

watershed of the Amargosa River in Oasis Valley, Nevada.

The petitioner also asked that we consider using the emergency provisions of the Act to list the species. The petition clearly identified itself as such and included the requisite identification information for the petitioner, required at 50 CFR 424.14(c). Listing a species on an emergency basis is not a petitionable action under the Act, and the question of when to list on an emergency basis is left to the discretion of the Service. If the Service determines that the standard for emergency listing in section 4(b)(7) of the Act is met, the Service may exercise that discretion to take an emergency listing action at any time. Therefore, we are considering the July 2, 2024, petition as a petition to list the Oasis Valley speckled dace. This finding addresses the petition.

Finding

We reviewed the petition, sources cited in the petition, and other readily available information (within the constraints of the Act and 50 CFR 424.14(h)(1)). We considered the credible information that the petition provided regarding effects of the threats that fall within factors under the Act's section 4(a)(1) as potentially ameliorated or exacerbated by any existing regulatory mechanisms or conservation efforts. Based on our review of the petition and readily available information] regarding gold mining (Factor A), we find that the petition presents substantial scientific or commercial information indicating that listing the Oasis Valley speckled dace as an endangered species or a threatened species may be warranted.

The petitioners also presented information suggesting solar energy development, water diversions, livestock grazing, wild burros, invasive species, climate change, and the effects of isolated populations may be threats to the Oasis Valley speckled dace. We will fully evaluate these potential threats during our 12-month status review, pursuant to the Act's requirement to review the best scientific and commercial information available when making that finding.

The basis for our finding on this petition and other information regarding our review of the petition can be found as an appendix at <https://www.regulations.gov> under Docket No. FWS-R8-ES-2024-0177 under the Supporting Documents section.

Evaluation of a Petition To List Tennessee Bottlebrush Crayfish

Species and Range

Tennessee bottlebrush crayfish (*Barbicambarus simmonsii*); Lawrence County, Tennessee, and Lauderdale County, Alabama.

Petition History

On June 16, 2023, we received a petition from CBD, requesting that the Tennessee bottlebrush crayfish (*Barbicambarus simmonsii*) be listed as a threatened or endangered species and critical habitat be designated for this species under the Act. The petition clearly identified itself as such and included the requisite identification information for the petitioner, required at 50 CFR 424.14(c). This finding addresses the petition.

Finding

We reviewed the petition, sources cited in the petition, and other readily available information (within the constraints of the Act and 50 CFR 424.14(h)(1)). We considered the credible information that the petition provided regarding effects of the threats that fall within factors under the Act's section 4(a)(1) as potentially ameliorated or exacerbated by any existing regulatory mechanisms or conservation efforts. Based on our review of the petition and readily available information regarding habitat destruction and alteration from the effects of dams and land use practices including agriculture, silviculture, urban runoff, and wastewater treatment facilities (Factor A), we find that the petition presents substantial scientific or commercial information indicating that listing the Tennessee bottlebrush crayfish as an endangered species or a threatened species may be warranted.

The petitioners also presented information suggesting overutilization or collection and impacts of climate change may be threats to the Tennessee bottlebrush crayfish. The petitioners also provided information that, despite the existing regulatory mechanisms, these potential threats are still affecting the species. We will fully evaluate these potential threats during our 12-month status review, pursuant to the Act's requirement to review the best scientific and commercial information available when making that finding.

The basis for our finding on this petition and other information regarding our review of the petition can be found at <https://www.regulations.gov> under Docket No. FWS-R4-ES-2024-0101 under the Supporting Documents section.

Conclusion

On the basis of our evaluation of the information presented in the petitions under section 4(b)(3)(A) of the Act, we have determined that the petitions summarized above for the Amargosa toad, Carson Valley monkeyflower, golden-cheeked warbler, large marble butterfly (including the large marble butterfly type subspecies), Mohave ground squirrel, Morrison bumble bee, Oasis Valley speckled dace, and Tennessee bottlebrush crayfish present substantial scientific or commercial information indicating that the petitioned actions may be warranted. We are, therefore, initiating status reviews of these species to determine whether the actions are warranted under the Act. At the conclusion of the status reviews, we will issue findings, in accordance with section 4(b)(3)(B) of the Act, as to whether the petitioned actions are not warranted, warranted, or warranted but precluded by pending proposals to determine whether any species is an endangered species or a threatened species.

Authors

The primary authors of this document are staff members of the Ecological Services Program, U.S. Fish and Wildlife Service.

Authority

The authority for these actions is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Martha Williams,

Director, U.S. Fish and Wildlife Service.

[FR Doc. 2025-01118 Filed 1-17-25; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R2-ES-2024-0083; FXES1111090FEDR-256-FF09E21000]

RIN 1018-BG16

Endangered and Threatened Wildlife and Plants; Endangered Species Status for Big Red Sage

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to list the big red sage (*Salvia pentstemonoides*), a plant species from central Texas, as an endangered species under the Endangered Species Act of

1973, as amended (Act). This determination also serves as our 12-month finding on a petition to list the big red sage. After a review of the best available scientific and commercial information, we find that listing the species is warranted. If we finalize this rule as proposed, it would add this species to the List of Endangered and Threatened Plants and extend the Act's protections to the species. We have determined that designating critical habitat for the big red sage is not prudent.

DATES: We will accept comments received or postmarked on or before March 24, 2025. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES**, below) must be received by 11:59 p.m. eastern time on the closing date. We must receive requests for a public hearing, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by March 7, 2025.

ADDRESSES: You may submit comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal: <https://www.regulations.gov>. In the Search box, enter FWS-R2-ES-2024-0083, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on "Comment."

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS-R2-ES-2024-0083, U.S. Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

We request that you send comments only by the methods described above. We will post all comments on <https://www.regulations.gov>. This generally means that we will post any personal information you provide us (see Information Requested, below, for more information).

Availability of supporting materials: Supporting materials, such as the species status assessment report, are available on the Service's website at <https://www.fws.gov/office/austin-ecological-services>, at <https://www.regulations.gov> at Docket No. FWS-R2-ES-2024-0083, or both.

FOR FURTHER INFORMATION CONTACT: Karen Myers, Field Supervisor, U.S. Fish and Wildlife Service, Austin Ecological Services Field Office, 1505 Ferguson Lane, Austin, TX 78754; telephone 512-937-7371. Individuals in the United States who are deaf,

deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States. Please see Docket No. FWS-R2-ES-2024-0083 on <https://www.regulations.gov> for a document that summarizes this proposed rule.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act (16 U.S.C. 1531 *et seq.*), a species warrants listing if it meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range). If we determine that a species warrants listing, we must list the species promptly and designate the species' critical habitat to the maximum extent prudent and determinable. We have determined that the big red sage meets the Act's definition of an endangered species; therefore, we are proposing to list it as such. Listing a species as an endangered or threatened species can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process (5 U.S.C. 551 *et seq.*).

What this document does. We propose to list the big red sage as an endangered species under the Act.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that big red sage is endangered due to the following threats: herbivory (Factor C), collection and inappropriate propagation (Factor B), land use changes (Factor A), and effects from climate change such as flash floods and erosion (Factor E).

Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary), to the maximum extent prudent and determinable, to designate critical habitat concurrent with listing. We have determined that designating critical

habitat for big red sage is not prudent because one of the main drivers of the species' status is direct mortality and loss of genetic integrity resulting from the collection of seeds and entire plants from wild populations (Factor B). The threat of collection potentially imperils all populations whose geographic locations are publicized and accessible to the public. Since we have determined that the species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species, we determine that designation of critical habitat is not prudent for the species.

Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other governmental agencies, Native American Tribes, the scientific community, industry, or any other interested parties concerning this proposed rule. We particularly seek comments concerning:

- (1) The species' biology, range, and population trends, including:
 - (a) Biological or ecological requirements of the species, including habitat requirements for feeding, breeding, and sheltering;
 - (b) Genetics and taxonomy;
 - (c) Historical and current range, including distribution patterns and the locations of any additional populations of this species;
 - (d) Historical and current population levels, and current and projected trends; and
 - (e) Past and ongoing conservation measures for the species, its habitat, or both.
- (2) Threats and conservation actions affecting the species, including:
 - (a) Factors that may be affecting the continued existence of the species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors;
 - (b) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this species; and
 - (c) Existing regulations or conservation actions that may be addressing threats to this species.
- (3) Additional information concerning the historical and current status of this species.
- (4) Information regarding our determination that designating critical

habitat for the big red sage is not prudent.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, do not provide substantial information necessary to support a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made solely on the basis of the best scientific and commercial data available, and section 4(b)(2) of the Act directs that the Secretary shall designate critical habitat on the basis of the best scientific data available.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

If you submit information via <https://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <https://www.regulations.gov>.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on <https://www.regulations.gov>.

Our final determination may differ from this proposal because we will consider all comments we receive during the comment period as well as any information that may become available after this proposal. Based on the new information we receive (and, if relevant, any comments on that new information), we may conclude that the species is threatened instead of endangered, or we may conclude that the species does not warrant listing as either an endangered species or a threatened species. In our final rule, we will clearly explain our rationale and the basis for our final decision, including why we made changes, if any, that differ from this proposal.

Public Hearing

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by the date specified in **DATES**. Such requests must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing. We may hold the public hearing in person or virtually via webinar. We will announce any public hearing on our website, in addition to the **Federal Register**. The use of virtual public hearings is consistent with our regulations at 50 CFR 424.16(c)(3).

Previous Federal Actions

On June 18, 2007, Forest Guardians (now Wild Earth Guardians) petitioned the Service to list 475 species in the southwestern United States, including big red sage, as endangered or threatened species under the Act. On December 16, 2009, the Service published in the **Federal Register** (74 FR 66866) a partial 90-day petition finding that the petition provided substantial information indicating that the big red sage may warrant listing under the Act. This document constitutes the 12-month finding on the petition to list the big red sage under the Act.

Peer Review

A species status assessment (SSA) team prepared an SSA report for the big red sage. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the big red sage.

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review in listing actions under the Act (<https://www.fws.gov/sites/default/files/documents/peer-review-policy-directors-memo-2016-08-22.pdf>), we solicited independent scientific review of the information contained in the big red sage SSA report. We sent the SSA report to four independent peer reviewers and received three responses. Results of this structured peer review process can be

found at <https://www.regulations.gov>. In preparing this proposed rule, we incorporated the results of these reviews, as appropriate, into the SSA report, which is the foundation for this proposed rule.

Summary of Peer Reviewer Comments

As discussed above in Peer Review, we received comments from three peer reviewers on the draft SSA report. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the contents of the SSA report. The peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions, including clarifications in terminology and discussions of genetics and hydrology, and other editorial suggestions. Otherwise, no substantive changes to our analysis and conclusions within the SSA report were deemed necessary, and peer reviewer comments are addressed in version 1.1 of the SSA report.

I. Proposed Listing Determination

Background

A thorough review of the taxonomy, life history, and ecology of big red sage is presented in the SSA report (version 1.1; Service 2023, pp. 2–11).

Big red sage is a perennial herbaceous plant in the mint family (Lamiaceae) that occurs along streams and narrow ravines in the Edwards Plateau of central Texas. The historical range of the species includes Bandera, Bexar, Comal, Gillespie, Kendall, Kerr, Real, Uvalde, and Wilson Counties. Most big red sage plants occur on bluffs, ledges, and slopes along watercourses and ravines where groundwater slowly seeps through limestone to the surface.

Its long, crimson flowers with purplish bases adorn 5-foot-tall stalks that arise from rosettes of shiny, dark green leaves (Service 2023, p. 2). Big red sage flowers opportunistically from May through November in response to rainfall and the persistence of soil moisture (Service 2023, p. 6). The flowers are specifically pollinated by hummingbirds (Wester 2007, pp. 40, 72; Cibolo Center for Conservation 2021, p. 4); black-chinned hummingbirds (*Archilochus alexandri*) are the most abundant species throughout the range and flowering period of the big red sage (Service 2023, p. 8). Hummingbirds may forage within discrete territories they establish and defend around concentrated nectar sources; alternatively, they may also forage in a more dispersed pattern along traplines, in which rewarding nectar sources are

visited repeatedly in a predictable sequence (Tello-Ramos et al. 2015, pp. 812–813). Trapline foraging behavior has been documented among black-chinned hummingbirds (Arizmendi and Ornelas 1990, p. 177). Based on the trapline forage range of other hummingbird species (Gill 1988, entire), we estimate that black-chinned hummingbirds foraging along consistent, regular routes may cross-pollinate individuals of big red sage that are separated by as much as 0.5 to 1.0 kilometers (km) (0.3 to 0.6 miles (mi)), and thus are important vectors for the species’ gene flow. However, the species’ fecundity is low, and small, inbred populations produce few viable seeds (Service 2023, p. 9). Individual plants can live at least 10 years, and the rootstocks may branch to form multiple

rosettes that appear to be separate individuals; therefore, the effective population sizes may be less than the numbers of individuals counted in censuses (Service 2023, pp. 9–10).

The Texas Parks and Wildlife Department’s (TPWD) Texas Natural Diversity Database (TXNDD) maintains geographic and population data of plant and animal species of conservation concern in Texas. Data for each species are organized by standard geographical units for populations and habitats called “source features” (SFs) and “element occurrences” (EOs). SFs and EOs are geographic locations where a species has been recorded one or more times. They may be displayed as points, lines, or polygons buffered by their estimated geographic precision. SFs may be combined into a single E.O. if they are

separated by less than 1 km (0.6 mi) in the wild (NatureServe 2002, p. 26). Therefore, each E.O. may contain one or more SFs. For the big red sage and other plant species of conservation concern, we use the E.O. standard as the unit of analysis because it ensures consistency among all the partners concerned with the conservation and management of a species, and this method involves rigorous scientific investigations spanning many years. We use numbers to identify the EOs for the big red sage, and all EOs are associated with unique identifiers in the TXNDD (Service 2023, pp. 26–27). Big red sage has been documented at 18 EOs (see table 1, below). Please refer to the SSA report for a full list of EOs and their respective SFs for the big red sage (Service 2023, pp. 26–27).

TABLE 1—SUMMARY OF THE EOs OF BIG RED SAGE

[TXNDD ranks each EO as historical (H) or extant (E). Those marked as historical may not have population estimates.]

EO No.	Site name	County	TXNDD rank	Most recent population estimate	Year of most recent survey
1	Barron Creek	Kendall	H		
2	Guadalupe River at Kerrville	Kerr	H	50	1894
3	Verde Creek south of Kerrville	Bandera/Kerr	H		
4	Turtle Creek south of Kerrville	Kerr	E	0	2013
5	Cibolo Creek near Boerne	Kendall	E	170	2013
7	Sutherland Springs	Wilson	H		
8	Frio Waterhole	Kerr	H		
10	Confluence of Bear Creek and Pedernales River	Gillespie	E	0	2013
11	Can Creek and Hale Hollow at Lost Maples State Natural Area	Bandera/Real	E	4	2013
14	Frederick Creek at Interstate 10	Kendall	E	401	2013
15	Big Joshua Creek	Kendall	E	0	2013
16	Wilson Hollow	Real	E	2	1991
19	Comanche Springs on Salado Creek	Bexar	H		
20	North Fork Guadalupe River above Farm to Market Road 1340	Kerr	E	8	2016
21	Blue Hole	Real	E	15	2018
22	Pedernales River at Friedrich Road	Gillespie	E	0	2013
23	South Grape Creek east of Luckenbach	Gillespie	E	0	2013
24	Canyon near Frederick Creek	Kendall	E	54	2013

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for endangered and threatened species.

The Act defines an “endangered species” as a species that is in danger of extinction throughout all or a significant portion of its range and a “threatened species” as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species’ continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of

the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory

definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the species’ expected response and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the Act’s definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis, which is further described in the 2009 Memorandum Opinion on the foreseeable future from the Department of the Interior, Office of the Solicitor (M–37021, January 16, 2009; “M-Opinion,” available online at <https://www.doi.gov/sites/doi.opengov.ibmcloud.com/files/uploads/M-37021.pdf>). The foreseeable future extends as far into the future as the U.S. Fish and Wildlife Service and National Marine Fisheries Service (hereafter, the Services) can make reasonably reliable predictions about the threats to the species and the species’ responses to those threats. We need not identify the foreseeable future in terms of a specific period of time. We will describe the foreseeable future on a case-by-case basis, using the best available data and taking into account considerations such as the species’ life-history characteristics, threat projection timeframes, and environmental variability. In other words, the foreseeable future is the period of time over which we can make reasonably reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction, in light of the conservation purposes of the Act.

Analytical Framework

The SSA report documents the results of our comprehensive biological review

of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent our decision on whether the species should be proposed for listing as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies.

To assess big red sage viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency is the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years); redundancy is the ability of the species to withstand catastrophic events (for example, droughts, large pollution events); and representation is the ability of the species to adapt to both near-term and long-term changes in its physical and biological environment (for example, climate conditions, pathogens). In general, species viability will increase with increases in resiliency, redundancy, and representation (Smith et al. 2018, p. 306). Using these principles, we identified the species’ ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species’ viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species’ life-history needs. The next stage involved an assessment of the historical and current condition of the species’ demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species’ responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time, which we then used to inform our regulatory decision.

The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS–R2–ES–2024–0083 on <https://www.regulations.gov>.

Summary of Biological Status and Threats

In this discussion, we review the biological condition of the species and its resources, and the threats that influence the species’ current and future condition, in order to assess the species’ overall viability and the risks to that viability. For the big red sage to maintain viability, its populations must be highly resilient with sufficient redundancy and representation. Several factors influence the resiliency of big red sage populations, including: (1) herbivory, (2) land use changes, (3) collection and inappropriate propagation (*i.e.*, breeding in captivity using closely related wild-sourced individuals that results in inbreeding and decreased genetic diversity), and (4) effects from climate change. These resiliency factors and habitat elements are discussed in detail in the SSA report (Service 2023, entire) and are summarized here.

Species Needs

Soil Moisture

Big red sage growth and flowering require the maintenance of soil moisture through rainfall and/or seepage through fissures and cavities in the limestone substrate. Flowering occurs opportunistically from May through November in response to rainfall and the presence of soil moisture (Service 2023, p. 6). Big red sage individuals establish on bluffs, ledges, and slopes along watercourses (including first-order streams) where soil moisture is relatively persistent (Correll and Johnston 1978, p. 1368; Pasztor 2004, p. 1; Poole et al. 2007, p. 437). Big red sage populations most often occur within 165 feet (50 meters) of watercourses and where slopes are greater than 25 percent (Taylor and O’Kennon 2013, pp. 3–5). The species is endemic to the riparian ravines in the Edwards Plateau, and it occurs in specific positions where intermittent seepage occurs. Additionally, portions of EOs appear to obtain moisture from a major aquifer, the Edwards-Trinity or Trinity, at least when aquifer levels are high (Service 2023, pp. 37–38).

Minimum Viable Population

Highly resilient populations of big red sage must also have stable or increasing demographic trends over time. This means that recruitment of new individuals is at least as great as the mortality rate, and populations must be large enough to have a high probability of surviving a prescribed period of time. Species that have more populations distributed over a broader geographic

range have a greater chance of surviving catastrophic events (Shaffer and Stein 2000, pp. 308–310). Species or populations are highly resilient when the probability of persisting 100 years is greater than 90 percent (Mace and Lande 1991, p. 151). This metric of population resilience is called minimum viable population (MVP) (Pavlik 1996, p. 137). We estimate that highly resilient populations have an MVP of at least 1,600 individuals of reproductive age (Service 2023, pp. 32–33). MVP for a species varies based on different traits of that species, including, but not limited to, longevity (*i.e.*, perennial vs. annual), growth form (*i.e.*, woody vs. herbaceous), fecundity, and longevity of seed viability. We determined that the MVP of 1,600 individuals for big red sage based on the specific traits of big red sage, which fall in the moderate range of several of these categories (Pavlik 1996, p. 137). For example, big red sage is perennial, occurs in old-growth vegetation, plants may produce a moderate number of ramets (physically separate but genetically identical individuals) that branch off the original root system, it is herbaceous, has low fecundity, individual survivorship is low, and environmental variation is high (Service 2024, p. 33). Therefore, populations require a moderately high MVP to persist for 100 years.

Individual and Population Connectivity

Small, reproductively isolated populations are susceptible to the loss of genetic diversity, to genetic drift, and to inbreeding (Barrett and Kohn 1991, pp. 3–30). Additionally, the loss of genetic diversity may reduce the ability of a species or population to resist pathogens and parasites, to adapt to changing environmental conditions, or to colonize new habitats (Service 2023, p. 34). Conversely, populations that pass through a genetic bottleneck may subsequently benefit through the elimination of harmful alleles. Nevertheless, the net result of the loss of genetic diversity is likely to be a loss of fitness and lower chance of survival of populations and of the species.

Additionally, the seeds of big red sage have a very limited dispersal range (Service 2023, p. 34). The forage range for the black-chinned hummingbird, an important pollinator of big red sage, determines the typical limits of gene flow between individuals (Service 2023, p. 34). We estimate that this limit may be from 0.5 to 1.0 km (0.3 to 0.6 mi) (Service 2023, p. 34). When the limits of gene flow are unknown, we apply the TXNDD's use of the NatureServe default minimum separation distance of 1.0 km

(0.6 mi) to delineate populations (NatureServe 2020, p. 4). Therefore, big red sage populations must have sufficient numbers of individuals and populations that are not too closely related or too widely dispersed for effective pollination, outcrossing, and seed production.

Risk Factors for Big Red Sage

We reviewed the potential risk factors (*i.e.*, threats, stressors) that could be currently affecting the big red sage. In this proposed rule, we will discuss only those factors in detail that could meaningfully impact the status of the species. The primary risk factors (*i.e.*, threats) affecting the status of big red sage are herbivory (Factor C), collection and inappropriate propagation (Factor B), land use changes (Factor A), and effects from climate change (Factor E).

Herbivory

Big red sage is palatable to browsing herbivores, such as white-tailed deer (*Odocoileus virginianus*), introduced ungulates, and goats (*Capra hircus*). Within large portions of the range of the big red sage, the numbers of white-tailed deer are about three times greater than the recommended sustainable deer population levels (Morrow 2020, p. 8; Armstrong and Young 2000, p. 20; Service 2023, p. 36). In addition to native white-tailed deer, several species of nonnative ungulate game animals have been introduced in the Edwards Plateau (Mungall and Sheffield 1994, pp. 188–194). Some introduced ungulates have escaped and established large breeding populations in the wild, compounding the browsing pressure from native white-tailed deer. Additionally, ranchers also introduced large numbers of goats in Real County and elsewhere in the Edwards Plateau beginning in the early 20th century (Minton 2019, unpaginated). Since goats are voracious browsers and nimble scalers of rocky slopes, large numbers of goats likely had a severe impact on populations of big red sage before conservationists began searching for the species.

Browsing from unsustainably large populations of deer has eradicated big red sage from all known habitats except areas that are inaccessible to deer, such as bluffs and steep slopes (Taylor and O'Kennon 2013, p. 10). Herbivory has already resulted in the decline of two of the seven remaining EOs of big red sage (EOs 11 and 14) (Ward 2010, p. 2). Therefore, herbivory, and thus mortality of individual plants, by native and introduced ungulates has severely affected all populations throughout the

species' range and is a continuing severe threat throughout the range.

Land Use Changes

Current rates of human population growth are stable or decreasing in Real, Bandera, and Uvalde Counties; increasing moderately in Kerr and Gillespie Counties; and increasing rapidly in Kendall County (Service 2023, pp. 83–84). Although bluffs and steep slopes are not suitable for most forms of land development, many big red sage populations occur near watercourses where human activities are concentrated (Service 2023, p. 30). Construction and maintenance of houses, roads, bridges, and other recreational land uses may impact these populations of big red sage.

All or portions of four EOs (2, 10, 19, 22) have been lost to development or land use changes that altered the native plant community (Taylor and O'Kennon 2013, pp. 6, 8, 9; TXNDD 2019, pp. 3, 4, 15, 16, 35, 36, 43). In these cases, some individuals were likely to have been destroyed when habitats were converted to buildings or pavement, or when nonnative vegetation was introduced in developed areas, while others may have died as a result of other drastic changes to the habitat.

In addition to losses that are directly attributable to urban and residential development, an increase in the amount of impermeable surfaces or a loss of vegetative cover may reduce the infiltration of water into the ground; this in turn may reduce the availability and constancy of seep moisture that sustains big red sage individuals and populations. The drying of these seepage areas may impact big red sage populations because of the reduction of necessary soil moisture for sustaining plant and population growth (Taylor and O'Kennon 2013, pp. 10–11). Three of the remaining seven EOs (EOs 5, 14, and 24) are currently at the greatest risk to development. Based on the extent of land use changes to known populations and current rates of human population growth in the encompassing counties, we estimate that this threat currently affects 25 percent of all extant populations. Therefore, land use changes are a continuing, potentially severe threat throughout the species' range.

Collection From the Wild and the Loss of Genetic Integrity Due to Inappropriate Propagation

Big red sage is used in landscapes and pollinator gardens, both within its native range in Texas as well as throughout North America and elsewhere. It has been propagated and

sold by several commercial nurseries since 1986 (Enquist 1987, p. 5). Seeds and entire plants have been collected from the wild for landscaping and commercial propagation from at least two EOs (14 and 20) that are accessible to the public (Collier 1989, pp. 1–2; Taylor and O’Kennon 2013, p. 11). E.O. 14, the source of at least one propagated population (Hoban and Garner 2019, p. 1), was widely known and easily accessible to the public. In 1988, the State Department of Highways and Public Transportation placed signs at E.O. 14 stating, “Non Mowing Area,” “Wildflower Research Area,” and “Property of State of Texas, Penalty for Private Use.” On June 27, 1989, State Department of Highways and Public Transportation maintenance personnel found the signs pulled out of the ground with cut flowering stems of the big red sage placed on top of them, with evidence of digging and cutting of the plants (Collier 1989, pp. 1–2). Therefore, there is confirmation that collection contributed to the decline of that population, along with other possible causes, including a major flood, competition from invasive plants, and ungulate browsing (Service 2023, p. 10). Other EOs, such as 11 and 21, are vulnerable to collection from the wild; undocumented populations may also have been discovered and depleted by collectors. Although the habitat of E.O. 11 is intact and is in high condition, and the site is protected as a State Natural Area, this population has declined 87 percent over 31 years (Service 2023, pp. 22, 65). This decline can be attributed to illicit collection because the collection sites have been publicized. However, additional factors may have also contributed to this decline, including herbivory by over-abundant white-tailed deer and introduced ungulates, and the demographic and genetic consequences of small population sizes. Because collection and sale of the big red sage has been ongoing for decades, we conclude that collection from wild populations is a potentially severe, continuing threat to all populations that occur in sites that are known to and accessible by the public.

Inappropriate propagation is also a threat to big red sage. Propagation, in general, is a useful tool for plant conservation. However, there are several potential risks if conducted without regard for the conservation of a species’ genetic integrity. Propagated plant populations often arise from a very small number of founders collected from the wild, and propagated populations may lose alleles, and thus experience a decline in genetic diversity

through genetic drift (the random reduction in frequency of alleles or the complete loss of alleles). Genetic drift occurs most rapidly when the number of breeding individuals is small.

Additionally, propagated populations may also experience a decrease in genetic diversity through deliberate or inadvertent selection. Selection leads to non-random changes in allele frequencies and non-random losses of alleles. Deliberate selection occurs when seeds are selected from plants with specific desirable traits, such as size, form, or flower color, and are used to propagate subsequent generations. Inadvertent selection occurs as an unintended consequence of propagation. For example, growers typically retain only the individuals that germinate readily and then use those individuals as future seed sources; consequently, propagated populations frequently lose the seed dormancy mechanisms that benefit the survival of wild populations. Each successive propagated generation incrementally changes the frequencies of alleles in the gene pool, including the complete loss of alleles. Ultimately, both deliberate and inadvertent selection lead to plants that are more fit in cultivation but less likely to persist if transplanted back into the wild (Service 2023, p. 39).

Through propagation, it is possible to create unlimited numbers of individuals that, once released to the wild, may interbreed with and overwhelm the much smaller wild populations with a very narrow sample of the species’ original genetic diversity, thus causing the loss of rare wild genotypes. Release of individuals bred in cultivation may also introduce genes that reduce fitness (e.g., loss of seed dormancy) into the wild population, as discussed above. Finally, horticulturalists and plant collectors may bring big red sage into proximity with other *Salvia* species that are geographically separated in the wild; if these taxa can breed with each other, this could lead to hybridization. An escape of hybridized *Salvia* species into the wild populations could lead to the extinction of the original wild genotype through interbreeding.

We have no evidence that the progeny of propagated individuals of big red sage have colonized wild population sites. Nevertheless, propagated big red sage populations have very low genetic diversity (Hoban and Garner 2019, p. 4). We conclude that inappropriate propagation is a potentially severe threat of unknown extent to the genetic integrity of the remaining wild populations and the species.

Effects From Climate Change

The Summary for Policy Makers in the Sixth Assessment Report of the Intergovernmental Panel on Climate Change concluded that global surface temperatures will continue to increase until at least the mid-century under all emissions scenarios considered; the frequency and intensity of hot extremes, marine heatwaves, and agricultural and ecological droughts will increase in some regions; and heavy precipitation events will become more frequent (IPCC 2021, pp. 16–20). The U.S. Global Climate Research Program (USGCRP) Fourth National Climate Assessment reports that average annual temperatures from 1986 to 2016 have increased in the Southern Great Plains, which includes the range of big red sage, by 0.42 degrees Celsius (°C) (0.76 degrees Fahrenheit (°F)), compared to the 1901 to 1960 baseline (USGCRP 2017, p. 187). The frequency of heavy precipitation events in the Southern Great Plains has increased from 1901 to 2016 and 1948 to 2016 (USGCRP 2017, pp. 20–212) and is projected to continue to increase under both moderate and high emission scenarios.

Because the big red sage only occurs where there is seep moisture along the slopes and bluffs of canyons and ravines, it requires relatively persistent soil moisture. Additionally, to evaluate how a changing climate may affect big red sage, we used the National Climate Change Viewer to compare past and projected future climate conditions for the Upper Guadalupe River watershed in Texas. The National Climate Change Viewer projects a decrease in soil water storage and an increase in summer evaporative deficit by 2050 to 2074, indicating that soil moisture will become more limiting to plant growth, and thus will restrict the big red sage to a smaller amount of suitable habitat (Service 2023, p. 42). Although climate models do not consistently project how total rainfall may change, the ongoing trend toward greater extremes in rainfall will likely increase with rising temperatures. We expect that mortality will increase and recruitment will decrease during longer, more severe droughts. Furthermore, the increasing frequency and intensity of heavy rainfall events will also exacerbate the threat of flash flooding. Flash floods have already caused population declines at EOs 5 and 14, and EO 15 was completely destroyed by a landslide when the bluff above it collapsed, which may have been caused by flooding along Big Joshua Creek. Flood waters may uproot individual plants or wash away their substrates, or the plants may be buried under silt and

debris (Service 2023, p. 40). Many EOs that occur along watercourses have individuals established below the high-water level that will likely be destroyed by a flood event at some point in the future (Taylor and O'Kennon 2013, p. 10). We conclude that the direct and indirect effects of climate change and associated flash floods and bank erosion represent a potentially severe threat to the portions of big red sage populations that are close to watercourses and below the high-water level of floods throughout the species' range.

Summary

Several historical and ongoing influences, including herbivory, land use changes, collection, and inappropriate propagation, may affect the viability of the big red sage. The most pervasive threats to the species are herbivory and collection, which have already resulted in the extirpation and decline of several populations. Additionally, climate change is expected to exacerbate impacts from all aforementioned threats.

Conservation Efforts and Regulatory Mechanisms

TPWD has previously supported two grants that promoted the conservation of the big red sage. The 2012 Texas Conservation Action Plan identified a research priority to study the distribution of and threats to the big red sage. This led to a wildlife conservation grant to update the species' status (Taylor and O'Kennon 2013, entire). The TPWD Conservation License Plate Program supported an investigation of the species' conservation genetics in 2019 (Hoban and Garner 2019, pp. 1–2). This genetic study was conducted at EO 11 located at Lost Maples State Natural Area, which is protected by TPWD. Although the habitat is intact and the site is protected as a State Natural Area, this population has declined 87 percent over 31 years. Factors that may have contributed to this decline include herbivory by overabundant white-tailed deer and introduced ungulates, as well as the demographic and genetic consequences of a small population size. Since the collection sites have been publicized, it is also possible that illicit collection may also have contributed to this decline. TPWD is currently supporting a third project, funded through the Service's cooperative endangered species conservation fund (see 16 U.S.C. 1535(i)). The objectives of this project are to seek access to private lands and conduct surveys for new populations, collect seeds from wild populations, and propagate seeds of wild populations to increase seed

available for reintroduction and augmentation of populations, scientific research, and seed banking.

One of the largest populations of the big red sage occurs at Cibolo Bluffs (EO 5), which is owned by Cibolo Center for Conservation and is monitored annually by volunteers of the Cibolo Center for Conservation and trustees of Cibolo Preserve. In 2005, there was a big red sage reintroduction at Cibolo Center for Conservation (formerly Cibolo Nature Center) from seeds obtained from the Lady Bird Johnson Wildflower Center and collected from the wild (likely Cibolo Bluffs). Results from this reintroduction suggest that the big red sage may be relatively resilient to the wide extremes in annual rainfall that characterize the Edwards Plateau (Service 2023, p. 46). However, none of the individuals that were planted outside of exclosures survived, indicating that herbivory by overabundant white-tailed deer is a severe threat to the survival of the big red sage. While the protected individuals declined over time, they also produced large numbers of seeds, with new big red sage individuals found growing nearby along a creek in 2013. In summary, this small pilot reintroduction demonstrates that it is possible to establish new population sources or to augment existing populations, provided that the sites are protected from white-tailed deer and other ungulates.

Cumulative Effects

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have analyzed the cumulative effects of identified threats and conservation actions on the species. To assess the current and future condition of the species, we evaluate the effects of all the relevant factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative-effects analysis.

Species Condition

We used the U.S. Geological Survey's hydrologic unit code watershed boundaries to delineate four representation areas of the big red sage: Guadalupe, Cibolo, Frio-Sabinal, and Pedernales. The current condition of the big red sage considers the risks to the populations previously and currently.

For each EO, we developed and assigned categories for the species' demographic and habitat conditions to measure population resiliency of the big red sage. Our analysis was conducted at the EO level, but some individual SFs may have different conditions than the EO in which it falls.

Seven EOs (EO numbers 5, 11, 14, 16, 20, 21, and 24) are extant and seven EOs (EO numbers 2, 4, 10, 15, 19, 22, and 23) are extirpated (Service 2024, p. 50). There are 4 EOs that were reliably recorded in the past for which there have been no recent visits, or the exact geographic location is unknown (EO numbers 1, 3, 7, and 8). We considered these previously documented populations where we could not determine if they are currently extant or extirpated as "non-contributing" (*i.e.*, not contributing to the overall viability of the species), and they are not included in the overall condition assessment of the species. Therefore, we consider there to be 14 known historical populations contributing to our understanding of the overall viability of the species.

We used MVP as the metric to determine the population condition (*i.e.*, resiliency) for each EO (Pavlik 1996, p. 137). MVP is an estimate of population size needed for a population to have a high probability of surviving 100 years, which for the big red sage is 1,600 individuals (Service 2023, p. 33). The estimate of MVP is based only on numbers of mature individuals (those that have flowered at least once or are judged capable of flowering) because juveniles that die before they reproduce do not contribute to the effective population size or future genetic diversity.

We categorized the population condition of each EO as high, moderate, low, or extirpated. EOs are in high condition when they have the estimated MVP of 1,600 mature individuals, meaning the populations would likely persist for 100 years. Moderate condition is a population of at least 100 individuals, which is a population size that is likely to persist for at least 10 years and has the ability to have increased resiliency through conservation and management. We adopt 10 years as the threshold for moderate condition because 10 years is the observed lifespan of an individual and it is long enough for both recruitment and mortality to occur and for demographic trends to emerge (Taylor 2021, pers. comm.). Low condition is a population size fewer than 100 individuals that is not likely to persist 10 years and is unlikely to increase resilience without

augmentation as well as conservation and management.

The evaluation of habitat conditions of the EOs includes the amount and percent of good and excellent habitat, the presence of gaps between areas of good or excellent habitat, the proximity of urban and residential development, and the abundance of forested ravines and tributaries that connect to the EOs (Service 2023, p. 54). High habitat condition was categorized by having, on average, abundant potential habitat, few (if any) significant habitat gaps, low proximity to or absence of nearby urban and residential development, and

abundant tributary ravines. Moderate habitat condition was categorized by having, on average, relatively abundant potential habitat, large or several gaps between suitable habitat areas, some proximity to urban and residential development, and few forested ravines and tributaries. Low habitat condition was categorized by having, on average, low amounts of potential habitat, many or large significant habitat gaps, large amounts or very nearby urban and residential development, and few to no nearby forested ravines and tributaries. We categorized the overall condition of

each EO as the lesser of the population condition and habitat condition (see table 2, below). There are several populations that were reliably recorded in the past for which there have been no recent visits, or the exact geographic location is unknown. We considered these previously documented populations where we could not determine if they are currently extant or extirpated as “non-contributing” (*i.e.*, not contributing to the overall viability of the species), and they are not included in the overall condition assessment of the species.

TABLE 2—SUMMARY OF REPRESENTATION AREAS, POPULATION AND HABITAT CONDITIONS, AND OVERALL RESILIENCE OF THE EOs OF BIG RED SAGE

Representation area	Element occurrence	Population condition	Habitat condition	Overall EO resilience
Guadalupe or Pedernales	1	Non-Contributing	Not Determined	Non-Contributing.
Guadalupe	2	Extirpated	Developed	Extirpated.
Guadalupe	3	Non-Contributing	Not Determined	Non-Contributing.
Guadalupe	4-Upper Turtle Creek	Non-Contributing	High	Non-Contributing.
Guadalupe	4-Middle Turtle Creek	Non-Contributing	Low	Non-Contributing.
Guadalupe	4-Lower Turtle Creek	Extirpated	Low	Extirpated.
Guadalupe	15	Extirpated	Not Determined	Extirpated.
Guadalupe	20	Moderate	High	Moderate.
Unknown	7	Non-Contributing	Unknown	Non-Contributing.
Cibolo	5-Upstream Cibolo Creek	Non-Contributing	High	Non-Contributing.
Cibolo	5-Midstream Cibolo Creek	Non-Contributing	Moderate	Non-Contributing.
Cibolo	5-Downstream Cibolo Creek	Moderate	High	Moderate.
Cibolo	14	Moderate	Moderate	Moderate.
Cibolo	24	Moderate	Moderate	Moderate.
Frio-Sabinal	8	Non-Contributing	High	Non-Contributing.
Frio-Sabinal	11	Low	High	Low.
Frio-Sabinal	16	Low	High	Low.
Frio-Sabinal	21	Low	High	Low.
Pedernales	10	Extirpated/Non-Contributing.	Not Determined	Extirpated/Non-Contributing.
Pedernales	22	Extirpated	Not Determined	Extirpated.
Pedernales	23	Extirpated	Not Determined	Extirpated.
Headwaters Salado Creek	19	Extirpated	Developed	Extirpated.

The species’ total known populations have declined by 46 percent since 1988. Twenty-eight percent of known EOs have been completely extirpated. All known EOs in the Pedernales representation area are extirpated. The Guadalupe representation area has only one remaining E.O., which is in moderate condition. The Frio-Sabinal representation area has three EOs, all of which are in low condition. The Cibolo representation area has three EOs in moderate condition that are currently isolated, or nearly isolated, from each other by urban, residential, and recreational development.

Redundancy for the big red sage is characterized by having multiple, sufficiently resilient populations distributed across the spring systems historically occupied by the species for the species to be able to withstand

catastrophic events. Species that have redundant, sufficiently resilient populations distributed across their historical ranges are less susceptible to the risk of extinction from catastrophic events. Of the 14 known historical populations of big red sage, 7 have become extirpated. Therefore, redundancy has been significantly reduced from historical levels, making the species more vulnerable to catastrophic events such as flash floods and prolonged drought.

Representation reflects a species’ capacity to adapt to changing environmental conditions over time and can be characterized by genetic and ecological diversity within and among populations. We describe species representation for the big red sage as genetic diversity both within and among populations. Current populations of big

red sage have very low overall species diversity and small population sizes and are likely to continue to experience declines in genetic diversity and increased inbreeding (Hoban and Garner 2019, pp. 3–4). Although the big red sage has critically low genetic diversity, wild populations maintain greater genetic diversity than propagated populations (Hoban and Garner 2019, pp. 3–4). When coupled with small population sizes, big red sage populations may experience an increased loss in genetic variation, resulting in a population’s reduced ability to survive and reproduce (*i.e.*, inbreeding depression) (Hoban and Garner 2019, p. 4). The big red sage occurs only in small, isolated groups of individuals, which are susceptible to the loss of genetic diversity, to genetic drift, and to inbreeding (Barrett and

Kohn 1991, pp. 3–30). This is evident in propagated populations of big red sage with known low genetic diversity that did not produce viable seeds (Hoban and Garner 2019, p. 4). Because of the species' low genetic diversity, its ability to withstand stochastic events and adapt to changing environmental conditions is reduced.

In summary, of the 14 known historical populations, 7 are extirpated and 7 are extant. This reduced redundancy makes the species more susceptible to catastrophic events such as floods and prolonged drought. Furthermore, of the extant populations, only four populations are expected to persist at least 10 years and three populations are likely to become extirpated within 10 years. The remaining populations are small, are isolated, and have low genetic diversity, making them less able to withstand stochastic events.

As part of the SSA, we also developed two future condition scenarios to capture the range of uncertainties regarding future threats and the projected responses by the big red sage. Because we determined that the current condition of the big red sage is consistent with an endangered species (see Determination of the Big Red Sage's Status, below), we are not presenting the results of the future scenarios in this proposed rule. Please refer to the SSA report (Service 2023, pp. 78–98) for the full analysis of future scenarios.

Determination of the Big Red Sage's Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines an "endangered species" as a species in danger of extinction throughout all or a significant portion of its range and a "threatened species" as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of an endangered species or a threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we find that the big red sage has declined from known historical levels in size and number of populations. Our analysis revealed several factors that caused this decline and pose a meaningful risk to the viability of the species. These threats are primarily related to habitat changes (Factor A), including land use changes; overutilization (Factor B) by collection and inappropriate propagation; herbivory (Factor C); and the effects of climate change (Factor E).

Of the 14 known historical populations, 7 are extirpated and 7 are extant. This decline in number of populations from known historical levels indicates a reduced level of redundancy, making the big red sage more vulnerable to catastrophic events such as flash floods. Of the seven extant populations, only four populations are expected to persist at least 10 years and three are likely to become extirpated within 10 years. These levels of resiliency of the remaining populations exhibit a lowered ability of the species to withstand environmental and demographic stochasticity. Additionally, overall genetic diversity of the species is low, meaning that the species may not be adequately able to adapt to both near-term and long-term changes in its physical and biological environment (*i.e.*, the species may lack adaptive capacity).

The most pervasive threats to the species are herbivory and collection and inappropriate propagation. Browsing from unsustainably large populations of deer has eradicated big red sage from all known habitats except areas that are inaccessible to deer, such as bluffs and steep slopes (Taylor and O'Kennon 2013, p. 10). Herbivory has already resulted in the decline of several EOs of big red sage, including EOs 11 and 14 (Ward 2010, p. 2). Seeds and entire plants have been collected from the wild for landscaping and commercial propagation from at least two EOs (14 and 20) that are accessible to the public (Collier 1989, pp. 1–2; Taylor and O'Kennon 2013, p. 11). E.O. 14 was widely known and easily accessible to the public, and collection contributed to the decline of that population, which remains extant.

These threats, in addition to land use changes and effects from climate change, have reduced available habitat for the big red sage and resulted in the direct and indirect destruction of individual plants and entire

populations. All or portions of four EOs have been lost to development or land use changes where individual plants were likely to have been destroyed when habitats were converted to buildings or pavement, or when nonnative vegetation was introduced in developed areas, while others may have died as a result of other drastic changes to the habitat (Taylor and O'Kennon 2013, pp. 6, 8, 9; TXNDD 2019, pp. 3, 4, 15, 16, 35, 36, 43). Effects from climate change such as flash floods have already caused population declines at three EOs, one of which was completely destroyed. Flood waters may uproot individual plants or wash away their substrates, or the plants may be buried under silt and debris (Service 2023, p. 40).

In summary, the big red sage is very susceptible to extirpations from catastrophic events and has limited adaptive capacity. The number of known populations has already been reduced from 14 to 7 populations due to herbivory, collection and inappropriate propagation, land use changes, and effects from climate change, all of which remain active threats to existing populations. The species is in danger of extinction due to the aforementioned threats, which have historically impacted, and are currently impacting, the species and reducing its viability across its range. We do not find the species meets the Act's definition of a threatened species because the species has already shown declines in the number and resiliency of populations. Half of known populations have already become extirpated due to the threats mentioned above, and all remaining populations are at risk due to the same threats. Because current redundancy is reduced from known historical levels, and representation is limited due to low genetic diversity, the species is vulnerable to catastrophic and stochastic events. Thus, after assessing the best scientific and commercial data available, we determine that the big red sage is in danger of extinction throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range. We have determined that the big red sage is in danger of extinction throughout all of its range and accordingly did not undertake an analysis of any significant portion of its range. Because the big red sage warrants listing as endangered

throughout all of its range, our determination does not conflict with the decision in *Center for Biological Diversity v. Everson*, 435 F. Supp. 3d 69 (D.D.C. 2020), because that decision related to significant portion of the range analyses for species that warrant listing as threatened, not endangered, throughout all of their range.

Determination of Status

Our review of the best available scientific and commercial information indicates that the big red sage meets the Act's definition of an endangered species. Therefore, we propose to list the big red sage as an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition as a listed species, planning and implementation of recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, foreign governments, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies, including the Service, and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

The recovery planning process begins with development of a recovery outline made available to the public soon after a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions while a recovery plan is being developed. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) may be established to develop and implement

recovery plans. The recovery planning process involves the identification of actions that are necessary to halt and reverse the species' decline by addressing the threats to its survival and recovery. The recovery plan identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened ("downlisting") or removal from protected status ("delisting"), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery outline, draft recovery plan, final recovery plan, and any revisions will be available on our website as they are completed (<https://www.fws.gov/program/endangered-species>), or from our Austin Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

If this species is listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Texas would be eligible for Federal funds to implement management actions that promote the protection or recovery of the big red sage. Information on our grant programs that are available to aid species recovery can be found at: <https://www.fws.gov/service/financial-assistance>.

Although the big red sage is only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species whenever it

becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7 of the Act is titled, "Interagency Cooperation," and it mandates all Federal action agencies to use their existing authorities to further the conservation purposes of the Act and to ensure that their actions are not likely to jeopardize the continued existence of listed species or adversely modify critical habitat. Regulations implementing section 7 are codified at 50 CFR part 402.

Section 7(a)(2) states that each Federal action agency shall, in consultation with the Secretary, ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Each Federal agency shall review its action at the earliest possible time to determine whether it may affect listed species or critical habitat. If a determination is made that the action may affect listed species or critical habitat, formal consultation is required (50 CFR 402.14(a)), unless the Service concurs in writing that the action is not likely to adversely affect listed species or critical habitat. At the end of a formal consultation, the Service issues a biological opinion, containing its determination of whether the Federal action is likely to result in jeopardy or adverse modification.

In contrast, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. Although the conference procedures are required only when an action is likely to result in jeopardy or adverse modification, action agencies may voluntarily confer with the Service on actions that may affect species proposed for listing or critical habitat proposed to be designated. In the event that the subject species is listed or the relevant critical habitat is designated, a conference opinion may be adopted as a biological opinion and serve as compliance with section 7(a)(2) of the Act.

Examples of discretionary actions for the big red sage that may be subject to conference and consultation procedures under section 7 are land management or other landscape-altering activities on Federal lands as well as actions on State, Tribal, local, or private lands that require a Federal permit (such as a

permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation. Federal agencies should coordinate with the local Service Field Office (see **FOR FURTHER INFORMATION CONTACT**) with any specific questions on section 7 consultation and conference requirements.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered plants. The prohibitions of section 9(a)(2) of the Act, and the Service's implementing regulations codified at 50 CFR 17.61, make it illegal for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit or to cause to be committed any of the following with an endangered plant: (1) import to, or export from, the United States; (2) remove and reduce to possession from areas under Federal jurisdiction; maliciously damage or destroy on any such area; or remove, cut, dig up, or damage or destroy on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law; (3) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity; or (4) sell or offer for sale in interstate or foreign commerce. Certain exceptions to these prohibitions apply to employees or agents of the Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered plants under certain circumstances. Service regulations governing permits for endangered plants are codified at 50 CFR 17.62, and general Service permitting regulations are codified at 50 CFR part 13. With regard to endangered plants, a permit may be issued for scientific purposes or for enhancing the propagation or survival of the species. The statute also contains certain exemptions from the prohibitions,

which are found in sections 9 and 10 of the Act.

II. Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (*i.e.*, range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (*e.g.*, migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that each Federal action agency ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of designated critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation also does not

allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Rather, designation requires that, where a landowner requests Federal agency funding or authorization for an action that may affect an area designated as critical habitat, the Federal agency consult with the Service under section 7(a)(2) of the Act. If the action may affect the listed species itself (such as for occupied critical habitat), the Federal agency would have already been required to consult with the Service even absent the designation because of the requirement to ensure that the action is not likely to jeopardize the continued existence of the species. Even if the Service were to conclude after consultation that the proposed activity is likely to result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement "reasonable and prudent alternatives" to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R.

5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information from the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of the species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if

new information available at the time of those planning efforts calls for a different outcome.

Prudency Determination

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered species or a threatened species. Our regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat may not be prudent in circumstances such as, but not limited to, the following:

(i) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species;

(iii) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States; or

(iv) No areas meet the definition of critical habitat.

As discussed above, big red sage is threatened by collection and inappropriate propagation, and identification of critical habitat can be expected to increase the degree of these threats to the species. Because of this, we have determined that designation of critical habitat is not prudent. We reach this conclusion largely because of the pervasive threat of collection (Factor B). The threat of collection potentially imperils all populations whose geographic locations are publicized and accessible to the public. Collection results in direct mortality when whole plants are removed from wild sites, and seed collection from wild populations for propagation can reduce recruitment of new individuals and contribute to the decline of those populations. What remains is a very small number of isolated fragments of former populations, none of which have viable population sizes. Designation of critical habitat would publicize locations of the big red sage that are not currently publicized, which puts those populations at risk for collection and thus extirpation. Designation of critical habitat would also not provide any additional conservation benefit to the species because it does not establish specific land management standards or prescriptions and only prohibits Federal agencies from carrying out, funding, or

authorizing actions that would destroy or adversely modify critical habitat, whereas big red sage occurs almost entirely on private land. Therefore, a designation of critical habitat would not be advantageous for this species. Since we have determined that the big red sage is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species, in accordance with 50 CFR 424.12(a)(1), we determine that designation of critical habitat is not prudent for the big red sage.

Required Determinations

Clarity of the Rule

We are required by Executive Orders (E.O.s) 12866 and 12988 and by the Presidential memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (1) Be logically organized;
- (2) Use the active voice to address readers directly;
- (3) Use clear language rather than jargon;
- (4) Be divided into short sections and sentences; and
- (5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951, May 4, 1994), E.O. 13175 (Consultation and Coordination with Indian Tribal Governments), the President's memorandum of November 30, 2022 (Uniform Standards for Tribal Consultation; 87 FR 74479, December 5, 2022), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with federally recognized Tribes and Alaska Native Corporations (ANCs) on a government-to-government basis. In accordance with Secretary's Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust

Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We have determined that the big red sage does not occur on Tribal lands, so no Tribes would be affected if we list the species.

References Cited

A complete list of references cited in this rulemaking is available on the internet at https://www.regulations.gov and upon request from the Austin

Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).

Authors

The primary authors of this proposed rule are the staff members of the Fish and Wildlife Service’s Species Assessment Team and the Austin Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. In § 17.12, in paragraph (h), amend the List of Endangered and Threatened Plants by adding an entry for “Salvia pentstemonoides” in alphabetical order under FLOWERING PLANTS to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Table with 5 columns: Scientific name, Common name, Where listed, Status, Listing citations and applicable rules. Row 1: Salvia pentstemonoides, big red sage, Wherever found, E, [Federal Register citation when published as a final rule].

Martha Williams, Director, U.S. Fish and Wildlife Service. [FR Doc. 2025–01117 Filed 1–17–25; 8:45 am] BILLING CODE 4333–15–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 20

[Docket No. FWS–HQ–MB–2024–0127; FXMB1231099BPP0–245–FF09M32000]

RIN 1018–BH65

Migratory Bird Hunting; Proposed 2025–26 Migratory Game Bird Hunting Regulations (Preliminary)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service or we) proposes to establish hunting regulations for certain migratory game birds for the 2025–26 hunting season. Through an annual rulemaking process, we prescribe outside limits (which we refer to as frameworks) within which States may select hunting seasons. This proposed rule provides the regulatory schedule, describes the proposed regulatory alternatives for the 2025–26 general duck seasons, and provides preliminary

proposals that vary from the 2024–25 hunting season regulations. Migratory bird hunting seasons provide opportunities for recreation and sustenance; aid Federal, State, and Tribal governments in the management of migratory game birds; and permit harvests at levels compatible with migratory game bird population status and habitat conditions.

DATES: Comments: You may comment on the general duck season regulatory alternatives, the process for authorizing annual hunting seasons, and other preliminary proposals for the 2025–26 season until February 20, 2025.

ADDRESSES: Comments: You may submit comments on the proposals by one of the following methods:

- Federal eRulemaking Portal: https://www.regulations.gov. Follow the instructions for submitting comments on Docket No. FWS–HQ–MB–2024–0127. U.S. mail: Public Comments Processing, Attn: FWS–HQ–MB–2024–0127; U.S. Fish and Wildlife Service; MS: PRB/3W; 5275 Leesburg Pike; Falls Church, VA 22041–3803.

We will not accept emailed or faxed comments. We will post all comments on https://www.regulations.gov. This generally means that your entire submission—including any personal identifying information—will be posted

on the website. See Public Comments, below, for more information.

FOR FURTHER INFORMATION CONTACT: Jerome Ford, U.S. Fish and Wildlife Service, Department of the Interior, (703) 358–2606; jerome_ford@fws.gov. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point of contact in the United States. For a summary of the proposed rule, please see the “rule summary document” in docket FWS–HQ–MB–2024–0127 on https://www.regulations.gov.

SUPPLEMENTARY INFORMATION:

Process for Establishing Annual Migratory Game Bird Hunting Regulations

Background

Migratory game birds are those bird species so designated in conventions between the United States and several foreign nations for the protection and management of these birds. Under the Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703–712), the Secretary of the Interior is authorized to determine when “hunting, taking, capture, killing,