism are the people and the chapters themselves, because we have made it perfectly clear that if one person in a chapter violates it, that chapter can no longer participate. So we have actually had members hear rumors that someone was going to plant corn and harvest it for silage, and they went out and picked it up out of his barn and took it back. They wouldn't even let him do it on a rumor. So that program has been very effective.

Mr. GILCHREST. That is tough.

Mr. JOHNSON. So that is how the seed program started.

Mr. GILCHREST. I see.

Mr. JOHNSON. The private sector is utilizing what I described to you as intensive management. The tonnage and energy generated from intensive management far exceeds what I described as passive management.

A few years ago "moist soil management" was the buzz word in Washington for waterfowl habitat. Moist soil management has its place, but moist soil management is nothing more than a wet weed patch. It does create some energy, it does create some micro-organisms that will generate when you put water on it, but nothing near the tonnage that grain crops will do.

Agriculture has changed so much since the '50's until now, the residue is no longer there for wildlife, so we have to look at intensive management. And the private sector, quite frankly, is doing a magnificent job. In some cases the State is utilizing intensive management, also.

Mr. GILCREST. Let me just jump now to Mr. Ashe on passive management versus intensive management. Based on what Mr. Johnson said in his testimony and has just alluded to now, can you comment on that as far as our Refuge System is concerned?

Mr. ASHE. I guess I would just say I am a little bit perplexed, and maybe if we have a discussion we will get down to the root of the issue. I mean, I am very familiar with our Refuge System, and we do intensive management. We do some of the most intensive management in the world.

If you go to refuges like Sacramento River or Klamath National Wildlife Refuge, you will see intensively managed refuges, the entire breadth of which look like what you see behind you here in Blackwater, with impoundments and farm fields. And we do that because the habitat has been so altered that it is necessary for us to do that.

Sacramento River Refuge and San Luis Refuge in the Central Valley of California provide the wintering habitat for the remaining population of Aleutian Canada goose (which we just delisted, or took off the Endangered Species List) so we have to manage those lands intensively to support those birds. They have plenty of habitat on the northern breeding range in Alaska. When they come to their wintering range in the Central Valley of California, Sac River and San Luis are all they have left, so we have to manage and do manage those refuges very intensively. The same thing for Klamath, and the same thing at Bosque del Apache along the Rio Grande. We manage land very intensively where we need to manage land.

Mr. GILCREST. Are there areas, then, that the Fish and Wildlife is considering less intensive management? Mr. Johnson, is this something that you have heard, or is it a direction—

Mr. JOHNSON. No, I understand that there is a directive out, and I forget, there is a name for this directive, and I apologize for not having that with me. But as Mr. Willey alluded to Prime Hook, planting Prime Hook's agricultural lands in trees when it should be intensively managed for that waterfowl population—

Mr. GILCREST. Now, this is a Fish and Wildlife Refuge in Delaware?

Mr. JOHNSON. Yes, and there is a directive out there, I believe, that says to put it back the way it was—as a matter of fact, it said

between 800 and 1800 A.D., is the way the directive reads, and I apologize for not having it with me. I can make it available to you, but there is a directive.

Mr. GILCHREST. A policy of maintaining—oh, I see, this is the issue of ecological integrity.

Mr. JOHNSON. That is it.

Mr. ASHE. The ecological integrity policy and biological integrity policy does not tell our managers to let nature take its course. That is not the purpose of the integrity policy. In fact, the policy recognizes that, in many cases, to achieve our purpose at our refuges, we do have to manage intensively, depending upon the nature of our business and what our purpose is at the refuge.

Mr. Johnson is right, we do a substantial amount of moist soil management on refuges, because what we have realized as a result of the developing science on moist soil management is that we can manage areas for waterfowl, we can produce “hot food,” as they say in the wildlife business, for migrating waterfowl, but also continue to manage those areas to provide the wetland benefits that benefit a diversity of species.

So that we can rely principally on native plants, we can leave areas in their wetland state, not as a drained farm field but leave them in their wetland state. We can also manage the water levels better at that point to benefit migrating shorebirds as well, so that we get more out of those areas by managing them in that way. We are not managing exclusively for waterfowl, but we are managing then for a diverse array of wildlife species.

Mr. GILCHREST. Would there be, in the process of planning, the concept of passive management versus intensive management, would the goal for the refuge be different under passive management versus intensive management?

Mr. ASHE. The goal of the refuges, I mean, our refuge, each refuge has—

Mr. GILCHREST. Would the goal then be more broad for passive versus intensive?

Mr. ASHE. Each refuge has a purpose, and I agree, refuges like Blackwater and Prime Hook are refuges that were established for migratory birds, principally waterfowl. And so we have an obligation to meet our purpose. That is also reflected in our integrity policy: our first responsibility is to accomplish our purpose. If that purpose is waterfowl conservation, then we first have to accomplish waterfowl conservation.

But we also have a responsibility to manage our refuges for, in many cases, for a variety of migratory waterfowl or migratory species, in some cases endangered species like the Delmarva fox squirrel here at Blackwater. So we have to manage for those also. So those purposes are going to dictate how we manage. In some cases, again, at our refuges we are looking at how we can manage the same piece of real estate, for waterfowl purposes, but also manage them for migrating shore birds.

And I don't know the issue at Prime Hook. Maybe it is funding. Maybe the manager is saying, “I can't farm those fields because I don't have the dollars to farm them, so in order to prevent invasives from coming in and other problems, I'm going to put them back into trees. I'm going to put that area back into forest.”

It is also possible that the manager may have said, "In order to provide benefits for migrating neotropical songbirds, I need more forest habitat on the refuge."

We can learn more about that case, but usually when a manager is doing something like that, they are doing it for a management reason. They are doing it because they have a reason to do it. And my guess would be that they have looked at the issue and they have said, "We can accomplish our waterfowl purpose through other means or existing means. What we need on this refuge is additional forest habitat to support migrating songbirds."

Mr. GILCHREST. Mr. Johnson?

Mr. JOHNSON. I think he just, Dan hit it on the head. Most of the comments I get back from the refuge managers that we are participating with, if it wasn't for our give-away seed program furnishing seed to them at 50 cents a bag or \$2 a bag versus \$80 or \$100 a bag, they could not plant that crop.

Now, what we have done also is, in many cases we have donated the seed to them. This seed may cost \$100 a bag. A bag plants four acres. We will give them a letter of in-kind contribution at a 50 percent value. The companies let us do this, so I can write Blackwater a letter and say, "We're giving you an in-kind grant of \$2,000 worth of seed," which they then can go to the Fish and Wildlife Foundation and use as a matching grant to try to get enough money for fertilizer. So, I mean, therein lies the problem, that most of the time—

Mr. GILCHREST. We have a lot of chicken manure on the Eastern Shore.

[Laughter.]

Mr. JOHNSON. —it is being converted to passive management because they just don't have the money to farm it.

Mr. GILCHREST. Would you say the size of the refuge—Dan made a comment about passive management in Alaska because it is so big, versus intensive management on some of the lower refuges because they have been altered and changed and they don't have the land mass. Would you say the size of the refuge to some extent might dictate either passive or intensive or a combination?

Mr. JOHNSON. It would be a combination. Blackwater, every refuge on the Atlantic Flyway, every refuge on the Mississippi and Central Flyway, and even parts of California, urbanization has taken so much of their habitat that the refuges are even more paramount than they were 30 years ago, as providing the nutritional source needed and a place to go hide and rest. As we said a while ago, agriculture is not supplying what it used to in the past, so they are more dependent on an energy source that is going to be consistent and sustainable.

The trouble with moist soil management, it is sustainable for a large population for a short period, where cash grains and intensive management produces much more tonnage, produces the same invertebrates. The tests that we have run in an agricultural field not treated with a herbicide, and in many cases we encourage that where we are going to do flooding because by not treating with a herbicide, we still get the foxtail, we still get the weed growth that does provide some tonnage also, but it does not cut down on the invertebrate blooms and the invertebrate generation that we can



get from those flooded facilities. So the tonnage is there. It comes down to the amount of energy that you can get out there to the wildlife source.

Mr. GILCHREST. Thank you.

Mr. JOHNSON. May I add something else?

Mr. GILCHREST. Yes.

Mr. JOHNSON. Ms. Thompson was talking about what funds were available. For instance, on phragmites, on treating invasive plants, we use Duck Stamp monies on a cost share program with a private entity for phragmites control. Phragmites control usually costs about \$100 an acre. We are into a cost share program using Duck Stamp monies, for the private sector to pay 50 percent of that.

We also passed legislation in the State where we can hit one-third of the mitigation funds from the Department of the Environment, where they mitigate for development and road construction and so on and so forth. We can use one-third of those funds for phragmites control. And we also get matching grants from the Fish and Wildlife Foundation.

I serve on a board called Pulling Together Initiative that makes available about \$3 million across the country in cost-share programs. The money comes from Fish and Wildlife, BLM, Department of Defense, and many other avenues. That goes on a lot of public lands in the West.

But we found in Maryland, on phragmites control particularly, that we better concentrate on watersheds. There is no need to do two acres here on the Chester River and then come down and do two acres on the Choptank; that we are going to concentrate our funds now and all our cost-share efforts on watersheds. For Blackwater to have an intensive program and then their neighbor not having an intensive phragmites program accomplishes nothing.

Mr. GILCHREST. Right. This is a big watershed.

Mr. JOHNSON. So we are trying to attack it on a watershed basis.

Mr. GILCHREST. I am going to try to make this as quick as possible, because we probably don't want to sit here until 3 o'clock this afternoon, but I do have about 16 questions more, and some of them are on phragmites. But I wanted to ask Mr. Willey a question, and the phragmites question deals with a whole range of other invasive species, what is the value of it versus the cost of eradicating it, can we adapt to phragmites, and things like that.

But you are exactly right, if you just do it on—even if you just did it in Dorchester, which is a pretty big area for eradication of phragmites, they are popping up all over the place, and in some areas of the Eastern Shore I think the DNR has pretty much given up on it, just letting it go for shoreline erosion purposes.

But, Mr. Willey, it was interesting that you said the loss of wetlands was about the biggest problem we have over here, partly and fundamentally due to human population activities and things like that, and the loss of habitat for a full range of wildlife. But nutria in particular, as an invited guest that has overstayed its welcome, there are a number of trappers now engaged in the pilot project, from I would guess a number of places, the Eastern Shore plus other States.

Could you give us, if you know, some idea of how many local trappers are involved in the pilot project? And Ms. Thompson made

a comment, alluded to the fact that we are going to need about twice as many trappers when the pilot project is over, and do you see that being a problem with continuing this program, or are there enough local trappers that could handle the full roll eradication program? I know that is a long—

Mr. WILLEY. Yes, just real briefly, if you are talking about, yes, there are several trappers from Maryland, not from this county.

Mr. GILCHREST. Right.

Mr. WILLEY. Well, I think there is one or two from this county. Edith, is that right?

Ms. THOMPSON. Seven in the local area.

Mr. WILLEY. Yes.

Mr. GILCHREST. Which is the lower Shore?

Mr. WILLEY. I think about half of them are, if I remember correctly. Isn't that—

Ms. THOMPSON. Yes. There are 12 total, and 7 from here.

Mr. WILLEY. But they are from here. The biggest problem with Dorchester, and Glenn could tell you, too, many of these trappers that trap here in the winter time are crabbers, like from Hooper's Island, Taylor's Island, or the locals, and those guys wouldn't sign on because when they had the pilot program, the opportunity was there but they didn't sign on because they can make more money, normally, crabbing, than they could, and they wouldn't accept the job for whatever they pay, you know, the pay, if it's \$20,000 a year, whatever it may be. They wouldn't accept that, and that's your biggest problem with getting when you say experienced trappers, someone who has trapped extensively.

I don't think you would have the problem once you get the program going. I don't think a lot of them wanted to be involved into the marking of animals, like Brian is involved into, the marking and recapture and all. I think most of these trappers are killers, you know. They want, when they've got the animal in hand, get rid of him.

So I think that's where it would come in. I think you would probably be in better shape as the years go by, where they know the animal is going to be taken, because we have a lot of criticism: Why in the hell are you putting the collar on? You know, that is the big problem I think you have got, so I think that is the big thing, but I think you would be.

Now, I am saying this, but not a lot of people I don't believe applied, and Edith can tell you that. You probably wasn't involved in it at first, but I think Rob Colona was involved in it. They were having a little problem getting even local people, you know, getting locals even within the State.

Mr. GILCHREST. That is because they wanted to—

Mr. WILLEY. Well, I mean, they got a full time job. They are kind of a little bit hesitant—

Mr. GILCHREST. Is there any way that, once the pilot project is done and there is a real good system to eradicate these little guys, that someone that does crabbing for part of the year could actually come in and trap for part of the year?

Mr. WILLEY. Well, this is what I think they have to work out. I think they have to work out that. I don't know how to do it money-wise, but when we had all our meeting up in Annapolis

about two years ago when we first started, they talked about monetary—you know, what would it cost? The \$1.50 came from Senator Malkus in the Maryland Legislature. It was proposed for \$3, and at the time some trapper said, “Well, I kill about 700 a day,” and Fred said, “Well, he’s making more than I am, so we’ll cut it to \$1.50.”

[Laughter.]

So that is where \$1.50 came in, and the \$1.50 has pretty much stuck with the State and the Feds.

Mr. GILCHREST. Is that a reasonable amount, or should it be more?

Mr. WILLEY. \$1.50 for nutria, no, but they get compensated. They bid for muskrat on their bid. For instance, they bid \$500 on a tract of marsh, on the unit. Then they get, they can turn in the tails of the nutria and they get the \$1.50 up to the amount that they bid. And then after a certain time that the other trappers don’t—at the end of, I believe it is at the end of February, then in March they can still take more animals. They pay the trapper, they can get a return into March, until all the money is gone. Say \$20,000 is paid into the government for trapping leases. It is all paid back to the trapper.

Mr. GILCHREST. With your experience as a trapper, would you say \$1.50—

Mr. WILLEY. No, you are not going to get too many people to trap, and Brian and the guys here, and Edith, she is not real involved but Brian is, and he can tell you it is a lot of labor in it. You know, you may go out and catch 10 animals. When we trapped on Tudor, we trapped from 19—we have got all the records, and they have got them—we trapped from 1985, through 1999, when we stopped trapping at Tudor because they had the project there. The State had a project and we didn’t want to trap where they were doing an experiment.

But we removed, I think in 1985, around 7,000 animals, and we went from 7,000 down to 5,000, then we went down to about 4,000. Then I think the last year we trapped it was around 1,900.

Mr. GILCHREST. Why was the drop, because you were trapping?

Mr. WILLEY. Because of the heavy trapping, yes. I mean, once you remove 7,000 animals from 7,000 acres, you see a difference in the population.

Brian, is that true or not? Where is Brian?

Mr. SHERFY. Brian is not here, but I can probably speak to that as well. Actually, in the successful effort in Great Britain—at the start of this project we brought over Dr. Morris Goslin from Great Britain, who had successfully eradicated nutria.

And that was one of their biggest concerns, was, it is not hard to start a crew of trappers on an eradication effort but it is difficult to keep them motivated and keep them going when you get to the end of the eradication effort. When there is only a handful of animals out there, and these trappers are trapping day in and day out and seeing no animals, then that, motivation and compensation for that crew becomes a concern. But that effort at the very tail end is critical to the success of eradication.

Mr. GILCHREST. I see.

Mr. WILLEY. Well, that may be the answer. I mean, price, you know, price will probably take care of anything. I mean, we had a guy in Annapolis tell us, "Put \$100 on him, like we did some exotic fish, and he won't be there." But you know when you talk \$100 on an animal, if you have got 100,000, then you have got a lot of money.

Mr. GILCHREST. Right. I am not sure if anybody on the panel can answer this question. Where else, or where in particular in the world are these things found? I know I hear South America. Is it Brazil, Argentina, Chile? Brazil?

Mr. JOHNSON. Louisiana.

Mr. GILCHREST. Outside the United States. Is this a species unique to South America?

Mr. ASHE. It is endemic to South America.

Mr. GILCHREST. And throughout the country, I know there are 20-some other States that have this same particular problem.

Ms. THOMPSON. There is the map.

Mr. GILCHREST. There it is, right there. England, they don't have one nutria in the country? The only nutria they have in the country is stuffed? They have no nutria there in England?

Mr. SHERFY. What they based that on was, I think it was 21 months of very intensive trapping and not catching a single animal, so if you ask them to unequivocally state "there are no nutria," then they are not 100 percent sure there are no animals here. But they trapped intensively for 21 months and didn't catch a single animal.

Mr. GILCHREST. What is the difference between what England did and what we are trying to do, other than there is a larger area where they are located?

Mr. SHERFY. What happened in England was ultimately a successful effort but they failed in their initial effort because they didn't understand the biology of the animal and how it responded to the combination of intensive harvest and severe winter weather. When they first started trapping the animals, they were trapping intensively but they also had severe weather, and they didn't understand the interplay between those two factors. So they initially knocked the population back, and then they backed off on their trapping effort and the population rebounded and they weren't prepared to deal with that, so they—

Mr. GILCHREST. So we are in part learning from their mistakes?

Mr. SHERFY. We hope so, yes.

Mr. GILCHREST. Is there any value to this thing at all? Meat?

Ms. THOMPSON. Nutria?

Mr. GILCHREST. Nutria. Is there any value, other than eradication?

Ms. THOMPSON. Not that we know of. I mean, we encouraged people to eat and use them to try to get rid of them, but of course there is always a danger when you do that. When you don't have them anymore, if people really want that—you know what I am saying? It is kind of a Catch-22.

Mr. GILCHREST. Mr. Johnson?

Mr. JOHNSON. Five years ago I said this in jest, but the more I think about it, it may come true. My theory of eradication of the

nutria was to start a rumor in China that it had aphrodisiac qualities.

[Laughter.]

Mr. GILCHREST. That might save some tigers. You know, I think that is a good idea. That could be a headline in the Washington Post. That is interesting. Yes, it might save the African rhino, or an elephant or tiger or whatever. Maybe it could be a protein source for India. Are there already nutria in India? Can you raise these things domestically?

Ms. THOMPSON. Oh, yes. That is why they were brought here, as fur farm animals, essentially.

Mr. GILCHREST. You know, two things. One, we will ship them over to India and other places that have a food source problem, and say that they have a certain quality about them. I think that is a great idea. Maybe the University of Maryland could come out with some sort of statement.

Anyway, Ms. Thompson, can you tell us what you hope to learn from the pilot project?

Ms. THOMPSON. I think we hope to learn, and I think we probably need to get the word out more about the questions we are trying to answer, but I think we are trying to learn the best and most efficient trapping method to use, the ones that the animals are caught the most in, and the places to put those traps, the timing of trapping that catches the most animals, so we understand where most of the animals are concentrated.

You know if we don't understand that, then we waste a lot of money and time because we don't know where the animals are going to be and when. So it is much better for us if we can find, if it is possible to find, concentrated areas where nutria are moving, either seasonally or during the day, so that we can utilize the limited resources that we have to get the most animals.

We also want to understand where the animals are because there is a problem of not being able to find them. We can trap and kill the animals we see, but we also understand that animals are moving where we can't see them, so we need to find that out. We also want to understand the reproductive biology.

For instance, with coyotes, let's take coyotes as an example, we thought we could eradicate coyotes, and found out that it is probably not possible just because of their reproductive biology and the way they respond to population declines or litter loss. You know, they are very prolific. We need to understand that kind of biology in nutria here, in order to not end up having more nutria because we eradicate—

Mr. GILCHREST. So the coyote has the ability to adapt to a changing habitat, and nutria are likely to be able to adapt to a changing habitat?

Ms. THOMPSON. Nutria might—what coyotes can do is immediately replace young that are lost. The female can store sperm for an indefinite period of time. So it is very difficult. If you go in and remove puppies and not the parents, they will immediately reproduce again. They are also very adaptable.

But we don't know that much about nutria and their reproductive biology to be confident that when we start a control program, there are some people who say eradication may be difficult to

achieve. If we understand at some point we are going to be removing animals and there will be less animals in a population, then those that remain, we are trying to answer the question, what is their reproductive response to that? Does it increase?

Mr. GILCHREST. Is the pilot project the same on Blackwater as it is on Tudor? Is it just one pilot project?

Ms. THOMPSON. Yes, one pilot project on all three sites, and with that data we will be able to more effectively, hopefully eradicate them in a way that doesn't waste resources.

Mr. GILCHREST. Now, Dan, as the pilot project continues and then it is finally complete, and there is some understanding of the best way to eliminate or reduce significantly nutria, is Fish and Wildlife looking at areas where this pilot project can then be replicated in areas around the country to eliminate nutria?

Mr. ASHE. I think I wouldn't say the pilot project. I would say if—

Mr. GILCHREST. I guess you wouldn't have to replicate the pilot project, but what is learned from this pilot project, does Fish and Wildlife then target areas where there is problems with nutria?

Mr. ASHE. If we can do intensive control and if we can achieve eradication, then that certainly is something that—I mean, you can look at all those red States on that map and in terms of the lower 48 it probably represents close to half of our refuge units in the lower 48 States. So it certainly would be something that we could then think about transporting.

I have to, in the back of my mind, sit here and think if the Great Britain experience is translatable to the Eastern Shore. I mean, island ecology is different than continental ecology, and I can almost see where the Delmarva Peninsula, you can almost treat the Delmarva Peninsula in the same context as you can island ecology.

Louisiana, Arkansas, Mississippi, I don't know and I can't tell you at this point, even if we could eradicate the nutria from the Eastern Shore of Maryland, if that is transferable to Louisiana or Texas. It may not be, and so we certainly need to learn more as we move through the pilot project and then into and through implementation. If we can eradicate on the Eastern Shore or on the Delmarva Peninsula, it doesn't mean that that is directly translatable to the continent as a whole.

Ms. THOMPSON. Yes. It sounds like we need to be able to—

Mr. GILCHREST. What area does the pilot project cover?

Ms. THOMPSON. It covers Dorchester County, those three sites, Tudor Farms, Fishing Bay Wildlife Management Area, and Blackwater.

Mr. GILCHREST. Where else on the Delmarva Peninsula have nutria been spotted or seen or known to be?

Ms. THOMPSON. From Delaware to the southern tip of Virginia.

Mr. GILCHREST. Queen Anne's County?

Ms. THOMPSON. Sure.

Mr. GILCHREST. Kent County?

Mr. SHERFY. Yes.

Ms. THOMPSON. Sure.

Mr. GILCHREST. They are in Kent County? Where are they in Kent County?

Mr. SHERFY. I can't give you a specific site, but every Eastern Shore of Maryland county has nutria, from Kent County all the way down.

Mr. GILCHREST. But you don't know where in Kent County?

Mr. SHERFY. I can't give you a specific site. Robert Colona from the DNR could.

Ms. THOMPSON. We can get that for you.

Mr. GILCHREST. I would like to have where on Delmarva nutria are found.

Ms. THOMPSON. Okay.

Mr. GILCHREST. That is interesting, yes. But I guess it would be easily transferable, the pilot project, certainly to the coastal areas of Virginia, I would guess.

Ms. THOMPSON. Yes.

Mr. ASHE. And it is like I mentioned salt cedar before. At our refuges in the Southwest, and we are learning how to eradicate salt cedar. It is a slow, as I said, acre-by-acre process, and so we are learning how to do it. Most of the time it involves chemical spraying and burning and tilling the landscape, and then we have to manage water to prevent the salt cedar from coming back and select for the native cottonwood.

It is a very difficult process, but we are learning how to do it. But just doing it on our refuges is a stopgap measure. Then we have to work with BLM and tribes and States to try to accomplish the same thing on a larger scale. And so we can translate the technique that we have, but it has to be exported or else in the long run you haven't really accomplished very much.

Mr. GILCHREST. Is there an estimate as to the number of nutria in this area?

Ms. THOMPSON. I think the estimate in Blackwater is 35,000 to 50,000 animals.

Mr. GILCHREST. Any rough estimate as to how many there are in Delmarva?

Ms. THOMPSON. I don't know.

Mr. SHERFY. Not that I am aware of.

Ms. THOMPSON. Not that I am aware of, no.

Mr. GILCHREST. Staff just told me that there is 22 million in Louisiana, rough estimate, so I wouldn't guess we have anywhere near that many, but I guess that is across the State.

Ms. THOMPSON. Yes. Louisiana has a lot more coastal marsh, too, habitat for them.

Mr. GILCHREST. I know the hour is moving along and we have some other places to go to today, and people are getting tired, probably want to eat lunch, but just a couple more questions and we will get out of here in the next 10 or 15 minutes, I promise.

We look forward to working aggressively with the nutria problem on Blackwater, Tudor Farms, the Delmarva Peninsula, in the hopes that we can completely eradicate on a watershed basis this little critter. Some other invasive species such as phragmites, gypsy moth, mute swans, are still a problem and they will be with us for quite some time.

What I would like to do, Mr. Tillier, as Friends of Blackwater, do you have any recommendation from your group or personal opinion on what to do with the mute swans?

Mr. TILLIER. Well, we would definitely like to see them disappear.

[Laughter.]

I don't know what we could specifically recommend, but I would say this, that the Friends of Blackwater would certainly be supportive in any kind of project that would assist the refuge in its efforts to come to grips with this sort of thing. We have a board of directors, and we have among our volunteers a lot of knowledge and a lot of interest in what is going on on the refuge in terms of invasive species, whether they be animal or whether they be vegetation. So we would be entirely supportive of any kinds of control mechanism, I assure you.

Mr. GILCHREST. Does the Friends of Blackwater, are you vocal, do you express those sentiments in the local media and things like that?

Mr. TILLIER. Sure. We will—

Mr. GILCHREST. And I ask that question because apparently there is, you know, across the country there are a lot of organizations that are, animal rights groups that are highly opposed to shaking eggs, to expanding hunting seasons or things like that.

Mr. TILLIER. We have people here in the county who are very vocal in terms of what you speak. But we will take any opportunity at any point in time to be supportive of anything that the refuge does, and we would do it through our Speaker's Bureau, we do it through any opportunity, wherever we have the opportunity to be interviewed on any of those subjects.

Mr. GILCHREST. Thank you.

Mr. Willey, any comment on mute swans?

Mr. WILLEY. On the mute swan, they are scattered throughout the Delmarva Peninsula. I mean, they go all the way up to the canal, all the way down. When we fly the eagle surveys, we see them, you know, nesting all over the place.

What we have been doing is reporting, you know, to the State, you know, where they are nesting at. That is probably the best time to try to, you know, get a handle on it. But since they are so spread out, there is little pockets of them.

I know here on Blackwater, they didn't used to be here, and now there is one or two, you know, scattered on the refuge. Most of them do lie between, out on the coast, from Talbot down, you know, all the way down to I guess the biggest population in the Honga River. I guess that is probably the biggest population still left of all the river populations, and the one out on Barren Island.

They could probably be eradicated, since they—

Mr. GILCHREST. Do you have any recommendation on how to do that?

Mr. WILLEY. Yes, I have a recommendation.

[Laughter.]

But the Friends of Animals, you do have a lot of groups that really love that bird, and when you talk about killing that big white bird, it is a different story than killing a blackbird. You know, it is like killing the eagle. When you talk about—

Mr. GILCHREST. It is the difference between a tuna fish and a dolphin.



Mr. WILLEY. No, I will tell you, probably—you know, again, I don't know if Dan—it probably doesn't come under his, come under migratory birds, does it, Dan, because it is exotic?

Mr. ASHE. Exotic.

Mr. WILLEY. So it is up to the State. The State, if they could get enough people to say we are going to eradicate them, we don't want a mute swan, it would be against the law to have a mute swan. But you have got people in Cambridge and all that I know, close to where Laddie lives, and you go around there to disturb that swan and you have got cameras come out, videos come out, and you are in big trouble. You better not go shaking no eggs around there, you know.

[Laughter.]

And they are nesting, you know, on little clumps right in the town, you know, right in the city, right in the creek, and they are aggressive. They will come after you.

Mr. GILCHREST. Thank you. We will see what we can do with the present and future administrations.

Mr. WILLEY. I think the State, you know, I think that is a State problem, really. I think the State, if you got enough, if people got enough influence with the people that are in office—and I doubt if you would do it in Maryland with the climate right now, really, with the type of—

Mr. GILCHREST. Well, I think the climate is changing. That is what I hear. There is climate change happening all over the world. Maybe this will bring in a new regime.

Mr. JOHNSON?

Mr. JOHNSON. You are in luck. I chaired the task force on mute swan for the State of Maryland, and the first thing I did was get Edith Thompson to come in as the facilitator, because I wasn't going to take that chairmanship on myself. So Edith came in and facilitated that task force. It took two years. So, Edith, could you summarize real quick what the task force came up with?

Ms. THOMPSON. Sure. We had a task force, a citizen task force, to give us some recommendations on what to do about the mute swan issue, to define mute swan issues for us. We had representation from the Humane Society, the SPCA and Defenders of Wildlife, as well as economic and conservation, Chesapeake Bay, conservation interests in the Eastern Shore and the Chesapeake Bay. And we talked for two years, as Ladd said, about this. We wrote an extensive report which is on our web site.

And basically the issue boils down to two things. One is that the submerged aquatic vegetation in the Chesapeake Bay is very stressed, and it is the one living resource upon which all life in the Chesapeake Bay depends. So if we have no SAV, we have no crabs, no fish, no nothing. It also, you know, contributes oxygen to the water and prevents soil erosion and recycling of sedimentation, which in turn creates no sunlight for the SAV.

So what happens is, the SAV species have evolved to reproduce, to produce mature seed during a period of time when the large flocks of waterfowl that migrate here are not here. The water celery is one good example. It creates a pod which rises up to the surface of the water, and then as the waterfowl arrive, it hides it until those seeds are mature. If waterfowl were to take those seeds while

they are immature, they would pass through the bird's system without being able to be dispersed and planted and used. So it hides this pod so that that doesn't happen until the seeds are mature, and then it raises up again, and the waterfowl eat it and it becomes dispersed.

But here you have a species of waterfowl that is extremely large. It needs a lot of food. It primarily eats SAV. It is here all year. Its population is growing exponentially, which means that as a population of any creature, humans or whatever, grows exponentially, the percentage of juveniles in that population increases.

We have 50 percent juveniles out now. Those birds spend three years together in big flocks. We have had up to 600 or more than 600 birds off of Blackwater. They cruise the Bay, and even though we have about 4,000 birds now and maybe we can live with 4,000 birds, as these birds' population goes up like that, they are going to come into conflict with the ability of SAV to regenerate itself, and this is the problem. It is a serious social problem—

Mr. GILCHREST. Do you have a recommendation as to what to do with the mute swan? That was a great explanation, by the way. That was—

Ms. THOMPSON. Okay. Well, the task force actually did not deal with the population issue at all. They didn't want to do that, and I can understand why, so that is kind of left to us. But they did talk about the need to protect those resources, the sensitive SAV areas, places where they are coming into conflict with humans, and of course here at Barren Island where they come into conflict with State threatened colonial nesting water birds. They actually eliminated a nesting colony of black skimmers and least terns, and it was the last nesting colony of black skimmers in this part of the Bay, and it was the last natural nesting colony of least terns.

Mr. GILCHREST. So nobody in this State—

Mr. JOHNSON. We did.

Mr. GILCHREST. Oh, you guys did.

Ms. THOMPSON. We killed some birds. Okay, we killed some birds. This was videotaped, and so on and so on, and turned up in the news media, which I have to say has been very supportive of us since then. But the task force recommended various ways of excluding the birds from these areas, of controlling those local populations that are having these impacts on the sensitive resources.

They have advised us on everything from explosives, pyrotechnics, to trying to look at vasectomy of birds, and moving nonfertile birds to certain areas. We have looked at egg addling. We need to do very aggressive egg addling. Most nests are on private land, so we started this year with an aggressive egg addling campaign with volunteers. And we have been advised on lethal methods, as well, and the task force recommended that lethal methods be used when other methods have failed to protect those resources from the birds.

We still do, though, have the issue of the increasing population of birds and where do those birds go? If we exclude them successfully from these sites—

Mr. GILCHREST. Can they be hunted, mute swans?

Ms. THOMPSON. They can be. They are a game species in Maryland. However, there is no regulated hunting season on mute

swans and has never been. They have always been a game species in Maryland, but there has never been a regulated hunting season.

Mr. GILCHREST. So a game season, but people can't hunt?

Ms. THOMPSON. Right, they are a game bird, but we just have never created a regulated season.

Mr. GILCHREST. If you create a regulated season, would that help diminish the population?

Ms. THOMPSON. Possibly, sure.

Mr. GILCHREST. The problem there would be, how do you tell the difference between—

Mr. JOHNSON. Easy.

Mr. GILCHREST. Oh, I figure an experienced person could tell the difference between a mute swan—

Ms. THOMPSON. And the tundra.

Mr. GILCHREST. —and a swan that just came down from Alaska.

Ms. THOMPSON. You would have a hunting season when the tundras were not here, of course, so there would be no—

Mr. GILCHREST. That is right.

Ms. THOMPSON. —ability to make that mistake. But actually the task force recommended no hunting season. The reason was because, you know, the animal welfare organizations in Maryland are quite vocal and do share their thoughts with us a lot, and we want to be responsive, and we are concerned about—

Mr. GILCHREST. Nobody else is quite as vocal?

Ms. THOMPSON. We do have some, we do have quite a lot of vocal people out here. Maryland is one of those States, which is a good thing. But we want to be responsive, and what we don't want to do is create a situation that will cause such a backlash in that vast majority of people who are unaware—

Mr. GILCHREST. How much time do we have before these guys are so large in number that the SAVs are—

Ms. THOMPSON. Not a lot of time. I mean, we don't know when they will really conflict with and damage SAV. We can't even say that has happened yet, except in local areas. They are—

Mr. GILCHREST. The people that are opposed to eradicating or finding some way to shake the eggs or a hunting season, the animal rights groups, I guess, do they have any solution to the SAV problem?

Ms. THOMPSON. My personal experience with it, having dealt with it for the past six months or something, or two years, is that there is an animal rights agenda which is very clearly no killing of animals ever, under any circumstances—and that is a very small minority of people. We can show that statistically.

And then there is a large group of people, members of the Humane Society and members of Friends of Animals, members of these organizations, who really don't understand all the issues. They value the Chesapeake Bay as much as they value the mute swan. But when they are presented with this information by the animal welfare organizations, they are not given that kind of information.

Mr. GILCHREST. The full story.

Ms. THOMPSON. They are told that the Department of Natural Resources is a morally bankrupt organization that simply wants to kill things. Yes. And that we are irresponsible and not willing to

look at alternatives, which is completely untrue. So I have had to, person by person, person by person, talk to people to tell them what the whole issues are and explain to them their role, their empowered role in helping to resolve this very sticky situation.

Mr. GILCHREST. Mr. Johnson?

Thank you very much, Ms. Thompson.

Mr. JOHNSON. After that task force reached their conclusion, the Waterfowl Commission, it was then referred back to the Waterfowl Commission, who then referred it to the Game Commission here in Maryland. The Waterfowl Commission took a more aggressive stance. The Waterfowl Commission passed unanimously to make the mute swan a nonprotected bird in Maryland, and to also reduce their numbers from 4,000 to 500 in five years.

The reason 500 was chosen, during the '80's the population remained at 500. It was in the '90's that we had the population explosion. So we picked that magical number of a decade there that it didn't seem to go up or down, and it was manageable by egg adling at that time.

But under today's population, we estimate that 12 million pounds of SAVs are being destroyed annually by mute swan in Maryland, that is probably a conservative figure. They have now spread to the Potomac and other tributaries, where they are no longer concentrated here on the Bay.

So the Department is doing their strategy now, and I think it is going to come probably in pretty close to what the Waterfowl Commission recommended, to take an aggressive approach to this population.

Mr. GILCHREST. I see. One last question, and I don't know if you know this, Dan. Maybe we can get Glenn to stand up and give it to us, if you don't know. Could you tell us what the major O&M needs on Blackwater are and what they might cost?

Mr. ASHE. I am going to let Glenn answer that, but I can't let the opportunity pass without saying something about the mute swan. Because I really don't know much about mute swans, but what the discussion says to me on the issue of invasive and exotic species generally, is that we have a lot of education to do, and it is something that we in the wildlife field don't do very well. And I think that you can probably help us by putting more of a burden on us to do a better job of communicating, because people need to understand.

This is like a patriotic issue to me, because these species are crowding out native species. I mean, we are losing our American wildlife heritage because we are unable, our wildlife managers are unable, not because they don't know how to do it, but because politically they are unable to do the job. And we have to do a better job of educating Americans about the need for wildlife management, the need to manage mute swans, the need to manage nutria, the need to manage salt cedar, the need to manage phragmites.

Because a lot of times people see us out there spraying phragmites with chemicals, or burning marshes, and they appropriately ask us questions about that, which is their right and privilege. But we need to increase people's understanding of why we need to do that, because we are losing a war. We are definitely los-

ing. Education is the solution, and it is something that we don't put much effort into and we don't do very well.

Mr. GILCHREST. Maybe we can help, collectively with the people here, strategize at least in this part of the world.

Mr. ASHE. You asked a question about the refuge O&M here, and Glenn is much, much more capable than I to answer that question.

Mr. CAROWAN. The refuge operation needs on Blackwater I think are reflective of the needs in the system. Certainly we can categorize those into three initiatives that we see:

Needs for people, particularly the needs reflective of the Improvement Act with the six priority public uses. Certainly Blackwater right now has a visitation of about a half million people a year, and we are not really equipped, just like I think Ron mentioned the fact that we had 1,350 people here in this facility on one day. So certainly there is a major need to address how we interact with our public and provide facilities for our people.

Habitat issues on the complex, not just on Blackwater Refuge, but there are significant problems with wetland restoration, as we have discussed, those operational dollars that are needed to facilitate those things.

And then our wildlife management responsibilities that we have, again not just here at Blackwater but on the complex, to go out and do the science that is necessary to address the issues that we discussed today, whether it be mute swans or whether it be nutria or invasive species, or just to address the issue of whether or not we do intensive management versus passive management. We need those population numbers, we need to develop that good science.

And so that is where we see our operational needs coming on the refuge, not just on Blackwater but again on the system as a whole. If you want to put that in dollars, I think we have operation needs, within our refuge operation needs system now, probably of about \$5 million worth of projects that are identified on Blackwater and the other refuges in the complex. So I hope that answers your question.

Mr. GILCHREST. Thank you, Glenn.

Ron?

Mr. TILLIER. May I just add one comment?

Mr. GILCHREST. Sure.

Mr. TILLIER. And that is, one thing that struck me in the items that I mentioned was the fact that when we are talking about people on the refuge, is that our outdoor recreation planner here is one individual. But when you consider that over a 10-year period, that this individual, because of lack of funding for one full-time employee, had 44 part-time employees, I ask you to consider the efficacy of this. Because the time that she takes to train a person, and by the time that person is trained to do anything, you know, that person leaves, so it is really not very efficient at all, and I would suggest probably horribly expensive vis-a-vis giving the refuge an individual to be in the system here.

I just wanted to add that comment. Thank you.

Mr. GILCHREST. Thank you very much.

Mr. Ashe, Ms. Thompson, Mr. Tillier, Mr. Johnson, and Mr. Willey, this was, at least for me and I think probably everybody in the room, an extraordinary two hours of exchanging information. We

will take all of this to heart and continue to work with all of you to reach the goal of making our refuges a place that we can be proud of, and certainly provide the habitat for a diverse range of wildlife, and a place where people can come and recreate and learn and wonder and ponder about the wonders of creation, right here in Blackwater.

And I look forward to the canoe and kayak trails, and I would like to come back down here sometime, maybe, Glenn, this late spring, early summer, with a canoe and paddle around through these vast and wonderful places. We can have the next hearing with a block of canoes.

I also want to thank the staff of the Subcommittee for setting all this up, doing a great job, and my personal staff, and in an indirect way the nutria for getting us all together. The hearing is adjourned.

[Whereupon, at 12:20 p.m., the Subcommittee was adjourned.]

