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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R2–ES–2026–1651; FXES1111090FEDR–267–FF09E21000]

RIN 1018–BH87

Endangered and Threatened Wildlife and Plants; Threatened Species Status with Section 4(d) Rule for White Sands Pupfish and Critical Habitat Determination

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to list the White Sands pupfish (*Cyprinodon tularosa*), a fish species from southcentral New Mexico, as a threatened species with protective regulations under section 4(d) of the Endangered Species Act of 1973, as amended (Act). This determination also serves as our 12-month finding on a petition to list the White Sands pupfish. After a review of the best scientific and commercial data available, 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 Wildlife and extend the Act's protections to the species. All areas meeting the definition of critical habitat for the White Sands pupfish occur on Department of War (DoW) owned facilities and are exempt from designation as critical habitat in accordance with section 4(a)(3)(B) of the Act. Therefore, we are not proposing any areas as critical habitat for the White Sands pupfish.

DATES: Comments will be accepted on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]. 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 [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

To ensure your comment is received and considered, you must submit it using one of the methods identified in the **ADDRESSES** section of this document. Comments submitted through any method not authorized in this document, or sent to an address not listed here, will not be considered.

ADDRESSES: *Comment submission:* All submissions must include the docket number FWS–R2–ES–2026–1651 for this document. You must submit comments using one of the following methods:

(1) *Electronic submission*: Federal eRulemaking Portal at: https://www.regulations.gov. In the Search box, enter FWS–R2–ES–2026–1651, which is the docket number for this action. Then click the Search button. On the resulting page, you may submit a comment by clicking on "Comment." Please ensure that you have found the correct document before submitting your comments.

(2) *U.S. mail*: Public Comments Processing, Attn: FWS–R2–ES–2026–1651, Policy and Regulations Branch, U.S. Fish and Wildlife Service, MS: PRB (JAO/3W), 5275 Leesburg Pike, Falls Church, VA 22041–3803.

Comments submitted through any method not authorized in this document, or sent to an address not listed here, will not be considered. We will not accept comments via email, fax, or hand delivery. We are not required to consider comments that are submitted after the comment period ends or that are submitted via a method outside of these instructions. Comments containing profanity, vulgarity, threats, or other inappropriate content will not be considered.

We will post all comments at https://www.regulations.gov. You may request that we withhold personal identifying information from public review; however, we cannot

guarantee that we will be able to do so. See **Information Requested**, below, for more information.

Availability of supporting materials: Supporting materials, such as the species status assessment (SSA) report, are available on the Service's website at https://www.fws.gov/office/new-mexico-ecological-services and at https://www.regulations.gov under Docket No. FWS–R2–ES–2026–1651.

FOR FURTHER INFORMATION CONTACT: Shawn Sartorius, Field Supervisor, U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office; 505–697–7606; shawn_sartorius@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. Please see Docket No. FWS–R2–ES–2026–1651 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 White Sands pupfish meets the Act's definition of a threatened species; therefore, we are proposing to list it as such. While we found areas that meet the definition of critical habitat, we are not proposing to

designate any critical habitat because all areas are exempt from such designation. 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 White Sands pupfish as a threatened species with a species-specific rule establishing protective regulations under section 4(d) of 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 the White Sands pupfish meets the Act's definition of a threatened species due to the following threats: extreme flooding events (Factors A and E), increased drying (Factors A and E), and increased temperatures (Factors A and E); and the impacts of saltcedar and aquatic emergent vegetation on White Sands pupfish and its habitat (Factor A).

Section 4(a)(3) of the Act requires that the Secretary of the Interior (Secretary), to the maximum extent prudent and determinable, concurrently with listing designate critical habitat for the species. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation on the basis of the best scientific data available and after

taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat.

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 to assist us with issuing protective regulations under section 4(d) of the Act ("4(d) rule") that may be necessary and advisable to provide for the conservation of the White Sands pupfish. In particular, we seek information concerning:

(a) The extent to which we should include any of the Act's section 9 prohibitions in the 4(d) rule;

(b) Whether we should consider any additional or different exceptions from the prohibitions in the 4(d) rule;

(c) Impacts (conservation and economic) associated with implementing the 4(d) rule;

(d) How frequently and in what geographical areas are activities that we propose to regulate under the 4(d) rule (e.g., sale, "take") currently occurring;

(e) Whether there are other laws currently in place beyond what we describe in the economic considerations document that regulate the activities or "take" prohibited in the proposed 4(d) rule;

(f) Any entities likely to request section 10(a)(1)(A) permits for conducting activities that would involve "take" such as capture or handling of the White Sands pupfish;

(g) Data available on the time and economic costs of obtaining section 10(a)(1)(A) permits in accordance with 50 CFR 17.32;

(h) Any entities likely to develop habitat conservation plans and request section 10(a)(1)(B) permits for conducting activities that would involve incidental "take" of the White Sands pupfish that we propose to prohibit;

(i) Data available on the time and economic costs of obtaining section 10(a)(1)(B) permits in accordance with 50 CFR 17.32;

(j) Any other entities not addressed in this proposed rule that may be affected by the 4(d) rule; and

(k) Comments and suggestions regarding additional guidance and methods that we could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule.

(5) Specific information related to critical habitat, such as:

(a) The amount and distribution of White Sands pupfish habitat;

(b) Any areas occurring within the range of the species (including areas not covered by the existing integrated natural resources management plans (INRMPs)), in Sierra, Lincoln, and Otero Counties of New Mexico, that should be included in a designation because they (i) are occupied at the time of listing and contain the physical or biological features that are essential to the conservation of the species and that may require special management considerations or protection, or (ii) are unoccupied at the time of listing and are essential for the conservation of the species;

(6) Whether we could improve or modify our approach to identifying critical habitat in any way to provide for greater public participation and understanding, or to better accommodate public concerns and comments.

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, as 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 must submit your comments and materials concerning this proposed rule by one of the methods listed 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, we may conclude that the species is endangered instead of threatened, or we may conclude that the species does not warrant listing as either an endangered or a threatened species. Based on public comment, we may determine there are additional areas that meet the definition of critical habitat and, therefore, we may propose critical habitat in the future. In addition, we may change the parameters of the prohibitions or the exceptions to those prohibitions in the protective regulations issued under section 4(d) of the Act if we conclude it is appropriate in light of comments and new information received. For example, we may expand the prohibitions if we conclude that the protective regulation as a whole, including those additional prohibitions, is necessary and advisable to provide for the conservation of the species. Conversely, we may establish additional or different

exceptions to the prohibitions in the final rule if we conclude that the activities would facilitate or are compatible with the conservation and recovery of the 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 title 50 of the Code of Federal Regulations (CFR) at § 424.16(c)(3).

Previous Federal Actions

We identified the White Sands pupfish as a Category 2 candidate on December 30, 1982 (47 FR 58454). Category 2 candidates were defined as species for which we had information that proposed listing was possibly appropriate, but conclusive data on biological vulnerability and threats were not available to support a proposed rule at the time. The species remained so designated in subsequent annual candidate notices of review (CNOR) (50 FR 37958, September 18, 1985; 54 FR 554, January 6, 1989; 56 FR 58804, November 21, 1991; 59 FR 58982, November 15, 1994). In the February 28, 1996, CNOR (61 FR 7596), we discontinued the designation of Category 2 species as candidates; therefore, the White Sands pupfish was no longer a candidate species.

Subsequently, on June 25, 2007, we received a petition dated June 18, 2007, from Forest Guardians (now WildEarth Guardians) to list 475 species, including the White Sands pupfish, in the Southwestern United States as endangered or threatened species and to designate critical habitat under the Act. On December 16, 2009, we published a partial 90-day finding (74 FR 66866) on 192 species from that petition; in that document, we announced that the petition presented substantial information that the White Sands pupfish may be warranted for listing.

Peer Review

We conducted an SSA and prepared an SSA report for the White Sands pupfish. The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data available regarding the viability of the species, which is then used to support our decision regarding whether a species warrants listing under the Act. In accordance with our joint policy with the National Marine Fisheries Service (NMFS) on peer review that 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 and recovery 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 White Sands pupfish SSA report. We sent the SSA report to eight independent peer reviewers and received four responses. The peer reviews can be found at https://www.regulations.gov at Docket No. FWS–R2–ES–2026–1651. 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 in **Peer Review**, above, we received comments from four 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, clarification, and suggestions. Reviewers primarily requested that we make revisions to further explain the rationale for the monitoring methods and models used for our analysis. We addressed all substantive comments, including recommended changes to our analysis or conclusions within the SSA report, in version 1.1 of the SSA report (Service 2026, entire). We provide a brief summary of substantive comments below.

One peer reviewer suggested that there was a need for a taxonomic reassessment given the results from a recently published scientific paper by Black et al. 2024, "Rapid vertebrate speciation via isolation, bottlenecks, and drift." In that paper, the authors concluded that vertebrate speciation can occur rapidly as a result of isolation, genetic bottlenecks, and genetic drift and suggested that there may be two distinct species of pupfish in the Tularosa Basin.

We reviewed the recent paper by Black et al. (2024, entire) that suggests two evolutionary significant units (ESUs) of the White Sands pupfish may actually represent two distinct species, based on their study of genome-wide variation and differentiation among two natural populations and one translocated population. The authors found significant neutral genetic differentiation between the two natural populations; however, they did not detect any signals of natural selection, arguing that the separation of these ESUs occurred due to genetic drift rather than selection. Given the short generation times of pupfish, the potential for genetic drift could lead to rapid differentiation over thousands of generations, allowing for the possibility of speciation in small, isolated populations. Despite these findings, the authors do not provide evidence of adaptive differences or reproductive incompatibilities between the populations—two factors important in confirming speciation. While the study highlights a high genome-wide

neutral differentiation, we conclude that there is insufficient evidence to support that speciation has occurred between these populations and will continue to classify them as members of the same taxon. The “Genetics” section of the SSA report was updated to include our assessment of the literature.

Another peer reviewer stated that the SSA report needs to provide more details regarding the climate model projections. They emphasized that climate variability and extreme weather in a warmer climate could lead to severe flooding impacts, posing a significant threat to the White Sands pupfish.

We addressed this comment by providing supplemental information in Chapter 5 of the SSA report to include more detail regarding the climate model projections and interpretation of several climate variables, which include air temperature and precipitation. In addition, we have highlighted in the SSA report that extreme precipitation events could lead to flooding that could potentially displace White Sands pupfish, such as in Salt Creek.

Another peer reviewer suggested that we improve our rationale and assumption of the use of N-mixture models (a model effective for analyzing sparse catch data) for evaluating White Sands pupfish monitoring data by clarifying the justification and assumptions used in our conclusion.

We addressed this comment by providing additional information in both Section 3.8.3 and Section 4.1 of the SSA report. We emphasized that, despite long-term monitoring efforts, we only utilized the most recent sampling data from 2017 to 2022 due to the robust sampling protocol and statistical analysis from this period. This approach accounts for instances where many data points result in zeros. Accordingly, using this approach reflects the best available science available and enables us to better estimate the likelihood of detecting fish.

I. Proposed Listing Determination

Background

A thorough review of the taxonomy, life history, and ecology of the White Sands pupfish is presented in the SSA report (Service 2026, pp. 3–20).

The White Sands pupfish is a small fish (less than 50 millimeters (mm) (1.97 inches (in)) in length) in the Cyprinodontidae family (pupfish and killifish) known only from the Tularosa Basin in southern New Mexico. White Sands pupfish are sexually dimorphic (physical characteristics differ between the sexes) with males exhibiting a black band on the caudal (tail) fin and a metallic/iridescent blue on their backs during breeding periods. Females and nonbreeding males are grayish-blue on the sides and olive green on the upper and back portions of the body, with fins a pale yellow to whitish color. Females also possess a "false eye" in the dorsal fin (Service 2026, p. 4).

White Sands pupfish are omnivorous, and food selection is dependent on resource availability. Food sources may include algae, diatoms, detritus, chironomids (non-biting midges, bloodworms), diptera (flies), copepods (small aquatic crustaceans), and ostracods (seed shrimp) (Terry 1971, p. 5; Hoover et al. 1999, p. 30).

Currently, the White Sands pupfish only occurs in seven localities in southern New Mexico (Pittenger 2023, p. 1). This includes two native populations at Malpais Spring and Salt Creek, and five replicate (introduced) populations at Lost River, North Mound Spring, Main Mound Spring, South Mound Spring, and Bradford Spring (Pittenger and Springer 1999, entire; Pittenger 2023, entire). These replicate populations largely occur on White Sands Missile Range (WSMR) and Holloman Air Force Base (HAFB). A small ephemeral portion of one replicate population (approximately 1.8 kilometers (1.12 miles) of Lost River) is located on White Sands National Park; the rest of the population occurs on WSMR and HAFB.

Genetic analyses show that the two native populations, Malpais Spring and Salt

Creek, have diverged significantly since the mid-Holocene. Initial estimates of this divergence place it approximately 6,000 years ago, leading to their classification as two evolutionarily significant units (ESUs) in 1998 (Stockwell et al. 1998, pp. 218–220). A more recent study suggests that Malpais Spring and Salt Creek diverged more recently, approximately 4,000–5,000 years ago (Black et al. 2024, p. 2). ESUs reflect populations that are reproductively isolated and constitute an important component of the evolutionary legacy of the species (Waples 1991, p. 11). This supports the practice of maintaining and managing the two native White Sands pupfish populations separately to maintain genetic representation of the species. Of the existing replicate populations, North Mound Spring and South Mound Spring consist of fish from the Malpais Spring ESU while Main Mound Spring, Bradford Spring, and Lost River consist of fish from the Salt Creek ESU.

The White Sands pupfish occurs within a variety of natural and artificial habitats including a laguna (a small brackish lake), wetlands, creeks, and springs (Pittenger 2015, pp. 11–24; WSMR 2015, p. 3-70). White Sands pupfish habitats can contain a diverse variety of substrates, such as detritus, silt, sand, cobble, and gravel (Pittenger 2024, pers. comm.). Vegetation found in White Sands pupfish habitat is similarly diverse, with a variety of algae, aquatic, semi-aquatic and halophytic vegetation. Specifically, vegetation may include saltcedar (*Tamarix ramosissima*), chairmaker's bulrush (*Schoenoplectus americanus*), beaked spike-rush (*Eleocharis rostellata*), saltgrass (*Distichlis spicata var. stricta*), common reed (*Phragmites australis*), spiral ditchgrass (*Ruppia cirrhosa*), alga muskgrass (*Chara* sp.), limewater brookweed (*Samolus ebracteatus*), alkali sacaton (*Sporobolus airoides*), alkali muhly (*Muhlenbergia asperifolia*), mule-fat (*Baccharis salicifolia*), iodinebush (*Allenrolfea occidentalis*), and southern goldenbush (*Isocoma pluriflora*) (Muldavin et al. 2000, p. 64; Allen et al. 2005, entire; Sivinski and Tonne 2011, p. 81; Pittenger 2020, entire).

White Sands pupfish occupy brackish (dissolved salt concentrations between 1,000 and 10,000 milligrams per liter (mg/L)) to saline water (dissolved salt concentrations greater than 10,000 mg/L). White Sands pupfish can occur in waters with a wide range of temperatures, and hourly water temperature readings from -1.9 degrees Celsius (°C) to 38 °C (28.5 degrees Fahrenheit (°F) to 100.4 °F) have been reported in occupied habitats (Pittenger 2015, p. 24). Temperatures above 42.7 °C (108.9 °F) may be lethal to White Sands pupfish (Schoenherr and Feldmeth 1992, p. 50).

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 CFR 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 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 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 we 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 scientific and commercial data available 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 available regarding the viability 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 our regulations and policies.

To assess White Sands pupfish 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' future condition, including responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best scientific and commercial data available 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–2026–1651 on https://www.regulations.gov and at https://www.fws.gov/office/new-mexico-ecological-services.

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.

Species Needs

For the White Sands pupfish to have sufficient resiliency, redundancy, and representation, individuals need suitable habitat that supports essential life functions at all life stages (see table 1, below). Based upon the best available scientific and commercial information, and acknowledging existing ecological uncertainties, White Sands pupfish individual needs include: (1) suitable water quality, (2) sufficient water quantity, and (3) habitat diversity. These needs are summarized below. For additional information, please see the SSA report (Service 2026, pp. 3–12).

Table 1. Ecological requisites for survival and reproductive success of White Sands pupfish.

Life Stage	Resources and circumstances needed for individuals to complete each life stage
Spawning Adult	• Water temperatures between 8 and 30 °C (46.4 and 86 °F) • Rocky to silty substrate with topographic diversity • Shallow water less than 50 centimeters (cm) (19.7 in) deep
Egg	• Salinities less than 35,000 mg/L • Topographic diversity with submerged aquatic vegetation, firm substrates, and relatively soft or flocculant substrates to adhere to
Juvenile/Non-breeding Adults	• Adequate abundance of food (algae, insect, vegetation, etc.) • Shallow to deep water for thermal and hiding cover and feeding
All	• Hydrologic conditions conducive to survival (sufficient water levels, appropriate water temperature, etc.)

Suitable Water Quality

Like other pupfish in the *Cyprinodon* genus, the White Sands pupfish is able to tolerate a wide range of water quality conditions (Hoagstrom and Brooks 1999, p. 5). However, temperature extremes, extremely low dissolved oxygen, and salinity extremes can all result in fish mortality.

For instance, high salinities (>35,000 mg/L) have been found to affect larval and egg development in desert pupfish and Pecos pupfish (Kinne and Kinne 1962, p. 250; Hoagstrom and Brooks 1999, p. 21), suggesting a possible upper limit to salinity tolerance. Maximum salinity levels affecting White Sands pupfish development or survival are unknown. However, given that salinities higher than 35,000 mg/L were

found to retard egg and larval development in closely related species, we assume salinities in excess of 35,000 mg/L would also affect White Sands pupfish.

Studies examining thermal tolerance of other pupfish have found thermal tolerance to range from below 0 °C to 45 °C (32 °F to 113 °F), although data collected in studies of desert pupfish (*Cyprinodon macularius*) found that temperatures above 42.7 °C (108.9 °F) may be lethal (Schoenherr and Feldmeth 1992, p. 50). Temperature may also influence egg development and reproduction (Shrode and Gerking 1977, p. 8), which is the most vulnerable stage in the *Cyprinodon* genus (Kodric-Brown 1983, p. 135). Another closely related species, the Amargosa pupfish (*Cyprinodon nevadensis*), was found to produce lower quality eggs (small, fragile eggs lacking a yolk) at temperatures in excess of 32 °C (89.6 °F) and increased mortality of adult pupfish at temperatures greater than 38 °C (100.4 °F) (Shrode and Gerking 1977, p. 8). Therefore, although specific data for White Sands pupfish are unavailable, the available evidence from related species suggests that temperatures in excess of 42.7 °C (108.9 °F) would also negatively affect White Sands pupfish.

Based on studies of White Sands pupfish and other related species, habitats with optimal water quality conditions (temperatures between 8 °C (46.4 °F) and 30 °C (86 °F) and no known water quality impairments) are expected to support pupfish with higher body conditions, higher fecundity rates, and higher population densities (Kinne and Kinne 1962, entire; McMahon and Tash 1988, p. 1879; Hoover et al. 1999, pp. 28–29).

Pupfish, including the White Sands pupfish, exhibit a wide tolerance for varied dissolved oxygen levels. White Sands pupfish have been observed in environments with dissolved oxygen levels as low as 1.4–1.5 mg/L; however, their population sizes in these conditions are considered low (Carman 2004, pp. 44–48; Carman 2005, pp. 1–3, 34–38). Although a specific minimum tolerance level for the White Sands pupfish is not established, the desert pupfish, a close relative, has a minimum tolerance of 0.88 mg/L,

suggesting that the White Sands pupfish may also survive in low dissolved oxygen conditions (Ostrand and Wilde 2001, p. 745). Based on habitats occupied by White Sands pupfish, the ideal dissolved oxygen level for White Sands pupfish is greater than 4 mg/L (Pittenger 2010, p. 27).

Sufficient Water Quantity

White Sands pupfish depend on water to complete all stages of their lifecycle. While White Sands pupfish can survive in very shallow water, they need deeper water to provide thermal refugia during the winter and summer, and sufficient water quantity throughout the year for breeding and adult survival. Reaches or areas that have water year-round, with no recorded events of drying or observed significant reductions in water volume or discharge, have a higher probability of persistence than reaches or areas that experience periodic drying or low-flow events (Service 2026, p. 35). Mortality of White Sands pupfish from stream drying has been documented in portions of Salt Creek (Pittenger et al. 2019, pp. 26–27, 36).

Habitat Diversity

White Sands pupfish need access to heterogeneous depths of water for breeding, sheltering, and feeding. Both reproductive-age and juvenile White Sands pupfish use habitats less than 50 cm (19.7 in) deep (Barlow 1961, p. 349; Hoover et al. 1999, pp. 24, 28; Pittenger 2015, p. iii). White Sands pupfish also seek refuge from avian predators, high summer temperatures, and cold winter temperatures in deeper water (Barlow 1961, p. 353; Pittenger 2015, p. 35). Therefore, we find that the presence of heterogeneous depths result in more resilient White Sands pupfish populations by supplying breeding habitat, protection from predators, and thermal refuge.

Reproductive success of male pupfish is driven by available breeding substrate for breeding territories, topographic diversity, and minimal vegetation established on sites (Barlow 1961, p. 358; Echelle 1973, p. 70; Kodric-Brown 1977, p. 751; Leiser and

Itzkowitz 2003, p. 119). White Sands pupfish spawning occurs on males' territories that have suitable substrate and in shallow water habitats that are less than 50 cm (19.7 in) in depth (Hoover et al. 1999, p. 28). Based on monitoring observations, White Sands pupfish will use substrate types that are available for spawning, including submerged aquatic vegetation (e.g., the macroalgae *Chara vulgaris*), firm substrates, and relatively soft or loosely clumped substrates (Pittenger 2024, pers. comm.).

Population-level Needs

In addition to these individual-level needs, White Sands pupfish require sufficiently large pupfish abundances such that the population can withstand environmental and demographic fluctuations. Therefore, sufficient reproduction and recruitment is needed to maintain White Sands pupfish within each population. Lastly, an adequate extent of suitable habitat should be present to support a stable population of pupfish, allow for a variety of habitat features, and provide refuge during stochastic events within a population.

Species-level Needs

At the species level, the White Sands pupfish requires demographically, physically, and genetically healthy populations across a diversity of environmental conditions to ensure resiliency across the range. These would consist of self-sustaining populations that are demographically, genetically, and physiologically robust and have sufficient suitable habitat. To ensure sufficient redundancy for the species, the White Sands pupfish needs multiple self-sustaining populations, distributed across the range of the species, to guard against population losses and losses in species' adaptive capacity. Adequate species representation requires the maintenance of both adaptive capacity and evolutionary processes. This involves maintaining populations across the breadth of behavioral, physiological, ecological, and environmental diversity, including the maintenance of both ESUs.

Threats (Stressors, Risk Factors, Etc.)

In this discussion, we review the primary threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability.

We analyzed several potential threats in the SSA report and determined the primary stressors affecting the White Sands pupfish's viability were extreme flooding events, increased drying, increased temperatures, and saltcedar and aquatic emergent vegetation. Other threats we analyzed included water use and management, non-native aquatic organisms, military operations, disease, and water quality; however, these stressors were not found to be the primary drivers of White Sands pupfish viability and are not discussed further here. For a full description of all threats we considered, see the SSA report (Service 2026, pp. 21–25).

Extreme Flooding Events, Increased Drying, and Increased Temperatures

The Southwestern United States is extremely likely to experience increased drought and higher average temperatures (Sheffield and Wood 2008, p. 101). Air temperatures across New Mexico, including in the Tularosa Basin, have increased by more than 1–2 °C (2 °F) between 1970 and 2020, and temperatures are expected to continue to rise, at the same rate or higher, into the future (Dunbar et al. 2022, pp. 4–5, 11). This is likely to result in higher high temperatures, higher overnight low temperatures, and higher average temperatures (Brown et al. 2008, pp. 1, 10; Hayhoe et al. 2018, pp. 86–88).

In terms of precipitation, broadly speaking, wet areas are expected to get wetter and experience more intense precipitation events, while dry areas are expected to get drier and experience more intense drought events (Garfin et al. 2014, p. 466; Garfin et al. 2018, pp. 1109–1110). In addition, as temperatures rise, the magnitude of future storms may lead to extreme precipitation events and increased flooding. However, extreme

precipitation events are difficult to simulate (Dunbar et al. 2022, p. 15). Nevertheless, intense precipitation and storm events are projected to overall increase in New Mexico, leading to an increased risk of flooding (Dunbar et al. 2022, pp. 119–120).

Potential environmental changes that are likely to affect water resources include increased air and water temperatures, evaporation, evapotranspiration, drought, earlier snowmelt runoff, and reduced or increased precipitation (Llewellyn et al. 2021, p. 98). Recent models show significant changes in temperature and rainfall patterns in this region, especially under scenarios where greenhouse gas emissions remain at medium to high levels (Marvel et al. 2021, pp. 4–19). These models suggest that there will be significant changes in the timing and intensity of rainfall throughout the year.

A main uncertainty is the resulting changes to surface and ground water flow, both of which support habitat for the White Sands pupfish. We examined the potential consequences to White Sands pupfish and their habitats that arise from changes in environmental conditions, such as changes to habitats or conditions that exceed the species' physiological tolerances (e.g., salinity and temperature tolerances). Increasing temperature results in decreased streamflow and increased evapotranspiration, which, in turn, result in concentrated levels of salinity. Increased temperatures and salinity levels can influence White Sands pupfish distribution and habitat use. A decrease in precipitation with an increase in evapotranspiration can lead to stream drying, resulting in a reduction in available habitat for spawning or nursery habitat, leading to reduced reproduction and survival. The lowest reach of Salt Creek is mostly intermittent, has experienced drying in the majority of the reach, and has high salinity levels. Because of this, this reach has poor habitat condition. Additionally, some of the replicate populations at Salt Creek (Bradford Spring and the upper and lower reaches of Lost River) are also experiencing drying and thus have poor habitat condition. In addition, the recent monitoring report for White Sands pupfish provided evidence that abundance is

potentially influenced by the frequency of flood flow and that floods displace White Sands pupfish into lower reaches (Pittenger 2024, p. 22).

Saltcedar and Aquatic Emergent Vegetation

Dense emergent aquatic vegetation can reduce the quality and extent of White Sands pupfish habitat by altering habitat use, reducing diurnal warming, reducing food availability, and restricting visual cues needed for breeding (Pittenger et al. 2018, pp. 242–243).

Occupancy and abundance of White Sands pupfish are influenced by saltcedar presence. Dense saltcedar stands contribute to lowered water temperatures from increased shading of water and increased water loss as a result of increased uptake via roots and increased evapotranspiration (Solis et al. 2024, pp. 1–2). Saltcedar can not only indirectly increase salt concentrations within nearby water bodies by reducing water levels, but also directly increase them by extruding salt from leaves (Service 2011, p. 9). At Ash Meadows National Wildlife Refuge, Amargosa pupfish density increased following saltcedar removal, as dense saltcedar heavily shaded riparian habitat and reduced the availability of algae, an important pupfish food resource (Kennedy et al. 2005, p. 2080). Given these mechanisms and the ecological similarities between the species, the presence of saltcedar is expected to similarly reduce habitat quality for White Sands pupfish, leading to lower population densities and less favorable environmental conditions. Saltcedar is currently present at both Lost River and Bradford Spring replicate populations, although it is being managed at White Sands pupfish sites.

Conservation Efforts and Regulatory Mechanisms

The White Sands pupfish has been listed as a threatened species by the State of New Mexico since 1975. In 1990, the New Mexico Department of Game and Fish (now the New Mexico Department of Wildlife) developed a conservation plan (The White Sands Pupfish Conservation Plan) as a cooperative effort with the Department of the

Army and the Service to identify actions that could be implemented on WSMR and HAFB to improve the security of the species (Propst 1990, entire). The recommendations from this conservation plan included forming a White Sands Pupfish Conservation Team and the establishment of replicate populations (Propst 1990, pp. 11–15). The White Sands Conservation Plan was revised in 1994 and again in 2015 (Propst and Pittenger 1994, entire; Pittenger 2015, entire).

There are two established replicate populations for Malpais Spring (North Mound Spring and South Mound Spring) and three established replicate populations for Salt Creek (Main Mound Spring, Lost River, and Bradford Spring). Because these replicate populations have been established in areas that have natural habitat that supports the White Sands pupfish, they are only being managed by periodic vegetation control and additional translocations of White Sands pupfish from the native populations to ensure genetic diversity is maintained. Because natural habitat is present at these sites, the replicate populations are intended to be self-sustaining (Pittenger 2015, p. 38) and thus are effective in-situ conservation efforts. Similar to populations that are maintained in hatcheries, the main purpose of the replicate populations is to add redundancy to the native populations by serving as a source of fish for stocking into native populations in the event of stochastic or catastrophic events that may reduce or eliminate native populations.

In 1994, the New Mexico Department of Wildlife, the Service, WSMR, HAFB, and White Sands National Park (formerly White Sands National Monument) signed a cooperative agreement to protect and maintain viable populations of White Sands pupfish within its entire range (White Sands Pupfish Conservation Team (WSPT) 1994, entire). This agreement was updated most recently in 2020 and remains in effect until 2029, at which point it can be updated and re-signed (WSPT 2020, entire). This agreement has been continuously in effect for the 32 years since its original signing. The signatories

agreed to participate on the White Sands Pupfish Conservation Team, to implement and maintain the White Sands Pupfish Conservation Plan, and to fulfill their respective roles and responsibilities. This includes protecting and managing White Sands pupfish habitats on the WSMR, HAFB, and White Sands National Park, reviewing any activities that might affect the White Sands pupfish or its habitat, providing logistical and financial resources to carry out the outlined responsibilities, and ensuring that monitoring continues.

In addition, the cooperative agreement delineated areas where certain installation activities are prohibited; identified and defined specific area types covered under the agreement (essential habitat, limited-use habitat, and areas of concern); and provided specific ongoing protections as follows (WSPT 2020, pp. 2–3):

(1) Essential habitat is aquatic habitat that is occupied by White Sands pupfish on a perennial or intermittent basis. It is protected from adverse anthropogenic disturbances to ensure survival of the species. All non-emergency vehicular traffic is restricted within this habitat, with the exception of existing improved and unimproved roads. Likewise, all non-emergency activities are restricted within this habitat, unless the responsible and relevant official is consulted. In the case of emergency activities (such as chemical spills, debris recovery from military activities, or carrion removal), New Mexico Department of Wildlife and the Service will be notified and conferred with, as appropriate. For detailed descriptions of the White Sands pupfish essential habitat refer to the cooperative agreement (WSPT 2020, pp. 2–3).

(2) Limited-use areas are lands adjacent to essential habitat where activities are managed to ensure that degradation of essential habitat does not occur through direct or indirect effects such as contaminant runoff and excessive soil erosion. The Service and New Mexico Department of Wildlife coordinate, as appropriate, to avoid or minimize degradation of essential habitat due to activities on limited-use areas.

(3) Areas of concern are watersheds within the topographic drainage basin of Salt Creek, Malpais Spring, Malone Draw-Lost River, Bradford Spring, and Mound Springs complex. Activities within these areas are reviewed based on their cumulative impacts on White Sands pupfish habitats.

The most recent White Sands Pupfish Conservation Plan also outlines conservation goals, objectives, and actions, and describes an implementation schedule of these conservation actions (Pittenger 2015, entire). These actions included the establishment of additional replicate populations (including North, South, and Main Mound Springs) and implementing improved monitoring, which have successfully been accomplished in the subsequent years (Pittenger 2015, p. 74). The White Sands Pupfish Conservation Plan is ongoing and is revised as needed.

The White Sands Pupfish Conservation Plan aims to enhance the conservation status of the White Sands pupfish through several key initiatives. It includes ongoing reviews of installation activities to protect essential habitats from military operations, the development of restoration alternatives for spring-supported wetlands, and measures to reduce the risk of land-based chemical spills that could adversely affect pupfish habitats. The plan emphasizes conservation-focused research to improve understanding of the pupfish's life history and habitat dynamics, enabling informed decision-making for its management. Overall, the White Sands Pupfish Conservation Plan seeks to significantly contribute to the protection and recovery of the White Sands pupfish. The White Sands Pupfish Conservation Plan has been successful in meeting these goals, particularly through the establishment of replicate populations which provide redundancy for the species. Despite the success of the White Sands Pupfish Conservation Plan and the cooperative agreement, the White Sands pupfish faces large-scale threats that cannot be fully or directly addressed by such a plan. Extreme flooding, increasing drying, and increased temperatures are anticipated to affect all populations of White Sands pupfish,

including replicate populations. Overall, the Southwestern United States is thought to be extremely sensitive to increased drought and higher average temperatures, and there is an expectation that intense precipitation and storm events will increase in New Mexico.

A White Sands pupfish monitoring program was established in 1995 to identify factors affecting population persistence, abundance, and distribution, characterize population dynamics, and identify refugia habitats (Pittenger 1995, p. 1; Pittenger and Springer 1996, p. 3). The primary metric used between 1995 and 2014 was raw catch per unit effort, where catch is the total number of pupfish in a minnow trap and effort is the number of hours the trap was in the water. A population estimate model was then developed that considered capture probabilities of individuals. Although there is no current range-wide population estimate, abundance estimates are available for the native populations of Malpais Spring and Salt Creek and two replicate populations (North Mound Spring and Main Mound Spring) for three different years ranging from 2017 to 2023 (Service 2026, pp. 76, 79).

Cumulative Effects

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.

Current Condition

For a full description of our analysis of current condition, please see the SSA report (Service 2026, pp. 29–47). For our analysis of the current condition of the White

Sands pupfish, we delineated each native population into either four areas (for Malpais Spring) or four reaches (for Salt Creek) that we refer to as analysis units. The analysis units are defined using sections that have been identified in previous monitoring efforts and tend to have similar hydrologic conditions, which allowed us to incorporate the fine-scale data available from ongoing monitoring, as well as address spatial heterogeneity in habitat quality within each population (Pittenger 2022, p. 5; Pittenger 2023, p. 4). The four area analysis units for Malpais Spring are Area I, Area, J, Area K, and Area L. The four reach analysis units for Salt Creek are Reach A-B, Reach C-D, Reach E-F, and Reach G-H. Additionally, we analyzed replicate populations independently and used that information to inform the redundancy of the native populations (Service 2026, appendix C).

We used an expert panel of members from the White Sands Pupfish Conservation Team, including members from the Service, the New Mexico Department of Wildlife, the National Park Service (NPS), and DoW, to develop condition categories and associated probabilities of persistence (Service 2026, pp. 32–33). We then used three habitat metrics (water quality, water depth diversity, and water permanence) and three population metrics (abundance, extent of occurrence, and secure replicate populations) to describe the current resiliency of the White Sands pupfish at the area/reach level. An area/reach that is assessed to be in high condition generally has a low risk of extirpation, with adequate water quality, high water depth diversity, stable water levels over time, abundances generally greater than 2,500 fish, occupies multiple sites in the area/reach, and contains secure replicates. An area/reach that is assessed to be in low condition generally has a high risk of extirpation, with known water quality issues, a lack of water depth diversity, prevalent low flows or drying events, abundances generally less than 500 fish, a low extent of occurrence, and no secure replicate populations. Moderate areas/reaches fall between these two.

White Sands pupfish experience habitat contraction during periods of drying, relying on areas with deeper and cooler water, or moving closer to the spring source where water is more reliable. However, movement upstream from the lower reaches of Salt Creek is not possible due to the presence of a headcut (vertical drop in a stream bed) waterfall below the upper two reaches.

Table 2, below, summarizes the current resiliency of each area/reach of the two native populations. In Malpais Spring, the areas closest to the spring source (Areas I and J) currently maintain high resiliency due to optimal water quality and permanence, heterogeneity of water depths, and a large extent of occurrence. The areas further from the spring (Areas K and L) are moderately resilient due to increased fluctuation in water temperature and more homogeneous water depths, with the furthest area downstream (Area L) experiencing occasional drying. Replicate populations were assessed independently and are considered to add redundancy to the native populations in the event of a stochastic or catastrophic event impacting a native population, rather than as independent populations. Malpais Spring has two replicate populations that have a stable water source, heterogeneous habitat, and high abundance of fish, which contribute to the overall resiliency of this population because they can be used to repopulate the native populations should a catastrophic event occur. Therefore, these replicate populations currently support the native population at Malpais Spring and help mitigate the risk of population loss due to stochastic and catastrophic events. Overall, the population at Malpais Spring is currently highly resilient to stochastic events.

Table 2. Current resiliency of White Sands pupfish native populations.

Population	Area/Reach	Current Condition
Malpais Spring	I	High
Malpais Spring	J	High
Malpais Spring	K	Moderate

Malpais Spring	L	Moderate
Malpais Spring	**Overall**	**High**
Salt Creek	A-B	High
Salt Creek	C-D	Moderate
Salt Creek	E-F	Low
Salt Creek	G-H	Low
Salt Creek	**Overall**	**Moderate**

In Salt Creek, similar to Malpais Spring, the upper reach (Reach A-B) has high resiliency due to optimal water quality and water permanence, moderately heterogeneous depths, and a relatively high abundance and extent of occurrence of White Sands pupfish. The next reach downstream (Reach C-D) supports moderate resiliency due to moderate water quality and depth diversity, moderate extent of occurrence, and low estimated abundance. The lower reaches (Reaches E-F and G-H) have low resiliency due to low water quality, occasional drying, and a more restricted extent of occurrence. Salt Creek has two replicate populations with variable water sources (perennial or some drying has occurred), heterogeneous habitat, and moderate abundance of fish, and one replicate population with low poor habitat conditions and low abundance of fish. Although the habitat condition of Salt Creek's replicate population is lower quality, these replicate populations do still provide redundancy to support the native population and help mitigate the risk of population loss due to stochastic and catastrophic events. Overall, the Salt Creek population is currently moderately resilient to stochastics events.

Currently, the White Sands pupfish has limited redundancy because it is a narrow endemic with only two native populations, and current redundancy has not been reduced from known historical levels. Additional redundancy over a large geographic area is not possible due to limited connectivity and lack of other water bodies. However, in the event

of a catastrophic event affecting one or both native populations such as drought, fish from a replicate population could be reintroduced to re-establish the population. Fish from a replicate population have not been used to re-establish a native population to date, but they have been used to supplement the Main Mound Spring replicate population in 2022 (Pittenger 2023, p. 1).

The White Sands pupfish maintains sufficient representation in the form of two ESUs (genetic lineages) and the ability to withstand a wide variety of ecological conditions. Each ESU consists of one native population and two to three replicate populations. This genetic diversity between the two ESUs allows for increased adaptive capacity in the face of future change. Ensuring persistence of each native population is therefore important to ensure no loss of representation. White Sands pupfish, similar to other species of *Cyprinodon,* have some of the widest temperature, salinity, and dissolved oxygen tolerances, making them well-suited to arid climates and providing some adaptive capacity. Overall, White Sands pupfish have been shown to have some ability to adapt to different environmental settings, as demonstrated in the morphological differences they exhibit when exposed to varying salinity levels (Collyer et al. 2011, p. 1).

Despite being restricted to two native populations, the White Sands pupfish is currently maintaining moderate to high resiliency to stochastic events, some redundancy from replicate populations, and some representation in the form of two ESUs (genetic lineages) and the ability to adapt to a wide range of water and habitat conditions. Additionally, the conservation efforts in place for this species ensure the protection and management of the species.

Future Conditions

For a full description of our analysis of future conditions, see the SSA report (Service 2026, pp. 48–61). Using the same analysis units described above, we then assessed future conditions of the White Sands pupfish. We developed two future

scenarios at three time steps (2025–2049, 2050–2074, and 2075–2099) to project how the viability of the White Sands pupfish may change in the future. These timeframes were chosen based upon available projections (U.S. Geological Survey (USGS) 2024, unpaginated) and our ability to determine the species' response to those changes. We used two SSP greenhouse gas emission scenarios (SSP2-4.5 and SSP5-8.5) to assess the effects on species' resiliency, redundancy, and representation, and how those changes affect the overall viability of White Sands pupfish.

Scenario 1 uses the SSP2-4.5 greenhouse gas emission scenario in which carbon dioxide (CO_2) emissions continue to increase during the first half of the 21st century and then stabilize and decline from 2050 to 2100. Under SSP2-4.5, warming is expected to increase, along with the frequency and severity of extreme weather events, such as flooding and drought. Within the Tularosa Basin, surface temperatures are likely to be 5.4 ºC (9.8 ºF) warmer by 2099 compared to the 1981–2010 mean of 14.6 ºC (58.2 ºF) (Service 2026, p. 81). Additionally, total winter and spring precipitation is anticipated to decrease by 12.4 percent by 2099, compared to the 1981–2010 mean of 7.6 cm (3.01 in) (Service 2026, p. 81). In this scenario, future annual air temperature increases, and annual precipitation decreases throughout the Tularosa Basin (USGS 2024, unpaginated; Service 2026, p. 81).

Scenario 2 uses the SSP5-8.5 emissions scenario, where CO_2 emissions continue at a higher rate than the SSP2-4.5 scenario (Service 2026, p. 51). The SSP5-8.5 scenario projects significant increases in the frequency and severity of extreme weather events, such as drought and floods. Within the Tularosa Basin, surface temperatures are likely to be 5.7 ºC (10.2 ºF) warmer by 2099 compared to the 1981–2010 mean of 14.6 ºC (58.2 ºF) (Service 2026, p. 81). Additionally, total winter and spring precipitation is anticipated to decrease by 24.5 percent by 2099, compared to the 1981–2010 mean of 7.6 cm (3.01 in) (Service 2026, p. 81).

Using projections for stream temperature, precipitation, and evaporative deficit (a measure of aridity that uses the difference between potential evapotranspiration and actual evapotranspiration) under these two scenarios, we then projected the potential range of outcomes to White Sands pupfish. Under both future scenarios, mean annual air temperature is projected to increase through 2099 with a decrease in winter and spring precipitation (including snow) of 12.4 to 24.5 percent through 2099. Decreases in soil moisture, earlier snowmelt runoff timing, and shorter snowmelt runoff duration are virtually certain to occur, as well as increases in seasonal evaporation patterns (Dunbar et al. 2022 pp. 17–18, 120). We find that intermittent reaches will experience earlier and longer drying periods (i.e., lower reaches of Salt Creek) and the extent of habitat may become contracted during drier periods (i.e., Malpais Spring). The extent of increased soil drying is projected to be higher under scenario 2 than scenario 1. Future conditions of White Sands pupfish populations are projected to be similar across all time steps and under both scenarios, with overall population resiliency anticipated to decline within both populations (see tables 3 and 4, below).

Table 3. Future projected conditions of White Sands pupfish native populations under scenario 1.

Population	Area/ Reach	Current Condition	Scenario 1: 2025 – 2049	Scenario 1: 2050 – 2074	Scenario 1: 2075 – 2099
Malpais Spring	I	High	High	High	High
Malpais Spring	J	High	High	Moderate	Moderate
Malpais Spring	K	Moderate	Moderate	Moderate	Moderate
Malpais Spring	L	Moderate	Moderate	Moderate	Moderate

Malpais Spring	**Overall**	**High**	**Moderate**	**Moderate**	**Moderate**
Salt Creek	A-B	High	Moderate	Moderate	Moderate
Salt Creek	C-D	Moderate	Low	Low	Low
Salt Creek	E-F	Low	Low	Low	Low
Salt Creek	G-H	Low	Low	Low	Low
Salt Creek	**Overall**	**Moderate**	**Low**	**Low**	**Low**

Table 4. Future projected conditions of White Sands pupfish native populations under scenario 2.

Population	Area/ Reach	Current Condition	Scenario 2: 2025 – 2049	Scenario 2: 2050 – 2074	Scenario 2: 2075 – 2099
Malpais Spring	I	High	High	High	High
Malpais Spring	J	High	Moderate	Moderate	Moderate
Malpais Spring	K	Moderate	Moderate	Moderate	Moderate
Malpais Spring	L	Moderate	Moderate	Moderate	Moderate
Malpais Spring	**Overall**	**High**	**Moderate**	**Moderate**	**Moderate**
Salt Creek	A-B	High	Moderate	Moderate	Moderate
Salt Creek	C-D	Moderate	Low	Low	Low
Salt Creek	E-F	Low	Low	Low	Low
Salt Creek	G-H	Low	Low	Low	Low
Salt Creek	**Overall**	**Moderate**	**Low**	**Low**	**Low**

Overall, Malpais Spring is projected to decline from high to moderate resiliency under both future scenarios due to increased drying of the lower areas and reduced water depths, leading to habitat contractions, decreased hiding cover, and increased water temperatures. Under scenario 1, Area I, the uppermost reach, is anticipated to remain in high condition because it is directly downstream from a spring, which provides a stable source of water in terms of water quantity and water quality (i.e., temperature). The most severe impacts are anticipated to the lower reaches of Malpais Springs and to areas that have more homogenous depths in later time steps because habitat contraction will reduce water depths, further increase the proportion of shallow depths and likely decrease the difference between the maximum depth and minimum depth. An increase in shallower depths could lead to increased temperatures as well as increased avian predation since White Sands pupfish use deeper water to hide. Additionally, we expect that the frequency of hot water temperatures will increase in areas where water temperatures already exceed 35 °C (95 °F), such as Area L. In the second and third timesteps (2050–2099), we anticipate that we would see more homogenous depths in Area J and Area K and water temperatures are anticipated to remain between 30 °C (86 °F) and 35 °C (95 °F).

Under scenario 2, negative effects are expected to affect the lower reaches of Malpais Spring; the most severe impacts are anticipated in areas that have somewhat heterogeneous depths. This is because habitat contraction will reduce water depths, further increasing the proportion of shallow depths and decreasing depth heterogeneity. An increase in shallower depths could lead to increased temperatures. Additionally, we expect that the frequency of hot water temperatures will increase in the lower reaches where water temperatures already exceed 30 °C (86 °F). Resiliency is expected to remain at elevated risk from 2074 to 2099, but not further degrade after 2074, as the upper portions have a reliable groundwater source and vegetation that minimizes the evaporation rate and mitigates increased temperatures. However, these upper portions are

small, comprising only 9.5 percent (37.3 acres; scenario 2) to 28 percent (77.3 acres; scenario 1) of the current wetted area at Malpais Spring. Because these areas are so small, any impacts to the upper portions by stochastic or catastrophic events such as extreme storm events or extreme drying could eliminate the species from Malpais Spring entirely.

Salt Creek is projected to decline from moderate to low resiliency at every time step and under both scenarios due to severe impacts to the lower reaches from long-term drought; however, the most severe impacts are anticipated in the lower reaches. At each time step in scenario 1, one analysis unit (Reach A–B) is projected to be in moderate condition and analysis units (Reaches C–D, E–F, G–H) are projected to be in low condition, where one analysis unit (Reach C–D) declines in overall condition from moderate to low condition from current condition. At each time step in scenario 2, Reach A–B is projected to decline from high to moderate condition, and Reach C–D is projected to decline from moderate to low condition. Reach G–H remains in low condition. The reduction in precipitation and increased evapotranspiration is projected to result in increased drying and shallower water depths, leading to habitat contractions, increased temperatures, and a reduction in hiding cover and thermal refugia. Additionally, Salt Creek is connected to an active channel and, therefore, subject to catastrophic flooding. Fish pushed downstream in floods are unable to move upstream towards more stable water during times of drying due to the presence of a headcut waterfall below the upper two reaches and, therefore, remain trapped in reaches more subject to drying.

Replicate populations were assessed independently and are considered to add redundancy to the native populations in the event of a stochastic or catastrophic event impacting a native population, rather than as independent populations. These populations are needed to mitigate catastrophic events, such as drought, that may occur within the native population of Malpais Spring, which becomes increasingly at risk of extirpation into the future. Both of the replicate populations for Malpais Spring are expected to

continue to have a stable water source, heterogeneous habitat, and high abundance of fish. Therefore, these replicate populations currently support the native population at Malpais Spring and will help mitigate the future risk of population loss due to stochastic and catastrophic events.

For Salt Creek, all three replicate populations will experience increased drying and decreased heterogeneous water depths. These declines in habitat suitability of Salt Creek's replicate population will limit their ability to serve as refugia populations and result in an overall decline in species redundancy and representation.

Under both scenarios, the White Sands pupfish will experience reduced resiliency, redundancy, and representation across its range. Many of the analysis units within the two native populations are projected to have reduced water quantity, water quality, and depth heterogeneity conditions that would significantly impact these populations. These declines in habitat condition are likely to reduce the survival and fecundity of individuals due to reductions in available habitat and increases in salinity and water temperature. As a result of these changes, the two native populations are more vulnerable to stochastic and catastrophic events. Although the two replicate populations for Malpais Spring will provide continued redundancy for the native population, the native population at Malpais Spring is projected to decline in resiliency to some degree in most areas, with the exception of the one area (Area I) at the spring source. Salt Creek is at risk from catastrophic flooding which would flush fish downstream below a headcut waterfall, preventing movement back upstream into higher quality habitats. These lower reaches occasionally dry and, therefore, isolated White Sands pupfish within these lower reaches of Salt Creek may be exposed to desiccation and lethal stream temperatures. The replicate populations at Salt Creek will experience declines in habitat suitability and thus will have reduced capacity to provide redundancy to mitigate the impacts of catastrophic events at the native population of Salt Creek.

In summary, White Sands pupfish will be impacted by increased air temperature, decreased winter and spring precipitation, and increased evapotranspiration. These changes will likely increase water temperatures and the seasonal drying of reaches that are further from groundwater or spring discharge. In Salt Creek, this is particularly concerning because the two reaches farthest from the spring, along with part of a third reach that is likely to seasonally dry up, are disconnected from the stable perennial reaches by a headcut waterfall, which prevents fish from moving upstream into habitats with a more stable water supply.

The native populations of White Sands pupfish have very limited redundancy. The replicate populations provide some level of mitigation of risk; however, the decline in condition of replicate populations in Salt Creek may limit their ability to serve as refugia populations and would result in an overall decline in species redundancy because the native populations may not be able to be reestablished after catastrophic events, such as flooding. Because the species is projected to maintain populations in both Malpais Spring and Salt Creek into the future, genetic diversity will continue to exist among the two ESUs. Given the current cooperative agreement, the White Sands Pupfish Conservation Team will continue to implement measures that help maintain resiliency of each of the native populations, to the extent possible. This, in addition to the White Sands Conservation Team managing the replicate populations, increases the likelihood some level of genetic diversity will be maintained among the two ESUs. However, the decline in resiliency of the native populations and some of the replicate populations will potentially limit their adaptive capacity into the future. Furthermore, all populations, both native and replicate, are vulnerable to catastrophic events, particularly large-scale drought.

Determination of Status Background

Section 4 of the Act (16 U.S.C. 1533) and our regulations at 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 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. We consider these five factors and the species' responses to these factors when making these determinations.

Section 3 of the Act defines endangered species and threatened species. An endangered species is any species which is in danger of extinction throughout all or a significant portion of its range, and a threatened species is any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Both definitions include not only the phrase "throughout all," but also the phrase "or a significant portion of its range." Thus, there are ultimately four bases for listing a species under the Act (in danger of extinction throughout all of its range, in danger of extinction throughout a significant portion of its range, likely to become an endangered species within the foreseeable future throughout all of its range, or likely to become an endangered species within the foreseeable future throughout a significant portion of its range). These four bases are made up of two classifications (i.e., endangered or threatened) and two components (i.e., throughout all of its range or throughout a significant portion of its range).

Beginning in 2001, a number of judicial opinions addressed our interpretation of the phrase "or a significant portion of its range" (the SPR phrase) in the statutory

definitions of endangered species and threatened species. In *Defenders of Wildlife* v. *Norton*, 258 F.3d 1136 (9th Cir. 2001) regarding the flat-tailed horned lizard, the court held that the interpretation of the SPR phrase that we had applied in analyzing the status of the flat-tailed horned lizard was unacceptable because it would allow for a species to warrant listing throughout a significant portion of a species' range only when the species "is in danger of extinction everywhere" (id. at 1141). The court held that the SPR phrase must be given independent meaning from the "throughout all" phrase to avoid making the SPR phrase in the statute superfluous.

In an attempt to address the judicial opinions calling into question our approach to evaluating whether a species was endangered or threatened throughout a significant portion of its range, the Services published a Final Policy on Interpretation of the Phrase "Significant Portion of Its Range" in the Endangered Species Act's Definitions of "Endangered Species" and "Threatened Species" (hereafter "2014 SPR Policy;" 79 FR 37578, July 1, 2014). The notice of the draft 2014 SPR Policy provides more detail about litigation before 2014 regarding the phrase (76 FR 76987, December 9, 2011). The 2014 SPR Policy included four elements:

(1) Consequence—that the consequence of determining that a species warrants listing based on its status in a significant portion of its range is to list the species throughout all of its range;

(2) Significance—a definition of the term "significant;"

(3) Range—that the species' "range" is the current range of the species; and

(4) DPS—that, if a [vertebrate] species is endangered or threatened in an SPR and the population in that SPR is a distinct population segment (DPS), the Service will list just the DPS.

Subsequently, two district courts vacated the definition of "significant" contained in the 2014 SPR Policy (*Ctr. for Biological Diversity* v. *Jewell*, 248 F. Supp. 3d 946, 959

(D. Ariz. 2017) ("*CBD* v. *Jewell*") and *Desert Survivors* v. *U.S. Dep't of the Interior*, 321 F. Supp. 3d 1011, 1070-74 (N.D. Cal. 2018) ("*Desert Survivors*")). The courts found that the definition in the 2014 SPR Policy set too high a threshold and rendered the SPR language in the statute superfluous, failing to give it independent meaning from the "throughout all" phrase. In 2020, another court (*Ctr. for Biological Diversity* v. *Everson*, 435 F. Supp. 3d 69 (D.D.C. 2020) ("*Everson*")) also vacated the specific aspect of the 2014 SPR Policy under which, "if the Services determine that a species is threatened throughout all of its range, the Services will not analyze whether the species is endangered in a significant portion of its range" (id. at 98). This was an extension of the definition of "significant," which required a stepwise process in which we only considered whether a species may be endangered or threatened throughout a significant portion of its range when the species was not endangered or threatened throughout all of its range. In an extension of the earlier rulings from *CBD* v. *Jewell* and *Desert Survivors*, the court found that this aspect of the definition of the 2014 SPR Policy was not only inconsistent with the statute because it "rendered the 'endangered in a significant portion of its range' basis for listing superfluous," but was also "inconsistent with [Endangered Species Act] principles" and "not a logical outgrowth from the draft policy." Under this ruling, if we find a species is not in danger of extinction throughout all of its range, we must evaluate whether the species is in danger of extinction throughout a significant portion of its range, even in cases where we have determined that the species is likely to become in danger of extinction within the foreseeable future (threatened) throughout all of its range. The remaining three elements of the 2014 SPR Policy remain intact.

In short, the courts have directed that the definition of "significant" must afford the phrase "or a significant portion of its range" an independent meaning from the "throughout all of its range" phrase. Therefore, to determine whether any species warrants listing, we determine for each classification (endangered and threatened) the

appropriate component to evaluate (throughout all of its range or throughout a significant portion of its range).

We make this determination based on whether the best scientific and commercial data available indicate that the species has a similar extinction risk in all areas across its range (at a scale that is biologically appropriate for that species). When making a listing determination for a species that has a similar extinction risk *in all areas* across its range, we determine its regulatory status using the component "throughout all of its range." For example, in some cases there is no way to divide a species' range in a way that is biologically appropriate. This could be because the range is so small that there is only one population or because the species functions as a metapopulation such that effects to one population directly result in effects to another population. On the other hand, when making a listing determination for a species whose extinction risk varies across its range, we determine its regulatory status using the component "throughout a significant portion of its range."

For either classification (endangered or threatened), we consider the five factors and the species' responses to those factors regardless of which component (throughout all of its range or throughout a significant portion of its range) we are evaluating. When assessing whether a species is endangered or threatened throughout a significant portion of its range, we address two questions because we must determine whether there is any portion of the species' range for which both (1) the portion is "significant" and (2) the species is in danger of extinction or likely to become in danger of extinction within the foreseeable future throughout that portion. We may address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

Determination of White Sands Pupfish's Status

We propose listing the White Sands pupfish as a threatened species because it is not in danger of extinction throughout all or a significant portion of its range, but it is likely to become in danger of extinction within the foreseeable future *throughout all of its range*. As stated above, when the species has similar extinction risk *in all areas* across its range (at a scale that is biologically appropriate for that species), we determine its classification based upon its regulatory status throughout all of its range. Conversely, if the extinction risk varies across its range such that the species' regulatory status may be different in a portion of its range, we determine a species' classification based upon its regulatory status throughout a significant portion of its range. Either way, we need to begin by determining the scale that is biologically appropriate for a classification determination for that species.

For many species, we can divide its range in an infinite number of ways. As described in *Current Condition*, for the White Sands pupfish, we divided the range into four analysis units within each of the two native populations to incorporate the fine-scale data available from ongoing monitoring and address spatial heterogeneity in habitat quality within each population. The two native populations were called "population analysis units" to show the distinction between the two populations that have diverged over time. The smaller scale analysis units within the larger population analysis units were called "area analysis units" in Malpais Spring and "reach analysis units" in Salt Creek. We used the larger units, population analysis units (Malpais Spring and Salt Creek), for our analysis of the regulatory status of White Sands pupfish because, as discussed above, those populations are separate based on genetic representation of the species. In summary, population analysis units (Malpais Spring and Salt Creek) are the units that provide the appropriate scale to assess extinction risk for the White Sands pupfish.

We then evaluated whether the White Sands pupfish has a similar risk of extinction within the foreseeable future *in all areas* across its range by assessing its extinction risk within each population analysis unit. Our review indicated that while the White Sands pupfish's populations have different future resiliency, their extinction risks are not significantly different across the species' range. Each area is a single population with limited redundancy, and so even Malpais Spring, with moderate resiliency, faces elevated threats from stochastic and catastrophic events in the foreseeable future. Since all areas may be in danger of extinction in the foreseeable future, we evaluated whether the White Sands pupfish may be threatened based upon the "throughout all of its range" component. In undertaking this analysis, we reviewed the best scientific and commercial data available regarding threats to the species, its responses to those threats, and any associated conservation measures. We then assessed the cumulative effects of those threats and conservation measures within the foreseeable future under the Act's section 4(a)(1) factors. We examined the following threats: extreme flooding events, increased drying, and increased temperatures (Factors A and E) and saltcedar and dense aquatic emergent vegetation (Factor A), including cumulative effects.

The statutory difference between an endangered species and a threatened species is the timeframe in which the species becomes in danger of extinction; an endangered species is in danger of extinction while a threatened species is not in danger of extinction but is likely to become so within the foreseeable future.

Under both future scenarios, and at all three time steps, resiliency of both native populations, as well as all three replicate populations for Salt Creek, decline into the future. Future scenarios project changes out until 2099, which we are considering the foreseeable future because that is the time period for which there are available projections for air temperature and precipitation (USGS 2024, unpaginated) and we can make reasonably reliable predictions about the species' response to those changes. By the first

time step (2025–2049), Malpais Spring is projected to decline from high to moderate resiliency due to increased drying of the lower areas and reduced water depths, leading to habitat contractions, decreased hiding cover, and increased water temperatures, which will elevate the overall extirpation risk during this period. Similarly, Salt Creek is projected to decline from moderate to low during the same time period due to increased drying and shallower water depths, leading to habitat contractions, increased temperatures, and a reduction in hiding cover and thermal refugia for an overall high extirpation risk.

Resiliency within Malpais Spring declines until the 2050–2074 time step, where the most significant impacts are likely to occur in the lower portion due to evaporation and increased temperatures. The upper portions near the spring source that are expected to maintain most of the White Sands pupfish population comprise only 9.5 percent (37.3 acres; scenario 2) to 28 percent (77.3 acres; scenario 1) of the current wetted area at Malpais Spring. Because these areas are relatively small, any impacts to the upper portions by stochastic or catastrophic events such as extreme storm events or extreme drying would likely impact the entire Malpais Spring system. This reduction of quality habitat for the White Sands pupfish is projected to result in a contraction in the area occupied by the species, making it more vulnerable to both catastrophic and stochastic events. Salt Creek continues to decline in condition until 2075–2099 under both scenarios due to a reduction in year-round precipitation such that the overall extirpation risk for this population analysis unit is high. Most areas of Salt Creek are far from a groundwater source and will likely experience increased evaporation and water temperatures. Additionally, Salt Creek is at the highest risk from catastrophic flooding, which would flush fish from the higher-quality habitat near the springhead into the lower-quality habitat downstream. The presence of a headcut below the first two reaches prevents upstream movement, thereby trapping fish in reaches that are subject to increased drying.

The replicate populations at Salt Creek will experience declines in habitat suitability and thus will have reduced capacity to provide redundancy to mitigate the impacts of catastrophic events at the native population of Salt Creek. Therefore, the ability of fish from replicate populations to provide rescue support to Salt Creek will be limited, reducing overall species redundancy. Additionally, representation will further decline with the degradation and potential loss of replicate populations for Salt Creek.

Despite the numerous successes of the White Sands Pupfish Conservation Plan, such as the establishment of replicate populations and the implementation of monitoring efforts and habitat management, the species faces large-scale threats that cannot be directly or fully addressed by the White Sands Pupfish Conservation Plan. Changes in hydrological conditions, increasing temperature, and extreme precipitation events are anticipated to affect all populations of White Sands pupfish, including replicate populations of Salt Creek. Overall, the Southwestern United States is thought to be extremely sensitive to increased drought and higher average temperatures, and intense precipitation and storm events are projected to increase in New Mexico. Recent models project significant changes in temperature and rainfall patterns in this region, especially under scenarios where greenhouse gas emissions remain at medium to high levels (Marvel et al. 2021, pp. 4–19).

We find that both White Sands pupfish native populations are projected to decline in resiliency into the future due to increased drying, water temperatures, and evaporation, resulting in shallower water depths, habitat contraction, and a reduction in hiding cover and thermal refugia. Species redundancy is expected to decline in the future due to the potential extirpation of one replicate population, and additional declines in the resiliency of the remaining replicate populations for Salt Creek due to decreased water levels, resulting in more homogeneous depths. Given that the Salt Creek native population is most at risk of extirpation from catastrophic flooding, the loss of replicate populations

further diminishes the likelihood that the population could successfully be repopulated following a catastrophic event. Representation is projected to decline due to the degradation and potential loss of replicate populations for Salt Creek.

In summary, the White Sands pupfish is likely to become in danger of extinction within the foreseeable future in all areas across its range (i.e., in every population analysis unit); thus, for the threatened classification, there is no portion of the range where the White Sands pupfish may have a regulatory status that is different from its status in the rest of its range. Based on the best scientific and commercial data available, we conclude that the White Sands pupfish is likely to become in danger of extinction within the foreseeable future throughout all of its range.

In accordance with the court's holding in *Everson*, when we find a species warrants listing as a threatened species, we must also consider whether the species is in danger of extinction throughout a significant portion of its range. We determined that the White Sands pupfish is not in danger of extinction throughout a significant portion of its range. To reach this determination, we first assessed whether we could divide the species' range at a biologically appropriate scale. As discussed above, population analysis units are the units that provide the appropriate scale to assess extinction risk for the White Sands pupfish.

We then evaluated whether the White Sands pupfish has a similar near-term risk of extinction in all areas across its range by assessing its extinction risk within each population analysis unit. Our review indicated that the White Sands pupfish's near-term extinction risk is similar in all areas across its range; therefore, we evaluated whether it may be endangered based upon the "throughout all of its range" component. In undertaking this analysis, we reviewed the best scientific and commercial data available regarding threats to the species, its responses to those threats, and any associated conservation measures. We then assessed the cumulative effects of those

threats and conservation measures under the Act's section 4(a)(1) factors. We examined the following threats: extreme flooding events, increased drying, and increased temperatures (Factors A and E) and saltcedar and dense aquatic emergent vegetation (Factor A), including cumulative effects.

The White Sands pupfish is currently maintaining moderate to high resiliency at both native populations, has five replicate populations which provide redundancy, and has representation that is maintained in the reproductively separate ESUs (Malpais Spring and Salt Creek), each preserving a unique portion of the species' genetic legacy. Additionally, the species is protected by ongoing conservation efforts through the cooperative agreement and White Sands Pupfish Conservation Plan. Although there is a risk of catastrophic flooding at Salt Creek, fish from replicate populations can be used to repopulate the area following extirpation.

The White Sands pupfish is currently restricted to two native populations and five replicate populations. Malpais Spring and Salt Creek support fish from different ESUs, which are needed to maintain the genetic diversity and adaptive capacity of the species. Replicate populations add additional redundancy in that they can serve as a source of fish in case of a catastrophic event at one of the native populations. Within both native populations, areas closer to the spring source are more resilient due to the presence of more reliable water, and resiliency declines as you move downstream and away from the water sources. Malpais Spring is currently highly resilient to stochastic events due to optimal water quality, heterogeneity of water depths, and a large extent of occurrence. Salt Creek is currently moderately resilient to stochastic events with declining habitat conditions further downstream. Although the upper reach of Salt Creek maintains high resiliency, resiliency declines moving downstream, with the lower two reaches subject to occasional drying.

Although both population analysis units occur within a very small geographic area and experience similar effects of climate change, we found that, currently, Salt Creek has lower resiliency than Malpais Spring. We also found that the replicate populations for Salt Creek are in poorer condition than those for Malpais Spring. Salt Creek is currently moderately resilient to stochastic events due to the presence of permanent water in the upper two reaches, high water quality, abundance, and extent of occurrence in the uppermost reach, and presence of three replicate populations. The presence of these three replicate populations provides redundancy to the Salt Creek ESU. Although Salt Creek has a moderate probability of persistence overall, the upper reach has a high probability of persistence and pupfish from one of the three replicates could be used to repopulate Salt Creek following a reduction or elimination of pupfish. Therefore, we found no portion of the White Sands pupfish's range where threats are affecting individuals differently from how they are affecting the species elsewhere in its range such that the status of the species in that portion differs from any other portion of the species' range.

Additionally, the White Sands Pupfish Conservation Plan and cooperative agreement have, and will continue to, provide guidance for agencies and partners working towards White Sands pupfish conservation through several means. First, there is consistent and rigorous monitoring across the spatial distribution of the species, providing a long-term dataset on the persistence of the White Sands pupfish and population estimates (Pittenger 2017, entire; Pittenger 2019, entire). This monitoring allows for the detection of population declines that may require stocking of fish from replicate populations. The Main Mound Spring replicate population had more pupfish added in 2022 (Pittenger 2023, p. 1). Secondly, the cooperative agreement guarantees an effective and cooperative working relationship between all signatories and provides for the protection, management, and maintenance of White Sands pupfish habitat on the WSMR,

HAFB, and White Sands National Park (WSPT 2020, entire). Third, the White Sands Pupfish Conservation Plan identifies several conservation actions, objectives, and goals that will help to improve the security of the species by protecting and managing White Sands pupfish habitats, reviewing any activities that might affect the White Sands pupfish or its habitat, and ensuring that monitoring continues (Pittenger 2015, entire).

In summary, we find that the White Sands pupfish is not in danger of extinction in any areas across its range (i.e., in no population analysis unit). Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction throughout a significant portion of its range.

Determination of Status

Based on the best scientific and commercial data available, we determine that the White Sands pupfish meets the Act's definition of a threatened species because it is likely to become in danger of extinction within the foreseeable future throughout all of its range. Therefore, we propose to list the White Sands pupfish as a threatened species in accordance with sections 3(20) 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 directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Under section 4(f)(1)(B)(ii), recovery plans must, to the maximum extent practicable, include objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of section 4 of the Act, that the species be removed from the Lists of Endangered and Threatened Wildlife and Plants.

Recovery plans provide a roadmap for us and our partners on methods of enhancing conservation and minimizing threats to listed species, as well as measurable criteria against which to evaluate progress towards recovery and assess the species' likely future condition. However, they are not regulatory documents and do not substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. A decision to revise the status of a species, or to delist a species, is ultimately based on an analysis of the best scientific and commercial data available to determine whether a species is no longer an endangered species or a threatened species, regardless of whether that information differs from the recovery plan.

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 and other experts, including those from Federal and State agencies, Tribes, the academic community, or nongovernmental organizations) may be established to develop and implement recovery plans. 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 New Mexico 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. Recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

If this species is listed, funding for recovery actions may 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 New Mexico would be eligible for Federal funds to implement management actions that promote the protection or recovery of the White Sands pupfish. 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 White Sands pupfish 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 destroy 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 White Sands pupfish that may be subject to conference and consultation procedures under section 7 are management of

Federal lands administered by the DoW or NPS, as well as actions 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 actions funded by Federal agencies such as 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 New Mexico Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**) with any specific questions on section 7 consultation and conference requirements.

Section 9 of the Act provides a specific list of prohibitions for endangered species but does not provide these same prohibitions for threatened species. Instead, pursuant to section 4(d) of the Act, for any species listed as a threatened species, the Secretary must issue protective regulations that are "necessary and advisable to provide for the conservation of such species" (these are referred to as "4(d) rules"). Additional measures for the White Sands pupfish are described below (see **Protective Regulations Under Section 4(d) of the Act**, below).

We may issue permits to carry out otherwise prohibited activities involving threatened wildlife under certain circumstances. Regulations governing permits for threatened wildlife are codified at 50 CFR 17.32, and general Service permitting regulations are codified at 50 CFR part 13. With regard to threatened wildlife, a permit may be issued for: scientific purposes, enhancing the propagation or survival of the species, or take incidental to otherwise lawful activities. The statute also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

II. Protective Regulations Under Section 4(d) of the Act

Background

As discussed in **Available Conservation Measures**, section 9 of the Act provides a specific list of prohibitions for endangered species but does not provide these same prohibitions for threatened species. Instead, pursuant to section 4(d) of the Act, for any species listed as a threatened species, the Secretary must issue protective regulations that are "necessary and advisable to provide for the conservation of such species." Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as they deem necessary and advisable to provide for the conservation of species listed as threatened species. Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. With these two sentences in section 4(d), Congress delegated broad authority to the Secretary to determine what protections would be necessary and advisable to provide for the conservation of threatened species.

Courts have recognized the extent of the Secretary's discretion under section 4(d) to develop regulations that are appropriate for the conservation of threatened species. For example, courts have upheld, as a valid exercise of agency authority, rules developed under section 4(d) that included limited prohibitions against takings (see *Alsea Valley Alliance* v. *Lautenbacher*, 2007 WL 2344927 (D. Or. 2007); *Washington Environmental Council* v. *National Marine Fisheries Service*, 2002 WL 511479 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana* v. *Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the

legislative history when the Act was initially enacted, "once an animal is on the threatened list, the Secretary has an almost infinite number of options available to [them] with regard to the permitted activities for those species. [They] may, for example, permit taking, but not importation of such species, or [they] may choose to forbid both taking and importation but allow the transportation of such species" (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Under our section 4(d) authorities, we put in place protections intended to both prevent a threatened species from becoming an endangered species and to promote its recovery. Section 4(d) rules explain what is prohibited for a threatened species, thus making the activity unlawful without a permit or authorization under the Act for the prohibited activity unless otherwise excepted in the 4(d) rule and may also include affirmative requirements. Section 4(d) rules are therefore directly related to what actions may require permits in the future. As discussed in **Available Conservation Measures**, permits may be issued for purposes described in our threatened species permitting regulations at 50 CFR 17.32, including for recovery actions, conservation benefit agreements (previously referred to as candidate conservation agreements with assurances and safe harbor agreements), or habitat conservation plans. We may also except otherwise prohibited activities through a 4(d) rule itself, in which case threatened species permits would not be required for those activities. For example, there are two categories of exceptions that we frequently include in 4(d) rules, and these are for otherwise prohibited acts or forms or amounts of "take" that are: (1) unavoidable while conducting beneficial actions for the species, or (2) considered inconsequential (de minimis) to the conservation of the species. For otherwise prohibited take or activities that require permits under section 10 of the Act, programmatic approaches—such as general conservation plans and template habitat conservation plans—may be available as another way for project proponents to comply with prohibitions or requirements applicable to one

or more species while reducing the time that would otherwise be associated with developing individual permit applications. In addition, the Service and project proponents can reduce the need for such permits by developing standardized conservation measures that avoid the risk of "take."

The provisions of this species' proposed protective regulations under section 4(d) of the Act are one of many tools that we would use to promote the conservation of the White Sands pupfish. The proposed protective regulations would apply only if and when we make final the listing of the White Sands pupfish as a threatened species and finalize the 4(d) rule. Nothing in 4(d) rules changes in any way the recovery planning provisions of section 4(f) of the Act or the consultation requirements under section 7 of the Act. As mentioned above under **Available Conservation Measures**, section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, even before the listing of any species or the designation of its critical habitat is finalized, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency 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. These requirements are the same for a threatened species regardless of what is included in its 4(d) rule.

Section 4(d) rules do not alter section 7 obligations, including the criteria for informal or formal consultations or the analytical process used for biological opinions or concurrence letters. Section 7 consultation is required for Federal actions that "may affect" a listed species regardless of whether take caused by the activity is prohibited or excepted by a 4(d) rule. For example, as with an endangered species, if a Federal agency

determines that an action is "not likely to adversely affect" a threatened species, this will require the Service's written concurrence (50 CFR 402.13(c)). Similarly, if a Federal agency determines that an action is "likely to adversely affect" a threatened species, the action will require formal consultation with the Service and the formulation of a biological opinion (50 CFR 402.14(a)).

At the end of a formal consultation, the Service issues a biological opinion, containing its determination as to whether the Federal action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat (a "jeopardy" biological opinion) (50 CFR 402.14(h)). If the Service determines in its biological opinion the action is likely to jeopardize listed species or destroy or adversely modify critical habitat, it shall include reasonable and prudent alternatives, if any exist, it believes would avoid the likelihood of jeopardy or destruction or adverse modification (50 CFR 402.14(h)). In accordance with 50 CFR 402.14(i), when there is a "no jeopardy" biological opinion but "take" of a listed species is reasonably certain to occur, the Service is required to issue an incidental take statement that specifies those reasonable and prudent measures (RPMs) the Service considers necessary or appropriate to minimize the impact of the incidental take and terms and conditions (TCs) that must be complied with to implement those measures. These requirements exist regardless of what is included in a 4(d) rule. However, we recognize that whether or not take associated with certain activities is prohibited by a 4(d) rule may be relevant to our consideration of the extent of RPMs we may consider necessary or appropriate. In most situations, we would not consider RPMs necessary or appropriate to minimize the impact of take that is not prohibited or that is excepted by a 4(d) rule. Regardless, the RPMs/TCs cannot alter the basic design, location, scope, duration, or timing of the action and may involve only minor changes (50 CFR 402.14(i)(2)). They should not prevent the action

subject to consultation from proceeding as essentially proposed (89 FR 24268; April 5, 2024).

Because consultation obligations and processes are unaffected by 4(d) rules, we may consider developing tools to streamline future intra-Service and interagency consultations for actions that result in forms of take that are not prohibited by the 4(d) rule (but that still require consultation). These tools may include consultation guidance, online consultation processes via the Service's digital project planning tool (Information for Planning and Consultation; https://ipac.ecosphere.fws.gov/), template language for biological opinions, or programmatic consultations.

Provisions of the Proposed 4(d) Rule

Exercising the Secretary's authority under section 4(d) of the Act, we have developed a proposed rule that is designed to address the White Sands pupfish's conservation needs. Section 4(d) requires the Secretary to issue such regulations as they deem necessary and advisable to provide for the conservation of each threatened species and authorizes the Secretary to include among those protective regulations any of the prohibitions that section 9(a)(1) of the Act prescribes for endangered species (*In re: Polar Bear Endangered Species Act Listing and 4(d) Rule Litigation*, 818 F. Supp. 2d 214, 228 (D.D.C. 2011) (citing *Sweet Home Chapter of Cmtys. for a Great Or.* v. *Babbitt*, 1 F.3d 1, 8 (D.C. Cir. 1993), *rev'd on other grounds*, 515 U.S. 687 (1995))). Our necessary and advisable determination includes consideration of conservation and economic impacts *(Kansas Natural Resources Coalition, et al.* v. *USFWS, et al.,* 780 F. Supp. 3d 650 (W.D. Tex. 2025)) (hereafter "*Kansas*") (91 FR 45723; July 21, 2026). We explain below why we find that, if finalized, the prohibitions and exceptions in this proposed rule as a whole satisfy the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the White Sands pupfish.

As discussed above under **Summary of Biological Status and Threats**, we have concluded that the White Sands pupfish is likely to become in danger of extinction within the foreseeable future primarily due to extreme flooding events, increased drying, and increased temperatures, and saltcedar and aquatic emergent vegetation. The protective regulations we are proposing for the White Sands pupfish incorporate prohibitions from section 9(a)(1) to address the threats to the species. We propose to include the following prohibitions of section 9(a)(1) of the Act and implementing regulations codified at 50 CFR 17.21 which 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 acts with regard to any endangered wildlife: (1) import into, or export from, the United States; (2) take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) within the United States, within the territorial sea of the United States, or on the high seas; (3) possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any such wildlife that has been taken illegally; (4) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of commercial activity; or (5) sell or offer for sale in interstate or foreign commerce. This protective regulation includes these prohibitions because the White Sands pupfish is likely to become in danger of extinction within the foreseeable future, and putting these prohibitions into place is intended to help to preserve the species' remaining populations and decrease synergistic, negative effects from other ongoing or future threats.

Under the Act, "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harass has been further defined in regulations at 50 CFR 17.3. Take can result knowingly or otherwise, intentionally or incidentally. Regulating take is intended to help preserve the species' remaining populations and decrease cumulative effects from other ongoing or future

threats. Therefore, we propose to prohibit take of the White Sands pupfish, except for take resulting from those actions and activities specifically excepted by the 4(d) rule.

The proposed 4(d) rule would also provide for the conservation of the species by allowing exceptions that are intended to incentivize conservation actions or actions that are not expected to rise to the level that would have a negative impact (i.e., would have only de minimis impacts) on the species' conservation. Exceptions to the prohibitions include the exceptions to the prohibition for endangered wildlife, as set forth in 50 CFR 17.21(c)(2)–(4) and (d)(2), and exceptions for threatened wildlife at 50 CFR 17.31(c). This includes allowing for law enforcement to possess and conduct other acts with illegally taken White Sands pupfish.

To further the conservation of the species, any employee or agent of the Service, any other Federal land management agency, the NMFS, a State conservation agency, or a federally recognized Tribe, who is designated by their agency or Tribe for such purposes, may, when acting in the course of their official duties, take threatened wildlife without a permit if such action is necessary to: (i) aid a sick, injured, or orphaned specimen; (ii) dispose of a dead specimen; (iii) salvage a dead specimen that may be useful for scientific study; or (iv) remove specimens that constitute a demonstrable but nonimmediate threat to human safety, provided that the taking is done in a humane manner. Such taking may involve killing or injuring only if it has not been reasonably possible to eliminate such threat by live capturing and releasing the specimen unharmed, in an appropriate area. Any taking must be reported in writing to the Office of Law Enforcement, via contact methods listed at https://www.fws.gov, within 5 calendar days. The specimen may only be retained, disposed of, or salvaged under directions from the Office of Law Enforcement.

We recognize the special and unique relationship that we have with our State natural resource agency partners in contributing to conservation of listed species. State

agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist us in implementing all aspects of the Act. In this regard, section 6 of the Act provides that we must cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with us in accordance with section 6(c) of the Act, who is designated by their agency for such purposes, would be able to conduct activities designed to conserve White Sands pupfish that may result in otherwise prohibited take without additional authorization.

In addition, any employee or agent of the Service or of the NMFS, who is designated by their agency for such purposes, may, when acting in the course of their official duties, take those species.

The proposed 4(d) rule would also provide for the conservation of the species by allowing exceptions that are intended to incentivize conservation actions or that, while they may have some minimal level of take of the White Sands pupfish, are not expected to rise to the level that would have a negative impact (i.e., would have only de minimis impacts) on the species' conservation. The proposed exceptions to these prohibitions include excepting all take as a result of translocations, and research and monitoring (described below) because these activities have negligible impacts on the White Sands pupfish. This exception does not include zoological exhibitions, educational purposes, or other scientific activities, not covered by the below exception. These activities would require a permit as described above.

Under this 4(d) rule, we propose to except all take associated with translocations and research and monitoring activities, including collecting tissue samples. The result of

this would be that a 10(a)(1)(A) permit would not be required for activities including temporary capture and handling of fish (including via trap or net), holding and marking of individual fish, tissue samples (including fin clips), field experiments to better understand the species' ecology and life history, installation of data loggers, assisted movement during extreme drought conditions, translocations for genetic maintenance, and translocations to establish new populations as identified by the WSPT. We propose to except take associated with these activities because such work would contribute to the conservation of the species while having only minimal negative impacts on the species and its habitats. Additionally, scientists conducting such work already do so in conjunction with the WSPT, in which the Service is a member, which requires coordination and sharing of any data collected. Finally, all White Sands pupfish populations occur on Federal lands and would require coordination with the appropriate agency for such surveys, even absent the requirement for a 10(a)(1)(A) permit. Additionally, given the White Sands pupfish is listed as threatened by the State of New Mexico, such activities still require a State permit.

Finally, we may under certain circumstances issue permits to carry out one or more otherwise-prohibited activities, including those described above. The regulations that govern permits for threatened wildlife state that the Director of the Service may issue a permit authorizing any activity otherwise prohibited with regard to threatened species. These include permits issued for the following purposes: for scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act (50 CFR 17.32). The statute also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

The 4(d) rule provides for the conservation of the White Sands pupfish because it would regulate take and activities that pose a threat to the species or that may become a

threat in the future. However, it also provides flexibilities in management and permitting requirements for several activities that are expected to have negligible impacts to the White Sands pupfish, as discussed above.

We considered the economic impacts of the implementation of the 4(d) rule. There will likely be limited change to the regulated community as a result of this rule. We are unaware of any import/export or sale to date. We do not envision many instances for the need for a permit to authorize otherwise prohibited activities under the 4(d) rule. Some number of individuals are anticipated to request permits for take. However, State permits are already required for take. The State of New Mexico currently prohibits take of the White Sands pupfish under the New Mexico Wildlife Conservation Act through the New Mexico Administrative Code. The State may authorize a permit for take from activities related to scientific or educational purposes, for propagation in captivity, or to protect private property. Therefore, researchers are already familiar with preparing permit applications for these types of activities. Anyone who does not work for the DoW or NPS wishing to conduct recovery actions for the White Sands pupfish would need to receive approval from DoW or NPS and coordinate with the appropriate agency for any such action. The INRMP (see *Approved INRMPs*, below) provides the overarching guidance for managing and conserving natural resources on WSMR and HAFB by serving as a foundational reference to the White Sands Pupfish Conservation Plan, which outlines actions to improve the species' viability and address key stressors and vulnerabilities. Because the White Sands pupfish occurs entirely on Federal lands, any future activities conducted by the DoW or NPS that "may affect" the White Sands pupfish would require consultation under section 7 of the Act. Please see our November 12, 2026, "Consideration of Economic Impacts for the 4(d) Rule for the White Sands Pupfish" on https://www.regulations.gov for our consideration of economic impacts. After consideration of the conservation and economic impacts of the 4(d) rule, and based

on the best scientific and commercial data, we have determined that the 4(d) rule is necessary and advisable to provide for the conservation of the species. We appreciate public comment on the conservation and economic impacts of the proposed 4(d) rule.

III. Critical Habitat

Background

Section 4(a)(3) of the Act requires that, to the maximum extent prudent and determinable, we designate a species' critical habitat concurrently with listing the species. Critical habitat is defined in section 3(5)(A) 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(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 listed 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(b)(2) 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 compiled in 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.

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, would 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 the 4(d) rule. 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 scientific data available 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.

Physical or Biological Features Essential to the Conservation of the Species

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. The regulations at 50 CFR 424.02 define "physical or biological features essential to the conservation of the species" as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat

characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkaline soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or absence of a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species.

In considering whether features are essential to the conservation of the species, we may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

White Sands pupfish require aquatic habitats that allow them to: (1) maintain their existing distribution; (2) move between areas depending on food, resource, and habitat availability; (3) maintain the size of the population at a level where it can withstand potentially negative genetic or demographic impacts; and (4) maintain their ability to withstand local- or unit-level environmental fluctuations or catastrophes. The primary

limiting factor for this species is the quality and availability of aquatic habitat. We discuss each below.

Aquatic Habitat

White Sands pupfish depend upon water to complete all life stages and, although they can persist in very shallow water, deeper water provides refugia from large temperature fluctuations. Portions of Salt Creek, Malpais Spring, Main Mound Spring (lower pond), and Lost River dry seasonally, which can result in die-off of White Sands pupfish when they are unable to move into perennial habitats (Pittenger 2019, entire). Therefore, perennial water is essential to the species. Both the native and replicate populations may require special management to maintain water flow such as removal of invasive plants (i.e., saltcedar) and dredging of springs to maintain depth diversity.

White Sands pupfish require access to heterogeneous depths to complete all stages of their life cycle, with shallow depths used for reproduction and deeper depths used as thermal and predatory refugia (Barlow 1961, pp. 349, 353; Hoover et al. 1999, pp. 24, 28; Pittenger 2015, pp. iii, 35). Therefore, presence of heterogeneous depths is essential to the species and may require special management and protection similar to those for perennial water. We define heterogeneous depths here as an area containing water depths both above and below 50 cm (20 in) (Barlow 1961, pp. 353–354; Hoover et al. 1999, pp. 23, 28; Pittenger 2015, pp. 11, 35, 40; Pittenger 2019, entire; Pittenger 2023, p. 31).

Currently, there are no nonnative fishes or crayfishes found within any of the White Sands pupfish populations, and it is prohibited to transport or introduce any nonnative aquatic organism on WSMR, HAFB, and White Sands National Park (Pittenger 2015, p. 47). However, nonnative fish have been introduced to the Tularosa Basin for the establishment of recreational fisheries, as biological control agents, and through unauthorized transfers. Nonnative fishes that could have significant effects on

White Sands pupfish populations and are present within the Tularosa Basin include: western mosquitofish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), and largemouth bass (*Micropterus salmoides*) (Rogowski and Stockwell 2006, p. 80; Pittenger 2015, p. 36). The virile crayfish (*Faxonius virilis*) and red swamp crayfish (*Procambarus clarkii*) have also been found to negatively affect the White Sands pupfish in a controlled study (Rogowski and Stockwell 2006, entire). In a controlled laboratory study, mosquitofish and virile crayfish were found to reduce White Sands pupfish population size and biomass due to predation (Rogowski and Stockwell 2006, p. 85). We assume green sunfish, largemouth bass, and red swamp crayfish would result in similar declines, given their diet preferences (Pittenger 2015, p. 36). Additionally, if other nonnative aquatic organisms were present in White Sands pupfish habitat, it is likely they would compete with White Sands pupfish for food. Therefore, White Sands pupfish require habitats that are free of nonnatives or have nonnatives at a low enough level that populations of White Sands pupfish are not negatively impacted.

Water Quality

As discussed above in *Suitable Water Quality*, the White Sands pupfish can tolerate a wide range of water quality conditions. However, high salinities, high temperatures, and low dissolved oxygen are all likely to negatively affect the White Sands pupfish. Based on research for congener species, salinities above 35,000 mg/L and temperatures above 42.7 °C are likely to negatively affect the White Sands pupfish (Schoenherr and Feldmeth 1992, p. 50; Hoagstrom and Brooks 1999, p. 21). Although pupfish, including the White Sands pupfish, exhibit a wide tolerance for dissolved oxygen levels, the optimal dissolved oxygen levels for White Sands pupfish are those above 4 mg/L (Pittenger 2010, p. 27).

As dissolved oxygen is tied to water temperature, which is in turn tied to water depth, special management consideration and protections for water quality would be similar to those for maintaining perennial water.

Summary of Essential Physical or Biological Features

We derive the specific physical or biological features essential to the conservation of White Sands pupfish from studies of the species' habitat, ecology, and life history as described above. Additional information can be found in the SSA report (Service 2026, entire), available on https://www.regulations.gov under Docket No. FWS–R2–ES–2026–1651. We have determined that the following physical or biological features are essential to the conservation of White Sands pupfish:

(1) Sufficient aquatic habitat to support all life stages of the White Sands pupfish, including:

(a) Permanent water;

(b) Water depth above and below 50 cm (20 in) to allow for breeding and thermal refugia (i.e., depth diversity); and

(c) Water that is absent of nonnatives, or a level of nonnatives low enough that it does not negatively impact population abundance for White Sands pupfish;

(2) Water quality parameters that support all life stages of the White Sands pupfish, including:

(a) Salinity less than 35,000 mg/L;

(b) Temperature less than 42.7 °C (108.9 °F); and

(c) Dissolved oxygen greater than 4 mg/L.

Special Management Considerations or Protection

When designating critical habitat, we assess whether there are specific areas within the geographical area occupied by the species at the time of listing containing

physical or biological features which (1) are essential to the conservation of the species and (2) may require special management considerations or protection.

The features essential to the conservation of the species may require special management considerations or protections to reduce the threats from saltcedar, aquatic emergent vegetation, and from drought. Special management considerations or protections may be required within critical habitat areas to address these threats. For example, management activities that could ameliorate this threat include, but are not limited to, habitat restoration, such as the removal of saltcedar and management of emergent vegetation. These management activities would protect the physical and biological features for the species by ensuring habitats have open water and adequate amounts of emergent vegetation to support hiding cover while preventing levels of emergent vegetation that restrict habitat use. Removal of saltcedar can reduce water lost through evapotranspiration and prevent increased salt concentrations that result from saltcedar leaves. Habitat restoration can protect and expand existing habitat that will allow White Sands pupfish to sustain prolonged drought or flash flooding.

Criteria Used to Identify Critical Habitat

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat.

We have only identified areas within the geographical area occupied by the species at the time of listing that meet the definition of critical habitat. Occupancy status at the time of listing was determined based on monitoring reports, literature, and expert elicitation that documented White Sands pupfish presence between 1994 and 2024, since

that is when the White Sands Pupfish Conservation Team was established and more regular monitoring began. We are not proposing to designate any areas outside the geographical area occupied by the species because we have not identified any unoccupied areas that meet the definition of critical habitat. Although some unoccupied spring sites (Barrel and Guilez Springs) have been identified for potential future reintroductions, spring restoration will require nonnative fish and saltcedar removal and excavation of accumulated sediments to desired depths before any White Sands pupfish introductions (WSMR 2016, pp. 17–21, 28, 50).

We used information from the cooperative agreement, conservation plan, reports, geographic information systems, and expert elicitation to identify areas that contain the physical or biological features. First, we identified which areas maintain perennial water by reviewing monitoring reports and maps because habitats with non-perennial water would lack physical or biological features necessary for White Sands pupfish. Next, within those areas, we identified areas with water depths both above and below 50 cm (20 in) by reviewing depth measurements from monitoring data and reports. For each of these areas, we determined whether there were nonnatives present and, if so, if they were at a level that would have a negative impact on White Sands pupfish populations. For each of those areas identified, we then assessed water quality parameters to ensure they were within adequate ranges (i.e., salinity, temperature, dissolved oxygen).

In summary, for areas within the geographical area occupied by the species at the time of listing, we identified areas that meet the definition of critical habitat using the following criteria:

(A) We considered areas to be occupied that had records of White Sands pupfish occupancy documented between 1994 and 2024.

(B) We then delineated the extent of perennial water within those occupied areas.

(C) Next, we identified those areas containing water depths both below and above 20 in (50 cm).

(D) Finally, we determined whether nonnative species were present and, if so, if they were at low enough levels that they would not impact the White Sands pupfish.

The areas we have identified that meet the definition of critical habitat include Malpais Spring, Salt Creek, Main Mound Spring, North Mound Spring, South Mound Spring, Lost River, and Bradford Spring within the Tularosa Basin in New Mexico. All of the habitat is known to be occupied by White Sands pupfish in perennial habitat with suitable water depths and water quality to maintain a population during extreme drying or precipitation events. DoW owns all of the perennial habitat we identified that meets the definition of critical habitat. None of the NPS lands occupied by the species meets the definition of critical habitat.

Exemptions

Section 4(a)(3)(B)(i) of the Act specifically prohibits designation of critical habitat on lands owned or controlled by the DoW, or designated for its use, that are subject to an INRMP and that provides a benefit to the species. After identification of areas that met the definition of critical habitat for the White Sands pupfish, we evaluated whether any of those areas are exempt from being designated as critical habitat for the White Sands pupfish pursuant to section 4(a)(3)(B)(i). We first determined that all of the areas that meet the definition of critical habitat for the White Sands pupfish are owned by the DoW. Below we discuss our analysis of whether those areas are subject to an INRMP that provides a benefit to the White Sands pupfish.

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an INRMP by November 17, 2001. An

INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

(1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;

(2) A statement of goals and priorities;

(3) A detailed description of management actions to be implemented to provide for these ecological needs; and

(4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108–136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act provides that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the DoW, or designated for its use, that are subject to an INRMP prepared under section 101 of the Sikes Act, if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.

We consult with the military on the development and implementation of INRMPs for installations with listed species. We analyzed INRMPs developed by military installations located within the range of the areas meeting the definition of critical habitat for White Sands pupfish to determine if they meet the criteria for exemption from critical habitat under section 4(a)(3) of the Act. The following areas are DoW lands with completed, Service-approved INRMPs within the areas meeting the definition of critical habitat.

Approved INRMPs

Holloman Air Force Base

HAFB is a 51,813-acre Air Force installation located in Otero County, in southeastern New Mexico near Alamogordo. Established in 1941, the base is primarily known for its role in testing and training, particularly in the areas of flight operations and aerospace technologies. HAFB is home to the 49th Wing, which conducts advanced pilot training and operates the F-16 Falcon and MQ-9 Reaper unmanned aerial vehicle (HAFB 2023, entire).

HAFB developed its first INRMP in 2001, adhering to Air Force Instruction 32-7064 and the Sikes Act. The current INRMP incorporates information and guidance from the Comprehensive Wildlife Conservation Strategy for New Mexico (New Mexico Department of Game and Fish (NMDGF) 2006, entire) and the State Wildlife Action Plan for New Mexico (NMDGF 2016, entire).

Since the early 1990s, HAFB has been collaboratively managing White Sands pupfish habitat through the White Sands Pupfish Conservation Plan, the cooperative agreement, and as a member of the WSPT (Propst 1990, entire; Propst and Pittenger 1994, entire; WSPT 2006, entire; Pittenger 2015, entire). There are 24.07 acres of lands within the boundary of the Base that were identified as critical habitat for the White Sands pupfish. These lands include all perennial habitats of Bradford Spring and Lost River.

The INRMP provides protection for Lost River, Malone Draw, and Ritas Draw, as these areas are classified as essential habitat for the White Sands pupfish and considered sensitive areas (WSPT 2006, pp. 2–3; HAFB 2023, pp. 118, 167, 192). These are designated as limited use areas, which are lands next to existing habitat where activities need to be carefully managed to prevent damage to important habitats (HAFB 2023, p. 167).

Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the HAFB INRMP and that conservation efforts identified in the INRMP will provide a benefit to White Sands pupfish. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. As a result, we are not including approximately 24.07 acres of habitat in the areas meeting the definition of critical habitat because of this exemption.

White Sands Missile Range

The WSMR is a major military testing area in southcentral New Mexico, covering approximately 2.2 million acres (about 3,200 square miles). Established in 1945, it is one of the largest and most versatile missile ranges in the United States, primarily used for testing and evaluating missiles, rockets, and other aerospace technologies. WSMR serves as a critical site for the U.S. Army, Navy, Air Force, and various defense contractors.

Before the implementation of the Sikes Act, WSMR developed its Natural Resources Management Plan in 1983, adhering to the requirements set forth by Army Regulation 420-74 (July 1977) and Chapter 3 of Technical Manual 5-630 (July 1982) (WSMR 1983, p. 1-1). This initial plan laid the groundwork for managing the range's natural resources responsibly. Following the enactment of the Sikes Act, WSMR created its INRMP in 2002 (WSMR 2023, p. xiv). As part of DoW policy, each Army installation is required to produce an INRMP and an Integrated Cultural Resources Management Plan. Several iterations of the Integrated Natural and Cultural Resources Management Plan (INCRMP) were developed between 2004 and 2015. The latest iteration of the INRMP updates the 2015 INCRMP and separates the natural and cultural resources components into standalone documents (WSMR 2023, entire).

Since the early 1990s, the WSMR has been collaboratively managing White Sands pupfish habitat through the White Sands Pupfish Conservation Plan, the

cooperative agreement, and as a member of the WSPT (Propst 1990, entire; Propst and Pittenger 1994, entire; WSPT 2006, entire; Pittenger 2015, entire). There are 531.19 acres of land within the boundary of the White Sands Missile Range that were identified as meeting the definition of critical habitat for the White Sands pupfish. These lands include all perennial habitats of Salt Creek, Main Mound Spring, North Mound Spring, South Mound Spring, and Malpais Spring.

The INRMP provides protection for Salt Creek, North Mound Spring, South Mound Spring, and Malpais Spring by designating them as special natural areas. This includes all the limited use and essential habitats for White Sands Pupfish that are defined within the cooperative agreement (WSPT 2020, pp. 2–3). These are areas that warrant special management practices and where management is focused on the protection of the area, rather than on restoration or improvement (WSMR 2023, pp. 2–45). In addition, the INRMP for the White Sands Missile Range reiterates their dedication to implementing the White Sands Pupfish Conservation Plan and the cooperative agreement.

Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the WSMR INRMP and that conservation efforts identified in the INRMP will provide a benefit to White Sands pupfish. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. As a result, we are not including approximately 531.19 acres of habitat in the areas meeting the definition of critical habitat because of this exemption.

Summary

In summary, the two areas that meet the definition of critical habitat for the White Sands pupfish are both exempt from designation under section 4(a)(3)(B), and therefore we are not proposing to designate any critical habitat for the White Sands pupfish.

Consideration of Impacts under Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, the impact on national security, and any other relevant impact of specifying any particular area as critical habitat. In the case of White Sands pupfish, all areas meeting the definition of critical habitat are exempt from designation in accordance with section 4(a)(3)(B). Therefore, we are not proposing to designate critical habitat, so there is no potential for any economic impact, impact on national security, or any other relevant impact. As a result, there are no areas to consider for exclusion under section 4(b)(2) of the Act.

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.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; title II of Pub. L. 104–121, March 29, 1996), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

While we do not conduct RFA analyses on our classification determinations under the Act, in accordance with recent caselaw (*Kansas*), we comply with RFA when promulgating 4(d) rules.

Under the RFA, as amended, and as understood in light of recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does not require agencies to evaluate the potential impacts to indirectly regulated entities. Some of the actions regulated by the proposed 4(d) rule are likely to involve Federal action agencies. 4(d) rules do not alter any obligations for Federal agencies under section 7 of the Act. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirements. Consequently, it is our position that only Federal action agencies would be directly regulated during section 7 consultations (regardless of what is prohibited in 4(d) rules). The RFA does not require evaluation of the potential

impacts to entities not directly regulated. Moreover, Federal agencies are not small entities.

Please see our November 12, 2026, "Consideration of Economic Impacts for the 4(d) Rule for the White Sands Pupfish" on https://www.regulations.gov for our consideration of economic impacts and RFA analysis. We certify that, if adopted as proposed, this proposed rule would not have a significant economic impact on a substantial number of small entities. We request information (see **Information Requested**) to ensure we fully understand the potential impacts of this proposed rule.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

Regulations adopted pursuant to section 4(a) of the Act are exempt from the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) and do not require an environmental analysis under NEPA. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This includes listing, delisting, and reclassification rules, as well as critical habitat designations and species-specific protective regulations promulgated concurrently with a decision to list or reclassify a species as threatened. The courts have upheld this position (e.g., *Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995) (critical habitat); *Center for Biological Diversity* v. *U.S. Fish and Wildlife Service*, 2005 WL 2000928 (N.D. Cal. August 19, 2005) (concurrent 4(d) rule)).

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 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. There are no Tribal entities expected to be affected by this proposed rule for the White Sands pupfish.

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

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 § 17.11, in paragraph (h), amend the List of Endangered and Threatened Wildlife by adding an entry for "Pupfish, White Sands" in alphabetical order under FISHES to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
* * * * * * *				
FISHES				
* * * * * * *				
Pupfish, White Sands	*Cyprinodon tularosa*	Wherever found	T	[*Federal Register* citation when published as a final rule]; 50 CFR 17.44(pp); [4d]
* * * * * * *				

3. Amend § 17.44 by adding a paragraph (pp) to read as follows:

§ 17.44 Species-specific rules—fishes.

* * * * *

(pp) White Sands pupfish (*Cyprinodon tularosa*)

(1) *Prohibitions.* The following prohibitions that apply to endangered wildlife also apply to the White Sands pupfish. Except as provided under paragraph (pp)(2) of this section and § 17.4, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.21(b) for endangered wildlife.

(ii) Take, as set forth at § 17.21(c)(1) for endangered wildlife.

(iii) Possession and other acts with unlawfully taken wildlife, as set forth at § 17.21(d)(1) for endangered wildlife.

(iv) Interstate or foreign commerce in the course of a commercial activity, as set forth at § 17.21(e) for endangered wildlife.

(v) Sale or offer for sale, as set forth at § 17.21(f) for endangered wildlife.

(2) *Exceptions from prohibitions.* In regard to this species, you may:

(i) Conduct activities as authorized by a permit under §17.32.

(ii) Take, as set forth at § 17.21(c)(2) through (c)(4) for endangered wildlife.

(iii) Take, as set forth at § 17.31(b).

(iv) Possess and engage in other acts with unlawfully taken wildlife, as set forth at § 17.21(d)(2) for endangered wildlife.

(3) *Exceptions from prohibitions for specific types of incidental take.* You may take White Sands pupfish while carrying out the following legally conducted activities in accordance with this paragraph:

(i) Definitions. For the purposes of this paragraph (pp)(3):

(A) *Person* means a person defined by section 3(13) of the Act.

(B) *Qualified person* means a Department of War (DoW)- or National Park Service (NPS)-approved fish biologist, aquatic resource manager, or other similar professional employed by DoW or NPS; or a fish biologist, aquatic resource manager, or similar professional employed by a State agency, academic institution, or consulting firm, provided that the individual holds a valid scientific collecting permit from the appropriate State agency and has received approval from the DoW to conduct activities described below within the Tularosa Basin.

(C) *White Sands Pupfish Conservation Team* means any *qualified person* of the New Mexico Department of Wildlife (formerly New Mexico Department of Game and Fish), the Service, White Sands Missile Range, Holloman Air Force Base, and White Sands National Park (formerly White Sands National Monument).

(ii) A qualified person may take White Sands Pupfish associated with:

(A) Translocations of pupfish to maintain genetic integrity, survival, and establish new populations, including:

(1) Assisted movement during extreme drought conditions;

(2) Translocations for genetic maintenance;

(3) Translocations to establish new populations as identified by the White Sands Pupfish Conservation Team.

(B) Research and monitoring, including:

(1) Temporary capture and handling of individual fish (including via trap or net);

(2) Holding and marking of individual fish;

(3) Tissue samples, including fin clips;

(4) Field experiments that involve the capture and handling of individual fish to better understand the species' ecology and life history.

* * * * *

Brian Nesvik,
Director,
U.S. Fish and Wildlife Service.

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