

**DEPARTMENT OF THE INTERIOR****Fish and Wildlife Service****50 CFR Part 17**

[Docket No. FWS-R8-ES-2023-0092;  
FF09E21000 FXES1111090FEDR 234]

RIN 1018-BH08

**Endangered and Threatened Wildlife and Plants; Threatened Species Status With Section 4(d) Rule for the Northwestern Pond Turtle and Southwestern Pond Turtle**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Proposed rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), propose to list the northwestern pond turtle (*Actinemys marmorata*), a species from Washington, Oregon, Nevada, and northern and central California, and the southwestern pond turtle (*Actinemys pallida*), a species from central and southern California and Baja California, Mexico, as threatened species under the Endangered Species Act of 1973, as amended (Act). This determination also serves as our 12-month finding on a petition to list the western pond turtle, which is now recognized as two separate species (northwestern pond turtle and southwestern pond turtle). After a review of the best scientific and commercial information available, we find that listing the northwestern pond turtle and southwestern pond turtle is warranted. Accordingly, we propose to list the northwestern pond turtle and southwestern pond turtle as threatened species with rules issued under section 4(d) of the Act (“4(d) rule”) for each species. If we finalize this rule as proposed, it would add the northwestern pond turtle and southwestern pond turtle to the List of Endangered and Threatened Wildlife and extend the Act’s protections to the two species. Due to the current lack of data sufficient to perform required analyses, we conclude that the designation of critical habitat for the northwestern pond turtle and southwestern pond turtle is not determinable at this time.

**DATES:** We will accept comments received or postmarked on or before December 4, 2023. 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 November 17, 2023.

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

(1) *Electronically:* Go to the Federal eRulemaking Portal: <https://www.regulations.gov>. In the Search box, enter FWS-R8-ES-2023-0092, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on “Comment.”

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS-R8-ES-2023-0092, U.S. Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

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

*Availability of supporting materials:* Supporting materials, such as the species status assessment report, are available at <https://www.regulations.gov> at Docket No. FWS-R8-ES-2023-0092.

**FOR FURTHER INFORMATION CONTACT:** Steve Henry, Field Supervisor, U.S. Fish and Wildlife Service, 2493 Portola Road, Suite B, Ventura, CA 93003; telephone 805-644-1766. 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. In compliance with the Providing Accountability Through Transparency Act of 2023, please see docket FWS-R8-ES-2023-0092 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 endangered 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 northwestern pond turtle and the southwestern pond turtle meet the Act’s definition of threatened species; therefore, we are proposing to list them as such. Listing a species as an endangered or threatened species can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process (5 U.S.C. 551 *et seq.*).

*What this document does.* We are proposing to list the northwestern pond turtle and southwestern pond turtle as threatened species with a rule issued under section 4(d) of the Act (a “4(d) rule”) for both species.

*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 northwestern pond turtle and southwestern pond turtle are threatened species due to the following threats: impacts to terrestrial and aquatic habitat (Factor A), anthropogenic impacts to the species and its habitat (*e.g.*, human modification of habitat, land conversion, loss of connectivity between populations, recreation) (Factors A and E), nonnative predators (Factor C), and the effects of climate change (*e.g.*, drought, impacts associated with wildfire) (Factors A and E).

Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary), to the maximum extent prudent and determinable, to designate critical habitat concurrent with listing. We have not yet been able to obtain the necessary economic information needed to develop proposed critical habitat designations for the two species, although we are in the process of obtaining this information. At this time, we find that designation of critical habitat for the northwestern pond turtle and southwestern pond turtle is not determinable. Once we obtain the necessary economic information, we will propose critical habitat designations for the two species.

### Information Requested

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

(1) The two species' biology, range, and population trends, including:

(a) Biological or ecological requirements of the two 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 these two species;

(d) Historical and current population levels, and current and projected trends;

(e) Past and ongoing conservation measures for these two species, their habitat, or both; and

(f) Tribal use or cultural significance of the northwestern pond turtle and southwestern pond turtle, including possession and collection and use of the two species for ceremonial or traditional crafts.

(2) Threats and conservation actions affecting the two species, including:

(a) Factors that may be affecting the continued existence of the two 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 these two species.

(c) Existing regulations or conservation actions that may be addressing threats to these two species.

(3) Additional information concerning the historical and current status of these two species.

(4) Information on regulations that may be necessary and advisable to provide for the conservation of the northwestern and southwestern pond turtle and that we can consider in developing a 4(d) rule for these two species. In particular, we seek information concerning the extent to which we should include any of the section 9 prohibitions in the 4(d) rule or whether we should consider any additional exceptions from the prohibitions in the 4(d) rule.

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

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

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

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

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

Because we will consider all comments and information we receive during the comment period, our final determinations may differ from this proposal. Based on the new information we receive (and any comments on that new information), we may conclude that the northwestern or southwestern pond turtle is endangered instead of threatened, or we may conclude that either of the two species does not warrant listing as either an endangered species or a threatened species. In addition, we may change the parameters of the prohibitions or the exceptions to those prohibitions in the 4(d) rule if we conclude it is appropriate in light of comments and new information received. For example, we may expand the prohibitions to include prohibiting additional activities if we conclude that those additional activities are not compatible with conservation of either

of the two species. Conversely, we may establish additional 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 either of the two species. In our final rule, we will clearly explain our rationale and the basis for our final decision, including why we made changes, if any, that differ from this proposal.

### Public Hearing

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

### Previous Federal Actions

On July 11, 2012, we received a petition from the Center for Biological Diversity (Center) (Center 2012, pp. 1–96), requesting that 53 species of amphibians and reptiles, including the western pond turtle, be listed as endangered or threatened species and that critical habitat be designated for those species under the Act. On June 10, 2014, the Center sent us a letter that cited a publication (Spinks et al. 2014, p. 2238) recommending that the western pond turtle be split into two separate species. The Center suggested that we consider the separation in our status review for the western pond turtle (Center 2014, entire). On April 10, 2015, we published in the **Federal Register** (80 FR 19259) a 90-day finding affirming that the petition for the western pond turtle as one species presented substantial scientific or commercial information indicating that the petitioned action may be warranted. The 12-month finding was added to our workload as part of our National Listing Workplan. In 2020, the Center included the western pond turtle in a lawsuit (*Center for Biological Diversity v. Debra Haaland et al.* No. 1:20-cv-00573-EGS) challenging the Service's failure to issue listing determinations in response to petitions for 241 species; the Service subsequently agreed in settlement to

submit to the **Federal Register** the 12-month finding in response to the petition to list the western pond turtle by September 30, 2023.

### Peer Review

A species status assessment (SSA) team prepared an SSA report for the northwestern pond turtle and the southwestern pond turtle (Service 2023, entire). The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the two species, including the impacts of past, present, and future factors (both negative and beneficial) affecting each species. In development of the SSA, we worked with academic researchers affiliated with the University of Florida and U.S. Geological Survey (USGS) to develop a population model for areas in Oregon and California (Gregory and McGowan 2023, entire). The model was included as part of the analysis of the western pond turtle's status, is included as an appendix to the SSA report, and was reviewed by the peer reviewers.

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we solicited independent scientific review of the information contained in the SSA report for the two species. We sent the SSA report to three independent peer reviewers and received responses from two of the reviewers. Results of this structured review process can be found at <https://www.regulations.gov>. In preparing this proposed rule and 12-month finding, we incorporated the results of these reviews, as appropriate, into the SSA report, which is the foundation for this proposed rule and 12-month finding.

### Summary of Peer Reviewer Comments

As discussed in Peer Review above, we received comments from two 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 material contained in the SSA report. The peer reviewers generally provided additional references, clarifications, and suggestions for the SSA report. We updated the SSA report based on the peer reviewers' comments and worked with researchers to update the current and future condition analyses in Oregon and California. The peer reviewer comments are addressed in the following summary and any

necessary changes were incorporated into the current version of the SSA report as appropriate (Service 2023, entire).

*Comment 1:* One peer reviewer commented on the scale at which resiliency and redundancy were addressed, suggesting that we analyze resiliency at the subwatershed level and redundancy at the regional level (*i.e.*, analysis unit level) rather than species level.

*Our response:* To assess the current and future condition of the two species, we divided their ranges into analysis units that incorporate genetic, management, and ecological data (Service 2023, Analysis Units, pp. 33–37). Although we acknowledge in the SSA report that, based on conversations with species experts, population processes are likely happening at the subwatershed level, the data necessary to conduct the analysis at such a level were limited and not available in all circumstances to analyze the two species' condition at this scale. Because of data limitations, breaking the analysis into smaller pieces potentially would have amplified uncertainties, so we maintained the use of analysis units for assessing resiliency, but reiterated that they contain multiple populations. Redundancy describes the ability of the species to withstand catastrophic events and, following the SSA framework, we analyzed redundancy at the species level rather than the regional level (Service 2016, pp. 11–13).

*Comment 2:* One peer reviewer was critical on the methods and assumptions used for the model (*i.e.*, Gregory and McGowan 2023, entire) to analyze probability of extirpation of the analysis units that we used to inform resiliency of portions of the northwestern and southwestern pond turtle ranges in the SSA report in Oregon and California. The peer reviewer was concerned that the results of the model would overestimate population sizes and not provide accurate information on population persistence.

*Our response:* In response to peer review of the model, the researchers that developed the model lowered the initial starting population size in their analysis and revised their methods and provided additional clarifying information on how the model incorporated and generated results from the initial abundance estimates for the two species. As a result, the model currently reflects comments and suggestions provided by the peer reviewers. The peer reviewer comments did not notably change the overall results (which are probabilities of extirpation at the analysis unit level). Changes to the

model are reflected in Gregory and McGowan (2023) (appendix to the SSA report) and incorporated into the analyses within the SSA report.

*Comment 3:* One peer reviewer questioned why the threat of disease (specifically shell disease) was not included in the model to assess the two species.

*Our response:* The top threats to each species were determined based on meetings with species experts and are consistent with a recent peer-reviewed publication (Manzo et al. 2021, entire) that is referenced in the SSA report. We acknowledge that disease is a threat with unknown demographic impacts to the species at this time. In the SSA report, we present the best scientific data available at this time in the section on disease. Our use of the model is one part of our analysis of the threats acting on the two species. We also considered disease as one of the factors in determining status of the two species.

*Comment 4:* One peer reviewer questioned the lack of objective criteria for assessing current condition in the model.

*Our response:* The model incorporates information about human use activities, drought conditions, and impacts from bullfrogs. The human use information includes numerous factors that may affect the species or its habitat. In our analysis, we used a 2050 timeframe to assess current condition because the western pond turtle is a long-lived species. More specific objective or species-specific criteria were not available rangewide and use of such localized information may have amplified uncertainties.

*Comment 5:* One peer reviewer stated that the generation time should be closer to 25 years rather than 50. They further stated that the projection period in the model (Gregory and McGowan 2023, entire) should span more generations/time.

*Our response:* Based on this comment, we revised our discussion of western pond turtle longevity in the SSA report to reflect generation time. In concert with this change, we added additional time steps in the model that are consistent with three western pond turtle generations (approximately 25, 50, and 75 years from now (year 2050, 2075, and 2100), respectively).

## I. Proposed Listing Determination Background

The western pond turtle (*Emys marmorata*) was first identified in 1852, from specimens collected from Puget Sound, Washington (Baird and Girard 1852, pp. 174–177). In 2017, the western

pond turtle was recognized and accepted by the scientific community as two separate species (northwestern pond turtle (*Actinemys marmorata*) and southwestern pond turtle (*Actinemys pallida*)) (Crother 2017, p. 82; Rhodin et al. 2017, pp. 76, 171–172). Because of the relatively recent split of the species into two separate entities, the majority of available research and information refers to a single species (western pond turtle). In the SSA report and this document, and unless otherwise noted, any reference to the western pond turtle is understood to apply to the northwestern and/or southwestern pond turtle.

#### Description

The northwestern pond turtle and southwestern pond turtle are medium in size (110 to 170 millimeter (4.33 to 7.05 inches) in length), with larger specimens occurring geographically in the northwestern pond turtle's range. Male and female western pond turtles are sexually dimorphic (Holland 1994, p. 2–4; Rosenberg et al. 2009, p. 10). Western pond turtle coloring varies with most appearing olive to dark brown, or blackish, occasionally without pattern but usually with a network of spots, lines, or dashes of brown or black (Hays et al. 1999, p. 2; Bury et al. 2012, p. 4; Stebbins and McGinnis 2018, pp. 204–205). The plastron (underside of shell) is yellowish and may have blackish or dark brown blotches or be unmarked (Stebbins and McGinnis 2018, p. 204). The first proposed study of geographic differentiation of western pond turtles into northern and southern subspecies was based on differences in coloration and the presence, shape, and size of the inguinal scute—the plate where the carapace joins the plastron at the groin (Seeliger 1945, entire; Service 2023, p. 15, Figure 2). Recent genetic results corroborated the presence/absence of inguinal scutes as a differentiating factor between the two species (Shaffer and Scott 2022, p. 9).

#### Diet and Habitat

The two species are omnivorous and considered dietary generalists, consuming a wide variety of food items including small aquatic invertebrates (insect larvae) and vertebrates (fish,

tadpoles, and frogs), carrion, and plant material (Bury 1986, pp. 516–517; Holland 1994, pp. 2–5–2–6). Habitat needs for the two species include: (1) aquatic features such as ponds, lakes, and streams for breeding, feeding, overwintering, sheltering, and dispersal; (2) basking sites that allow for thermoregulation; and (3) terrestrial or upland features adjacent to the aquatic habitat for nesting, overwintering and aestivation, and dispersal and connectivity between populations (Service 2023, pp. 28–32). The elevational range of the two species is from sea-level to approximately 2,000 meters (m) (6,500 feet (ft)).

#### Lifespan and Reproduction

The maximum lifespan of the two species is unknown. However, they are long-lived after reaching adulthood with one individual living to at least 55 years of age (Bury et al. 2012, p. 17). These old individuals are rare in natural populations, but they appear to reproduce throughout their life (Kaufman and Garwood 2022, p. 354). In our analysis in the SSA report, we estimated the generation time for the northwestern pond turtle and southwestern pond turtle to be approximately 25 years (Service 2023, p. 12). The age at sexual maturity and breeding is variable between the two species and by specific locality and ranges from approximately 3.5 to 12 years of age depending on size, sex, environmental condition, and resource availability (Holland 1994, pp. 2–9, 5–2; Hays et al. 1999, p. 12; Germano and Rathbun 2008, pp. 190–191; Rosenberg et al. 2009, p. 22; Germano 2010, p. 95; Bury et al. 2012, p. 15; Germano et al. 2022, p. 114–115). Courtship and mating behavior has been observed from April through November (Holland 1991, p. 23). Nesting behavior and oviposition usually occur from May through July, with northern populations nesting later in the season than those in the south (Bury et al. 2012, p. 15). Incubation periods range from 73–80 days in captivity under controlled conditions (Feldman 1982, p. 10) and 75 to 134 days in field studies in Oregon and northern California (Holland 1991, 26–33; Geist et al. 2015, p. 495, figure 2(B); Christie and Geist 2017, p. 49).

#### Species' Ranges

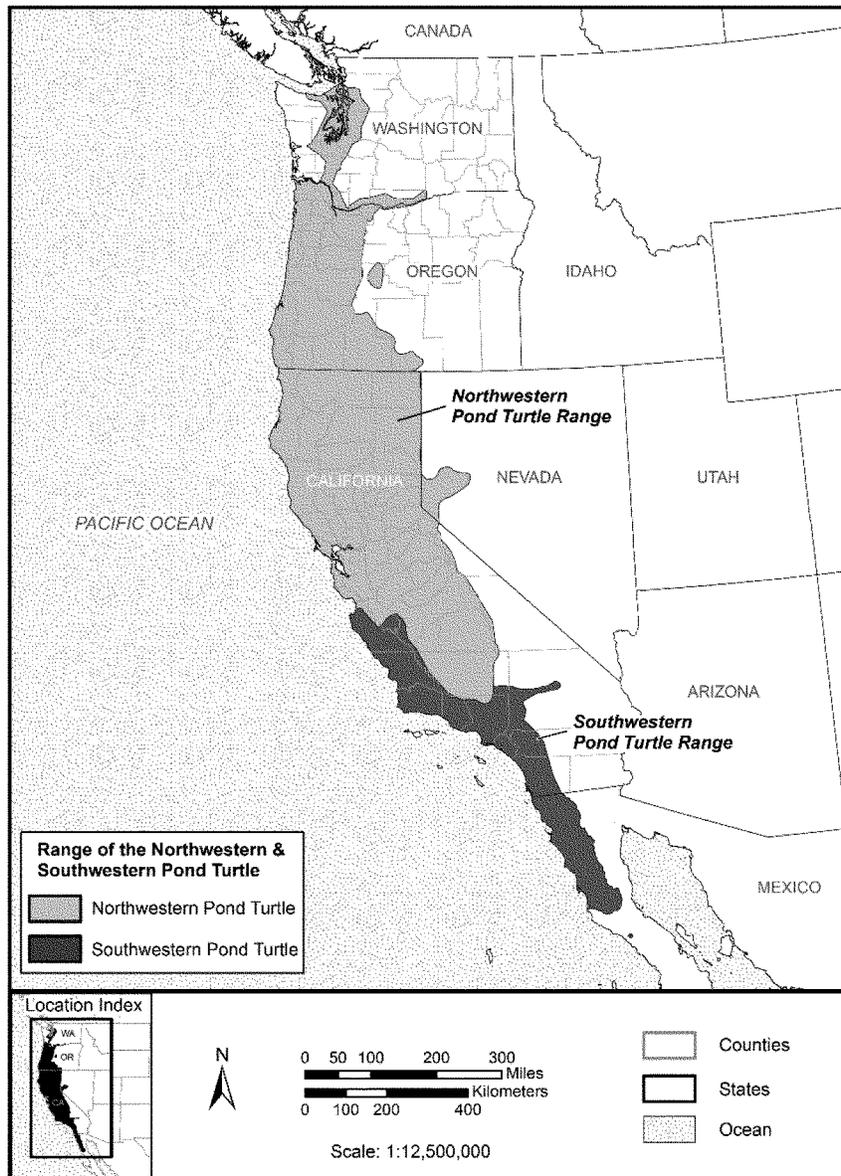
The historical range of the western pond turtle as a single species included areas in the States of Washington, Oregon, Nevada, and California, areas in British Columbia, Canada, and areas in Baja California, Mexico. The current collective range of the two species has experienced contractions within existing occupied areas including extirpation from British Columbia, Canada. In Washington, the northwestern pond turtle was nearly extirpated from Puget Sound and was restricted to 150 individuals within two remnant populations along the Columbia River Gorge. As a result of the reduced numbers, the Washington Department of Fish and Wildlife (WDFW) along with other partners initiated numerous conservation measures to conserve the species in Washington (see *Conservation Efforts and Regulatory Mechanisms*).

The current range of the northwestern pond turtle includes portions of Washington, Oregon, Nevada, and northern and central California. The range in Washington now includes six areas located in the Puget Sound area southward toward and including areas along the Columbia River. In Oregon, the species occupies areas along the Columbia River and west of the higher elevations of the Cascades Range, including portions of the Klamath Basin to the California border. The range in Nevada includes areas along the Carson and Truckee Rivers. The range in California includes areas of the Coast Range from the Oregon-California border down to northern Monterey County, the lower elevation and foothills of the southern Cascades and Sierra Nevada Mountains, and areas within the Sacramento and San Joaquin Valleys (see figure below).

The range of the southwestern pond turtle includes areas of central and southern California south into Baja California, Mexico. This includes areas of the central Coast Range from near northern Monterey County, California, portions of the Transverse Range into the Mojave River watershed, and areas south into Baja California, Mexico.

**BILLING CODE 4333–15–P**

Figure: Range of the Northwestern and Southwestern Pond Turtle.



**BILLING CODE 4333-15-C**

Recent genetic information identifies the boundary between the two species along the Coast Range to be the middle of the Monterey Bay coastline south of the Monterey/Santa Cruz County line in California (Shaffer and Scott 2022, p. 5). The contact zone between the two species lies at the edge of the southern Coast Range and Transverse Range where they meet along the floor of the Central Valley; individuals of both species occur along this contact zone but do not overlap (Shaffer and Scott 2022, pp. 4-5).

*Genetics*

Molecular analyses for western pond turtles were first conducted in the mid-

1990s, with results generally following long-held subspecies designations based on coloration and morphological variation (Seeliger 1945, p. 156). More recent genetic analyses have since confirmed the taxonomic separation between the two entities and split them into two separate species (Spinks and Shaffer 2005, entire; Spinks et al. 2010, entire; Spinks et al. 2014, entire). The genetic makeup of the northwestern and southwestern pond turtle each largely follows a north/south geographic characterization, with greater (more differentiated) clustering in southern portions of the two species' ranges (Shaffer and Scott 2022, entire).

When reviewing the patterns of relative genetic similarity for the

northwestern pond turtle, the species was found to be subdivided into five groups or clusters and includes: (1) a large area including the north California coast, Oregon, and Washington; (2) the area occupying the Sacramento Valley; (3) the Delta and areas due east across the Central Valley and Nevada; (4) the Yosemite Valley area; and (5) the San Joaquin Valley and the area east and south of the San Francisco Bay Area and San Francisco Peninsula (Shaffer and Scott 2022, p. 6-8). Genetic clustering for the southwestern pond turtle includes six groups or clusters: (1) a Coast Range group in the central coast from roughly Monterey Bay south to northern Santa Barbara County; (2) a Ventura/Santa Barbara cluster from

Point Conception to the Santa Clara River; (3) a Los Angeles group including the west-flowing Los Angeles basin drainages; (4) a Mojave group from the east-flowing Mojave River Drainage; (5) an Orange County/San Diego cluster encompassing southern coastal California from the Santa Ana river south through most of San Diego and Orange Counties; and (6) a Baja California group covering populations south of the U.S.-Mexico border.

We used this genetic clustering information on the two species as one of the factors in determining the boundaries of the analysis units used in our SSA report (Service 2023, pp. 33–37). A thorough description and review of the taxonomy, genetics, and ranges of the northwestern pond turtle and southwestern pond turtle is presented in the SSA report for the two species and literature cited within (Service 2023, pp. 11–20).

### Regulatory and Analytical Framework

#### Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for endangered and threatened species. In 2019, jointly with the National Marine Fisheries Service, the Service issued a final rule that revised the regulations in 50 CFR part 424 regarding how we add, remove, and reclassify endangered and threatened species and the criteria for designating listed species' critical habitat (84 FR 45020; August 27, 2019). On the same day, the Service also issued final regulations that, for species listed as threatened species after September 26, 2019, eliminated the Service's general protective regulations automatically applying to threatened species the prohibitions that section 9 of the Act applies to endangered species (84 FR 44753; August 27, 2019).

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 now and in the foreseeable future.

The Act does not define the term "foreseeable future," which appears in the statutory definition of "threatened

species." Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term "foreseeable future" extends only so far into the future as we can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define the foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

#### Analytical Framework

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

To assess the viability of the two species, 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, severe 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, changing 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 two species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the two species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs for the two species. The next stage involved an assessment of the historical and current condition of the two species' demographics and habitat characteristics, including an explanation of how the two species arrived at their current condition. The final stage of the SSA involved making predictions about the two species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best scientific information available to characterize

viability as the ability of the two 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 for the northwestern and southwestern pond turtle; the full SSA report can be found at Docket FWS-R8-ES-2023-0092 on <https://www.regulations.gov>.

**Summary of Biological Status and Threats**

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

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report for the northwestern and southwestern pond turtle, we have analyzed the cumulative effects of identified threats and conservation

actions on the species. To assess the current and future condition of the species, we evaluate the effects of all the relevant factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.

*Species Needs*

The habitat needs considered most important for western pond turtles to complete their life cycle include: aquatic habitat, upland habitat, and basking sites. Table 1, below, summarizes the individual habitat needs by life stage and resource function. The demographic needs considered most important for western pond turtles are abundance, reproduction/recruitment, survival, and connectivity.

TABLE 1—INDIVIDUAL HABITAT NEEDS OF THE WESTERN POND TURTLE

Individual need	Life stage	Resource function
Aquatic habitat .....	Hatchlings, juveniles, adults .....	Breeding, feeding, overwintering, sheltering, and dispersal.
Upland habitat .....	Eggs, hatchlings, juveniles, adults .....	Nesting, overwintering and aestivation, and dispersal.
Basking sites .....	Hatchlings, juveniles, adults .....	Thermoregulation, physiological functioning, and predator avoidance.

**Aquatic Habitat**

Western pond turtles are semi-aquatic, requiring both aquatic and terrestrial (upland) habitats that are connected to one another or within close proximity. Western pond turtles occur in a broad range of permanent and ephemeral water bodies including rivers and streams, lakes, natural and constructed ponds, wetlands, marshes, vernal pools, reservoirs, settling ponds, irrigation ditches, and estuaries with tidal influence (Spinks et al. 2003, entire; Bury and Germano 2008, p. 001.3; Ernst and Lovich 2009, p. 175; Bury et al. 2012, p. 12; Stebbins and McGinnis 2018, p. 205). Western pond turtles use aquatic habitat for breeding, feeding, overwintering, and sheltering. Preferred aquatic conditions are those with standing or slow-moving water that contain underwater shelter sites (undercut banks, submerged vegetation, mud, rocks, and logs) and abundant basking sites (see "Basking Sites," below) (Holland 1991, pp. 13–14; Reese and Welsh Jr. 1998a, p. 852; Hays et al. 1999, p. 10; Bury and Germano 2008, p. 001.4; Ernst and Lovich 2009, p. 175). Western pond turtles inhabiting lentic

aquatic habitat, such as ponds, lakes, and slack water habitats, often overwinter within the aquatic environment by burying themselves within the bottom substrate, such as mud. Various depths of both deeper and shallower water provide western pond turtles with habitat necessary for overwintering and hatchling growth. Primary habitat for hatchlings and young juveniles is shallow water with dense submerged vegetation and logs, which most likely provides shelter, prey, and thermoregulatory requirements or other functions for survival (Holland 1994, pp. 1–14, 2–12; Rosenberg and Swift 2013, p. 119).

**Upland Habitat**

Western pond turtles use upland habitat for nesting and overwintering. Females require upland nesting habitat in order to lay their eggs. Upland nesting habitat varies greatly across the two species' geographic ranges, but regardless of composition, it needs to be in close proximity to the aquatic habitat being used by the species. This habitat is typically characterized as having sparse vegetation with short grasses and forbs and little or no canopy cover to

allow for exposure to direct sunlight (Holland 1994, p. 2–10; Rathbun et al. 2002, p. 232; Rosenberg et al. 2009, pp. 16–17; Riensche et al. 2019, p. 97). Females excavate nests in compact, dry soils that are 3 to 400 m (10 to 1,300 ft) from water (Holland 1994, p. 2–10; Holte 1998, p. 54). Additional features of nesting habitat/sites that may be important include aspect, slope, and vegetation (Service 2023, pp. 29–30).

Upland overwintering habitat also varies greatly across the two species' ranges. Overwintering habitat usually occurs above the high water elevation of the aquatic habitat and beyond any riparian zone (Reese and Welsh Jr. 1997, p. 355; Rathbun et al. 2002, p. 229; Oregon Department of Fish and Wildlife (ODFW) 2015, pp. 6–7). While vegetation communities differ from site to site, open areas were avoided for overwintering, and leaf litter was present at most sites (Reese and Welsh Jr. 1997, pp. 354–355; Davis 1998, p. 19; Rathbun et al. 2002, p. 230). In central California, overwintering western pond turtles were generally located where they could be exposed to direct sunlight during a portion of the day (Rathbun et al. 2002, p. 230).

### Basking Sites

As reptiles, western pond turtles use basking as a means to thermoregulate their body temperature. Western pond turtles engage in basking both within water (aquatic basking) and outside water (emergent basking). Basking is essential for physiological functions such as metabolism, digestion, reproduction, and growth. Additional benefits of emergent basking include drying out the shell and skin for parasite or algal control. Western pond turtles use logs, rocks, vegetation, shorelines, and essentially any other substrate located within and adjacent to aquatic habitat for emergent basking (Holland 1994, p. 2–8; Hays et al. 1999, p. 10). The location of the basking site above or adjacent to aquatic features allows for quick retreat into the water if there is perceived danger (Storer 1930, p. 431). Aquatic basking occurs in shallow water in top layers of vegetative matter or in submerged vegetation such as algal mats. Aquatic basking may be used when emergent basking sites are limited or not present and provides a warmer environment than that of surrounding water (Jennings and Hayes 1994, p. 100; Reese and Welsh Jr. 1998a, p. 851).

### Habitat Connectivity

Despite their ability to use a wide range of aquatic and upland features, suitable aquatic habitats are relatively rare across much of the range, exacerbated mostly by past land use changes (e.g., urbanization and agriculture) (see “Habitat Loss and Fragmentation,” below). Consequently, the distribution of populations of the two species may be disjunct depending on habitat availability across the landscape, especially in areas with increased development; roadways; or extensive open, dry terrain between waterways (Holland 1991, pp. 13, 53–54; Bury et al. 2012, p. 12; Thomson et al. 2016, pp. 300–301). Western pond turtle populations need a network of appropriate aquatic breeding, feeding, and basking habitat that has sufficient upland nesting and overwintering/aestivation sites that are connected by suitable habitat. The back-and-forth movements between aquatic and upland habitats of individuals within a population (i.e., migration) are typically less than 500 m (1,600 ft) (Reese and Welsh Jr 1997, p. 357).

Dispersal between populations is an important demographic need for both western pond turtle species. A population that is connected to other populations through dispersal is more resilient because individuals have the ability to bolster existing sites and

thereby enhance the genetic diversity of the population or recolonize extirpated sites. The dispersal of western pond turtles between populations is not well understood. However, genetic research suggests that most dispersal activity occurs within drainages or watersheds (Spinks and Shaffer 2005, p. 2057). Observed dispersal distances for the western pond turtle varied from approximately 2.6 kilometers (km) (1.6 miles (mi)) to 7 km (4.3 mi) within aquatic habitat, with overland dispersal distances being slightly less (approximately 5 km (3 mi)) under optimal conditions (Holland 1994, pp. 2–9; 7–28; Rosenberg et al. 2009, p. 21; Purcell et al. 2017, pp. 21, 24).

### *Threats Influencing Current and Future Condition of the Western Pond Turtle*

The following is a summary of information and evaluations of the threats analyzed in the SSA report for the northwestern and southwestern pond turtle. The discussion focuses on threats impacting both species with specific information regarding threats acting on each species individually. Additional information on the specific threats associated with each species is provided in the SSA report (Service 2023, Chapter 8, pp. 38–69).

Based on the best scientific and commercial information available including State wildlife agency status reviews, threat and conservation assessments, and management plans in Washington, Oregon, Nevada, and California (Rosenberg et al. 2009, pp. 1–80; Thomson et al. 2016, pp. 296–303; Hallock et al. 2017, pp. 8–11; Wildlife Action Plan Team 2022, p. 57), a peer-reviewed threat analysis (Manzo et al. 2021, pp. 485–501), and other published information gathered for the SSA report on the northwestern pond turtle and southwestern pond turtle (Service 2023, Chapter 8, pp. 38–69), we identified habitat loss and fragmentation (including latent impacts from past habitat impacts), altered hydrology, predation, competition, road impacts, collection (including historical overutilization in California (Bettelheim and Wong 2022, pp. 7–12)), contaminants, disease, and the effects of climate change (including increasing temperatures, severe drought, extreme flood events, and high severity wildfire) as threats acting on individuals, populations, or each species as a whole to varying degrees across their respective ranges. Based on our assessment as identified in the SSA report (Service 2023, pp. 85–91, section 9.2), we identified three key factors as most influential in driving the western pond turtle’s current and future

condition: anthropogenic impacts, predation by bullfrogs, and drought. Anthropogenic impacts are a group of threats that are driving or influencing the viability of both the northwestern or southwestern pond turtle and are outlined in the threat discussion of the SSA report (Service 2023, pp. 38–69, 81–85, and figure 18) and other supporting literature (Theobald et al. 2020, entire; Manzo et al. 2021, pp. 492–493; Theobald 2021, entire). Anthropogenic impacts include or exacerbate all the threats identified below outside of those associated with bullfrogs and drought. These threats have had substantial population-level effects on the northwestern and southwestern pond turtle and are anticipated to continue to be the primary drivers of northwestern and southwestern pond turtle viability.

### Habitat Loss and Fragmentation

Habitat loss and fragmentation from land conversion associated with historical and current urbanization and agriculture has impacted aquatic and upland habitat for the western pond turtle (Service 2023, pp. 41–45). Areas of significant habitat loss, conversion, and alteration for the northwestern pond turtle include areas in Washington in the Puget Sound and lower Columbia River (Lower Columbia River Fish Recovery Board 2010, p. B–204; Hallock et al. 2017, p. 10), areas in Oregon in the Portland metropolitan area and Willamette Basin (Rosenberg et al. 2009, pp. 37, 40), and areas in California in the Sacramento and San Joaquin Valleys and urbanized areas for the San Francisco Bay Area (Jennings et al. 1992, p.12; Jennings and Hayes 1994, p. 99; Kelly et al. 2005, pp. 63, 70). Areas of significant habitat loss for the southwestern pond turtle include areas in the heavily urbanized portions of southern California including Los Angeles, Orange, Riverside, and San Diego Counties (Thomson et al. 2016, p. 301).

In areas associated with agriculture and urbanization, upland land conversion and draining of the extensive wetlands or channeling of streams have resulted in the decline and extirpation of many populations and left the remaining western pond turtle populations within these areas disjunct, scattered, and isolated from each other with little upland habitat available for nesting (Holland 1991, p. 13; Reese 1996, p. 105; Thomson et al. 2016, p. 300–301). Currently, western pond turtle populations rarely have densities similar to their historical counterparts, and age structures of extant populations tend to be skewed towards adults

(Holland 1991, p. 53; Reese 1996, p. 73; Manzo et al. 2021, p. 493).

Although the rate of habitat losses has diminished, the lingering effects of past habitat loss and ongoing habitat loss, alteration, and fragmentation continue to impact the northwestern and southwestern pond turtle by reducing the size of populations due to reductions in available aquatic and upland habitat, isolating populations, and limiting dispersal between populations. These impacts reduce the capability of populations of the two species to respond to stochastic or catastrophic events and thereby affect the species' ability to maintain populations in the wild; the level of impact varies among populations and is dependent on habitat availability and condition and level of past habitat loss (Holland 1991, pp. 13, 53; Reese 1996, p. 73; Manzo et al. 2021, p. 493; Service 2023, pp. 41–45). The effects associated with habitat loss by urbanization and agriculture include additional impacts associated with human activity such as recreation, road impacts, collection, and contaminants (Service 2023, pp. 45–46, 54–59) (see Human Impacts below).

#### Altered Hydrology

The threats associated with altered hydrology that have impacted both the northwestern and southwestern pond turtle include: wetland conversion and draining; stream channelization and ditching; modification of flow regimes; groundwater pumping; water diversions; damming; and water regulation for flood risk management (flood control) (Reese and Welsh Jr. 1998b, p. 505; Rosenberg et al. 2009, pp. 37, 40; Germano 2010, p. 89). These threats affect the hydrology, thermal conditions, and structure of the western pond turtle aquatic and upland habitat (Service 2023, pp. 45–46). Dams and the reservoirs they create can act as barriers to migration, create stretches of unsuitable habitat, and/or degrade or eliminate habitat (Holland 1994, p. 1–29; Reese and Welsh Jr. 1998a, p. 851). Managed stream flows below dams that alter natural flow regimes and hold water during winter and release water during the summer have been shown to reduce water temperatures, increase sedimentation, and have a higher canopy cover percentage compared to undammed systems (Ligon et al. 1995, entire; Reese and Welsh Jr. 1998a, p. 842, 847–848; Madden-Smith et al. 2005, p. 5; Rosenberg et al. 2009, p. 40; Williams and Wolman, entire). Reduced water temperatures, increased sedimentation, and high canopy cover all negatively impact the aquatic habitat as well as basking habitat conditions for

the northwestern and southwestern pond turtle.

In northern California, colder water temperatures on regulated streams below dams likely contributed to northwestern pond turtles having a slower growth rate, less recruitment, and fewer juveniles (Reese 1996, pp. 43–44; Reese and Welsh Jr. 1998b, p. 513; Ashton et al. 2015, pp. 624–628). Changes to the timing of water releases from a dam on a regulated stream in northern California resulted in a pre-dam intermittent stream having year-round flows post-dam. This change provided for an increase in food availability, which allowed northwestern pond turtles to grow larger. However, similar to the other studies, there were fewer juveniles below the dam, which suggested an effect on the population's recruitment (Bondi and Marks 2013, p. 146–149).

The impacts of altered hydrology can also be exacerbated or compounded by other threats to the two species, such as drought and nonnative predators (see Predation and Drought below) (Meyer et al. 2003, p. 2; Moyle 1973, p. 21; Holland 1991, pp. 54–57; Holland 1994, pp. 2–11–2–12; Hays et al. 1999, pp. 13–14; Spinks et al. 2003, pp. 264–265; Cadi and Joly 2004, pp. 2515–2517; Service 2023, p. 47).

#### Disease

Disease has been and is an emerging concern for western pond turtle populations. Documented diseases in western pond turtles include respiratory disease and shell disease. Several respiratory diseases have been shown to impact both northwestern and southwestern pond turtles but only in limited areas and not in large numbers. Shell disease has been found to impact the northwestern pond turtle, but again in only parts of its range and may be associated with headstarted western pond turtles. Although disease may impact individuals or localized populations and may be a cumulative impact on either the northwestern or southwestern pond turtle, we do not consider disease a driving factor in the viability of either species. As a result, we do not expect that respiratory or shell disease are significant threats impacting the northwestern or southwestern pond turtle. See the SSA report for additional information regarding disease (Service 2023, pp. 53–54).

#### Predation

Western pond turtles are impacted by both native and nonnative predators including most carnivorous or omnivorous animals large enough to

consume eggs, nestlings, or adult turtles (Rosenberg et al. 2009, p. 27). Native predators to western pond turtles include but are not limited to black bears (*Ursus americanus*), foxes (*Urocyon cinereoargenteus* and *Vulpes vulpes*), coyotes (*Canis latrans*), raccoons (*Procyon lotor*), skunks (*Mephitis* sp. and *Spilogale* sp.), mink (*Neogale vison*), river otters (*Lontra canadensis*), osprey (*Pandion haliaetus*), bald eagles (*Haliaeetus leucocephalus*), ravens (*Corvus corax*), American crows (*Corvus brachyrhynchos*), and herons (Order *Ciconiiformes*) (Holland 1994, p. 2–12; Bury and Germano 2008, p. 5; Ernst and Lovich 2009, p. 180; Thomson et al. 2016, p. 302). Nonnative predators include American bullfrogs (bullfrogs) (*Lithobates catesbeianus*), invasive fish, such as large and smallmouth bass (*Micropterus* sp.), and feral and domestic dogs (*Canis familiaris*) (Moyle 1973, p. 21; Bury and Whelan 1984, pp. 2–5; Holland 1994, p. 2–12; Ernst and Lovich 2009, p. 180).

Nonnative predators in western pond turtle habitat influence the species by increasing predation pressure on hatchlings and young juveniles. Increased predation beyond the natural levels under which western pond turtles evolved results in reduced survival and reproduction, affecting population recruitment and abundance, which in turn, lessens overall resiliency. Increased predation effects beyond those in natural settings are further amplified when considered with other factors contributing to reduced recruitment and survival, such as occurrence in urbanized areas with increased nest predators (such as dogs, raccoons, crows, ravens, or coyotes), or in areas with altered hydrology that are more susceptible to drought (Service 2023, p. 49).

Although the effects of bullfrogs on western pond turtles are difficult to distinguish from co-occurring factors influencing viability (such as habitat loss and degradation), research indicates that bullfrogs play an instrumental role in western pond turtle population declines due to reductions in recruitment through predation on hatchlings and competition for resources (see “Competition (nonnative species),” below) (Holland 1991, p. 43; Holland 1994, p. 2–12; Hays et al. 1999, p. 14; Ernst and Lovich 2009, p. 180; Hallock et al. 2017, pp. 9–10; Nicholson et al. 2020, pp. 4–5, 9). Teasing apart the impacts of nonnative predators from other factors may best be observed by testing the effects of removing them from the system and measuring the response by western pond turtles. For

example, at Sycuan Peak Ecological Reserve in San Diego County, California, removal of invasive predators including bullfrogs resulted in observations of hatchling and young juvenile southwestern pond turtles (less than 80 millimeter carapace length (over the curve measurement)) for the first time in over a decade (Brown et al. 2015, pp. 24, 110). Similar improvements of hatchling success have been observed in northwestern pond turtles in Washington once bullfrog control efforts were implemented (Hallock et al. 2017, pp. 13–14).

Bullfrogs are native to the eastern United States and were first introduced into the West as part of commercial farming operations and were first documented in California in 1896 (Heard 1904, p. 24; Jennings and Hayes 1985, p. 98, California Department of Fish and Wildlife (CDFW) 2023b, entire). Since that time, bullfrogs have become widespread throughout much of the western pond turtles' range due in part to altered hydrology, land-use and habitat changes, and unauthorized introductions (Holland 1991, p. 40; Fuller et al. 2011, pp. 210–211; CDFW 2023b, entire). Once bullfrogs are introduced or become established, they often require multi-year or permanent implementation of management efforts for their removal and eradication from a site (Doubledee et al. 2003, pp. 424–425; Adams and Pearl 2007, pp. 679–670; Kamoroff et al. 2020, pp. 618–622). For example, the National Park Service (NPS) implemented a program to remove bullfrogs from sites in Yosemite National Park. The program required implementation of numerous eradication and monitoring methods and a significant amount of funding and staffing resources over a multi-year timeframe (2005 to 2019 for a site in Yosemite Valley, and 2019–2024 (and potentially beyond) for an ongoing effort on a site in the Tuolumne River watershed) (Kamoroff et al. 2020, pp. 617–624; NPS 2020, entire). Bullfrogs are an especially detrimental aquatic predator due to their use of shallow aquatic habitat less suitable to other predators such as nonnative fish; the apparent lack of an anti-predator response in western pond turtles (particularly in hatchlings, which are most susceptible to predation), as western pond turtles did not co-evolve with bullfrogs; and the difficulty and continued intensive management necessary for removal once bullfrogs are established (Hays et al. 1999, p. 14; Hallock et al. 2017, pp. 9–10; Nicholson et al. 2020, pp. 4–5, 9).

#### Competition (Nonnative Species)

Nonnative species such as red-eared sliders, bullfrogs, bass, snapping turtles (*Chelydra serpentina*), and several crayfish species (*Pacifastacus leniusculus*, *Procambarus clarkii*) may compete with the western pond turtle for food or habitat resources (Thomson et al. 2010, p. 300; Lambert et al. 2013, p. 196; Fulton et al. 2022, pp. 102–104; ODFW 2022, entire). Although competition is a contributing factor and may act as a cumulative threat on individual northwestern and southwestern pond turtles, its impact on populations of the two species is not to such a degree that it causes significant impacts to the northwestern or southwestern pond turtle. As a result we do not consider competition from nonnative species to be a factor influencing the viability of the northwestern or southwestern pond turtle. See the SSA report for additional discussion on competition from nonnative species (Service 2023, pp. 51–53)

#### Human Impacts

**Recreation.** Recreational activities such as hiking, biking, fishing, boating, and off-highway vehicles, and the associated disturbance within or adjacent to aquatic and nest habitats, can affect western pond turtles in a variety of ways, depending on the region and type of recreation. Some forms of recreation may inadvertently cause mortality, degrade habitat, disturb pond turtle behavior, and/or contribute to other threats.

Western pond turtles are extremely wary and will rapidly flee from basking sites or dive when on the water surface when disturbed by the sight or sound of people at distances of greater than 100 m (328 ft) (Bury and Germano 2008, p. 001.5). This disturbance reduces the amount of time basking and has potential effects on the species' metabolism, proper digestion, feeding, reproduction, and growth (Lambert et al. 2013, p. 196; Nyhof and Trulio 2015, p. 183; Service 2023, p. 45). Direct impacts to western pond turtles, although less prevalent, may include ingestion of or injury by fishhooks (Lovich et al. 2017, p. 6) and shooting (Shore 2001, p. 37). Although impacts from recreation may affect individual turtles, recreation's impact on populations of the two species is not to such a degree that it causes significant impacts to the northwestern or southwestern pond turtle.

**Road and Transportation Impacts.** Although roads and other transportation infrastructure are tightly linked to

urbanization and development, they also exist as a stand-alone threat since their presence is not always associated with urban or developed areas. In an assessment of the susceptibility of California herpetofauna to road mortality and habitat fragmentation, one study evaluated 160 species and classified western pond turtles in the top 10 affected (Brehme et al. 2018, p. 921). Populations of western pond turtles are increasingly male-biased the closer the species' aquatic habitat is to roads, a correlation consistent with higher road mortality of females dispersing to nesting habitat (Nicholson et al. 2020, pp. 11–13, 16). Roads can affect western pond turtle viability by killing or injuring individuals through vehicle impacts, disturbing basking behavior, increasing human and predator access to areas, reducing migration between upland and aquatic habitat of individual populations, and limiting connectivity between populations (Steen and Gibbs 2004, pp. 1145–1146; Rosenberg et al. 2009, p. 41; Nyhof 2013, p. 43; Nyhof and Trulio 2015, p. 183; Thomson et al. 2016, p. 301; Rautsaw et al. 2018, pp. 138–139; Madden-Smith et al. 2005, pp. 43, 45; Nicholson et al. 2020, entire; Manzo et al. 2021, p. 494, S1 text supplement). As a result, we expect that populations of northwestern or southwestern pond turtles near or within urbanized areas may be negatively affected by the impacts of roads.

**Collection.** Historical collection of the western pond turtle for commercial harvesting of food for the San Francisco market in the latter part of the 19th century and early 20th century was extensive and led in part to the declines in abundance of western pond turtles especially in the San Francisco Bay area and the Sacramento and San Joaquin Valleys (Holland 1991, p. 44; Holland 1994, p. 2–13; Hays et al. 1999, p. 16; Bettelheim 2005, entire; Rosenberg et al. 2009, p. 42; Thomson et al. 2016, p. 301; Bettelheim and Wong 2022, pp. 5–16). Harvesting of western pond turtles has declined significantly, but still occurs, typically for the pet trade, food, or opportunistic collection by the public as a personal pet in urbanized areas. In some instances (especially near urbanized areas), the collection may cause a reduction in numbers of individuals within populations of western pond turtles, but the impact is expected to be localized and not a driving factor of population or species' status (Sweet pers. comm. in Bettelheim 2005, p. 42; Germano 2021, p. 240; Barnes 2023, entire).

**Contaminants.** Western pond turtles are exposed to a variety of toxins

throughout their range; however, the exact sensitivity of individuals to pesticides, heavy metals, pollutants, and other contaminants is largely unknown. Sources of contaminants affecting western pond turtles include run-off, discharge, or drift from agricultural activities, mining sites, accidental hazardous waste spills, urbanized areas, and roadways (Bury 1972, p. 294; Holland 1994, p. 2–13; Majewski and Capel 1995, entire; Tudi et al. 2021, pp. 6–8; Meyer et al. 2014, p. 2994). Potential effects from contaminants to long-lived species such as the western pond turtle include premature mortality or chronic accumulation that could potentially be transferred to offspring (Rowe 2008, p. 626). Contaminants can be toxic to aquatic prey or food items of western pond turtles such as amphibians, small aquatic invertebrates, and plants (Davidson 2004, p. 1892; Relyea 2005, p. 1118; Brühl et al. 2013, p. 1). Thus, a potential reduction of prey due to contaminants may have negative impacts at the individual and population level of western pond turtle.

#### Effects of Climate Change

The effects of climate change are already having statewide impacts in California, Oregon, Nevada, and Washington (Washington Department of Ecology 2012, pp. 34–44; Bedsworth et al. 2018, p. 13; Mote et al. 2019, p. ii, summary; University of Nevada, Reno Extension 2021, pp. 1–9). The recent overall trends in climate conditions across the range of the western pond turtle include increasing temperatures, changes in precipitation patterns, and increased frequency and severity of extreme events such as droughts, heat waves, wildfires (and associated debris flows), and floods (Bedsworth et al. 2018, pp. 19–33; May et al. 2018, pp. 1036–1050; Oregon Climate Change Research Institute 2019, pp. 5–7). Because of the large ranges of the northwestern and southwestern pond turtle, impacts associated with climate change are expected to vary throughout the range of the two species with the southern portion of each species' range seeing greater impacts. Below we provide information regarding the major impacts associated with climate change: increasing temperatures, drought, extreme flood events, and wildfire impacts.

*Increasing Temperatures.* Both the northwestern and southwestern pond turtle exhibit temperature-dependent sex determination (TSD). This is where the sexual makeup of male and female hatchlings within a population is based on the temperature conditions of the nest site during egg incubation (Ewert et

al. 1994, pp. 3–7; Ewert et al. 2004, pp. 21–32). Under higher mean nest temperatures during the incubation period, western pond turtle hatchlings are more likely to be female and under lower mean nest temperatures, hatchlings are more likely to be male. Increases in incubation temperature of the nest site due to the effects of climate change could lead to skewed sex ratios or reduced hatching success (Christie and Geist 2017, pp. 49, 51). The western pond turtle requires certain temperature thresholds for proper development of the embryo (Geist et al. 2015, pp. 494–496). The mean and maximum temperatures of the nest site and their interaction with each other significantly influence the incubation period for the western pond turtle (Christie and Geist 2017, p. 51). According to one study, nest sites exposed to mean higher temperatures had shorter incubation periods, and nest sites exposed to higher temperature extremes had a longer incubation period (Christie and Geist 2017, p. 49). This is most likely due to higher extreme temperatures, which are outside proper temperature development thresholds for the western pond turtle, slowing or halting embryo development (Christie and Geist 2017, p. 51). Longer incubation times delay hatchling emergence and cause them to either enter aquatic habitat later in the season when aquatic habitat conditions may be reduced or impacted by drought, or cause hatchlings to overwinter in the nest and have a lower fitness level when they do emerge in the spring. If extreme or elevated temperatures are prolonged during the incubation period, then development of the embryos would stop entirely and the embryos would die (Christie and Geist 2017, pp. 50–51).

The incubation temperatures observed at nest sites over a 3-year period in a northern California pond in Lake County, commonly fluctuated more than 20 degrees Celsius (°C) (36 degrees Fahrenheit (°F)) on a daily basis, with nearly half of the eggs reaching maximum temperatures of 39 °C (102 °F) or greater (Christie and Geist 2017, pp. 50–51). Site temperatures above 40 °C (104 °F) were lethal to 50 percent of eggs, and temperatures above 45 °C (113 °F) resulted in a 90 percent infertility rate (Christie and Geist 2017, pp. 49, 51).

In some instances, such as in cooler climactic regions, warmer mean temperatures may allow for reproductive success by expanding the nesting season (Washington Department of Fish and Wildlife 2015, p. C–56), but the impacts of winter warming temperatures were less clear based on

research of other reptile species (Moss and MacLeod 2022, pp. 264–266).

This skew in populations favoring more females, limiting reproductive success, and reducing the number of hatchlings produced as a result of increased temperatures has been found in other turtle species with TSD (Refsnider and Janzen 2016, pp. 66–67). Individual western pond turtles within a population may be able to tolerate increased temperatures and show some level of tolerance to temperature variation, or egg-laying females may be able to compensate for increased temperatures by digging deeper nests or seeking cooler upland nest sites, if such locations are available. However, due to the current expected rate and magnitude of temperature changes, it is unknown whether any individual behavioral changes or internal traits can compensate for the expected temperature changes. Increasing temperatures will impact the western pond turtle on both the individual and population level by impacting population composition, nesting behavior, and nesting success, and further influence aquatic habitat conditions. Therefore, we would expect declines in both individuals and populations of northwestern pond turtle and southwestern pond turtle, especially in areas in the southern parts of each species' range where temperatures are typically warmer.

*Drought:* Since 1900, drought conditions (or below average precipitation seasons) in the range of the western pond turtle in California have been relatively common, with significant drought conditions occurring intermittently over an extended period in the 1920s through 1930s and in 1976–77 (CDWR 2015, pp. 6–12). In Nevada, the western pond turtle populations on the Truckee River and Carson River are mostly influenced by snowpack in the Sierra Nevada Mountains, and, as a result, those populations' drought and aquatic habitat conditions in Nevada mimic those in California. In Oregon and Washington, documented drought impacts to western pond turtles are limited; however, drought conditions in the Northwest have increased in incidence, extent, and severity between 2000 and 2021, and this trend is predicted to continue (Dalton and Fleishman 2021, pp. 37–42). However, the severity and impacts of drought are not uniform across the north-south gradient from Washington to Mexico, resulting in a variable impact intensity for both the northwestern pond turtle and southwestern pond turtle (Dong et

al. 2019, pp. 3818–3819; Manzo et al. 2021, p. 497).

During normal drought conditions, when aquatic habitat levels are low or become dry, western pond turtles can aestivate in upland habitat or move to another water body if one is within migration or dispersal distance. Aestivating western pond turtles have been observed to remain in upland habitat during drought periods for approximately 7 months, suggesting that the western pond turtle is adapted to some level of drought conditions (Belli 2015, pp. 57, 59). During multi-year or severe drought conditions, individuals could remain alive in upland habitat and return to their aquatic habitat when conditions become suitable again depending on whether the aquatic habitat is more ephemeral or permanent, other aquatic habitat is located nearby (within dispersal capabilities of the species), climate refugia between sites are available, and if the species can avoid the expected increased predation opportunities in upland areas (Purcell et al. 2017, pp. 19–24). However, although individuals may survive extended droughts, the ability of small or isolated populations of western pond turtles to survive such events is unlikely (Purcell et al. 2017, pp. 23–24). Survival of populations would require a sufficient number of adult individuals of appropriate male and female composition to survive. A study on common box turtles (*Terrapene carolina*), a similarly long-lived turtle subject to catastrophic events such as severe drought, found that populations that were increasing or stable would remain at a site subject to a single event after 50 years, and that if the site was subject to multiple catastrophic events, only those sites with increasing populations would remain (Dodd et al. 2015, pp. 373–376). Although the western pond turtle has evolved with and can tolerate periodic drought conditions, its populations have been reduced or extirpated in areas that have been impacted by severe drought, especially in central and southern California (Leidy et al. 2016, pp. 71–74; Purcell et al. 2017, pp. 6–10; Service 2023, pp. 60–63), and the frequency, severity, and duration of drought are expected to increase in response to climate change (Washington Department of Ecology 2012, pp. 34–44; Bedsworth et al. 2018, pp. 13, 19–33; May et al. 2018, pp. 1036–1050; Mote et al. 2019, p. ii, summary; Oregon Climate Change Research Institute 2019, pp. 5–7). The increased frequency, severity, and duration of droughts would greatly alter hydrology or reduce aquatic habitat,

would limit movement of western pond turtles between habitats, would further isolate local populations, and would cause species' declines (Holland 1994, p. 2–14; Leidy et al. 2016, pp. 73–74; Hallock et al. 2017, pp. 10–11). In addition, drought affects the quality and quantity of aquatic habitat, increases competition for resources (leading to starvation), limits reproductive output, and causes warmer water temperatures that may benefit nonnative predators and competitors such as bullfrogs and nonnative fish in the remaining aquatic habitat (Goodman Jr. 1997, p. 23; Lovich et al. 2017, p. 7; Purcell et al. 2017, p. 21). In addition, because females often forego nesting when conditions are unfavorable, extended drought can result in reduced reproduction and recruitment opportunities.

As a result, extended drought conditions or the increased frequency or severity of droughts could have significant effects on both northwestern or southwestern pond turtle populations, and other cumulative effects could create conditions such that repopulation of sites is unlikely, especially in more ephemeral aquatic habitats.

*Extreme flood events:* Flooding is a natural event that occurs throughout the range of the western pond turtle. Effects of flooding on western pond turtles include flushing of individuals from aquatic and terrestrial habitat and inundation of nesting sites (Rathbun et al. 1992, p. 323; Nerhus 2016, p. 45). Strong winter flows from heavy precipitation are typical in western pond turtle habitats, and floods can maintain and improve nesting habitat quality (Risley et al. 2010, p. 64). However, extreme flood events have the potential to cause severe habitat destruction and can act in concert with other stressors, leading to potential extirpation of populations, as may have occurred at two sites in the Mojave Desert, San Bernardino County, California (Lovich pers. comm. in Nerhus 2016, p. 44; Puffer et al. 2020, unpaginated). Western pond turtles are known to leave the water during times of highwater events and mostly aestivate or overwinter in the uplands above the highwater marks (Reese and Welsh Jr. 1997, p. 356). In Oregon, most hatchlings overwinter in the nest; however, fall emergence was observed in response to a heavy precipitation event (Rosenberg and Swift 2013, p. 117). Without protection from the nest, these hatchlings were exposed to both environmental and predation risk that may have reduced their survival. Extreme flood events can also cause nest failure as a result of prolonged

inundation or too much moisture during the incubation period, and they may cause drowning of hatchlings (Bury et al. 2012, p. 17).

A potential benefit of flood events may be aided dispersal. Hatchlings that overwinter in nests along the Mojave River may be dispersed by floods (Lovich and Meyer 2002, p. 542). Anecdotal accounts have been reported of young and adult turtles being flushed to the mouth of rivers after the floods of 1995 in Ventura County, California (Rosenberg et al. 2009, pp. 20–21). While some pond turtles were most likely injured or killed, long distance dispersal from these infrequent but large flood events likely occurred (Rosenberg et al. 2009, pp. 20–21) and may have provided opportunities for genetic exchange.

*High Severity Wildfire.* Wildfires are a natural part of the environment within the range of the western pond turtle, increased wildfire activity on the landscape is expected and is likely exacerbated by years of wildfire suppression (both by increasing fuel levels and increased shading) and increased temperatures and drought conditions; and increased wildfire activity on the landscape is also positively correlated with urbanization, roads, and recreation (Lang 1961, pp. 84–86; Crawford and Hall 1998, pp. 13–14; Hays et al. 1999, p. 11; Abatzoglou and Williams 2016, entire; Halofsky et al. 2020, pp. 2–16; Parks and Abatzoglou 2020, pp. 1, 5–6; Service 2023, pp. 64–65). Observed and projected trends in warmer and drier wildfire seasons in the western United States are likely to continue the trend toward higher-severity wildfires and larger burn areas (Parks and Abatzoglou 2020, pp. 1, 5–6). There is broad agreement among wildfire scientists that dry forests are becoming less resilient to fire under current and projected climate conditions (Moritz et al. 2018, p. 3). Large-scale wildfires would result in additional loss, degradation, fragmentation, and alteration of habitat, and secondary impacts from wildfire suppression activities, increased sedimentation (from debris flows), and increased predation (due to lack of cover) for the western pond turtle across its range (McDonald et al. 1996, pp. 62, 69, 71; Finger et al. 1997, pp. 136–137; Moritz et al. 2018, p. 3).

#### *Conservation Efforts and Regulatory Mechanisms*

The western pond turtle was listed as endangered by the State of Washington in 1993 (Hays et al. 1999, p. 23; WDFW 2022, p. 1). The WDFW developed a State recovery plan for the northwestern

pond turtle in 1999 (Hays et al. 1999, entire). Recovery efforts being implemented by the State include monitoring, bullfrog removal, habitat restoration, land acquisition and protection, and population enhancement (see Headstarting, Captive Breeding and Rearing, and Reintroductions, below). In Oregon, the species is State sensitive-critical and a species of greatest conservation need (ODFW 2021, p. 9). ODFW has developed a western pond turtle conservation strategy for Oregon, identified and implemented best management practices, developed an educational program, established a monitoring program, and conducted habitat enhancement projects for the northwestern pond turtle. In Nevada, the northwestern pond turtle is a species of conservation priority (Nevada State Wildlife Action Plan 2012, p. 77; Nevada Natural Heritage Program 2012, p. 11) and measures being implemented include population monitoring and education. In California, the species (both northwestern and southwestern pond turtle) is a species of special concern (CDFW 2023a, p. 53). Measures being implemented by the CDFW include research funding, population monitoring, conservation coordination, and education. These State efforts have identified conservation strategies and priorities, and the States have implemented efforts to conserve western pond turtles; however, outside Washington where it is state listed, these efforts do not provide regulatory protections for the species. The southwestern pond turtle is not listed in Mexico (NOM-059-SEMARNAT-2010, entire), although monitoring and survey work has identified the southwestern pond turtle in small populations throughout its range in Baja California, Mexico (Amphibian and Reptile Atlas 2023, entire).

As part of an effort to foster awareness and promote conservation of sensitive species, the Association of Zoos and Aquariums (AZA) implemented programs for numerous species including the western pond turtle (AZA 2017, entire). This effort has resulted in a multi-stakeholder supported agreement to coordinate western pond turtle conservation and develop a conservation strategy for the species across its range (Western Pond Turtle Range-wide Conservation Coalition 2020, entire; Western Pond Turtle Memorandum of Understanding (MOU) 2021, entire). This effort includes Federal agencies (the Service, U.S. Forest Service, Bureau of Land Management (BLM), NPS, Department

of Defense (DOD), USGS), State agencies (WDFW, ODFW, Nevada Department of Wildlife (NDOW), CDFW), and nongovernmental conservation partners (AZA, Fauna Del Noroeste A.C.) throughout the range of both species. This coordinated strategy will assist in identifying priorities for conservation, will assist in obtaining funding for identified initiatives, will kick-start recovery planning, and will raise awareness of and provide educational information on both the northwestern and southwestern pond turtle.

Several Federal and State regulatory mechanisms, other than listing the northwestern pond turtle by the State of Washington, provide some protection for the western pond turtle or reduce or eliminate impacts to habitat from threats. These regulatory mechanisms include the California Environmental Quality Act, which requires minimizing significant effects to the environment; U.S. Forest Service/BLM's sensitive species conservation through the Northwest Forest Plan (USDA and USDI 1994, entire); CDFW's lake and streambed alteration agreements (California Fish and Game Code, section 1602), which provide measures to protect lake and stream habitat; CDFW's natural community conservation plans (NCCPs); and the Service's habitat conservation plans (HCPs) permitted under section 10(a)(1)(B) of the Act. Currently, 20 HCPs are being implemented that include western pond turtles as a covered species (10 for the northwestern pond turtle, and 10 for the southwestern pond turtle). Several of these in California are also joint NCCPs. In general, these plans assure that habitat will be set aside and managed for the western pond turtle as compensation for covered activities that occur in the plan area, such as planned urban development, and that measures will be implemented to avoid or minimize take of the covered species. Many of these plans have been in place for over 20 years and have implemented measures for habitat protection, habitat restoration, species monitoring, and provided educational benefits for the western pond turtle or its habitat. Of these 20 HCPs, several in the range of the southwestern pond turtle have been implemented since 1998 and have resulted in significant protection and management for the southwestern pond turtle. Two examples of large-scale HCPs in the range of the southwestern pond turtle include the 2004 Western Riverside County Multi-Species HCP (MSHCP) (Dudek and Associates 2003, entire) and the 1998 South County HCP in San Diego County (San Diego County

1998, entire). These two HCPs cover areas in the western portion of the southwestern pond turtle's range and help minimize the effects of urbanization, development, and other human activities as well as assist in maintaining populations of the southwestern pond turtle by establishing connected ecosystem preserves, controlling unauthorized access, monitoring habitat conditions, and maintaining and improving aquatic and upland habitat. Together, the two HCPs have established over 425,000 ac (171,992 ha) of preserve lands in the western portion of the southwestern pond turtle's range. Although not all of the preserve land is used by the southwestern pond turtle, the preserve land they do occupy within the two HCP areas is well connected and provides both aquatic and upland habitat. This level of habitat conservation and connectivity will reduce the current threats impacting the southwestern pond turtle and assist in maintaining populations by avoiding impacts from development and other habitat loss and allow the species to respond to the environmental variability of drought by providing connected habitat should conditions at a given site become unsuitable in a given year.

The DOD has implemented numerous integrated natural resources management plans (INRMPs) for their military installations through the Sikes Act Improvement Act of 1997 (16 U.S.C. 670a) including INRMPs for U.S. Marine Corps base at Camp Pendleton (DOD MCB Camp Pendleton 2018, entire) in San Diego County, U.S. Army bases at Camp Roberts (DOD Camp Roberts INRMP 2022, entire) and Fort Hunter Liggett (DOD Fort Hunter Liggett INRMP 2022, entire) in Monterey and San Luis Obispo County, and Vandenberg Space Force Base (DOD VSFB INRMP 2021, entire) in Santa Barbara County, California, which all include large areas within the range of the southwestern pond turtle. Some of the DOD military installations in the range of the northwestern pond turtle include: Joint Base Lewis-McChord in Washington; Air National Guard installations in Portland (142 Wing) and Klamath Falls (Kingsley Field) in Oregon; and Travis Air Force Base and Beale Air Force Base in California. The DOD military facilities in the range of the northwestern pond turtle are generally associated with airbases and do not contain large amounts of habitat for the northwestern pond turtle, except for Joint Base Lewis-McChord (U.S. Army/Air Force) which has developed an INRMP for their facilities (Joint Base

Lewis-McChord INRMP 2017, entire). However, populations in Washington are limited and the occupancy by northwestern pond turtle on Joint Base Lewis-McChord is unknown.

Conservation measures and management for species in the INRMPs include establishing restrictions for vehicle use, habitat protections, monitoring, habitat enhancement, and establishment of best management practices for species and habitat protection.

#### Headstarting, Captive Breeding and Rearing, and Reintroductions

Headstarting is the process of collecting eggs or young from the wild and rearing them in captivity through the most vulnerable stages of their life cycle, and then releasing those individuals back into wild populations. Headstarting was initiated in Washington in 1990 (Hays et al. 1999, pp. 25–26) to bolster the last two known populations of western pond turtle left in the State (Hays et al. 1999, entire; Pramuk et al. 2013, p. 3; Hallock et al. 2017, p. iv). From 1991 through 2015, 2,200 captive-bred and wild-bred western pond turtles raised at the Woodland Park Zoo and Oregon Zoo have been released, increasing the number of sites for these turtles in Washington from two sites in 1993 to six sites today (Hallock et al. 2017, p. iv). The Washington State Recovery Plan indicates that headstarting and captive breeding should continue until northwestern pond turtle populations are sustainable without such intervention (Hays et al. 1999, p. 39). Due to the success of the headstarting program in bolstering the populations of northwestern pond turtle, the captive breeding has been discontinued. In reviewing the success of the headstarting program and commitment of the WDFW and other partners to continue the program, we consider headstarting and other conservation efforts (not including captive breeding) such as conducting habitat management efforts, investigating and managing shell disease, and predator control for the species to increase adult and hatchling survival to currently be sufficient for the conservation of the northwestern pond turtle in Washington (Anderson 2022, entire; Bergh and Wickhem 2022, p. 13; Hallock 2022, entire).

Headstarting of both northwestern pond turtles and southwestern pond turtles has been implemented to a limited degree by additional zoos and other partners in other parts of the two species' ranges (Spinks et al. 2003, pp. 260–261; Brown et al. 2015, pp. 4–16). Other reintroduction efforts in San

Diego County have occurred that involved translocating western pond turtles from private ponds into restored habitat, often in conjunction with nonnative species removals (Molden et al. 2022, p. 2).

#### Current and Future Conditions

The current condition of a species may be described in terms of past and ongoing changes in a species' habitat, demographics, and distribution (Smith et al. 2018, p. 306). To assess the current condition of the northwestern pond turtle and southwestern pond turtle, we used the best scientific and commercial data available to describe past and ongoing changes in occupancy and impacts from the primary threats impacting the two species. We assessed the current and future conditions for both the northwestern and southwestern pond turtle by evaluating the health and distribution of western pond turtles in identified analysis units throughout the range of each species. The analysis units are delineated based on occupancy, genetic makeup, management regions, and ecological data depending on each State, and they stem from information gathered in collaboration with researchers and other stakeholders across the range of both species (Service 2023, pp. 33–37). Each of the analysis units contains multiple populations based on observation information. We identified 14 analysis units for the northwestern pond turtle: 2 analysis units in Washington, 7 in Oregon, and 5 in California (Service 2023, p. 34, figure 8, and p. 36, table 2). For the southwestern pond turtle, we identified six analysis units: five analysis units over the species' range in California and one analysis unit in Baja California, Mexico (Service 2023, p. 35, figure 9, and p. 37, table 3).

#### Modeling Population Growth and Probability of Extirpation

To assist in our analysis and quantitatively assess the current and future condition of the northwestern and southwestern pond turtle, we used results from two modeling efforts. For northwestern pond turtle analysis units in the State of Washington, we used information from a population viability analysis model (PVA) (Pramuk et al. 2013, entire) that looked at potential changes in the number of individuals over time based on various parameters including with and without bullfrog removal efforts and with or without headstarting efforts (Pramuk et al. 2013, pp. 19–28). Although the model is from 2013, the projections for the model start with slightly reduced population levels and therefore may slightly overestimate

the rates of decline. To account for this potential overestimation we compared the model results to current population numbers and took any differences into account in our analysis. Drought is not explicitly incorporated into the Washington PVA but has been considered as part of our assessment of threats facing the northwestern pond turtle. We used a separate model for Washington due to its availability and because the populations in Washington have been extensively supplemented by headstarted turtles, so using this separate model avoided potentially conflicting results when compared to natural populations in other parts of the species' range.

For the remainder of the northwestern pond turtle analysis units in Oregon, Nevada, and California, as well as for 5 of the 6 analysis units in the range of the southwestern pond turtle, we used a single sex (female) stochastic stage-based (hatchling, juvenile, adult) matrix population model developed by researchers as part of our SSA analysis (Gregory and McGowan 2023, entire; Service 2023, appendix A). The model did not include information regarding the analysis unit in Baja California, Mexico (AU-6), due to the paucity of occurrence information for the unit (Service 2023, Appendix A). In the model, the researchers refer to declines of the northwestern and southwestern pond turtle as the “probabilities of extinction” in each analysis unit in Oregon, Nevada, and California. In this document, we present information from the model as probability of extirpation (locally or regionally extinct) to avoid confusion with the loss of either of the two species rangewide.

This model incorporated information on western pond turtle presence, specifically occurrence observations, as well as data on the primary threats identified for the northwestern and southwestern pond turtle (anthropogenic impacts, drought, and bullfrogs) as described above. The model projected land use change and drought conditions into the future by calculating annual rates of increase of moderate and extreme drought for representative concentration pathway (RCP) 4.5 (shared socioeconomic pathway (SSP 2)) and RCP 8.5 (SSP 5). RCPs are changes in carbon dioxide gas emissions based on land use pattern changes and other climate drivers. An RCP level of 4.5 represents mid-level emission scenario with some level of carbon dioxide emission reduction and an RCP of 8.5 represents continued carbon dioxide emission with little or no reduction. RCPs were developed explicitly for climate modeling into the

future based on the emission level, and, as a result, the socioeconomic characteristics used in RCPs were not standardized. SSPs further refine RCP emission levels to include other factors, such as standardized societal and economic patterns. The model also incorporated the spread of bullfrogs based on a continuation of the bullfrog's existing rates of distribution change at the analysis unit scale.

The modeling identified threats to the species or its habitat from human alteration of habitat and anthropogenic effects on the species (anthropogenic impacts), effects from nonnative bullfrogs, and the effects of drought conditions, which are influenced by the effects of climate change, to the year 2100 (approximately 75 years or three western pond turtle generations) (Gregory and McGowan 2023, entire; Service 2023, pp. 91–98). To model impacts from human alteration and land conversion, the modelers used data and projection information developed by the USGS and Environmental Protection Agency from the Integrated Climate and Land-Use Scenarios model (ICLUS) (Gregory and McGowan 2023, p. 22). The ICLUS project produces spatially explicit projections of human population and land-use that are based on Intergovernmental Panel on Climate Change's (IPCC) scenarios and pathways (Morefield et al. 2018, unpaginated). The model provided a continuous rate of change over time to the year 2100 and assigns probabilities of extirpation in each analysis unit for the two species in Oregon, Nevada, and California under two emission scenarios (RCP 8.5/SSP5 (scenario 1: higher emissions/higher human population growth impacts) and RCP 4.5/SSP2 (scenario 2: medium emissions/medium human population growth impacts)) (Gregory and McGowan 2023, pp. 18–22; Service 2023, pp. 102–105).

In the SSA report, we identified the results of the model from three time periods (2050, 2075, and 2100) to provide information for the two species' current and projected future condition in Oregon, Nevada, and California. Because the western pond turtle is a long-lived species, we consider results from the model at 2050 (approximately 25 years) (approximately one western pond turtle generation) to represent current condition of western pond turtles. The SSA report also provides results for discussion purposes to the year 2075 (approximately two generations) and to the year 2100 (approximately three generations) (Service 2023, pp. 69, 101–114). Because the results of the modeling in Oregon, Nevada, and California (Gregory

and McGowan 2023, entire) provide information on a continuum to the year 2100 rather than specifically identified intermediate dates, in our analysis of future conditions, we considered a range of 50 to 75 years from now (between the year 2075 and 2100) to be our foreseeable future timeframe for both the northwestern pond turtle and southwestern pond turtle. This time range allows for the incorporation of the climate change information, projected human development changes, and additional impacts from bullfrogs on the northwestern pond turtle in Oregon, Nevada, and California, and the southwestern pond turtle in California, and this time range allows us to address how the impacts from these driving threats may impact the two species' resiliency over time. Our analysis of the northwestern and southwestern pond turtles' current and future redundancy and resiliency are assessed qualitatively based on past population trends and the life-history characteristics of the two species. Therefore, in addition to the modeling effort used to assist our determinations on resiliency, we also considered other factors not specifically part of the modeling efforts to determine the future condition of the northwestern pond turtle such as information on population persistence and species' longevity, the species' reproduction capabilities, known species distribution, the species' ability to use variable aquatic habitat, the variable ecological and environmental characteristics of habitat used across the species' range, regulatory mechanisms in place to protect the species, and any current management and rangewide conservation efforts and coordination being implemented for the species. Below, we provide information on the current and future conditions of the northwestern pond turtle and southwestern pond turtle separately.

#### Northwestern Pond Turtle—Current Condition

In Washington, historically the northwestern pond turtle was considered locally common. The species was listed as a WDFW sensitive species in 1981 and State threatened in 1983, and then was uplisted to State endangered in 1993 (Hays et al. 1999, p. 23). In 1990, the northwestern pond turtle in Washington was nearly extirpated in Puget Sound and other areas of the State and was found in two isolated populations, totaling only 150 individuals, near the Columbia Gorge. As a result of the northwestern pond turtle's reduced numbers, the WDFW and other partners initiated the headstarting program (see *Conservation*

*Efforts and Regulatory Mechanisms*, above) and captive breeding program in 1990 and 1991, respectively (Hays et al. 1999, pp. 25–27).

The captive breeding efforts collected the last 12 western pond turtles from the Puget Sound area and placed them in a breeding program at the Woodland Park Zoo. The captive breeding program was successful and, along with the headstarting program, assisted in releasing captive-bred and wild-bred western pond turtles into the wild. The captive breeding program was discontinued after 1991, but the headstarting program is still being implemented. By 2015, these programs expanded the total number of populations to six (two reestablished populations in Puget Sound, two remnant populations in Columbia River Gorge, and two additional reestablished populations also in the Columbia River Gorge) and increased the total number of northwestern pond turtle individuals in the State to approximately 800–1,000 (Hallock et al. 2017, pp. 5–6).

More than 2,300 headstarted turtles have been released to these 6 sites since the program's inception and the total current population estimate in Washington remains near 1,000 individuals, although survey efforts at some of the sites have imperfect detection and may underestimate actual numbers, especially for detecting juvenile turtles (Hallock et al. 2017, p. 6; WDFW 2021, entire; Oregon Zoo 2022, entire; Woodland Park Zoo 2023, entire). The six sites are part of recovery efforts by the State and all are protected through landowner agreements or ownership by the WDFW (Hays et al. 1999, pp. 36–45; Hallock et al. 2017, p. 7). Two of the sites in Skamania County (Pierce National Wildlife Refuge (Service-owned) and Beacon Rock sites (Washington State Parks-owned)) are within the dispersal distance for the species from each other (Hallock et al. 2017, p. 7). Two additional sites (one in Puget Sound area and one along the Columbia River Gorge) have populations of more than 250 individuals and are above the State-identified recovery goals for population size (Hays et al. 1999, p. 37; Hallock et al. 2017, p. 7). Despite these successes, the northwestern pond turtle is still heavily dependent on the headstarting program and the WDFW has committed to continue to implement the program as part of their recovery efforts for the northwestern pond turtle (Hays et al. 1999, entire; Hallock 2022, entire; Hallock and Anderson 2022, entire).

## Resiliency

Resiliency is having sufficiently robust populations for the species to withstand stochastic events (*i.e.*, events arising from random factors). Analysis unit resiliency relies on sufficient suitable habitat in a condition to support multiple populations with enough individuals to withstand stochastic events. To evaluate resiliency for the northwestern pond turtle, we considered the modeling results, as well as the long-lived nature of the species and its ability to reproduce throughout its lifespan, habitat availability and quality, environmental conditions across this range of the species, the proximity of populations to each other and opportunities of dispersal between populations, the level of habitat fragmentation and habitat loss and conservation efforts being implemented across these areas by numerous Federal, State, and other entities.

For the northwestern pond turtle, we determined that resiliency (at the analysis unit level) is a function of the probability of extirpation as derived from the modeling results (Service 2023, pp. 96–97, 102–105, Appendix A). Specifically, the model uses quasi-extinction as the threshold under which the western pond turtle numbers within an analysis unit would be so small that it would no longer be viable (functionally extirpated) and unlikely to sustain populations in the wild. According to the Washington PVA, populations of northwestern pond turtle would decline significantly in the absence of headstarting (Pramuk et al. 2013, pp. 28–29). When looking at adult females only, the PVA identified an initial increase in abundance that reflected the transition of sub-adults to adults, where the number of adult females increased even as the overall population declined (Pramuk et al. 2013, pp. 26–27). Despite these overall declines, the PVA suggests that northwestern pond turtles are expected to persist in Washington, although at substantially reduced numbers through the year 2050 without headstarting (Pramuk et al. 2013, pp. 28–29; Service 2023, p. 114). However, based on our discussions with WDFW and those assisting in the headstarting program, our information gathering for the SSA, our work with researchers and zoos associated with the headstarting program, and the State's emphasis and commitment to northwestern pond turtle conservation and to the continuance of the implementation of the recovery goals for the species (including the headstarting and bullfrog removal programs), we do not anticipate

that the headstarting efforts would cease now or in the near future due to WDFW's designation of the species as State endangered. As a result, we consider the northwestern pond turtle in Washington to currently have sufficient resiliency due to current conservation measures to provide for the current viability of the species.

In Oregon, Nevada, and California within all of the analysis units, population growth rate and abundance for the northwestern pond turtle are currently declining. However, based on species survey information and abundance modeling, numerous relatively large populations exist throughout the species range in these three States (Rosenberg et al. 2009, pp. 32–38; Manzo et al. 2021, pp. 493–495; Service 2023, 72–74). According to the modeling efforts, at the year 2050, the probability of extirpation in analysis units in Oregon, Nevada, and California ranges from approximately 6 percent in AU–11 in the North Central Valley unit in California to 15 percent in analysis unit 14 (AU–14) in the southern part of the species' range in the San Joaquin Valley unit in California using the RCP 8.5 climatic conditions and ranges from approximately 6 percent in AU–6 in the North Coast unit in Oregon to 15 percent in AU–14 using the RCP 4.5 climatic conditions. This equates to an overall probability of persistence of 85 to 94 percent in 2050 across analysis units in Oregon, Nevada, and California under either emission scenario (Gregory and McGowan 2023, entire; Service 2023, pp. 97–99 and Appendix A). Based on habitat availability and connectivity, relatively favorable environmental conditions lessening the effects of climate change, the number and distribution of occupied areas, the number of relatively large populations and their distribution throughout the three States, and the relatively low probabilities of extirpation identified above, we consider the northwestern pond turtle in Oregon, Nevada, and California to currently have sufficient resiliency.

## Redundancy

Redundancy describes the ability of a species to withstand catastrophic events. To determine redundancy for the northwestern pond turtle, we assessed the number and distribution of sufficiently resilient analysis units relative to the scale of anticipated species-relevant catastrophic events, which entailed assessing the cumulative risk of catastrophes occurring within the species' range over time. These factors were assessed in terms of their potential influence on the ability of northwestern

pond turtle populations to survive and recover after a plausible catastrophic event.

The northwestern pond turtle has been subject to historical habitat loss, alteration, and fragmentation and is still impacted by the legacy effects from such habitat impacts (Rosenberg et al. 2009, p. 40). Nonnative predators, such as bullfrogs and largemouth bass, are also a threat to northwestern pond turtles (Rosenberg et al. 2009, pp. 40–47; Manzo et al. 2021, p. 492). Based on standardized occupancy surveys that were conducted in 2018–2020 at 138 historical sites and 176 new sites in Oregon, the current occupancy information appears to indicate that there are fewer occupied areas when compared to historical information (Samara Group, LLC 2021, entire). However, the existing habitat availability and connectivity, population distribution, and size of some populations would help maintain the species in Oregon. In California, the most significant declines have occurred in the southern portion of its range and is associated with habitat loss, urbanization, and historical overutilization (Jennings et al. 1992, pp. 10–11; Jennings and Hayes 1994, pp. 101–102; Kelly et al. 2005, pp. 63, 70; Bury and Germano 2008, p. 001.6; Bettelheim and Wong 2022, pp. 7–12). According to modeling efforts and other status assessments, the parts of the species' range in Oregon and northern California currently are less likely to be subject to the extensive habitat losses that have occurred further south and still have numerous well distributed and well connected populations in this area (Thomson et al. 2016, p. 301; Gregory and McGowan 2023, entire; Service 2023, Appendix A). For the species' southern parts of its range in central California, the species has a higher probability of extirpation than the populations in Oregon and northern California; however, numerous populations with evidence of breeding do still occur in areas such as Merced, Fresno and Kern Counties and would also provide some level of redundancy as these areas are associated with permanent natural and artificially ponded habitats that are currently protected or maintained (Germano 2010, pp. 91–96; Gregory and McGowan 2023, entire; Service 2023, Appendix A).

In terms of current redundancy, the northwestern pond turtle is currently distributed across the analysis units in Washington, Oregon, Nevada, and California similarly to its historical distribution, with the majority of populations in northern California and Oregon. This spatial spread would most

likely protect the species from catastrophic events including wildfire, flooding events, and severe drought. As a result, the species would most likely continue to maintain its ability to withstand catastrophic events, particularly in the center of the range (Oregon and Northern California) due to this extensive distribution. Based on this information, we consider the northwestern pond turtle in Oregon, Nevada, and California to currently have sufficient redundancy.

Representation

Representation describes the ability of a species to adapt to changing environmental conditions. This includes both near-term and long-term changes in its physical (e.g., climate conditions, habitat conditions, habitat structure, etc.) and biological (e.g., pathogens, competitors, predators, etc.) environments. This ability of a species to adapt to these changes is often referred to as “adaptive capacity.” To assess the current condition of representation for the northwestern pond turtle, we considered the current diversity of ecological conditions and genetic make-up of the species throughout its range.

For current representation, the species exhibits ecological flexibility in habitat use, particularly different types of waterbodies and ecological conditions from the Pacific Northwest in Oregon to northern and central California and eastern Sierra Nevada in Nevada. Based on genetic analyses, the northwestern pond turtle in Oregon and northern California has lower genetic variation than those further south, despite covering a larger geographic area. Although genetic variation is lower in the northern portions of its range, researchers suggest this is due to a more relatively recent (on a geologic timescale, after the retreat of Pleistocene glaciation in the last ~15,000 years) range expansion rather than a reduction in available genetic make-up (Shaffer and Scott 2022, p. 6). In addition, based on the number and distribution of populations and modeling efforts on persistence to the year 2050 (Gregory and McGowan 2023, entire; Service 2023, Appendix A), we do not expect

severe population declines or extirpations in the near-term across Washington, Oregon, Nevada, and California analysis units; therefore the species is likely to maintain its ability to adapt to changing environmental conditions in the near-term and currently has sufficient representation.

Northwestern Pond Turtle—Future Condition

In the future, impacts from land conversion, bullfrog predation, and increasing drought will continue throughout the 50- to 75-year timeframe (to the year 2100) we considered in our analysis. The level of impact on the northwestern pond turtle associated with these threats generally follows a latitudinal trend, with the southern analysis units having a more negative response and therefore poorer condition than the more northern analysis units.

Resiliency

In Washington, as discussed above, the northwestern pond turtle is heavily reliant on implementation of conservation measures and is expected to depend on headstarting, bullfrog control, and habitat management into the future (Hallock et al. 2017, p. 14). Population modeling efforts looking out approximately 100 years (year 2112) found that populations declined towards extirpation in the absence of headstarting and management (Pramuk et al. 2013, pp. 28–29). Declines in populations were tied to both adult and hatchling mortality rates, with bullfrog removal positively influencing population persistence (Service 2023, pp. 101–102). Small populations were shown in the model to persist in the future without headstarting as long as adult mortality is relatively low and hatchling mortality is reduced through habitat management and predator control (Pramuk et al. 2013, pp. 29 and 32). The current adult mortality rate is unknown and hatchling mortality is estimated to be high (above 85 percent). Because the northwestern pond turtle is a State endangered species and recovery goals for down and delisting have not been met, the WDFW is committed to continuing the conservation measures of headstarting, conducting habitat

management efforts, investigating and managing shell disease, and implementing predator control for the species to increase adult and hatchling survival (Anderson 2022, entire; Bergh and Wickhem 2022, p. 13; Hallock 2022, entire). However, without the continuance of current management (i.e., headstarting, predator control, and ongoing habitat management), we consider the northwestern pond turtle’s resiliency in Washington to be in decline and question the ability of the species to withstand stochastic events in the future.

In the Oregon, Nevada, and California analysis units, we used the modeling efforts to inform resiliency into the future. Looking at conditions of the northwestern pond turtle in the 50–75 year timeframe, by the year 2075 (approximately the next 50 years), the modeling efforts identified some declines in population size for the species with the probabilities of extirpation of the analysis units ranging from 30 percent in AU–6 along the Oregon coast to 43 percent in AU–14 in the San Joaquin Valley and San Francisco Bay area in California under scenario 1 (RCP 8.5/SSP 5) and 29 percent in AU–5 in the Willamette Valley unit in Oregon to 42 percent in AU–14 under scenario 2 (RCP 4.5/SSP 2). By the year 2100 (approximately next 75 years), the probabilities of extirpation of populations in analysis units ranged from 46 percent in AU–10 in the Northern California unit to 59 percent in AU–14 under scenario 1 (RCP 8.5/SSP 5) and 47 percent in AU–11 to 59 percent in AU–14 under scenario 2 (Service 2023, pp. 101–105). These predicted results of extirpation at the end of the 75-year timeframe (year 2100) will most likely cause declines in all analysis units with some populations within the analysis units to become functionally extirpated and limit the ability of smaller populations or populations in fragmented habitats to respond to stochastic events and limit the population resiliency in those units. Table 2 below identifies the range of the probability of extirpation (highest and lowest percentage) of analysis units for the northwestern pond turtle in 2050, 2075, and 2100.

TABLE 2—NORTHWESTERN POND TURTLE RESILIENCY RANGES  
[Probability of extirpation percentages]

Scenario	Year	High (relevant analysis unit)	Low (relevant analysis unit)
RCP 8.5	2050	15 (AU–14)	6 (AU–11).
	2075	43 (AU–14)	30 (AU–6).
	2100	59 (AU–14)	46 (AU–10).
RCP 4.5	2050	15 (AU–14)	6 (AU–6).

TABLE 2—NORTHWESTERN POND TURTLE RESILIENCY RANGES—Continued  
[Probability of extirpation percentages]

Scenario	Year	High (relevant analysis unit)	Low (relevant analysis unit)
	2075	42 (AU-14) .....	29 (AU-5).
	2100	59 (AU-14) .....	47 (AU-11).

We consider the northwestern pond turtle's resiliency in Oregon, Nevada, and California will decline from current levels such that the species will be less able to withstand stochastic events in the future because of the fragmented nature of habitat and increased threat from anthropogenic impacts, predation from nonnative bullfrogs, and the effects of climate change from drought.

Therefore, looking at the overall resiliency of the northwestern pond turtle across its range, we have determined that the species' resiliency will decline across the majority of its range in the next 50–75 year timeframe.

#### Redundancy

Future redundancy of northwestern pond turtles is expected to decline due to the reduced number of populations across the range of the species. In Washington, as discussed, the species relies heavily on headstarting and other conservation actions to sustain populations in the wild. Although we expect those conservation measures to continue to be implemented for the northwestern pond turtle in the State in the future (Hallock and Anderson 2022, entire) the certainty of future funding mechanisms are not secure. In addition, the existing populations are small and dispersed with little connectivity or opportunity to bounce back from catastrophic events such as drought or high severity wildfire. In Oregon, Nevada, and California, the latent negative effects to habitat from land use conversion (urbanization and agriculture), impacts from the increased magnitude and frequency of wildfire, impacts from more frequent and intense drought conditions, and the continued effects from existing threats will cause further declines in populations. These declines are reflected in probability of extirpation for all analysis units (AU-3 through AU-14) for the northwestern pond turtle in Oregon, Nevada, and California. Under scenario 1 (RCP 4.5/SSP 2) the probabilities of extirpation are near 30 percent in 2075 and above 47 percent by the year 2100. Similar probabilities of extirpation are expected under scenario 2 (RCP 8.5/SSP 5) for 2075 and 2100. Therefore, in the future, we expect that northwestern pond turtle populations in Washington, Oregon,

Nevada, and California to become reduced in size, distribution, and connectivity with numerous populations becoming functionally extirpated resulting in a decline in the ability to bounce back from catastrophic events.

#### Representation

Future representation of northwestern pond turtles is expected to be reduced. As discussed, the number and distribution of populations and the differing habitat conditions in which they occur is projected to decrease across all analysis units. This loss will likely reduce the species' genetic diversity and ability to adapt to changing environmental conditions under both scenarios. By 2100, continued declines would result in additional losses of representation. Besides analysis units in Washington, the southern-most northwestern pond turtle analysis unit (San Joaquin Valley, AU-14) has the highest probability of extirpation. Given that these turtles are at the lowest latitude and experience some of the highest temperatures across the range, loss of these individuals may result in a potential loss of adaptive capacity for increasing temperatures with climate change. Overall, in the 50–75 year timeframe, genetic diversity and adaptive capacity will be lost and we anticipate that the future representation of the northwestern pond turtle will be reduced.

#### *Southwestern Pond Turtle—Current Condition*

The current distribution of the southwestern pond turtle in California is similar to its historically occupied range except for the areas associated with the heavily urbanized areas of the Los Angeles basin, San Diego County, and other heavily developed areas along the California coast (Service 2023, pp. 76–77). Recent occurrence information in Baja California, Mexico, also identifies occurrence records throughout the historically occupied range of the species in Mexico (Amphibian and Reptile Atlas of Peninsular California 2023, entire).

Specific population abundance and trend information is lacking rangewide for the southwestern pond turtle, but

estimates of selected localities have identified most populations in California and one location in Mexico to be made up of less than 50 individuals with a mean of 10 individuals (Manzo et al. 2021, pp. 493, 495; Service 2023, p. 78). Information on the southwestern pond turtle in Baja California, Mexico is limited mostly to occurrence information (Amphibian and Reptile Atlas of Peninsular California 2023, entire). The limited information available identifies the distribution of the southwestern pond turtle in Baja California, Mexico as being “marginal” (Macip-Ríos et al. 2015, p. 1053). This is reflected in the limited streams and isolated desert ponds or other similar habitats where they are currently known to occur. An assessment looking at the environmental vulnerability (an assessment of a species' distribution, habitat, and threats) of amphibians and reptiles in Mexico (Wilson et al. 2013, pp. 1–47), found the southwestern pond turtle to have an environmental vulnerability score of 17 out of 20 (Wilson et al. 2013, p. 29) and similar to the International Union of Conservation of Nature (IUCN) as being vulnerable (VU)(high risk of extinction) (IUCN 2012, p. 15).

#### Resiliency

In California, we used the modeling efforts (Gregory and McGowan 2023, entire) to assist in determining the current and future resiliency for the southwestern pond turtle. According to the modeling efforts, which takes into account threats to the species and its habitat, the probability of extirpation to the year 2050 for the analysis units is relatively low and ranges from approximately 21 percent (AU-1 Coast Range unit) to 24 percent (AU-3 Mojave unit) using the RCP 8.5 (SSP 5) climatic conditions and approximately 20 percent (AU-1) to 23 percent (AU-2 Ventura/Santa Barbara unit) using the RCP 4.5 (SSP 2) climatic conditions (Gregory and McGowan 2023, entire; Service 2023, Appendix A).

The current condition of the southwestern pond turtle in Mexico is expected to have sufficient resiliency. This is based on recent occupancy records (2014–2022) distributed in both new and previously known to be

occupied areas; in addition, the areas in which they occur are in relatively remote areas and not subject to development or other threats. Therefore, we would expect that the habitat and environmental conditions would be sufficient for southwestern pond turtle populations within Baja California, Mexico to be currently able continue to carry out their normal life history functions and be able to withstand stochastic events.

Based on this information, we consider southwestern pond turtle populations to currently withstand stochastic events such that the species currently has sufficient resiliency.

**Redundancy**

Because the threats facing the species are relatively uniform, the majority of populations are expected to maintain their distribution, and are not expected to be lost in the next 25 years, we expect the species will be able to maintain its ability to withstand catastrophic events. The southwestern pond turtle is currently distributed across all analysis units in California and Mexico similarly to their historical distribution, with the majority of occupancy in California. This broad distribution would most likely protect the species from catastrophic events including wildfire, flooding events, and severe drought. Based on this information, we consider

southwestern pond turtle to currently have sufficient redundancy.

**Representation**

The southwestern pond turtle exhibits ecological flexibility in habitat use, particularly different types of waterbodies and ecological conditions from the arid portions of Mexico and the Mojave region in California to the moister areas along the California Coast Range to Monterey County. In addition, based on the number and distribution of populations and the probabilities of extirpation for each analysis unit identified in the modeling efforts to the year 2050 (Gregory and McGowan 2023, entire) (Service 2023, Appendix A), we expect the species can likely maintain its ability to adapt to changing environmental conditions in the near-term and it currently has sufficient representation.

*Southwestern Pond Turtle—Future Condition*

**Resiliency**

Across all southwestern pond turtle analysis units in California, populations declined for the duration of the model simulation, with the probability of extirpation rising over time. Model results were most sensitive to increases in drought, especially in the Ventura/Santa Barbara (AU-2), LA (AU-4), and Orange County/San Diego (AU-5)

analysis units. The probability of extirpation for all the analysis units in 2075 was above 50 percent and ranged from 54 percent (AU-1) to 57 percent (AU-3) under scenario 1 (RCP 8.5 (SSP 5)) and 51 percent (AU-5) to 55 percent (AU-3) under scenario 2 (RCP 4.5 (SSP 2)). These results suggest that the populations in some of the analysis units are likely to become extirpated and that all populations across the species' range in California would be less able to withstand stochastic events within the next 50 years.

The probability of extirpation of all the analysis units in 2100 increases substantially to over 70 percent, ranging from 73 percent (AU-1) to 78 percent (AU-2) under scenario 1 and 70 percent (AU-5) to 73 percent (AU-2) under scenario 2 (Service 2023, pp. 107, 108 (figures 32 and 33)). This indicates a 70 to 78 percent likelihood of extirpation of the populations for each analysis unit in the next 75 years under either plausible future scenario. Under both scenarios, multiple analysis units are projected to be at risk of extirpation and resiliency would be reduced such that the species is less able to withstand environmental stochasticity. Table 3 below, identifies the range of the probability of extirpation (highest and lowest percentage) of analysis units for the southwestern pond turtle in 2050, 2075, and 2100.

**TABLE 3—SOUTHWESTERN POND TURTLE RESILIENCY RANGES**  
[Probability of extirpation percentages]

Scenario	Year	High (relevant analysis unit)	Low (relevant analysis unit)
RCP 8.5	2050	24 (AU-3)	21 (AU-1).
	2075	57 (AU-3)	54 (AU-1).
	2100	78 (AU-2)	73 (AU-1).
RCP 4.5	2050	23 (AU-2)	20 (AU-1).
	2075	55 (AU-3)	51 (AU-5).
	2100	73 (AU-2)	70 (AU-5).

**Redundancy**

Based on projections of probability of extirpation, loss of all 5 analysis units in the U.S. is greater than 50 percent under both scenarios by 2075. Therefore, all U.S. analysis units are more likely than not to become functionally extinct in approximately 50 years. There is a possibility that the species could maintain some of its current distribution in those waterbodies most resistant to anthropogenic impacts, bullfrog predation, and drought, which would continue to offer some low level of redundancy for the species. However, increasing probability of extirpation

across analysis units and contraction of the range mean that the species would be less likely to withstand catastrophic events under either future scenario in approximately 50 years.

By 2100, all California analysis units are substantially likely (greater than 70 percent) to be functionally extinct under both scenarios. Given the increasing probability of extirpation predicted across analysis units and contraction of the range, the species would be much less likely to withstand catastrophic events under either future scenario in approximately 75 years.

**Representation**

Representation of southwestern pond turtles would be reduced with extirpation of any analysis units. As stated above, based on probability of extirpation, all analysis units in the U.S. portion of the range have greater than a 50 percent probability of extirpation or are more likely than not to become functionally extinct by 2075 and have over a 70 percent probability of becoming functionally extinct by 2100. With projected losses in both future scenarios, the species may lose occupancy throughout most of its current distribution. Inbreeding depression and loss of genetic diversity

would be exacerbated as abundance declines across analysis units with increasing probability of population-level extirpations. Even without the overall extirpation of analysis units, additive loss of individuals over time leads to an overall decline in species genetic diversity due to increased probability of inbreeding, genetic drift, and increasing the potential for incorporating detrimental genetic traits into a population, which decreases adaptive potential (Palstra and Ruzzante 2008, entire). Therefore, under both future scenarios, representation in southwestern pond turtles is likely to be severely reduced in the next approximately 50 to 75 years, such that the species will be less able to adapt to changing conditions.

#### Determination of Status

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

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the northwestern pond turtle and southwestern pond turtle. Below we summarize our assessment of status of the northwestern pond turtle and southwestern pond turtle under the Act.

#### *Northwestern Pond Turtle: Status Throughout All of Its Range*

The threats that are affecting the northwestern pond turtle throughout its range in Washington, Oregon, Nevada, and California include habitat loss, fragmentation, and alteration (Factor A), predation from nonnative species (Factor C), urbanization (including development and roads) (Factor A), and

the effects of climate change and recreation (Factor E). In addition, in portions of its range, the northwestern pond turtle is impacted by disease (Factor C) and competition from nonnative turtles (Factor E).

In Washington, the condition of the northwestern pond turtle is considered to be conservation reliant due to the small number of occupied sites, low abundance, impacts from nonnative predators, and reliance of these populations on headstarting. A population viability assessment for Washington that looked at populations to the year 2112 suggested that the sites in that State are reliant on continuation of population augmentation via the headstarting program until bullfrog predation and adult and hatchling mortality are reduced (Pramuk et al. 2013, entire). The State of Washington has listed the northwestern pond turtle as endangered and WDFW has developed a recovery plan for the northwestern pond turtle that identifies that headstarting and captive breeding should continue until populations are sustainable without such intervention (Hays et al. 1999, p. 39). The captive breeding program was discontinued by the WDFW after initial efforts to maintain the northwestern pond turtle. Based on our discussions with WDFW, they intend to continue their emphasis and commitment to northwestern pond turtle conservation and continuance of the implementation of the recovery goals (except for captive breeding) for the species, and we do not anticipate that the headstarting efforts would cease now or in the foreseeable future. As discussed above, headstarting and other conservation efforts are required to maintain populations of the northwestern pond turtle in the wild in Washington. As a result, we consider the northwestern pond turtle in Washington to be conservation reliant in order to maintain sufficient resiliency, redundancy, and representation and provide for the continued viability of the species now and into the future.

In Oregon, Nevada, and California, based on occurrence information and some survey efforts, the northwestern pond turtle is still well distributed throughout its historical range. Some of the analysis units have at least one population with relatively large abundances and habitat connectivity between populations. The occupancy and distribution of the species covers Oregon and northern California Coast Ranges, Willamette Valley, Klamath Mountains, Trinity Mountains, eastern and southern Cascades in Oregon and California, Sacramento Valley, Carson River and other areas of Nevada, west

slope of the Sierra Nevada foothills in California, as well as the majority of the species’ range outside the southern San Joaquin Valley region (Rosenberg et al. 2009, pp. 31–38, 72–80; Thomson et al. 2016, pp. 297, 300–301; Manzo et al. 2021, p. 495; Service 2023, pp. 70–75). Populations within the Willamette Valley, Oregon (AU–5) and southwest Oregon (AU–9) and populations in northwestern California (AU–10) and into the northern and southern Sacramento Valley and northern San Joaquin Valley (AU–11, AU–12, AU–13) in California all contain a number of abundantly sized and connected populations. The number of individuals in several of these populations is over 50 with some over 100 (Service 2023, pp. 70–75). Based on modeling efforts to the year 2050 (our current condition timeframe) the probability of extirpation under both scenarios ranges from 5 to 9 percent in Oregon. As a result, despite some expected declines in abundance and distribution of individuals from negative habitat impacts (Factor A), nonnative predators (Factor C), and negative effects of climate change (Factor E), the populations of northwestern pond turtle in Oregon are likely to currently withstand stochastic and catastrophic events, maintain its ecological flexibility and likely be able to adapt to changing environmental conditions and thereby still has a sufficient degree of resiliency, redundancy, and representation to sustain populations in the near term.

In California and Nevada, as discussed above, parts of the historical distribution and abundance of the northwestern pond turtle have declined, especially in the southern parts of its range in the Central Valley of California associated with historical habitat loss, although some stable populations with relatively large abundance and reproduction do still occur within these areas in Merced, Fresno, and Kern Counties (Jennings et al. 1992; pp. 10–11; Kelly et al. 2005, pp. 63, 70; Bury and Germano 2008, p. 001.6; Germano 2010, 91–96; Bettelheim and Wong 2022, pp. 10–12). In Nevada, available historical distribution and status information is limited and additional research is needed (Nevada State Wildlife Action Plan 2012, pp. 44–45). However, information from the State’s natural heritage program on vulnerability and conservation priority for the northwestern pond turtle does not suggest that the species’ current abundance or distribution within its currently known occupied areas will change substantially by the year 2050; the northwestern pond turtle has been

assigned as a not vulnerable or presumed stable species for the State (Nevada Natural Heritage Program 2012, pp. 7 and 11). In California, the main threats facing the species include the latent impacts associated with historical habitat loss and fragmentation (Factor A), current urbanization (Factor A), nonnative species predation (Factor C), and the effects of climate change (Factor E) on habitat and the species. These threats continue to reduce and fragment habitat, reduce recruitment, and impact the ability of the species to maintain populations. However, due to the number and distribution of populations of the species, the amount of available habitat for the populations of the species to sustain themselves, and relatively low near-term (2050) probability of extirpation (6 to 15 percent) of the populations in all five analysis units in California (Service 2023, pp. 71 and 97, figures 13 and 26 respectively), we have concluded that although the impacts resulting from present-day threats are currently negatively affecting individuals of the northwestern pond turtle in California, the species still has a sufficient degree of resiliency, redundancy, and representation to sustain populations in the near term.

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors as well as assessing the conservation measures in place for the species, we have determined that the northwestern pond turtle throughout all of its range in Washington, Oregon, Nevada, and California, is able to maintain viability with numerous populations that are well distributed across the species' range and those populations currently have sufficient resiliency, redundancy, and representation to sustain themselves in the wild. Thus, after assessing the best information available, we conclude that the northwestern pond turtle is not currently in danger of extinction throughout all of its range.

Therefore, we proceed with determining whether the northwestern pond turtle is likely to become endangered within the foreseeable future throughout all of its range. In considering the foreseeable future as it relates to the status of the northwestern pond turtle, we considered the timeframes applicable to the relevant risk factors (threats) to the species and whether we could draw reliable predictions about future exposure, timing, and scale of negative effects and the species' response to these effects. We considered whether we could reliably assess the risk posed by the

threats to the species, recognizing that our ability to assess risk is limited by the variable quantity and quality of available data about the effects to the northwestern pond turtle and its response to those effects.

In the SSA report, we developed two future scenarios that range over an approximately 50- to 75-year timeframe to the years 2075 and 2100 that encompass the best information available for projected future conditions across the range of the northwestern pond turtle. This 50- to 75-year timeframe encompasses approximately two to three generations of western pond turtles and enabled us to consider the threats acting on the species and to draw conclusions on the species' response to those threats, and accordingly, we consider this 50- to 75-year range to be the period of foreseeable future for this species.

As discussed above, to assist in determining the future condition of the northwestern pond turtle, we used two modeling efforts, one for Washington (Pramuk et al. 2013, entire; Service 2023, pp. 101–102) and one for Oregon, Nevada, and California (Gregory and McGowan 2023, entire; Service 2023, pp. 101–105) (see *Modeling Population Growth and Probability of Extirpation*, above). These models looked at those threats most influential on determining the species' future condition. We also considered other factors not specifically part of the modeling efforts to determine the future condition of the northwestern pond turtle such as information on population persistence and species' longevity, the species' reproduction capabilities, known species distribution, the species' ability to use variable aquatic habitat, the variable ecological and environmental characteristics of habitat used across the species' range, regulatory mechanisms in place to protect the species, and any current management and rangewide conservation efforts and coordination being implemented for the species.

In Washington, modeling efforts looking out approximately 100 years using four management scenarios found that populations declined towards extirpation in the absence of headstarting and management within this timeframe (Pramuk et al. 2013, pp. 28–29). The four scenarios included: (1) maintaining current headstarting efforts; (2) complete cessation of headstarting without additional management; (3) continuing headstarting to year 20; and (4) continuing headstarting to year 20 with bullfrog removal efforts. Scenario 1 identified a short term increase then leveling of population numbers for the species into the future. Scenarios 2 and

3 each showed declines in populations which eventually lead to expected functional extirpation of the species, although at differing rates of decline, at or near the 100 year timeframe. Declines in populations were tied to both adult and hatchling mortality rates, with bullfrog removal positively influencing continued population persistence even under a scenario (scenario 4) where headstarting was discontinued after 20 years but bullfrog removal efforts were maintained (Pramuk et al. 2013, pp. 28–29, figure 6–4; Service 2023, pp. 101–102). WDFW has committed to manage for and conserve the northwestern pond turtle through implementation of its existing headstarting program, habitat management actions, disease control, and bullfrog removal activities as identified in its recovery plan for the species. These conservation measures will assist in maintaining and increasing adult and hatchling survival in the State. However, because the northwestern pond turtles in Washington are conservation reliant and require on-going management and commitment by the WDFW, the species in Washington would decline and become functionally extirpated in the foreseeable future should management efforts for the species cease.

In Oregon, Nevada, and California, modeling efforts of future resiliency of populations within our analysis units identified that individuals and populations of the northwestern pond turtle will most likely decline due to the threats from human activities and habitat loss, increased predation from nonnative bullfrogs, and increased impacts from the effects of climate change mostly attributed to drought. These threats would reduce resiliency, redundancy, and representation into the future. However, the threats, the magnitude of threats, and the species' response to the threats in both extent and timing are not uniform throughout the area, with populations in northern California and Oregon faring better over time than populations in more southerly parts of the species' range within the 50- to 75-year timeframe (Service 2023, pp. 102–103). This is partly due to past extensive habitat loss and fragmentation due to agriculture and urbanized land conversion leaving mostly small, isolated populations. However, rangewide, Federal, State, and local conservation efforts such as the HCPs/ NCCPs, DOD facilities with INRMPS, BLM and Forest Service sensitive species management activities under the Northwest Forest Plan will continue to assist in conservation of the

northwestern pond turtle throughout its range.

According to the modeling efforts for Oregon, Nevada, and California, the range of the probabilities of extirpation across analysis units was estimated to be between 28 to 33 percent over the next approximately 50 years (year 2075), and between 45 to 60 percent over the next approximately 75 years (year 2100) (Gregory and McGowan 2023, entire; Service 2023, pp. 96–97 and 102–105). The analysis units most impacted and more likely (greater than 50 percent chance) of becoming extirpated by 2100 included areas in the San Joaquin Valley (AU–13 and AU–14), southern Sacramento Valley (AU–12) of California and areas in the Klamath Basin (AU–8), and an area along the Columbia River Gorge (AU–3) in Oregon (Service 2023, figure 30, p. 105). According to our modeling efforts, the species is likely to maintain populations throughout its range in the next 50 to 75 years in Oregon, Nevada, and California; however, the species is likely to lose its adaptability to variable environmental conditions and ability to use various habitat types and conditions, have reduced levels of reproduction, and have a low likelihood of responding to catastrophic events such as severe drought, extreme flooding events, or high severity wildfire occurring uniformly across the entire species' range (see Effects of Climate Change).

Therefore, due to the northwestern pond turtle's projected lower occupancy levels, abundance, connectivity, and distribution of populations within its range in Washington, Oregon, Nevada, and California, we have determined that the northwestern pond turtle will have a reduced level of resiliency, redundancy, and representation such that we anticipate the future threats will limit the species' ability to maintain populations in the wild in the next 50 to 75 years.

After our review of the threats identified above and cumulative effects facing the northwestern pond turtle, as well as existing regulatory mechanisms and conservation measures, we conclude that threats have and will likely continue to impact individuals or localized populations of the northwestern pond turtle especially in the southern portion of its range in California to the point where populations may become extirpated. As a result, we have determined that the northwestern pond turtle will have reduced resiliency, representation, and redundancy in the future such that it is likely to become in danger of extinction within the foreseeable future throughout all of its range.

#### *Northwestern Pond Turtle: Status Throughout a Significant Portion of Its Range*

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity v. Everson*, 435 F. Supp. 3d 69 (D.D.C. 2020) (*Everson*), vacated the provision of the 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 “Final Policy”); 79 FR 37578, July 1, 2014) that provided 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.

Therefore, we proceed to evaluating whether the northwestern pond turtle is endangered in a significant portion of its range—that is, 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 in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to 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.

Following the court's holding in *Everson*, we now consider whether there are any significant portions of the northwestern pond turtle's range where the species is in danger of extinction now (*i.e.*, endangered). In undertaking this analysis for northwestern pond turtle, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify portions of the range where the species may be endangered.

In undertaking this analysis for northwestern pond turtle, we choose to address the status question first. We began by identifying portions of the range where the biological status of the species may be different from its biological status elsewhere in its range. For this purpose, we considered information pertaining to the geographic distribution of (a) individuals of the species, (b) the threats that the species faces, and (c) the resiliency condition of populations.

We evaluated the range of the northwestern pond turtle to determine if the species is in danger of extinction now or likely to become so within the foreseeable future in any portion of its range. The range of a species can theoretically be divided into portions in an infinite number of ways. We focused our analysis on portions of the species' range that may meet the Act's definition of an endangered species. For the northwestern pond turtle, we considered whether the threats or their effects on the species are greater in any biologically meaningful portion of the species' range than in other portions such that the species is in danger of extinction now in that portion.

For the northwestern pond turtle, we examined the following threats: habitat impacts, disease, predation, competition, recreation, collection, and the effects of climate change, including cumulative effects.

The threats associated with negative habitat conditions or availability, nonnative predators, and the effects of climate changes (drought and increased temperatures) are occurring throughout the range of the northwestern pond turtle to varying degrees. In the 14 analysis units we evaluated in Oregon, Nevada, and California a portion of the species' range within AU–14 associated with the lower elevations of the southern San Joaquin Valley in Tulare and Kern County, California has been subject to extensive past habitat loss and land use changes which have resulted in declines of the northwestern pond turtle (Frayer et al. 1989, p. 4; Jennings et al. 1992; pp. 10–11; Kelly et al. 2005, pp. 63, 70; Bury and Germano 2008, p. 001.6; Germano 2010, 91–96; Bettelheim and Wong 2022, pp. 10–12). Based on modeling efforts, this unit also had the highest probability of likely current and future extirpation based on the current lower levels of occurrence, human disturbance, nonnative predators, and impacts from climate change (drought) (Service 2023, figure 30, p. 105). The probability of extirpation for AU–14 as a whole, which also includes portions of Merced County and several other San Francisco Bay counties (see figure 8 and 13 in the SSA report (Service 2023, pp. 34 and 71 respectively)), is 15 percent in the year 2050 (current condition). Although these areas in the species' southern portion of its range in California were identified as being impacted to a greater degree than other portions of the species' range, numerous well established and breeding northwestern pond turtle populations still occur (observation information from 2013–2022) within AU–14 in these lower elevation areas, including but not

limited to areas in Merced, Fresno, and Kern Counties (Germano 2010, pp. 91–96; Thomson et al. 2016, pp. 301) and we find that the populations in these areas will maintain sufficient resiliency, redundancy, and representation currently. Therefore, we found no concentration of threats in any portion of the northwestern pond turtle's range at a biologically meaningful scale.

Although within the southern San Joaquin Valley portion of AU–14, some threats to the northwestern pond turtle are impacting individuals differently from how they are affecting the species elsewhere in its range, or the biological condition of the species differs from its condition elsewhere in its range, the best scientific and commercial data available do not indicate that the threats, or the species' responses to the threats, are such that the northwestern pond turtle is currently in danger of extinction in the identified portion. Based on the discussion outlined above, we find that the species is not in danger of extinction now in the southern San Joaquin Valley portion of AU–14.

Therefore, no portion of the northwestern pond turtle's range provides a basis for determining that the species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This determination does not conflict with the courts' holdings in *Desert Survivors v. U.S. Department of the Interior*, 321 F. Supp. 3d 1011, 1070–74 (N.D. Cal. 2018) and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the 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” (79 FR 37578; July 1, 2014), including the definition of “significant” that those court decisions held to be invalid.

#### *Northwestern Pond Turtle: Determination of Status*

Our review of the best scientific and commercial information available indicates that the northwestern pond turtle meets the definition of a threatened species. Therefore, we propose to list the northwestern pond turtle as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

#### *Southwestern Pond Turtle: Status Throughout All of Its Range*

As discussed above, the threats that are affecting the southwestern pond turtle throughout its range in California and Baja California, Mexico, include impacts to habitat from land conversion and urbanization (including development and roads) (Factor A), predation from nonnative species (Factor C), and the effects of climate change and other anthropogenic impacts (Factor E). The impact of these threats has caused the distribution and abundance of the southwestern pond turtle to decline, especially in the southern parts of California that are associated with the developed and highly urbanized areas of southern Los Angeles, Orange, and San Diego Counties (AU–5), although some stable populations with relatively high abundance and evidence of reproduction do still occur in these areas, especially in areas further north along the California Coast Range outside urbanized areas (Jennings and Hayes 1994, pp. 99, 101; Thomson et al. 2016, p. 301). Status trends and abundance for areas in Baja California are not available, but information suggests that similar conditions exist for the species in Mexico, based on recent occupancy and distribution of populations of the species. Despite populations of the species being impacted by the existing threats, the species currently continues to maintain populations (Manzo et al. 2021, p. 495; Service 2023, pp. 75–80). This is supported by the modeling efforts (see Modeling Population Growth and Probability of Extirpation, above) developed for our analysis that found that probability of extirpation across southwestern pond turtle analysis unit was approximately 20 to 24 percent (76 to 80 percent probability of persistence) in the year 2050 (*i.e.*, current condition, representing one generation into the future) (Gregory and McGowan 2023, entire; Service 2023, pp. 97–99).

After evaluating threats to the southwestern pond turtle and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we have determined that the southwestern pond turtle is maintaining its viability due to the number and distribution of populations of the species, the current ability of the species to maintain its populations despite the existing threats, and relatively low current probability of extirpation of the species across its range (Service 2023, pp. 76 and 97, figures 15 and 26 respectively). We conclude that, although the impacts resulting from present-day threats are currently

negatively affecting the southwestern pond turtle, the species still has a sufficient degree of resiliency, redundancy, and representation. As such, after assessing the best available information, we conclude that the southwestern pond turtle is not currently in danger of extinction.

Therefore, we proceed with determining whether the southwestern pond turtle is likely to become endangered within the foreseeable future throughout all of its range. In considering the foreseeable future as it relates to the status of the southwestern pond turtle, we considered the timeframes applicable to the relevant risk factors (threats) to the species and whether we could draw reliable predictions about future exposure, timing, and scale of negative effects and the species' response to these effects. We considered whether we could reliably assess the risk posed by the threats to the species, recognizing that our ability to assess risk is limited by the variable quantity and quality of available data about the effects to the southwestern pond turtle and its response to those effects.

In the SSA report, we developed two future scenarios that range over an approximately 50- to 75-year timeframe to the years 2075 and 2100 that encompass the best information available for projected future conditions across the range of the southwestern pond turtle. This 50- to 75-year timeframe encompasses approximately two to three generations of western pond turtles and enabled us to consider the threats acting on the species and to draw conclusions on the species' response to those threats, and accordingly, we consider this 50- to 75-year range to be the period of foreseeable future for this species. As discussed above (see Modeling Population Growth and Probability of Extirpation), we used modeling efforts (Gregory and McGowan 2023, entire; Service 2023, pp. 101–105) to assist in determining the future condition of the southwestern pond turtle. According to the modeling efforts developed for the southwestern pond turtle, the probability of extirpation for the species by the year 2075 (two generations) was estimated at greater than 50 percent across all analysis units, ranging from 54 percent to 57 percent under scenario 1 (RCP 8.5/SSP 5) and 51 percent to 55 percent under scenario 2 (RCP 4.5/SSP 2). The future impacts on the species would most likely include reduced distribution, abundance, and range contraction resulting in a reduced ability to withstand catastrophic events or adapt to changing environmental

conditions. The modeling results in the year 2100 (approximately three generations) identified continued declines for the species with the probability of extirpation estimated at greater than 70 percent in all analysis units, ranging from 73 percent to 78 percent under scenario 1 (RCP 8.5/SSP 5) and 70 percent to 73 percent under scenario 2 (RCP 4.5/SSP 2) (Gregory and McGowan 2023, entire; Service 2023, pp. 107–110).

Based on our projections of the future condition for the species in the next 50 to 75 years and the ongoing and increased threats to the species into the future from anthropogenic impacts, bullfrog predation, and increases in drought intensity due to climate change conditions, the species will have continued and increasing impacts on its abundance and connectivity between populations that will most likely cause the species to be increasingly less able to support itself into the future. Thus, after assessing the best available information, we conclude that the southwestern pond turtle is likely to become in danger of extinction within the foreseeable future throughout all of its range.

#### *Southwestern Pond Turtle: Status Throughout a Significant Portion of Its Range*

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity v. Everson*, 435 F. Supp. 3d 69 (D.D.C. 2020) (*Everson*), vacated the provision of the 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 “Final Policy”; 79 FR 37578, July 1, 2014) that provided 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.

Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, 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 in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to 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.

Following the court’s holding in *Everson*, we now consider whether there are any significant portions of the species’ range where the species is in danger of extinction now (*i.e.*, endangered). In undertaking this analysis for southwestern pond turtle, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify portions of the range where the species may be endangered.

We evaluated the range of the southwestern pond turtle to determine if the species is in danger of extinction now in any portion of its range. The range of a species can theoretically be divided into portions in an infinite number of ways. We focused our analysis on portions of the species’ range that may meet the definition of an endangered species. For the southwestern pond turtle, we considered whether the threats or their effects on the species are greater in any biologically meaningful portion of the species’ range than in other portions such that the species is in danger of extinction now in that portion.

We examined the following threats: habitat impacts, anthropogenic impacts, competition, and the effects of climate change, including cumulative effects. The current and expected future threat conditions and impacts from those threats on the southwestern pond turtle across its range are relatively uniform as informed by the modeling efforts used to determine the species’ current and future conditions (Service 2023, p. 108, figure 32). The difference in the species’ probability of extirpation across all analysis units varied only by a maximum of 4 percent between the highest and lowest analysis unit probabilities for both current and future conditions (Service 2023, p. 109, figure 33).

Based on this information, we found no biologically meaningful portion of the southwestern pond turtle’s range where threats are impacting individuals differently from how they are affecting the species elsewhere in its range, or where the biological condition of the species differs from its condition elsewhere in its range such that the status of the species in that portion differs from any other portion of the species’ range.

Therefore, no portion of the southwestern pond turtle’s range provides a basis for determining that the

species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This does not conflict with the courts’ holdings in *Desert Survivors v. U.S. Department of the Interior*, 321 F. Supp. 3d 1011, 1070–74 (N.D. Cal. 2018) and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the Final Policy, including the definition of “significant” that those court decisions held to be invalid.

#### *Southwestern Pond Turtle: Determination of Status*

Our review of the best available scientific and commercial information indicates that the southwestern pond turtle meets the definition of a threatened species. Therefore, we propose to list the southwestern pond turtle as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

#### **Available Conservation Measures for the Northwestern and Southwestern Pond Turtle**

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, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies, including the Service, and the prohibitions against certain activities are discussed, in part, below.

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

The recovery planning process begins with development of a recovery outline made available to the public soon after a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions while a recovery plan is being developed. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) may be established to develop and implement recovery plans. The recovery planning process involves the identification of actions that are necessary to halt and reverse the species' decline by addressing the threats to its survival and recovery. The recovery plan identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened ("downlisting") or removal from protected status ("delisting"), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery outline, draft recovery plan, final recovery plan, and any revisions for each species will be available on our website as they are completed (<https://www.fws.gov/program/endangered-species>), or from our Ventura Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

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

If these species are listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of Washington, Oregon, Nevada, and California would be eligible for Federal funds to implement

management actions that promote the protection or recovery of the northwestern pond turtle and southwestern pond turtle, as applicable to each species' range. 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 northwestern pond turtle and southwestern pond turtle are only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for these species. Additionally, we invite you to submit any new information on the northwestern pond turtle and southwestern pond turtle 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 mandates all Federal action agencies to use their existing authorities to further the conservation purposes of the Act and to ensure that their actions are not likely to jeopardize the continued existence of listed species or adversely modify critical habitat. Regulations implementing section 7 are codified at 50 CFR part 402.

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

In contrast, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. Although the conference procedures are required only when an action is likely to result

in jeopardy or adverse modification, action agencies may voluntarily confer with the Service on actions that may affect species proposed for listing or critical habitat proposed to be designated. In the event that the subject species is listed or the relevant critical habitat is designated, a conference opinion may be adopted as a biological opinion and serve as compliance with section 7(a)(2).

Examples of discretionary actions for the northwestern pond turtle and southwestern pond turtle that may be subject to conference and consultation procedures under section 7 are land management or other landscape-altering activities on Federal lands administered by the U.S. Forest Service, Bureau of Land Management, National Park Service, or Department of Defense as well as actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation. Federal agencies should coordinate with the local Service Field Office (see **FOR FURTHER INFORMATION CONTACT**) with any specific questions on section 7 consultation and conference requirements.

It is the policy of the Services, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the extent known at the time a species is listed, specific activities that will not be considered likely to result in violation of section 9 of the Act. To the extent possible, activities that will be considered likely to result in violation will also be identified in as specific a manner as possible. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of the species proposed for listing. Although most of the prohibitions in section 9 of the Act apply to endangered species, sections 9(a)(1)(G) and 9(a)(2)(E) of the Act prohibit the violation of any regulation under section 4(d) pertaining to any threatened species of fish or wildlife, or threatened species of plant, respectively. Section 4(d) of the Act

directs the Secretary to promulgate protective regulations that are necessary and advisable for the conservation of threatened species. As a result, we interpret our policy to mean that, when we list a species as a threatened species, to the extent possible, we identify activities that will or will not be considered likely to result in violation of the protective regulations under section 4(d) for that species.

At this time, we are unable to identify specific activities that will or will not be considered likely to result in violation of section 9 of the Act beyond what is already clear from the descriptions of prohibitions and exceptions established by protective regulation under section 4(d) of the Act.

Questions regarding whether specific activities would constitute violation of section 9 of the Act should be directed to the Ventura Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

## II. Proposed Rule Issued Under Section 4(d) of the Act

### Background

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide for the conservation of species listed as threatened species. The U.S. Supreme Court has noted that statutory language similar to the language in section 4(d) of the Act authorizing the Secretary to take action that she “deems necessary and advisable” affords a large degree of deference to the agency (see *Webster v. Doe*, 486 U.S. 592, 600 (1988)). 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. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting one or more of the prohibitions under section 9.

The courts have recognized the extent of the Secretary’s discretion under this standard to develop rules that are

appropriate for the conservation of a 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 *Alesea 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 [her] with regard to the permitted activities for those species. [She] may, for example, permit taking, but not importation of such species, or [she] 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).

The provisions of this proposed 4(d) rule would promote conservation of the northwestern pond turtle and southwestern pond turtle by encouraging management of the habitat for both species in ways that facilitate conservation for each species. The provisions of this proposed rule are one of many tools that we would use to promote the conservation of the northwestern pond turtle and southwestern pond turtle. This proposed 4(d) rule would apply only if and when we make final the listing of the northwestern pond turtle and southwestern pond turtle as threatened species.

As mentioned previously in Available Conservation Measures for the Northwestern and Southwestern Pond Turtle, section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, 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 with a species-specific 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, it 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)).

### Provisions of the Proposed 4(d) Rule for the Northwestern and Southwestern Pond Turtles

Exercising the Secretary’s authority under section 4(d) of the Act, we have developed a proposed rule that is designed to address the northwestern pond turtle’s and southwestern pond turtle’s conservation needs. As discussed previously in Summary of Biological Status and Threats, we have concluded that the northwestern pond turtle and southwestern pond turtle are likely to become in danger of extinction within the foreseeable future primarily due to threats associated with the ongoing residual effects of past habitat alteration, increased predation from nonnative bullfrogs, and the effects associated with climate change. Section 4(d) requires the Secretary to issue such regulations as she deems 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. We find that, if finalized, the protections, 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 northwestern pond turtle and southwestern pond turtle.

The protective regulations we are proposing for the northwestern pond turtle and southwestern pond turtle incorporate prohibitions from section 9(a)(1) to address the threats to the species. Section 9(a)(1) prohibits the following activities for endangered wildlife: importing or exporting; take; possession and other acts with unlawfully taken specimens; delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce. This protective regulation includes all of

these prohibitions because the northwestern pond turtle and southwestern pond turtle are at risk of extinction in the foreseeable future and putting these prohibitions in place will help to prevent further declines, preserve the two species' remaining populations, slow their rates of decline, and decrease negative effects from other ongoing or future threats.

In particular, this proposed 4(d) rule would provide for the conservation of the northwestern pond turtle and southwestern pond turtle by prohibiting the following activities, unless they fall within specific exceptions or are otherwise authorized or permitted: importing or exporting; take; possession and other acts with unlawfully taken specimens; delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce.

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. Some of these provisions have been further defined in regulations at 50 CFR 17.3. Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Regulating take would help preserve the two species' remaining populations and potentially slow the two species' future declines. Therefore, we propose to prohibit take of the northwestern pond turtle and southwestern pond turtle, except for take resulting from those actions and activities specifically excepted by the 4(d) rule.

Exceptions to the prohibition on take would include all of the general exceptions to the prohibition against take of endangered wildlife, as set forth in 50 CFR 17.21 and certain other specific activities that we propose for exception, as described below.

The proposed 4(d) rule would also provide for the conservation of the two species by allowing exceptions that incentivize conservation actions that, while they may have some minimal level of take of the northwestern pond turtle and southwestern pond turtle, are not expected to rise to the level that would have a negative impact (*i.e.*, would have only de minimis impacts) on the two species' conservation. As described in more detail below, the proposed exceptions to these prohibitions are expected to have negligible impacts to the northwestern pond turtle and southwestern pond turtle and their habitat.

We note that the long-term viability of the northwestern pond turtle and

southwestern pond turtle, as with many wildlife species, is intimately tied to the condition of their habitat. As described in our analysis of the two species' status, one of the major threats to the northwestern pond turtle and southwestern pond turtle's continued viability is habitat loss, degradation, and fragmentation resulting from past or current anthropogenic impacts, nonnative bullfrogs, and impacts from an increase and intensity of drought conditions. The exceptions we have determined are appropriate to include for the northwestern pond turtle and southwestern pond turtle include: wildfire suppression and forest management activities; habitat restoration activities specifically identified for the two species otherwise not covered under other permitting processes as coordinated with the Service; nonnative bullfrog removal; and because the northwestern pond turtle and southwestern pond turtle can use various aquatic habitats and often take advantage of artificial ponds such as those developed for livestock, we are proposing to provide an exception for routine ranching activities associated with maintenance of livestock ponds by private landowners. The exceptions we are considering are outlined below.

(1) Forest or wildland management activities that are conducted for the purpose of and in accordance with an established forest or fuels management plan and that include measures that minimize impacts to the species and its aquatic habitat for the purposes of reducing the risk or severity of catastrophic wildfire or maintaining the minimum clearance (defensible space) requirement to provide reasonable fire safety and to reduce wildfire risks consistent with State fire codes or local fire codes or ordinances. These measures include prescribed burns, fuel reduction activities, maintenance of fuel breaks, and defensible space maintenance actions.

(2) Habitat restoration activities conducted as part of nonpermitted Federal or State habitat restoration plans that are developed in coordination with the Service or the Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, California Department of Fish and Wildlife, or Nevada Department of Wildlife that are for the purpose of northwestern pond turtle and/or southwestern pond turtle conservation as appropriate. Measures may include enhancement of nesting sites, clearing of pond or stream habitat of material associated with debris flows, and improving basking areas for the species.

(3) Nonnative bullfrog removal activities that include bullfrog trapping, giggering, shooting with air guns (using nonlead ammunition), dipnetting, or hand catching. Activities that disrupt habitat (*e.g.*, vegetation removal, dewatering) or that may indiscriminately harm or kill wildlife or aquatic organisms (*e.g.*, use of chemicals, electro-shocking) are not included in this exception. Northwestern pond turtle or southwestern pond turtles that are caught alive as part of nonnative bullfrog removal must be returned to their source location.

(4) Routine management and maintenance of livestock ponds, including maintenance and management of berms and dams to maintain livestock water supplies, by landowners. The intentional introduction into a livestock pond of species that may prey on northwestern pond turtle or southwestern pond turtle adults, juveniles, or eggs is not included in this exception.

We described above the prohibitions that apply to threatened species. We may under certain circumstances issue permits to carry out one or more otherwise-prohibited activities. The regulations that govern permits for threatened wildlife state that the Director 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.

We recognize the special and unique relationship 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 his or her agency for such purposes, would be able to conduct activities designed to conserve the northwestern pond turtle and/or the southwestern pond turtle that may result in otherwise prohibited take without additional authorization.

Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or our ability to enter into partnerships for the management and protection of the northwestern pond turtle and/or southwestern pond turtle. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between us and other Federal agencies, where appropriate. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide 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 (see Information Requested, above).

### III. Critical Habitat

#### Background

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

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

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

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

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

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

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures

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

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

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the

species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

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

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

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

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is

unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in the 4(d) rule. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of the species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of those planning efforts calls for a different outcome.

#### Critical Habitat Determinability

Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist:

- (i) Data sufficient to perform required analyses are lacking, or
- (ii) The biological needs of the species are not sufficiently well known to identify any area that meets the definition of "critical habitat."

When critical habitat is not determinable, the Act allows the Service an additional year to publish a critical habitat designation (16 U.S.C. 1533(b)(6)(C)(ii)).

We reviewed the available information pertaining to the biological needs of the northwestern pond turtle and southwestern pond turtle and habitat characteristics where the two species are located. A careful assessment of the economic impacts that may occur due to a critical habitat designation is still ongoing, and we are in the process of working with our Federal partners, Tribes, and State and other partners in acquiring the complex information needed to perform that assessment. Therefore, due to the current lack of data sufficient to perform required analyses, we conclude that the designation of critical habitat for the northwestern pond turtle and southwestern pond turtle is not determinable at this time. The Act

allows the Service an additional year to publish a critical habitat designation that is not determinable at the time of listing (16 U.S.C. 1533(b)(6)(C)(ii)).

#### Required Determinations

##### Clarity of the Rule

We are required by 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.

##### 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. Aug. 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), E.O. 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at

512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with federally recognized Tribes 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. During the development of the SSA report for the western pond turtle, we asked for information and concerns from all the federally recognized Tribes in the range of the two species in Washington, Oregon, Nevada, and California. We did not receive any information regarding the western pond turtle from any Tribe. We will continue to work with Tribal entities during the development of the final rule for listing of the northwestern pond turtle and southwestern pond turtle and the designation of critical habitat for the two species.

#### References Cited

A complete list of references cited in this rulemaking is available on the internet at <https://www.regulations.gov> and upon request from the Ventura Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

#### Authors

The primary authors of this proposed rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Service's Ecological Field Offices in the Pacific Northwest and Pacific Southwest Regions.

#### 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 entries for “Turtle, northwestern pond” and “Turtle,

southwestern pond” in alphabetical order under REPTILES to read as follows:

**§ 17.11 Endangered and threatened wildlife.**

\* \* \* \* \*  
(h) \* \* \*

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
*	*	*	*	*
REPTILES				
*	*	*	*	*
Turtle, northwestern pond.	<i>Actinemys marmorata</i> .	Wherever found ..	T	[Federal Register citation when published as a final rule]; 50 CFR 17.42(p) <sup>4d</sup> .
Turtle, southwestern pond.	<i>Actinemys pallida</i>	Wherever found ..	T	[Federal Register citation when published as a final rule]; 50 CFR 17.42(p) <sup>4d</sup> .
*	*	*	*	*

■ 3. As proposed to be amended at 86 FR 62434 (November 9, 2021), § 17.42 is further amended by adding paragraph (p) to read as follows:

**§ 17.42 Special rules—reptiles**

\* \* \* \* \*

(p) Northwestern pond turtle (*Actinemys marmorata*) and Southwestern pond turtle (*Actinemys pallida*).

(1) *Prohibitions.* The following prohibitions that apply to endangered wildlife also apply to the northwestern pond turtle and southwestern pond turtle. Except as provided under paragraph (p)(2) of this section and §§ 17.4 and 17.5, 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 these 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 specimens, as set forth at § 17.21(d)(1) for endangered wildlife.
- (iv) Interstate or foreign commerce in the course of 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 these 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.

(v) Take incidental to an otherwise lawful activity caused by:

(A) Forest or wildland management activities that are conducted for the purpose of and in accordance with an established forest or fuels management plan and that include measures that minimize impacts to the species and its aquatic habitat for the purposes of reducing the risk or severity of catastrophic wildfire or maintaining the minimum clearance (defensible space) requirement to provide reasonable fire safety and to reduce wildfire risks consistent with State fire codes or local fire codes or ordinances. These measures include prescribed burns, fuel reduction activities, maintenance of fuel breaks, and defensible space maintenance actions.

(B) Habitat restoration activities conducted as part of nonpermitted Federal or State habitat restoration plans that are developed in coordination with the Service or the Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, California Department of Fish and Wildlife, or Nevada Department of Wildlife that are for the purpose of

northwestern pond turtle and/or southwestern pond turtle conservation as appropriate.

(C) Nonnative bullfrog removal activities that include bullfrog trapping, giggering, shooting with air guns (using only nonlead ammunition), dipnetting, or hand catching. Activities that disrupt habitat (e.g., vegetation removal, dewatering) or that may indiscriminately harm or kill wildlife or aquatic organisms (e.g., use of chemicals, electro-shocking) are not included in the exception in this paragraph (p)(2)(v)(C). Northwestern pond turtle and southwestern pond turtles that are caught alive as part of nonnative bullfrog removal must be returned to their source location.

(D) Routine management and maintenance of livestock ponds, including maintenance and management of berms and dams to maintain livestock water supplies, by landowners. The intentional introduction into a livestock pond of species that may prey on northwestern pond turtle or southwestern pond turtle adults, juveniles, or eggs is not included in the exception in this paragraph (p)(2)(v)(D).

\* \* \* \* \*

**Janine Velasco,**

*Acting Director, U.S. Fish and Wildlife Service.*

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