Signed pursuant to authority delegated at 49 CFR 1.27(c) in Washington, DC.

Subash Iyer,

Acting General Counsel.

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R1–ES–2020–0076; FXES1111090FEDR–245–FF09E21000]

RIN 1018–BE71

Endangered and Threatened Wildlife and Plants; Threatened Species Status for Mount Rainier White-Tailed Ptarmigan With a Section 4(d) Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine threatened species status for the Mount Rainier white-tailed ptarmigan (*Lagopus leucura rainierensis*), a bird subspecies in Washington, under the Endangered Species Act of 1973, as amended (Act). This rule adds the subspecies to the List of Endangered and Threatened Wildlife and extends the Act's protections to the subspecies. We also finalize a rule under the authority of section 4(d) of the Act that provides measures that are necessary and advisable to provide for the conservation of the Mount Rainier white-tailed ptarmigan.

DATES: This rule is effective August 2, 2024.

ADDRESSES: This final rule is available on the internet at *https://www.regulations.gov* under Docket No. FWS–R1–ES–2020–0076 and at *https://www.fws.gov/office/washington-fish-and-wildlife.* Comments and materials we received are available for public inspection at *https://www.regulations.gov* under Docket No. FWS–R1–ES–2020–0076. Supporting materials we used in preparing this rule, such as the species status assessment report, are also available at *https://www.regulations.gov* under Docket No. FWS–R1–ES–2020–0076.

FOR FURTHER INFORMATION CONTACT: Brad Thompson, State Supervisor, U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, 510 Desmond Drive, Suite 102, Lacey, WA 98503; telephone 360–753–9440. 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.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species warrants listing if it meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range). If we determine that a species warrants listing, we must list the species promptly and designate the species' critical habitat to the maximum extent prudent and determinable. We have determined that the Mount Rainier white-tailed ptarmigan meets the Act's definition of a threatened species; therefore, we are listing the Mount Rainier white-tailed ptarmigan as a threatened species. Listing a species as an endangered species 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. This rule makes final the listing of the Mount Rainier white-tailed ptarmigan as a threatened species under the Act and adopts a rule under section 4(d) of the Act for the subspecies.

The basis for our action. Under the Act, we may determine that a species is an endangered species 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 Mount Rainier white-tailed ptarmigan meets the definition of a threatened species due to habitat loss and degradation resulting from climate change within the foreseeable future. Rising temperatures associated with climate change are expected to have direct and rapid impacts on individual birds. Changing habitat conditions, such as loss of suitable alpine vegetation and reduced snow quality and quantity, are expected to cause populations to decline. This threat and responses are reasonably foreseeable because some are already evident in the range of the subspecies, and the best available information indicates that the effects of climate change will continue to alter the subspecies' habitat within the foreseeable future. Furthermore, it is unlikely that the Mount Rainier white-tailed ptarmigan will adapt to the changing climate by moving northward because alpine areas north of the subspecies' current range are expected to undergo similar impacts due to climate change and any potential connectivity to areas north of the current range is expected to decline.

Previous Federal Actions

Please refer to the proposed listing rule (86 FR 31668; June 15, 2021) for a detailed description of previous Federal actions concerning the Mount Rainier white-tailed ptarmigan.

Peer Review

A species status assessment (SSA) team prepared an SSA report for Mount Rainier white-tailed ptarmigan. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the subspecies, including the impacts of past, present, and future factors (both negative and beneficial) affecting the subspecies. 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 draft SSA report. We sent the draft SSA report to seven independent peer reviewers including scientists with expertise in white-tailed ptarmigan as well as climate science; we received three responses. The peer reviews and the draft SSA report they commented on can be found at *https://www.regulations.gov.* We also sent the draft SSA report to three agency partners for review; we received comments from one agency—the Washington Department of Fish and Wildlife. We incorporated the results of these reviews, as appropriate, into the 2021 SSA report (version 1.0, USFWS 2021, entire), which was the foundation for the proposed rule and this final rule. Additionally, new information provided to us during the public comment period on the proposed rule was incorporated into both the final rule as well as version 2.0 of the SSA report (USFWS 2023, entire). A summary of the peer review comments and our responses can

be found in the Summary of Comments and Recommendations below.

Summary of Changes From the Proposed Rule

In preparing this final rule, we reviewed and fully considered comments and new information received from the public on the June 15, 2021, proposed rule. This final rule does not make any substantive changes to the determinations made in the proposed rule. We updated the SSA report to version 2.0 (USFWS 2023, entire), revising it based on all new information and comments received. The new information received from our agency partners and others on genetics, diet, habitat characteristics, adaptive divergence, and range and distribution was incorporated into version 2 of the SSA but not incorporated into this final rule because it did not lead to substantive changes in the determinations made in the proposed rule. The changes we made to this final rule are as follows:

(1) We shorten the Background section to a condensed discussion of the general information for the subspecies on taxonomy/genetics, species description, range/distribution, life history, and habitat (for the full updated discussion on these topics see version 2 the SSA Report (USFWS 2023));

(2) We shorten the Summary of Biological Status and Threats section to include only a brief discussion of recreation and the full discussion of the effects of climate change (for the full updated discussion on factors influencing the status of the subspecies see version 2 the SSA Report (USFWS 2023));

(3) We make many clarifications and minor corrections in this rule to ensure better consistency with the updated SSA report (USFWS 2023), we clarify some information, and we update or add new references.

(4) We remove language referencing low connectivity between populations from this final rule.

(5) We revise table 6 in the final rule (and table 17 the SSA (USFWS 2023, p. 81) by correcting the following:

- We adjust the future condition score under Scenario 4 for the North Cascades-West Population Unit to poor, to be consistent with that unit's Scenario 2 score. Under both scenarios, we predict a lack of future availability of breeding and post-breeding habitat (USFWS 2023, chapter 6.0).
- We adjust the future condition scores for Mount Adams under Scenarios 1 and 3 from good to fair, to better reflect predicted future conditions for Mount Adams, as explained in the SSA report (version 2.0, USFWS 2023, chapter 6.0).

(6) In light of the April 5, 2024, regulation revisions to 50 CFR 424.12, that pertain to circumstances when a designation of critical habitat may be not prudent, we indicate we will reevaluate the prudency analysis for the ptarmigan and issue a critical habitat determination in a separate **Federal Register** document.

(7) We make revisions to the description of the prohibitions and exceptions in our rule issued under section 4(d) of the Act (''4(d) rule'') in the preamble of this final rule to be consistent with the regulatory text that sets forth the 4(d) rule.

(8) We revise the regulatory text that sets forth the 4(d) rule by making the following changes:

- In § 17.41(i)(1), we add the full suite of section 9 prohibitions. We want to prevent declines in the species' status, and section 4(d) provides that the Secretary shall promulgate regulations that are necessary and advisable to provide for the conservation of the species. Although threatened species are not currently in danger of extinction like endangered species, we have determined those species are likely to become in danger of extinction within the foreseeable future, and we have an opportunity to try to prevent that from happening for newly listed species. Further, we often lack a complete understanding of the causes of a species' decline, and taking a precautionary approach to applying protections would proactively address potentially unknown threats. In addition, the initial listing of a species may bring new attention to the species and that attention may increase the risk of collection or sale. Therefore, this approach of applying section 9 prohibitions assists our goal of putting in place protections that will both prevent the species from becoming endangered and promote the recovery of species. As we learn more about the Mount Rainier white-tailed ptarmigan and the reasons for its decline over time, we have the option to revise the 4(d) rule accordingly.
- In § 17.41(i)(2)(ii), we remove reference to 17.21(c)(5) as this was an error in the proposed rule.
- In § 17.41(i)(2)(v), we remove the exception for Law Enforcement and On-the-job Wildlife Professionals. The intent of this exception is already satisfied by exceptions in § 17.41(i)(2)(i)–(iv), making this stand-alone this exception duplicative.
- In § 17.41(i)(2)(iv)(F), we add developed ski areas and helicopter landing pads to the list of examples of infrastructure where incidental take of Mount Rainier white-tailed ptarmigan can occur during routine maintenance. This revision ensures consistency between our description of the exception in the preamble of this document and in the regulatory text that sets forth the 4(d) rule. In addition, we keep references to trails as part of infrastructure, but remove any references to trails separate from infrastructure to eliminate redundancy in both the preamble and promulgation.

We conclude that the information we received during the comment period for the June 15, 2021, proposed rule did not change our previous analysis of the magnitude or severity of factors influencing the subspecies or our determination that the Mount Rainier white-tailed ptarmigan meets the definition of a threatened species.

Summary of Comments and Recommendations

Prior to developing the proposed rule, we solicited peer review and received comments on the draft SSA report (USFWS 2021) as discussed below. In our June 15, 2021, proposed rule (86 FR 31668), we requested that all interested parties submit written comments on the proposal by August 16, 2021. We also contacted appropriate Federal and State agencies, Tribes, scientific experts and organizations, and other interested parties and invited them to comment on the proposed rule. Newspaper notices inviting general public comment were published in the Seattle Times on June 21, 22, and 23, 2021, and we did not receive any requests for a public hearing. All substantive information provided during the public comment period either has been incorporated directly into this final rule or is addressed below.

Peer Reviewer Comments

As discussed in Peer Review, above, we received comments from three peer reviewers on the draft SSA report. We reviewed all comments we received from the specialists for substantive issues and new information regarding Mount Rainier white-tailed ptarmigan. The reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions to improve the SSA report and this final rule. The SSA peer review comments mainly fell into categories pertaining to the subspecies' life history, influence factors, and population needs. Revisions per peer reviewer comments and expert opinions are incorporated into the SSA report (version 1.0, USWFS 2021, entire;

version 2.0, USFWS 2023, entire) and this final rule as appropriate.

Public Comments

We received 14 public comment letters in response to the June 15, 2021, proposed rule. We reviewed all comments we received during the public comment period for substantive issues and new information regarding the proposed rule. A majority of the commenters supported the listing determination and one opposed the determination. Eight commenters provided substantive comments or new information concerning the proposed listing and 4(d) rule for Mount Rainier white-tailed ptarmigan. Below, we provide a summary of the substantive issues raised in the public comments we received; however, comments outside the scope of the proposed rule, and those without supporting information, did not warrant an explicit response and, thus, are not presented here. Identical or similar comments have been consolidated. As noted below in Critical Habitat, any substantive comments regarding critical habitat received during the comment period on the 2021 proposed rule will be responded to in a separate determination in the future in the **Federal Register**.

Comments From Federal Agencies

(1) Comment: The U.S. Forest Service (USFS) asked for clarification regarding species and habitat responses to climate change, including why the representative concentration pathway (RCP) 8.5 model predicted good food abundance if there is overall habitat loss and whether habitat loss is related to heat.

Our Response: We determined with our expert elicitation group that Mount Rainier white-tailed ptarmigan need both an adequate quality and quantity of foraging habitat in each season, but habitat quality is no longer relevant if habitat quantity is zero. The expert elicitation group included biologists from USFS, the Washington Department of Fish and Wildlife (WDFW), and the National Park Service (NPS) with local expertise on the subspecies and its habitat.

As described in the SSA report (USFWS 2023, chapter 3.0), we developed a list of species' needs and their indicators prior to the future condition analysis that includes the RCP8.5 scenario. The USFS comment is correct in noting an apparent contradiction between the ratings for habitat loss and food abundance, but the term ''abundance of food resources'' was chosen to represent the quality and quantity of foraging habitat within remaining breeding, post-breeding, and wintering habitat. We used a variety of indicators to represent ''abundance of food resources,'' including acres of winter forage vegetation, distance to water during the breeding season, Normalized Difference Vegetation Index (NDVI; an index of plant growth) during early brood rearing, peak timing of NDVI, soil moisture, and the width of the unvegetated area of the glacial forefront not yet colonized by forage plants. Of these, the only indicator available for future scenarios was a measure of soil moisture. In forb-dominated alpine environments, soil moisture will drive productivity in the face of climate warming (Walker et al. 1994, p. 402; Winkler et al. 2016, p. 1553). Soil moisture was projected to remain within one standard deviation of historical means (Northwest Climate Toolbox, developed by members of the Applied Climate Science Lab at the University of Idaho (Pacific Northwest Climate Impacts Research Consortium, CIRC, 2019)), and therefore remains within the range of a ''good'' rating for some of the population units in some future scenarios. We chose measures within one standard deviation of historical means as representative of a ''good'' rating because our expert elicitation group concluded that historical forage vegetation conditions adequately support populations of the Mount Rainier white-tailed ptarmigan.

With regard to the potential relationship of habitat loss and heat, the overall loss of ptarmigan habitat is not directly due to a warming climate or desiccation of alpine meadows, but to a shift from open meadow vegetation to forest (Intergovernmental Panel on Climate Change (IPCC) 2019, p. SPM–25; Jackson et al. 2015, p. 440; Steuve et al. 2009, entire; USFWS 2023, pp. 57–61). This future shift to forest represents a loss of habitat for the Mount Rainier white-tailed ptarmigan, and for other species dependent on alpine tundra vegetation.

(2) Comment: USFS questioned why alpine meadow habitat would not expand into areas where glaciers have retreated.

Our Response: In the June 15, 2021, proposed rule, and as explained in the SSA report (USFWS 2023, p. 60), as glaciers retreat and expose soil-less, unvegetated bedrock (called the glacial forefront), we estimate a minimum of 20 years for the development of white-tailed ptarmigan forage plants, and 70 to 100 years for maturation to full meadow and subshrub habitat within that area. This represents a time gap in development of breeding and post-breeding habitat of 5 to 24 generations of ptarmigan (86 FR 31668, June 15, 2021, p. 31681), and thus in the foreseeable future, habitat loss is expected to exceed habitat gains. At some point after glacial retreat (beyond our projected timeline), the exposed areas will be suitable ptarmigan habitat with alpine meadows and remain so for a period of time. Eventually, however, any alpine habitat that develops there will become forest (USFWS 2023, pp. 57–61).

(3) Comment: USFS questioned our use of 50- to 80-year climate models as ''foreseeable'' and asked for clarification on the projected effects of warming temperatures on forage plant growth.

Our Response: As discussed below under *Regulatory Framework,* the foreseeable future extends as far into the future as the Service can make reasonably reliable predictions about the threats to the species and the species' responses to those threats. 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 and the species' biological response. For the Mount Rainier white-tailed ptarmigan, we could make reasonably reliable predictions 50 to 80 years into the future with respect to the primary driver of the subspecies' status (climate change) and our understanding of information available on the subspecies' survival, generational framework, and physiology (see the discussion in *Climate Change* under Summary of Biological Status and Threats, below, and section 6.1 of SSA report (USFWS 2023, p. 73).

(4) Comment: USFS asked what metric we used to estimate the low connectivity between populations discussed under *Status Throughout all its Range* in the proposed rule, given that the subspecies is able to fly relatively long distances.

Our Response: In the June 15, 2021, proposed rule, we erred in stating that connectivity between populations is currently low (86 FR 31668 at p. 31685). Current connectivity levels between populations are not negatively impacting the viability of the subspecies; therefore, we removed language referencing low connectivity between populations from this final rule. For the SSA, we analyzed current connectivity between types of habitat within each population. Appendix F in the SSA report (USFWS 2023, pp. 120–138) provides information on current connectivity between breeding, post-breeding, and winter habitat within

each population unit. The categories of ''poor,'' ''fair,'' ''good,'' and ''very good'' are based on the size and abundance of habitat gaps within a population unit. Current connectivity for each population was categorically rated based on expert opinion (WDFW partners), but future condition estimates of connectivity were left blank (see appendix G in the SSA report (USFWS 2023, pp.138–156) because available vegetation models are not sensitive enough to model small-scale areas, which would be necessary to make a definitive statement of future condition of this indicator. Therefore, this indicator was not used to rate future condition of any population unit or the subspecies.

We clarified the language under Executive Summary, above, and *Status Throughout All of Its Range,* below, to make clear that this information was for evaluating connectivity between breeding, post-breeding, and winter habitat within populations, as opposed to connectivity between populations. We also clarified that the metric was only used for analysis of current condition for each population.

(5) Comment: The British Columbia Ministry of Environment and Climate Change remarked that the amount of existing recreation in British Columbia is similar to that occurring in the United States, with the same resultant effects to the species. USFS noted that recreational use of high-elevation habitats has been increasing, exponentially in recent years, but did not provide data to support or further explain this statement.

Our Response: We agree that factors influencing Mount Rainier white-tailed ptarmigan populations in British Columbia are similar to those affecting populations in the State of Washington. We thoroughly analyzed the best available information on the scope, magnitude, and intensity of recreation in the range of the subspecies (USFWS 2023, pp. 42–48). Based on this analysis, recreation of any type or timing in the range does not appear to currently affect any more than individual ptarmigan in localized areas. Although both established recreation in designated areas as well as recreation away from established roads and trails will likely increase in the future, we do not have information at this time to analyze whether future increases in recreation would rise beyond individual-level impacts such that it is likely to affect the resiliency of populations of Mount Rainier white-tailed ptarmigan.

(6) Comment: Three commenters, including British Columbia Ministry of Environment and Climate Change and USFS's Region 6, questioned the wording in the discussion of taxonomy and genetics in the June 15, 2021, proposed rule and suggested the Service refer to Taylor (1920, entire) and specific sections within Langin et al. (2018) in our final rule. These commenters questioned our identified boundary for the northern white-tailed ptarmigan, further suggesting the Mount Rainier white-tailed ptarmigan may not be a valid subspecies based on peer review comments and statements in Langin et al. (2018, entire).

Our Response: The June 15, 2021, proposed rule provided only a summary of the taxonomic and genetic information from the SSA report for the Mount Rainier white-tailed ptarmigan. As noted in the SSA report (USFWS 2023, p. 23), the 1957 American Ornithological Union (AOU, now American Ornithological Society (AOS)) taxonomic classification of the subspecies relies on a 1920 description (Taylor 1920, entire) of the subspecies based on a comparison of specimens taken only from Mount Rainier National Park. We adopted the 1957 AOU classification of the subspecies for delineating the range of the subspecies for the SSA analysis and explain in the SSA report that the AOU mapping of the subspecies' border at the international boundary was likely a convenience; the range of the subspecies likely extends slightly farther north than the U.S.-Canada border because habitat is contiguous across the border (USFWS 2023, p. 23; Langin et al. 2018, figures S10 and S14).

As explained in our June 15, 2021, proposed rule, a combination of sightings, dispersal distance, occurrence and distribution of suitable alpine/subalpine habitat, and forests, agriculture, cities, and highways that occur west of the range of the subspecies in British Columbia was used to determine the northern range limit. A 2018 genetics study referenced by commenters (Langin et al. 2018) raised some uncertainty regarding the taxonomic validity of several of the subspecies of white-tailed ptarmigan. However, Langin et al. (2018) stated that sampling was sparse in the area at the border of Washington and British Columbia, ''. . . making it infeasible to identify the start and end points of putative genetic groups.'' Furthermore, additional research by another group found that individuals are genetically clustered largely by their recognized subspecies (Zimmerman et al. 2021, p. 125).

We acknowledge there is some remaining uncertainty over the relationship between the subspecies in question and the exact boundary between *L. l. rainierensis* and other subspecies in the genus. However, there has been no change to the official nomenclature of Mount Rainier white-tailed ptarmigan, and the best available science leads us to find that the Fraser River represents the northern terminus of the range of the *L. l. rainierensis* subspecies. We have incorporated additional information in the discussion of taxonomy and genetics in the SSA report (USFWS 2023, pp. 4–6). All substantive peer review and expert elicitation comments were incorporated into the SSA report (version 1.0. USFWS 2021, entire; version 2.0, USFWS 2023, entire) and considered in development of the June 15, 2021, proposed rule and this final rule.

Comments From States

Section 4(i) of the Act states that the Secretary shall submit to the State agency a written justification for the failure to adopt regulations consistent with the agency's comments or petition. Comments we received from State agencies regarding the proposal to list the Mount Rainier white-tailed ptarmigan as threatened under the Act are addressed below. We received comments from WDFW related to biological information, influence factors, and the 4(d) rule. WDFW provided a number of recommended technical corrections, clarifications, or edits to the proposed listing determination for the Mount Rainier white-tailed ptarmigan. As noted in the Summary of Changes from the Proposed Rule, we have evaluated and incorporated this information into this final rule where appropriate to clarify the final listing determination.

(7) Comment: Citing a 1905 text by Judd, WDFW indicated the historical range of the Mount Rainier white-tailed ptarmigan may have extended south to Mt. Hood and Mount Jefferson in Oregon.

Our Response: We contacted biologists at WDFW to discuss this comment. Past research by WDFW biologists has shown that such historical observations may be in error. Because the Judd text did not provide any information on who or when someone may have seen the subspecies in that area, their recommendation was to mention the possible past occupancy of the subspecies in the area of Mt. Hood and Mount Jefferson, but not to list the area as a historical population. A clarification to this effect has been added to the SSA report (USFWS 2023).

(8) Comment: WDFW suggested that sections of the proposed rule that cite results from research conducted within

the range of the southern white-tailed ptarmigan should be cited as such, as those results may not accurately represent conditions or life-history traits for the Mount Rainier white-tailed ptarmigan.

Our Response: In this final rule, we clarify where information came from in studies of southern white-tailed ptarmigan and other subspecies of white-tailed ptarmigan under the Summary of Biological Status and Threats, below.

Other Comments

(9) Comment: Several commenters from nongovernmental organizations and other groups noted their repeated and extensive, yet unsuccessful, searches for Mount Rainier white-tailed ptarmigan over the last several years, concluding that the subspecies' range is likely contracting.

Our Response: We incorporated the search effort information provided by the commenters into the final SSA report and this rule (see Background, below), and we considered the information in our determination.

I. Final Listing Determination

Background

We completed a comprehensive assessment of the biological status of the Mount Rainier white-tailed ptarmigan and prepared a report of the assessment (SSA report; USFWS 2023, entire), which provides a thorough account of the subspecies' overall viability and risks to that viability. Please refer to the SSA report as well as our June 15, 2021, proposed rule (86 FR 31668) for a full summary of subspecies information. Both are available at *https://www.regulations.gov* under Docket No. FWS–R1–ES–2020–0076. Below, we summarize the key results and conclusions of the SSA report.

The Mount Rainier white-tailed ptarmigan, one of five subspecies of white-tailed ptarmigan (AOU 1998, p. xii; ITIS 2019; Clements et al. 2019, entire), is found in alpine and subalpine areas of the Cascade Mountains (Cascades) in Washington State and southern British Columbia, Canada. Mount Rainier white-tailed ptarmigan's historical range extended along the Cascade Range from southern Canada south to and including Mount St. Helens and Mount Adams. Mount Rainier white-tailed ptarmigan regularly occurred on Mount St. Helens before the active volcano lost approximately 400 meters (m) (1,314 feet (ft)) of elevation when it erupted in 1980 (Brantley and Myers 1997, p. 2). The population on Mount St. Helens is now presumed extirpated (Schroeder et al. 2021, p 4). We consider the current range of the Mount Rainier white-tailed ptarmigan to include alpine and subalpine areas in the Cascade Mountains, extending from the southern edge of Mount Adams in Washington State to approximately Lytton, British Columbia, Canada, east of the Fraser River. Recent searches for the subspecies noted the recession or loss of previously permanent snowfields, as well as a marked decline in sightings or density of sightings of individuals (Garner 2021, in litt.; Isley 2021, in litt.).

The four other recognized subspecies of white-tailed ptarmigan are the southern white-tailed ptarmigan (*L. l. altipetens*) primarily in Colorado; the Kenai white-tailed ptarmigan (*L. l. peninsularis*) in Alaska; the Vancouver Island white-tailed ptarmigan (*L. l. saxatilis*) in British Columbia, Canada; and the northern white-tailed ptarmigan (*L. l. leucura*) in northern Montana, and the provinces of British Columbia and Alberta, Canada. In the following paragraphs, we rely on studies conducted on other subspecies of white-tailed ptarmigan because most life-history studies either do not differentiate between the subspecies or focus on the more well-studied southern white-tailed ptarmigan subspecies. Mount Rainier white-tailed ptarmigan are cryptic birds that are resident or short-distance elevation migrants with numerous adaptations for snow and extreme cold in winter, including snow roosting behavior and heavily feathered feet that act as snowshoes to support them as they walk across the snow (Braun et al. 2011, Distinguishing Characteristics section). The subspecies molts frequently throughout the year to remain cryptic, appearing entirely white in winter (except for black eyes, dark toenails, and a black beak), mottled with brown and white in spring, and brown in summer; the tail feathers remain white year-round and distinguish the white-tailed ptarmigan from other ptarmigan species (Braun et al. 2011, Distinguishing Characteristics section; Braun et al. 1993, Appearance section; Hoffman 2006, p. 12). Males and females share similar body size and shape, with adult body lengths up to 34 centimeters (cm) (13.4 inches (in)), and body masses up to approximately 378 grams (g) (0.83 pounds (lb)) (Martin et al. 2015, table 3).

Pairs of ptarmigan form shortly after females arrive on breeding areas in late April to mid-May (Martin et al. 2015, Phenology section). Due to the short breeding season, female white-tailed ptarmigan raise only one brood per year (Sandercock et al. 2005, p. 2177). Within 6 to 12 hours after all eggs have hatched, broods gradually move upslope, depending on where forage and cover for chicks are found (Braun 1969, p. 140; Schmidt 1988, p. 291; Giesen and Braun 1993, p. 74; Hoffman 2006, p. 21; Martin et al. 2015, Young Birds section). Records of longevity for wild white-tailed ptarmigan include a 12-year-old female and a 15-year-old male (Martin et al. 2015, Life Span and Survivorship section). There have been no population-scale density estimates for populations in the range of the Mount Rainier subspecies but estimates for other subspecies range from fewer than 1 to about 14 birds per square kilometer (km^2) (2.6 to 36 birds per square mile (mi^2)) (Clarke and Johnson 1990, p. 649). Mount Rainier white-tailed ptarmigan populations may or may not be within this wide range reported for other subspecies (USFWS 2023, p. 26).

Chicks younger than 3 weeks old primarily eat invertebrates (May 1975, p. 28), but adult white-tailed ptarmigan, as well as chicks older than approximately 5 weeks old, are herbivorous (May 1975, pp. 28–29). Mount Rainier white-tailed ptarmigan in the North Cascades were observed eating, in order of preference: dwarf huckleberry (*Vaccinium deliciosum*), red mountain heather (*Phyllodoce empetriformes*), black-headed sedge (*Carex nigricans*), white mountain heather (*Cassiope mertensiana*), crowfoot (*Luetkea pectinata*), Tolmie's saxifrage (*Saxifraga tolmiei*), spiked wood rush (*Luzula spicata*), and mosses (Skagen 1980, p. 4). A suitable microclimate is important for this cold-adapted bird. Because white-tailed ptarmigan have the lowest evaporative cooling efficiency of any bird (Johnson 1968, entire) and will pant at temperatures above 21 °C (70 °F), adults are likely limited by warm temperatures during the breeding and post-breeding seasons. Thermal behavioral adaptations include seeking cool microsites such as the edges of snowfields, near snowbanks, in the shade of boulders, or near streams where temperatures are cool; the absence of these microsites may preclude presence of the species (Johnson 1968, p. 1012). Use of snow in late summer may be important.

Breeding and brood-rearing habitat of white-tailed ptarmigan is within the alpine zone, defined by treeline at its lower elevation limit and permanent snow or barren rock at its upper elevation limit. As with breeding habitat, the lower elevation limit of post-breeding habitat is likely defined by treeline and proximity to water (Frederick and Gutierrez 1992, p. 895).

At high elevations in the Pacific Northwest, winter snowpack can store a significant portion of winter precipitation and release it to the soil during spring and early summer, thereby reducing the duration and magnitude of summer soil water deficits (Peterson et al. 2014, p. 26). At the basin scale, glacier melt supplies 2 to 14 percent of summer discharge in the Cascades and up to 28 percent of discharge by September (Frans et al. 2018, p. 11); the proportion is likely much greater in the high-elevation subbasins occupied by Mount Rainier white-tailed ptarmigan, which have a smaller catchment area to supply discharge from snow or rain.

No studies of the Mount Rainier white-tailed ptarmigan's use of winter habitat have been conducted, however, white-tailed ptarmigan in Colorado shelter from winter wind and cold in snow roosts (Braun et al. 1976, p. 2; Braun and Schmidt 1971, p. 245). Snow-roosting sites for white-tailed ptarmigan have deep, fluffy snow with high insulation value; this generally means snow that is cold, is relatively dry, and has abundant air spaces. Wind influences snow deposition patterns and the availability of snow roosts (Braun et al. 1976, p. 3). During the day when ptarmigan are not feeding, they seek shelter beneath or on the lee side of dwarf conifers growing along ridges, but snow on the ridges is often shallow and covered with a hard crust, making conditions unsuitable for night roosting. Thus, at dusk, the birds move from ridges to areas of deeper and softer snow along treeline, where they can burrow beneath the surface of the snow (Braun and Schmidt 1971, p. 245). When weather conditions are harsh, flocks will move below treeline to stream bottoms and avalanche paths (Braun et al. 1976, p. 4).

The Cascades of the Pacific Northwest have some of the deepest snowpack in North America. Willow stands along valley bottoms similar to those relied on by southern white-tailed ptarmigan are rare and are likely buried by heavy winter snows on the steep slopes within the range of the Mount Rainier white-tailed ptarmigan (Schroeder 2019, pers. comm.). Based on limited observations and information from other subspecies, we expect wintering Mount Rainier white-tailed ptarmigan will use alpine areas, open areas in subalpine parklands, and openings created by stream courses, landslides, and avalanches within subalpine forests, and refer to these habitat types as ''alpine'' or ''potentially suitable'' habitat herein. Approximately 76.5 percent of the total suitable habitat for the Mount Rainier white-tailed ptarmigan is found in the United States, and almost all of that area is federally owned (94.5 percent, see table 1, below).

TABLE 1—MOUNT RAINIER WHITE-TAILED PTARMIGAN SUITABLE HABITAT BY LAND OWNERSHIP, IN HECTARES

[Acres]

Population unit	Alpine Lakes	Goat Rocks	Mount Adams	Mount Rainier	North Cascades East	North Cascades West	William O. Douglas	Total	Percent ownership
Federal:									
USFS	132,208 (326,693)	34,901 (86,242)	14,116 (34,881)	36,090 (89,180)	354,484 (875,949)	366,774 (906,318)	25,096 (62,014)	963,669 (2,381,277)	59
NPS	0	0	0	55,917 (138,174)	18,860 (46,604)	139,639 (345,056)	0	214,416 (529,833)	13
Other Federal	275 (680)	0	0	0	402 (993)	0	0	677 (1,673)	<1
State	161 (398)	8,522 (21,058)	0	0	24,396 (60,283)	2,576 (6,364)	29 (71)	35,684 (88,177)	2
Tribal	0	17,940 (44,331)	8,087 (19,983)	0	0	0	0	26,027 (64,314)	2
Private/Other	876 (2,166)	3,488 (8,619)	1,248 (3,084)	360 (889)	141 (348)	1,562 (3,860)	0	7,675 (18,965)	<1
British Columbia:									
Provincial Parks	0	0	0	0	60,479 (149,448)	39,596 (97,845)	0	100,075 (247,291)	6
Private/Other	0	0	0	0	188,077 (464,748)	95,801 (236,730)	0	283,878 (701,477)	17
Total	133,520 (329,935)	64,851 (160,250)	23,451 (57,949)	92,367 (228,244)	646,839 (1,598,374)	645,948 (1,596,172)	25,125 (62,085)	1,632,101 (4,033,009)	

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. On April 5, 2024, jointly with the National Marine Fisheries Service, the Service issued a final rule that revised the regulations in 50 CFR 424 regarding how we add, remove, and reclassify endangered and threatened species and what criteria we apply when designating listed species' critical habitat (89 FR 24300). On the same day, the Service published a final rule revising our protections for endangered species and threatened species at 50 CFR 17 (89 FR 23919). These final rules are now in effect and are incorporated into the current regulations. Our analysis for this final decision applied our current regulations. Given that we proposed listing for this species under our prior regulations (revised in 2019), we have also undertaken an analysis of whether our decision would be different if we had continued to apply the 2019 regulations; we concluded that the listing decision would be the same. However, we will reevaluate our not prudent determination, as discussed below under Critical Habitat, in a separate **Federal Register** notice. The analyses under both the regulations currently in effect and the 2019 regulations are available on *https://www.regulations.gov*.

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 expected response by the species, 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 which is further described in the 2009 Memorandum Opinion on the foreseeable future from the Department of the Interior, Office of the Solicitor (M–37021, January 16, 2009; ''M-Opinion,'' available online at *https://www.doi.gov/sites/doi.opengov.ibmcloud.com/files/uploads/M-37021.pdf*). The foreseeable future extends as far into the future as the Services can make reasonably reliable predictions about the threats to the species and the species' responses to those threats. The Services need not identify the foreseeable future in terms of a specific period of time. The Services will describe the foreseeable future on a case-by-case basis, using the best available data and taking into account considerations such as the species' life-history characteristics, threat-projection timeframes, and environmental variability. In other words, the foreseeable future is the period of time over which we can make reasonably reliable predictions. ''Reliable'' does not mean ''certain''; it means sufficient to provide a reasonable degree of confidence in the prediction, in light of the conservation purposes of the Act.

Analytical Framework

The SSA report (USFWS 2023, entire) documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of a species, including an assessment of the potential threats to that species. The SSA report does not represent our decision on whether a species should be listed 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 Mount Rainier white-tailed ptarmigan's viability for the SSA, 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 a species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years); redundancy is the ability of a species to withstand catastrophic events (for example, droughts, large pollution events); and representation is the ability of a species to adapt to both near-term and long-term changes in its physical and biological environment (for example, climate conditions or 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 Mount Rainier white-tailed ptarmigan's ecological requirements for survival and reproduction at the individual, population, and subspecies levels, and described the beneficial and risk factors influencing the subspecies' viability.

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

Analysis Units

Occurrence data are quite limited, and we do not know whether the abundance of Mount Rainier white-tailed ptarmigan has changed over time. To facilitate the assessment of the current and projected future status of the subspecies across its range, we used the limited occurrence data and expert elicitation to delineate representation areas and population units. We separated the range into two representation areas, the North Area and the South Area, to represent the known ecological variation between the two regions. Within those two representation areas, we identified seven current population units based on observations, elevation, and vegetation types from Landfire vegetation maps (see table 2, below).

We refined the boundaries of these units by selecting vegetation types on recently refined NPS vegetation maps and Landfire vegetation maps for USFS lands. Our refined population unit maps contain nearly all observations of the subspecies obtained from agency partners. One of the population units in the South Area, William O. Douglas, has suitable habitat but unknown occupancy. Another historical population in the South Area is

considered extirpated due to the 1980 eruption of the Mount St. Helens volcano. We did not include the presumed extirpated Mount St. Helens population unit in our analysis of current or future condition because we conclude that it does not constitute suitable habitat now and is unlikely to within the foreseeable future. Similarly, we did not consider Mt. Hood or Mount Jefferson because records there are more than 100 years old and are questionable.

TABLE 2—NUMBER OF MOUNT RAINIER WHITE-TAILED PTARMIGAN OBSERVATIONS BY POPULATION UNIT

Representation area	Population unit	Number of observations
North	North Cascades—East	484
North	North Cascades—West	315
North	Alpine Lakes	98
South	Mount Rainier	289
South	William O. Douglas	0
South	Goat Rocks	4
South	Mount Adams	2

The following is a summary of the key results and conclusions from the SSA report (USFWS 2023); the full SSA report can be found at *https://www.regulations.gov* under Docket No. FWS–R1–ES–2020–0076.

Summary of Biological Status and Threats

In this discussion, we review the biological condition of Mount Rainier white-tailed ptarmigan and its resources, and the threats that influence the subspecies' current and future condition, in order to assess the subspecies' overall viability and the risks to that viability.

Factors Influencing the Status of Mount Rainier White-Tailed Ptarmigan

The petition to list the southern and Mount Rainier white-tailed ptarmigan subspecies as threatened (Center for Biological Diversity (CBD) 2010, entire) identified the following influences as threats: effects to habitat from global climate change, recreation, livestock grazing, and mining; hunting; predation; inadequacy of regulatory mechanisms; population isolation or limited dispersal distances; and population growth rates and physiological response to a warming climate. Our 90-day finding on the petition (77 FR 33143; June 5, 2012) concluded that the petition presented substantial information to indicate that the Mount Rainier white-tailed ptarmigan may warrant listing due to the effects of climate change on habitat and population growth rates, and the physiological response of the subspecies to a warming climate.

As part of our analysis of the viability of the Mount Rainier white-tailed ptarmigan, we looked at the previously identified potential environmental and anthropogenic influences on viability, as well as any new ones identified since the publication of our 90-day finding. We analyzed population isolation and limited dispersal distances in the context of our resiliency, redundancy, and representation analysis for the subspecies. We also looked at the regulatory and voluntary conservation mechanisms that may reduce or ameliorate the effect of those stressors. To provide the necessary context for our discussion of the magnitude of stressors, we first discuss our understanding of existing regulatory and voluntary conservation mechanisms.

Regulatory and Voluntary Conservation Mechanisms

A majority of the land (70 percent) within the national parks and forests in the U.S. portion of the range of the Mount Rainier white-tailed ptarmigan is congressionally designated wilderness under 16 U.S.C. 1131 *et seq.* and 54 U.S.C. 100101 *et seq.* This designation bans roads along with the use of motorized and nonmotorized vehicles. In North Cascades National Park, 94 percent of the land is designated as the Steven Mather Wilderness (259,943 ha (642,333 ac) of the total 275,655 ha (681,159 ac)) (NPS 2020, entire). There are 16 designated wilderness areas on USFS land in the Mount Rainier white-tailed ptarmigan's range; the percentage of designated wilderness in each population unit is summarized below in table 3. Additionally, 6 percent of the total suitable habitat for Mount Rainier white-tailed ptarmigan is located on land owned by British Columbia Provincial Parks (BC-Parks 2020, entire). Provincial parks are multiuse areas that contain some remote wilderness and allow activities such as hiking, camping, and winter recreation. The wilderness designation areas and Provincial Park lands in the range of Mount Rainier white-tailed ptarmigan are shown below in figure 1.

TABLE 3—PERCENT OF MOUNT RAINIER WHITE-TAILED PTARMIGAN HABITAT IN U.S. DESIGNATED WILDERNESS BY POPULATION UNIT

Population unit	Total hectares (acres) of habitat	Hectares (acres) of habitat in wilderness	Percent of habitat in unit designated as wilderness
North Cascades—East (U.S. portion)	398,283 (984,179)	232,041 (573,387)	58
North Cascades—West (U.S. portion)	510,551 (1,261,599)	394,529 (974,902)	77
Alpine Lakes	133,520 (329,935)	100,566 (248,504)	75
Mount Rainier	92,367 (228,244)	83,339 (205,935)	90

TABLE 3—PERCENT OF MOUNT RAINIER WHITE-TAILED PTARMIGAN HABITAT IN U.S. DESIGNATED WILDERNESS BY POPULATION UNIT—Continued

Population unit	Total hectares (acres) of habitat	Hectares (acres) of habitat in wilderness	Percent of habitat in unit designated as wilderness
William O. Douglas	25,125 (62,085)	19,468 (48,106)	78
Goat Rocks	64,851 (160,250)	25,375 (62,703)	39
Mount Adams	23,451 (57,949)	13,266 (32,781)	57
Total	1,248,148 (3,084,241)	868,584 (2,146,318)	70

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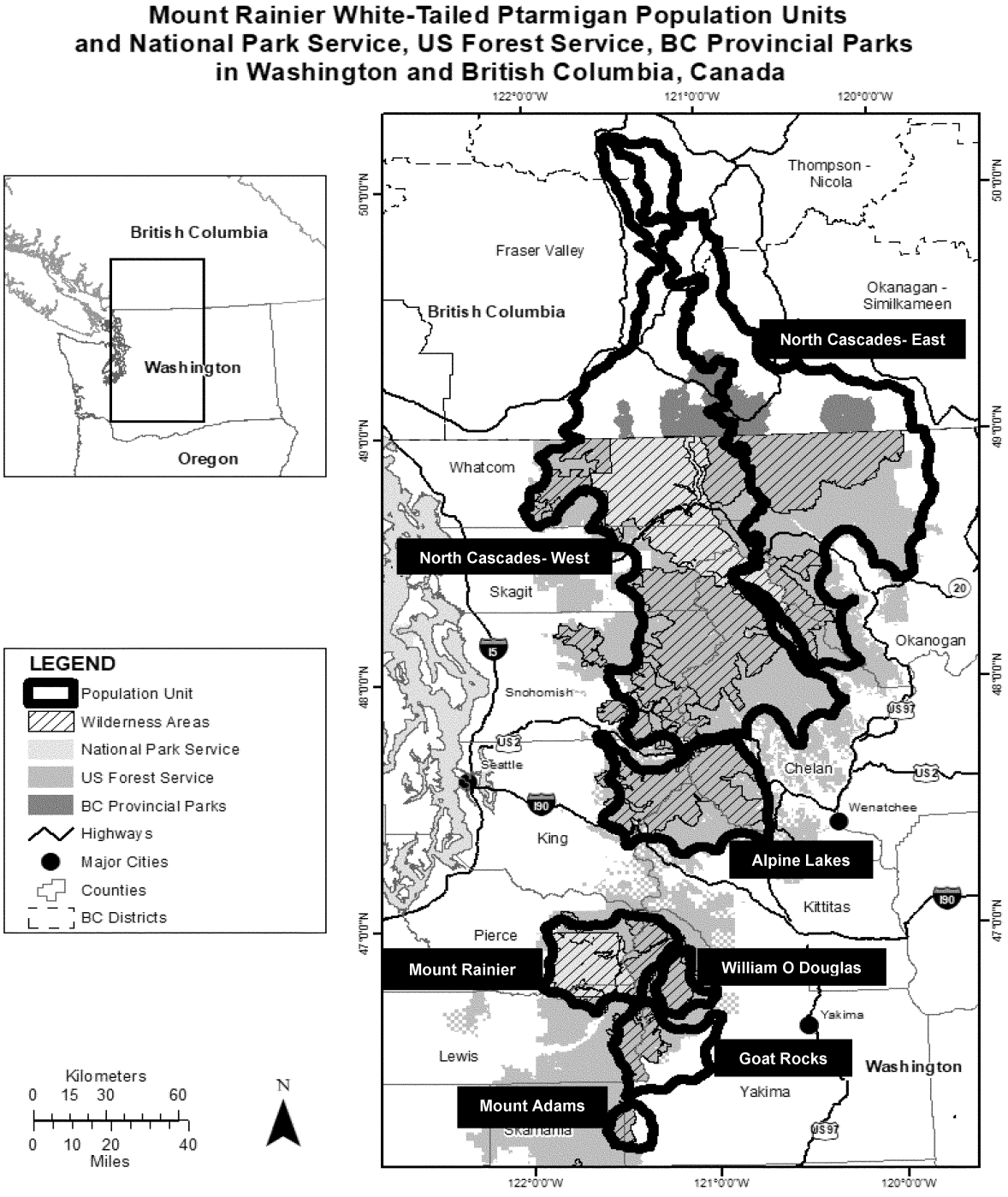

Figure 1. Mount Rainier white-tailed ptarmigan population units, land ownership, and designated wilderness areas in the subspecies' range.

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The WDFW considers the white-tailed ptarmigan a game bird but does not have a hunting season on the species. Take or possession of the species would be a violation of the Revised Code of Washington, section 77.15.400 (Washington State Legislature 2020, entire). Hunting of ptarmigan is allowed in a relatively small portion of the Canadian portion of the North Cascades–West population unit from mid-September through mid-December (BC-Parks Canada 2020, entire).

White-tailed ptarmigan are a ''Species of Greatest Conservation Need'' in the Washington State Wildlife Action Plan (WDFW 2015, pp. 3–18). The WDFW is making efforts to better understand the distribution and abundance of the species by soliciting observations from

birding enthusiasts, hikers, backpackers, mountaineers, skiers, snowshoers, and other recreationists that visit ptarmigan habitat. The Transboundary Connectivity Project (Krosby et al. 2016, entire) included white-tailed ptarmigan as a focal species, and members created conceptual models of stressors to the species and designed strategies to abate threats.

Critical habitat for Canada lynx (*Lynx canadensis*) overlaps the range of the Mount Rainier white-tailed ptarmigan in most of the North Cascades—East population unit, and about half of the North Cascades—West population unit (79 FR 54782, September 12, 2014; 50 CFR 17.95(a)). One of the identified physical and biological features essential to the conservation of Canada lynx is snow conditions (winter conditions that provide and maintain deep fluffy snow for extended periods). This critical habitat designation may provide some benefit to the Mount Rainier white-tailed ptarmigan if it results in the regulation of activities that would reduce the quantity and quality of snow within these population units, but such a situation would not likely happen at a scale that would benefit the resiliency of the population unit.

Stressors

We analyzed a variety of stressors that potentially influence the current status of the Mount Rainier white-tailed ptarmigan or may influence the subspecies' future status. We again reviewed all of the factors identified in the petition, as well as any potential additional influences in the range of the subspecies. Neither the petition nor our 90-day finding identified disease as a threat, and we did not find information in our analysis to indicate that disease is currently, or is likely to be in the future, a threat to the resiliency of any population unit or the overall viability of the subspecies. Our SSA concluded that the available information on several potential stressors, including mining, hunting, grazing, browsing, the invasive willow borer beetle (*Cryptorhynchus lapathi*), predation, and infrastructure development, indicated that these did not operate at a level affecting the resiliency of any population unit, or the overall viability of the subspecies (USFWS 2023, pp. 37–41).

While the effects from recreation have not been investigated in the field, recreation is the primary human activity throughout the range of the subspecies. As discussed in the Proposed Rule and the SSA Report (USFWS 2023, section 4.8), a wide array of recreation regularly occurs year-round within all Mount Rainier white-tailed ptarmigan population units. Although no published studies exist that directly link recreation to individual-level, population-level, or subspecies-level effects to the Mount Rainier white-tailed ptarmigan, effects to individual Mount Rainier white-tailed ptarmigan have been observed, and studies have shown effects of recreation on closely related species (USFWS 2023, p. 42–43). However, available information does not indicate that recreation has impacted the historical abundance and distribution of Mount Rainier white-tailed ptarmigan. Further, although we do not know the true overlap of recreational areas (mainly trails) with concentrated Mount Rainier white-tailed ptarmigan use areas, the history of established recreation, the overall small amount of area occupied by trails in Mount Rainier white-tailed ptarmigan habitat (0.02 percent as shown in Table 9, USFWS 2023, p. 47), and the large percentage of protected wilderness in the range (70 percent of the range of the subspecies in the United States as shown in Table 4, USFWS 2023, p. 41) all likely reduce the risk of exposure of the subspecies to this stressor. The best available information does not indicate that recreation currently has a population-level effect on the Mount Rainier white-tailed ptarmigan. Although both established recreation in designated areas as well as recreation away from established roads and trails will likely increase in the future, available information does not indicate that future increases in recreation would rise beyond individual-level impacts such that it is likely to affect subspecies' redundancy or representation.

The effects of climate change are already evident in Mount Rainier white-tailed ptarmigan habitat, and the projected future increase in those effects may decrease the viability of the subspecies. The Intergovernmental Panel on Climate Change (IPCC) (2019, pp. 2–9) projects with very high confidence that surface air temperatures in high mountain areas will rise by 0.54 °F (0.3 °C) per decade, generally outpacing global warming rates regardless of future emission scenario. As temperatures increase, glaciers initially melt quickly and contribute an increased volume of water to the system, but as glacial mass is lost, their contribution of meltwater to the system decreases over time. Global climate models project declines in current glacier area throughout the Washington and northern Oregon Cascades (Frans et al. 2018, p. 13) that will result in a corresponding decline in associated snowpack and glacial melt contribution to summer discharge. Scenario representation concentration pathway (RCP) 4.5 is a moderate emissions scenario, and RCP8.5 is a high emissions scenario (Alder and Hostetler 2016, entire). In the North Cascades, glaciers are projected to retreat 92 percent between 1970 and 2100 under RCP4.5, and 96 percent between 1970 and 2100 under RCP8.5 (Gray 2019, p. 34).

The effects of climate change have already led to some glacial recession in Mount Rainier white-tailed ptarmigan habitat (Snover et al. 2013, pp. 2–3). Geologic mapping data, old maps and aerial photos, and recent inventories indicate that glacier area declined 56 percent in the North Cascades between 1900 and 2009 (Dick 2013, p. 59). On Mount Adams, total glacier area decreased by 49 percent from 1904 to 2006, at about 0.15 km^2 (0.06 mi^2) per year (Sitts et al. 2010, p. 384). Other individual glaciers in Washington have receded from 12 percent (Thunder Creek; 1950–2010) to 31 percent (Nisqually River; 1915–2009) (Frans et al. 2018, p. 10), and throughout the Cascades, glaciers continue to recede in both area and volume (Snover et al. 2013, pp. 2–3; Dick 2013, p. 59).

Glacier melt in many of the watersheds of the eastern Cascade Range and low-moderate elevation watersheds of the western Cascades has already peaked or will peak in the current decade (Frans et al. 2018, p. 20). The variation in the timing of peak discharge from glacier to glacier will initially lead to decreases in available moisture to some alpine meadows but increases in others. Later in the century, we expect all areas to suffer significant losses of glacier melt (Frans et al. 2018, p. 20). Total discharge in August and September from snowmelt, rain, and glacial melt in a sample of Cascades watersheds is already below the 1960–2010 mean and is expected to continue to drop through 2080 (Frans et al. 2018, p. 15). Glaciers on the east side of the Cascade crest, where the precipitation regime is drier, show the strongest response to climate in both historical and future time periods, and will be the most sensitive to a changing climate (Frans et al. 2018, p. 17).

Spring snowpack fluctuates substantially from year to year in Washington but has declined overall by 30 percent from 1955 to 2016 and is expected to further decline by up to 38 percent under RCP4.5 and up to 46 percent under RCP8.5 by midcentury (Roop et al. 2019, p. 6). Changes in snowpack in the colder interior mountains will largely be driven by decreases in precipitation, while

changes in snowpack in the warmer maritime mountains will be driven largely by increases in temperature (Hamlet 2006, pp. 40–42). Although some high-elevation sites that maintain freezing winter temperatures may accumulate additional snowpack as additional winter precipitation falls as snow, overall, perennial snow cover is projected to decrease with climate change (Peterson et al. 2014, p. 25). A substantial decrease in perennial snow cover is projected for the North Cascades, with many areas of current snow cover replaced by bare ground (Patil et al. 2017, pp. 5600–5601). Field studies in the North Cascades-East population unit of the Mount Rainier white-tailed ptarmigan indicate that despite above-average snowfall in the winter of 2020–2021, the date of complete melt and disappearance of an important snowbank for male flocks and some broods was the earliest recorded in 13 field seasons since 1997 (Schroeder et al. 2021, p. 11).

Projected increases in air temperatures will also lead to changes in the quality of available snow through increases in rain-on-snow events and the refreezing of the surface of snowpack that melts in the heat of the day. The refreezing of snow creates a hard surface crust (Albert and Perron, Jr. 2000, p. 3208) that may make burrowing for roosting sites difficult for ptarmigan, who prefer soft snow for their roosts (Braun and Schmidt 1971, p. 244; Braun et al. 1976, pp. 3–4). Furthermore, warm winter temperatures that create wet, heavy snow may also make burrowing difficult for ptarmigan, and thus less suitable for snow roosts.

Reduced snowpack, earlier snowmelt, elimination of permanent snowfields, and higher evapotranspiration rates are likely to enhance summer soil drying and reduce soil water availability to alpine vegetation communities in the Cascades (Elsner et al. 2010, p. 245). As the climate becomes warmer, vegetation communities are also expected to shift their distributions to higher elevations. Globally, treelines have either risen or remained stable, with responses to recent warming varying among regions (Harsch et al. 2009, entire). Strong treeline advances have already been found in some areas of Washington, such as Mount Rainier National Park (Stueve et al. 2009, entire). As treeline rises at the lower limit of the alpine zone, Mount Rainier white-tailed ptarmigan habitat will be lost as open, alpine vegetation communities become forested. Creation of new habitat by upward expansion of the alpine zone will be constrained by cliffs, parent rock material, ice, remaining glaciers, permanent snow, and the top of mountain ranges. Where glaciers and permanent snow recede, primary succession will need to occur before the underlying parent material can support alpine meadows. Succession of the Lyman glacial forefront (the newly exposed area under a receding glacier) in the North Cascades took 20–50 years to develop early successional plant species.

Decreased winter wind associated with climate change may be contributing to observed declines in snowpack and stream flows (Luce et al. 2013, p. 1361). Continued decreases in wind are expected throughout the Cascades (Luce 2019, p. 1363), potentially decreasing the availability of forage for Mount Rainier white-tailed ptarmigan, as well as allowing some krummholz to grow taller into tree form, which can reduce the suitability of habitat. Decreased wind may reduce snowbanks and thereby limit the availability of snow roosting sites for the subspecies, increasing the exposure of Mount Rainier white-tailed ptarmigan to temperatures below their tolerance, or increasing stress levels in the winter. Delayed snowfall could also create plumage mismatch, leading to increased predation. White-tailed ptarmigan are adapted to be cryptic through all seasons by changing plumages frequently to match the substrate as snow cover changes. A change in timing of molt, or timing of snow cover, could limit the effectiveness of this strategy, leading to higher predation risk to individuals. Mount Rainier white-tailed ptarmigan in white plumage have already been detected in snow-free areas in fall (Riedell 2019, in litt.).

Climate change may affect Mount Rainier white-tailed ptarmigan through direct physiological effects on the birds such as increased exposure to heat in the summer. White-tailed ptarmigan experience physiological stress when ambient temperatures exceed 21 °C (70 °F; Johnson 1968, p. 1012), so their survival during warmer months depends on access to cool microrefugia in their habitat; these cooler areas are created by boulders and meltwater near glaciers, permanent snowfields, snowbanks, and other areas of snow in alpine areas. The projected increases in temperature and related decreases in snowpack and meltwater will reduce the availability of these microrefugia in the foreseeable future to populations of the Mount Rainier white-tailed ptarmigan.

The timing of peak plant growth influences the availability of appropriate seasonal forage to ptarmigan, as well as the availability of insects. When the peak of plant abundance falls outside a crucial post-hatch period, the resulting phenological mismatch affects chick survival (Wann et al. 2019, entire). Projected effects of climate change could alter the growing season and abundance of the ptarmigan's preferred vegetation and the timing of the emergence and abundance of the insects necessary for foraging. If these changes result in significant asynchrony, populations of Mount Rainier white-tailed ptarmigan may not have adequate forage availability.

Where upslope migration of alpine plant communities is able to occur in the face of climate change, breeding and post-breeding habitat for white-tailed ptarmigan will still not be available unless, or until, primary succession proceeds to the stage where dwarf willows, sedges, and other ptarmigan forage species are present in sufficient abundance and composition to support foraging ptarmigan and insect populations for chicks. If it takes at least 20 years to develop limited white-tailed ptarmigan forage plants (*Saxifrage* species), and 70–100 years to mature to full habitat with lush meadows and ericaceous subshrubs, this would represent a gap in breeding and post-breeding habitat for 5 to 24 generations (assuming a generation length of 4.1 years) (Bird et al. 2020, supplement table 4). Thus, we do not expect new breeding and post-breeding habitat for the subspecies to be created at the same rate at which it is lost. Climate change will also convert subalpine forest openings (*e.g.,* meadows) to subalpine forests, which are not suitable winter habitat for white-tailed ptarmigan. Infill of subalpine openings with trees has already occurred at Mount Rainier National Park (Stueve et al. 2009, entire). Subalpine tree species have increasingly filled in subalpine meadows throughout northwestern North America (Fagre et al. 2003, p. 267).

Species distribution models for all three species of ptarmigan in British Columbia (rock ptarmigan (*Lagopus muta*), willow ptarmigan (*Lagopus lagopus*), and white-tailed ptarmigan)) project that all three species will experience upward shifts in elevation and latitude, habitat loss, and subsequent range reductions throughout the province (Scridel et al. 2021, p. 1764). The white-tailed ptarmigan, including individuals in the area southeast of the Fraser River Valley included in our SSA, is projected to experience an upward elevation gain of 254 m (833 ft), an upward latitude shift of 1.11°, and a range decline of 86 percent by the 2080s (Scridel et al. 2021,

p. 1764). Projected distribution maps indicate that all habitat within the range of the Mount Rainier white-tailed ptarmigan in British Columbia will be lost by the 2080s (Scridel et al. 2021, p. 1765). Although this study focused on British Columbia, climate change projections for vegetation in Washington State are comparable, and range declines of Mount Rainier white-tailed ptarmigan in Washington State are expected to be similar in both area and timing to those predicted for British Columbia. As the distribution of white-tailed ptarmigan habitat in British Columbia contracts, the habitat gap between white-tailed ptarmigan in Washington and white-tailed ptarmigan north of the Fraser River Valley will increase (Scridel et al. 2021, p. 1765). This increased habitat gap will decrease the likelihood of genetic exchange between the subspecies.

A 1998 study assessed the potential vulnerability of wildlife species within the Interior Columbia River Basin to effects of climate change and reported that the species of white-tailed ptarmigan (*Lagopus leucura*) seemed particularly at risk (Marcot et al. 1988, pp. 58–63). The study noted this species occurs only in alpine tundra habitats within the Interior Columbia River Basin, in isolated locations that, under climate change projections, would potentially undergo upward shifts in elevation, further isolation, and reduction in area or local elimination. The study determined white-tailed ptarmigan (at the species level) was most at risk of all species in their analysis area, as it uses only alpine tundra habitats (Marcot et al. 1998, p. 60).

In summary, the future condition of Mount Rainier white-tailed ptarmigan habitat will likely be affected by several factors associated with climate change, including the following: exposure to heat stress (caused by increasing ambient temperatures coupled with decreasing availability of the cool summer refugia supplied by snow and glaciers); loss of winter snow roosts that protect ptarmigan from winter storms; changes in snow deposition patterns that may affect both snow roosts and forage availability; loss of alpine vegetation due to both hydrologic changes caused by decreases in meltwater from snowpack and glaciers as well as rising treelines; and phenological mismatch between ptarmigan hatch and forage availability. These changes are likely to impact the habitat at levels that measurably affect the resiliency of all populations. Although a reasonable projection of future population trend is limited by the lack of demographic data, the projected degradation and loss of habitat, as well as likelihood of increased physiological stress of individuals across the range, would have negative effects on the future population growth rate of the subspecies. The scope and intensity of these combined effects is likely to affect the future resiliency of every extant population of the Mount Rainier white-tailed ptarmigan and the redundancy and representation of those units across the range. Therefore, the effects of climate change are likely to affect the overall viability of the subspecies.

Summary of Factors Influencing the Status of the Species

We reviewed the environmental and anthropogenic factors that may influence the viability of the Mount Rainier white-tailed ptarmigan, including regulatory and voluntary conservation measures and potential stressors. The subspecies is provided some measure of protection from the large amount of Federal management and congressionally designated wilderness in its range, the management of some of its range in Canada by British Columbia Provincial Parks, the subspecies' State designation in Washington, and the overlap of its range with designated critical habitat for the Canada lynx.

The best available information does not indicate that disease has previously, is currently, or will in the future affect the resiliency of any Mount Rainier white-tailed ptarmigan population units. Although mining, hunting, grazing, browsing, the invasive willow borer beetle, predation, infrastructure development, and recreation may have localized effects to individual Mount Rainier white-tailed ptarmigan, the best available information does not indicate they affect the overall viability of the subspecies, and adequate future projections are not available to determine if these influence factors increase in the future to a level that will affect the viability of the subspecies. However, the effects of climate change are already evident in Mount Rainier white-tailed ptarmigan habitat, and the likely projected future increase in the scope, magnitude, and intensity of those effects will decrease the viability of the subspecies.

Current Condition

Based on our assessment of the biological information on the subspecies, we identified 10 key resiliency attributes for populations of the Mount Rainier white-tailed ptarmigan: (1) connectivity among seasonal use areas, (2) cool ambient summer temperatures, (3) a suitable hydrologic regime to support alpine vegetation, (4) winter snow quality and quantity, (5) abundance of forage, (6) cool microsites, (7) suitable population structure and recruitment, (8) adequate population size and dynamics, (9) total area of alpine breeding and post-breeding habitat, and (10) total area of winter habitat. We developed a table of these key population needs with one or more measurable indicators of each population need (USFWS 2023, pp. 68–69).

To evaluate current condition, we took information for the current value of each indicator and assigned it to a condition category (USFWS 2023, pp. 68–69). We created condition categories based on what we consider an acceptable range of variation for the indicator based on our understanding of the subspecies' biology and the need for human intervention to maintain the attribute (Conservation Measures Partnership 2013, entire) (see table 4, below). Categorical rankings were defined as follows:

Poor—Restoration of the population need is increasingly difficult (may result in loss of the local population);

Fair—Outside acceptable range of variation, requiring human intervention (this level would be associated with a decreasing population);

Good—Indicator within acceptable range of variation, with some intervention required for maintenance (this would be associated with a stable population); and

Very Good—Ecologically desirable status, requiring little intervention for maintenance (this would be associated with a growing population).

TABLE 4—METRICS FOR BOTH CURRENT AND FUTURE CONDITION INDICATOR RATINGS FOR HABITAT ATTRIBUTES OF MOUNT RAINIER WHITE-TAILED PTARMIGAN

Population need	Indicator	Indicator ratings descriptions			
		Poor	Fair	Good	Very good
Cool ambient temperatures in summer.	Maximum summer temperature.	>38°C (100 °F)	21.1–38 °C (70.1–100 °F).	13.4–21 °C (56–70 °F) ...	7.3–13.3 °C (45–56 °F)

TABLE 4—METRICS FOR BOTH CURRENT AND FUTURE CONDITION INDICATOR RATINGS FOR HABITAT ATTRIBUTES OF MOUNT RAINIER WHITE-TAILED PTARMIGAN—Continued

Population need	Indicator	Indicator ratings descriptions			
		Poor	Fair	Good	Very good
Cool ambient temperatures in summer.	Number of days above 30 °C.	>3	1 to 3	0–1	0
Hydrologic regime	Glacier melt (discharge normalized to 1960–2010 mean).	<0.5	0.5 to 0.75	>0.75 to 1	>1
Hydrologic regime	Snow water equivalent (April 1).	>2 standard deviations from historical mean.	1–2 standard deviations from historical mean.	<1 standard deviation from historical mean.	Pre-1970 levels
Abundance of food resources.	Distance to water during breeding season.	>200 m	61–200 m	11–60 m	<10 m
Abundance of food resources.	Soil moisture	>2 standard deviations from historical mean.	1–2 standard deviations from historical mean.	<1 standard deviation from historical mean.	Pre-1970 levels
Total area of modeled summer habitat.	Area of alpine vegetation modeled from MC2.	<7 sq km (1,730 ac)	1,731–4,000 ac	4,000–12,000 ac	>12,000 ac
Total area of modeled summer habitat.	Area of alpine vegetation modeled from biome climatic niche models.	<7 sq km (1,730 ac)	1,731–4,000 ac	4,000–12,000 ac	>12,000 ac

Eight additional indicators had data available for current condition, but we did not have models that allowed us to project them into the future, so we did not use them to assess future condition. These additional indicators include connectivity within population units between breeding, post-breeding, and winter habitat, which is important for less-mobile broods; area of willow, alder, or birch (winter forage); distance to water during breeding season; unvegetated area of glacial forefront (not colonized by forage plants yet, less is better); cover or distribution of large boulders (breeding and post-breeding seasons); a qualitative assessment of vegetation quality; mapped area of alpine vegetation from Landfire and NPS vegetation maps; and mapped area of subalpine vegetation from Landfire and NPS vegetation maps.

Current resiliency ratings are captured below in table 5. Redundancy is limited to six known extant population units in ''good'' or ''fair'' condition across the range of the subspecies. With respect to ecological variation, three extant populations occur in the South representation area and three extant populations occur in the North representation area. Although Mount Adams has poor landscape context due to large gaps in habitat limiting connectivity throughout the unit, and the condition is poor due to low quality of vegetation, the availability of microrefugia and summer habitat are very good, so the overall condition score of the population unit was scored as fair. The historical population at Mount St. Helens was extirpated as a result of the volcanic eruption in 1980. Historical populations that may have existed in Oregon Cascades (Judd 1905, p. 47) have been extirpated for many years, as we know of no observations in the past several decades. The William O. Douglas Wilderness contains potential habitat, but we have no records of white-tailed ptarmigan in the area and consider occupancy unknown. Habitat for populations in the South representation area is more limited and isolated than habitat for populations in the North representation area. Observations on record and expert opinion indicate there are only a small number of birds in the Goat Rocks population unit in the South representation area and the Alpine Lakes population unit in the North representation area.

TABLE 5—CURRENT CONDITION FOR EACH MOUNT RAINIER WHITE-TAILED PTARMIGAN POPULATION

Representation area	Population unit	Condition metrics			Resiliency rating
		Landscape context *	Condition	(Habitat) size	
North	North Cascades—East	Good	Good	Fair	Good.
North	North Cascades—West	Good	Fair	Very Good	Good.
North	Alpine Lakes	Good	Fair	Fair	Fair.
South	Mount Rainier	Good	Fair	Very Good	Good.
South	Goat Rocks	Good	Fair	Fair	Fair.
South	Mount Adams	Poor	Poor	Good	Fair.

* Landscape context describes the combined condition of habitat connectivity within population units, ambient temperature, hydrologic regime, and winter snow.

Future Condition

To better understand the projected future condition of the Mount Rainier white-tailed ptarmigan, we developed four future scenarios based on global climate models at RCP4.5 and RCP8.5 to depict a range of plausible potential outcomes for the subspecies' habitat over time.

Projected changes in climate and related impacts can vary substantially across and within different regions of the world (IPCC 2007, pp. 8–12). Therefore, we use ''downscaled'' projections when they are available and are developed through appropriate scientific procedures, because such projections provide higher resolution information that is more relevant to spatial scales used for analyses of a given species (Glick et al. 2011, pp. 58–61). We used data obtained from the Northwest Climate Toolbox, developed by members of the Applied Climate Science Lab at the University of Idaho

(Hegewisch and Abatzoglou 2019, entire). In addition to past and current data, the Northwest Climate Toolbox provides modeled future projections of climate and hydrology based on the effects of potential degrees of greenhouse gas emissions reported by the IPCC (IPCC 2014, entire).

We estimated area of alpine vegetation from vegetation models based on the RCP4.5 or RCP8.5 scenarios (MC2 models) (Bachelet et al. 2017, entire; Sheehan et al. 2015, entire). We also estimated area of alpine vegetation from biome climatic niche models based on three earlier global climate projections (CGCM3 1 A2 2090, Hadley A2 2090, and Consensus A2 2090). These models were used to project alpine area (and other vegetation type areas) for the Transboundary Connectivity Project (Krosby et al. 2016, entire, based on the projections supplied by Rehfeldt et al. 2012, entire). Alpine area from the NPS and Landfire vegetation maps provides the most reliable and important measure of current population resiliency. We reported subalpine area for each analysis unit but did not use it as an indicator of future resilience because this measure does not differentiate between subalpine forests (which are not suitable for the Mount Rainier white-tailed ptarmigan) and subalpine openings (suitable winter habitat for the subspecies). We also included a management variable in our scenarios to assess if specific management of recreation impacts and habitat enhancement and restoration would make a difference to the projected status of the Mount Rainier white-tailed ptarmigan in the future. These management variable factors ultimately made minimal difference in the outcome of our scenarios in comparison to the impact of climate projections.

The future scenarios we developed based on the climate-based vegetation models include:

(1) Projected climate change effects under RCP4.5 with no management for Mount Rainier white-tailed ptarmigan populations or habitat;

(2) Projected climate change effects under RCP8.5 with no management for Mount Rainier white-tailed ptarmigan populations or habitat;

(3) Projected climate change effects under RCP4.5 with management to maintain Mount Rainier white-tailed ptarmigan populations and habitat; and

(4) Projected climate change effects under RCP8.5 with management to maintain Mount Rainier white-tailed ptarmigan populations and habitat.

The scenarios demonstrated that the projected effects of climate change could result in the loss of up to 95 percent of the Mount Rainier white-tailed ptarmigan's currently available alpine tundra habitat (USFWS 2023, appendix A) and could lead to a related decrease in the availability of thermal microrefugia for the subspecies. Although vegetation models yield different acreage projections, trajectories of both vegetation models and all scenarios are similar in indicating only one or two populations are likely to have any breeding season habitat remaining by 2069. Mount Rainier is consistently projected to be one of the remaining populations in all four future scenarios. This is due to its high elevation, which results in a much larger amount of current and future suitable habitat compared to other populations in the subspecies' range. The management actions (which include both reduced recreational impacts and habitat enhancement and restoration) are not projected to affect the status of any population unit in the Global Climate models (GCM). Table 6 summarizes the future condition for all known currently extant population units; possible ratings include poor, fair, good, or very good.

TABLE 6—FUTURE CONDITION RATING FOR EACH MOUNT RAINIER WHITE-TAILED PTARMIGAN POPULATION

Representation area	Population unit	Current condition	Future condition			
			Scenario 1	Scenario 2	Scenario 3	Scenario 4
North	North Cascades—East	Good	Poor	Poor	Poor	Poor.
North	North Cascades—West	Good	Poor	Poor	Poor	Poor.
North	Alpine Lakes	Fair	Poor	Poor	Poor	Poor.
South	Mount Rainier	Good	Good	Good	Good	Good.
South	Goat Rocks	Fair	Poor	Poor	Poor	Poor.
South	Mount Adams	Fair	Fair	Fair	Fair	Fair.

Currently, population units of the Mount Rainier white-tailed ptarmigan maintain fair to good resiliency across the subspecies' range; no population unit has very good resiliency. The continuing effects of climate change threaten Mount Rainier with-tailed ptarmigan in the following ways: increased physiological stress due to elevated temperatures; reduced availability of moist alpine vegetation and associated insects; loss of snow cover and reduction of snow quality for climate microrefugia and camouflage; and, most importantly, loss of breeding and post-breeding habitat as a result of changes in precipitation, wind, and temperature.

There is evidence of local adaptive divergence among subspecies of the white-tailed ptarmigan based on variables that are likely to be negatively impacted by climate change (Zimmerman et al. 2021, pp. 126–127). This suggests the adaptive capacity (*i.e.,* representation) of each subspecies, including Mount Rainier white-tailed ptarmigan, may be negatively impacted. Results from additional studies which are discussed under *Climate change,* above, support that suggestion, as they project a range decline of 86 percent for white-tailed ptarmigan throughout British Columbia, Canada, by the 2080s; we would expect to see a similar change in Washington State (Scridel et al. 2021, entire).

After developing four future scenarios based on downscaled climate and vegetation models, we found that the South representation area maintains much better future resiliency and redundancy than the North representation area. Mount Rainier is the only population unit in the range of the subspecies projected to have good resiliency across all four future scenarios. Mount Adams is also projected to remain extant, though with fair resiliency. Goat Rocks, however, along with all three population units in the North representation area, has poor resiliency in all four future scenarios. Overall, the number of sufficiently resilient population units will decrease in the future, reducing redundancy across the range. If population units in the North representation area decrease in resiliency to the point of extirpation,

the ecological diversity present in the North representation area will be lost.

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the subspecies, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the subspecies. To assess the current and future condition of the subspecies, we undertake an iterative analysis that encompasses and incorporates the threats individually and then accumulates and evaluates the effects of all the factors that may be influencing the subspecies, 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 subspecies, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.

Determination of Mount Rainier White-Tailed Ptarmigan's Status

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

Status Throughout All of Its Range

We evaluated the environmental and anthropogenic factors influencing Mount Rainier white-tailed ptarmigan and assessed the cumulative effect of those influences under the Act's section 4(a)(1) factors. The habitat-based stressors of climate change, mining, grazing, browsing, the invasive willow borer beetle, development, and recreation demonstrated varying degrees of localized effects to individual birds, but none of these stressors demonstrated effects to habitat at a level that is currently impacting the viability of the subspecies (Factor A). The best available information does not suggest that hunting (Factor B) or predation or disease (Factor C) are threats to the Mount Rainier white-tailed ptarmigan. Habitat for the Mount Rainier white-tailed ptarmigan is currently supporting populations of the subspecies, and approximately 70 percent of the entire range is protected from habitat loss as a result of development due to its wilderness designation (Factor D). We also evaluated disturbance associated with recreation effects, but the best available information does not indicate any current effect to populations or the viability of the subspecies (Factor E). We further examined the current information available on demographics and distribution of the subspecies, as well as availability and quality of suitable habitat in the subspecies' range. The best available information does not demonstrate any discernible trend for the condition (*e.g.,* increasing, declining, or stable) of the known populations of the Mount Rainier white-tailed ptarmigan. Although evidence of climate change related impacts to habitat already exists and these impacts are likely to continue in the foreseeable future, the subspecies currently exhibits adequate resiliency, redundancy, and representation. Thus, after assessing the best available information, we determined that the Mount Rainier white-tailed ptarmigan is not currently in danger of extinction throughout all of its range.

After assessing all the same stressors for future condition, we determined that mining, grazing, browsing, the invasive willow borer beetle, hunting, and disease will not affect the viability of the Mount Rainier white-tailed ptarmigan within the foreseeable future. Additionally, although the level of predation, development, and recreation may increase in the future, the best available information at this time does not indicate that they are reasonably likely to increase to a degree that will impact the viability of the subspecies within the foreseeable future.

In contrast, habitat loss and degradation resulting from climate change will affect the Mount Rainier white-tailed ptarmigan's viability within the foreseeable future. The best available scientific information indicates that changing habitat conditions associated with future climate change, such as loss of alpine vegetation and reduced snow quality and quantity (Factor A), are expected to cause populations of Mount Rainier white-tailed ptarmigan to decline. Furthermore, rising temperatures associated with climate change are expected to have direct impacts on individual birds (Factor E), which experience physiological stress at temperatures above 21°C (70 °F).

Two independent vegetation models (Bachelet et al. 2017, Rehfeldt et al. 2012) project that within the foreseeable future all alpine tundra vegetation will be lost to forest expansion in all but two of the population units (USFWS 2023, Appendix A). In the North Cascades, glaciers are projected to retreat between 92 percent and 96 percent within the next 50 to 80 years. Glacier melt in many of the watersheds of the eastern Cascade Range and low-moderate elevation watersheds of the western Cascades has already peaked or will peak in the current decade. Total discharge in August and September from snowmelt, rain, and glacial melt in Cascades watersheds has notably declined and is expected to continue to drop through 2080. Spring snowpack in Washington has already declined overall by 30 percent from 1955 to 2016 and is expected to further decline from 38 to 46 percent by midcentury. The projected decreases in snowpack and glaciers and their associated meltwater, as well as changes in snow quality, decreasing wind, and advancing treeline and infill, could result in the loss of greater than 99 percent of the Mount Rainier white-tailed ptarmigan's currently available alpine tundra habitat and a related loss in the availability of thermal microrefugia for the subspecies (USFWS 2023, Appendix A).

Within 50 years, the climate within available suitable Mount Rainier white-tailed ptarmigan breeding and post-breeding habitat is expected to change significantly, such that the subspecies may remain in only one or two of the six current known extant population units. We can make reasonably reliable predictions about this threat and the subspecies' response; notable glacial retreat and tree expansion into alpine and subalpine meadows have already occurred in the range due to warming temperatures, and the best available information does not indicate that the rate of climate change will slow within the foreseeable future. The maximum two populations projected to remain in 50 years are insufficient to support the viability of the Mount Rainier white-tailed ptarmigan. Furthermore, it is unlikely that the Mount Rainier white-tailed ptarmigan will adapt to the changing climate by moving northward because alpine areas north of the

subspecies' current elevational range are expected to undergo similar impacts due to climate change (Scridel et al. 2021, entire).

Thus, after assessing the best available information, we determined that the Mount Rainier white-tailed ptarmigan is likely to become in danger of extinction within the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity* v. *Everson,* 435 F. Supp. 3d 69 (D.D.C. 2020) (*Everson*), vacated the aspect 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'' (Final Policy; 79 FR 37578, July 1, 2014) that provided that the Service does not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all 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 the Mount Rainier white-tailed ptarmigan, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the subspecies and the threats that the subspecies faces to identify portions of the range where the subspecies may be endangered.

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

We assessed the best available science on factors influencing the status of the subspecies, analyzing the scope, magnitude, and intensity of all potential stressors, including predation, disease, browsing, hunting, grazing, development, recreation, timber harvest, the invasive willow borer beetle, and effects of climate change. Although several of these factors may have localized effects on individual ptarmigan, we determined that no stressor is currently impacting the viability of the subspecies. However, changing habitat conditions associated with ongoing climate change, including reduced snow quality and quantity, reduced glacial melt and associated loss of alpine vegetation, and decreasing wind, are expected to cause populations of the Mount Rainier white-tailed ptarmigan to decline within the foreseeable future, adversely impacting the future condition and overall viability of the subspecies.

The statutory difference between an endangered species and a threatened species is the time horizon in which the species becomes in danger of extinction; an endangered species is in danger of extinction now while a threatened species is not in danger of extinction now but is likely to become so within the foreseeable future. Thus, we considered the time horizon for the effects of climate change, which are the threats that are driving the Mount Rainier white-tailed ptarmigan to warrant listing as a threatened species throughout all of its range. We then considered whether these threats are occurring in any portion of the subspecies' range such that the subspecies is in danger of extinction now in that portion of its range.

The best scientific and commercial data available indicate that the time horizon within which the Mount Rainier white-tailed ptarmigan will experience the effects of and respond to climate change is within the foreseeable future. Though some effects of climate change are already evident in parts of the range, the best scientific and commercial data available do not indicate that the resiliency of any Mount Rainier white-tailed ptarmigan populations is currently low. Therefore, we determine that the Mount Rainier white-tailed ptarmigan is not in danger of extinction now in any portion of its range, but that the subspecies 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.

Determination of Status

Our review of the best scientific and commercial data available indicates that the Mount Rainier white-tailed ptarmigan meets the Act's definition of a threatened species. Therefore, we are listing the Mount Rainier white-tailed ptarmigan as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

Available Conservation Measures

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

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

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

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

Please let us know if you are interested in participating in recovery efforts for the Mount Rainier white-tailed ptarmigan. Additionally, we invite you to submit any new information on this subspecies 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.

Examples of discretionary actions for the Mount Rainier white-tailed ptarmigan that may be subject to consultation procedures under section 7 are land management or other landscape-altering activities on Federal lands administered by the U.S. Forest Service and National Park Service 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 listing on proposed and ongoing activities within the range of the species. 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 Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

II. Final Protective Regulations 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. Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. With these two sentences in section 4(d), Congress delegated broad authority to the Secretary to determine what protections would be necessary and advisable to provide for the conservation of threatened species, and even broader authority to put in place any of the section 9 prohibitions, for a given species.

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 *Alsea Valley Alliance* v. *Lautenbacher,* 2007 WL 2344927 (D. Or. 2007); *Washington Environmental Council* v. *National Marine Fisheries Service,* 2002 WL 511479 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (*see State of Louisiana* v. *Verity,* 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, ''once an animal is on the threatened list, the Secretary has an almost infinite number of options available to [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 4(d) rule was developed considering our understanding of the Mount Rainier white-tailed ptarmigan's physical and biological needs, which in large part relies upon information from other white-tailed ptarmigan subspecies. Although there is some information on the subspecies' habitat, the majority of habitat and demographic information comes from other subspecies (particularly the southern white-tailed ptarmigan in Colorado, where there is considerable habitat connectivity and a very different climate). Given the unique aspects of the landscape and climate in the Cascades, significant uncertainty remains regarding the Mount Rainier white-tailed ptarmigan's specific needs and how and to what degree stressors are operating in the subspecies' habitat. For example, we do not fully understand the Mount Rainier white-tailed ptarmigan's winter habitat requirements, its winter food resources, or its reliance on snow roosting. We do not understand why some areas of apparently suitable habitat lack observational records of the subspecies. We also lack the demographic information necessary to understand to the degree to which the subspecies is at risk in the future from various forms of disturbance.

Considering these uncertainties and our requirement to develop a recovery plan for the Mount Rainier white-tailed ptarmigan, our 4(d) rule is designed to promote the subspecies' conservation by facilitating the viability of current populations, scientific study of the subspecies, and conservation and restoration of its habitat. As we learn more about the Mount Rainier white-tailed ptarmigan and its habitat, we will refine our conservation recommendations for the subspecies. The provisions of this 4(d) rule are some of many tools that we will use to promote the conservation of the Mount Rainier white-tailed ptarmigan.

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. These requirements are the same for a threatened species with a species-specific 4(d) rule. Section 7 consultation is required for Federal actions that ''may affect'' a listed species regardless of whether take caused by the activity is prohibited or excepted by a 4(d) rule. A 4(d) rule does not change the process and criteria for informal or formal consultations and does not alter the analytical process used for biological opinions or concurrence letters. For example, as with an endangered species, if a Federal agency determines that an action is ''not likely to adversely affect'' a threatened species, the action 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 and the formulation of a biological opinion (50 CFR 402.14(a)). Two Federal agencies, the NPS and USFS, manage approximately 95 percent of the U.S. portion of the Mount Rainier white-tailed ptarmigan's range (Table 1). Because consultation obligations and processes are unaffected by 4(d) rules, we may consider developing tools to streamline future intra-Service and inter-Agency consultations for actions that result in forms of take that are not prohibited by the 4(d) rule (but that still require consultation). These tools may include consultation guidance, Information for Planning and Consultation effects determination keys, template language for biological opinions, or programmatic consultations.

Provisions of the 4(d) Rule

Exercising the Secretary's authority under section 4(d) of the Act, we have developed a rule that is designed to address the Mount Rainier white-tailed ptarmigan's conservation needs. As discussed previously in Summary of Biological Status and Threats, we have concluded that the Mount Rainier white-tailed ptarmigan is likely to become in danger of extinction within the foreseeable future primarily due to the projected effects of climate change, especially increasing temperatures and a loss of the conditions that support suitable alpine habitat (above treeline). 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 are not required to make a ''necessary and advisable'' determination when we apply or do not apply specific section 9 prohibitions to a threatened species (*In re: Polar Bear Endangered Species Act Listing and 4(d) Rule Litigation,* 818 F. Supp. 2d 214, 228 (D.D.C. 2011) (citing *Sweet Home Chapter of Cmtys. for a Great Or.* v. *Babbitt,* 1 F.3d 1, 8 (D.C. Cir. 1993), *rev'd on other grounds,* 515 U.S. 687 (1995))). Nevertheless, even though we are not required to make such a determination, we have chosen to be as transparent as possible and explain below why we find that the protections, prohibitions, and exceptions in this 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 Mount Rainier white-tailed ptarmigan.

The protective regulations for the Mount Rainier white-tailed ptarmigan 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 Mount Rainier white-tailed ptarmigan is at risk of extinction in the foreseeable future and putting these prohibitions in place will help to preserve the subspecies' remaining populations, slow their rate of decline, and decrease cumulative or synergistic, negative effects from other threats.

Under the Act, ''take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulation at 50 CFR 17.3. Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Regulating take will support the conservation of existing populations of the subspecies by facilitating their viability in the face of these projected environmental changes. Therefore, we are prohibiting take of the Mount Rainier white-tailed ptarmigan, except for take resulting from those actions and activities specifically excepted by the 4(d) rule. Exceptions to the prohibition on take include the general exceptions to take of endangered wildlife as set forth in 50 CFR 17.21 and additional exceptions, as described below.

Despite these prohibitions regarding threatened species, we may under certain circumstances issue permits to carry out one or more otherwise prohibited activities, including those described above. The regulations that govern permits for threatened wildlife state that the Director 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 exceptions from the prohibitions, which are found in sections 9 and 10 of the Act.

In addition, to further the conservation of the species, any employee or agent of the Service, any other Federal land management agency, the National Marine Fisheries Service, a State conservation agency, or a federally recognized Tribe, who is designated by their agency or Tribe for such purposes, may, when acting in the course of their official duties, take threatened wildlife without a permit if such action is necessary to: (i) Aid a sick, injured, or orphaned specimen; or (ii) Dispose of a dead specimen; or (iii) Salvage a dead specimen that may be useful for scientific study; or (iv) Remove specimens that constitute a demonstrable but nonimmediate threat to human safety, provided that the taking is done in a humane manner; the taking may involve killing or injuring only if it has not been reasonably possible to eliminate such threat by livecapturing and releasing the specimen unharmed, in an appropriate area.

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

The 4(d) rule will also provide for the conservation of the species by allowing exceptions that incentivize conservation actions or that, while they may have some minimal level of take of Mount Rainier white-tailed ptarmigan, are not expected to rise to the level that would have a negative impact (*i.e.,* would have only de minimis impacts) on the species' conservation. The following exceptions to these prohibitions are expected to have negligible impacts to the Mount Rainier white-tailed ptarmigan and its habitat:

- Take that is incidental to facilitating human safety (such as rescue, fire, and other emergency responses) and the protection of natural resources. During emergency events, the primary objective of the responding agency must be to protect human life and property and this objective takes precedence over considerations for minimizing adverse effects to the Mount Rainier white-tailed ptarmigan.
- Take that is incidental to a person's lawfully conducted outdoor recreational activities such as hiking (including associated authorized pack animals and domestic dogs handled in compliance with existing regulations), camping, backcountry skiing, mountain biking, snowmobiling, climbing, and hunting where these activities are allowed. We consider outdoor recreation lawful if it is carried out in accordance with the recreation rules and limits established by the State, Federal, or Tribal agency managing the land. This exception does not apply to recreation planning activities by Federal or State agencies. Based on available information, these types of activities have the potential to disturb individual ptarmigan in localized areas representing a very small portion of the available habitat in the subspecies' range. Also, there are aspects of recreation that can be beneficial to the Mount Rainier white-tailed ptarmigan and other alpine species. USFS and NPS, through their recreational planning activities, can help educate the public and build advocacy for conservation of alpine habitats and species that are facing habitat loss due to climate change, including the Mount Rainier white-tailed ptarmigan. These and other partners can train alpine recreationists to become citizen scientists, helping us to better understand specific aspects of the biology of this subspecies that we are lacking. In the future, should recreation become a threat to the species, the Service may reconsider this exception.
- Take that is incidental to authorized habitat restoration actions consistent with the conservation needs of the Mount Rainier white-tailed ptarmigan. Activities associated with habitat restoration (*e.g.,* weeding, planting native forage plants, establishing watering areas) are likely to cause only short-term, temporary adverse effects, especially in the form of harassment or disturbance of individual ptarmigan. In the long term, the risk of these effects to both individuals and populations is expected to be mitigated as these types of activities will likely benefit the

subspecies by helping to preserve and enhance the habitat of existing populations over time. We consider habitat restoration and enhancement activities authorized if they are consistent with Mount Rainier white-tailed ptarmigan conservation prescriptions or objectives that are specifically included in established Federal, State, or Tribal conservation plans.

- Take that is incidental to conducting lawful, authorized control of predators of Mount Rainier white-tailed ptarmigan, provided reasonable care is practiced to minimize effects to Mount Rainier white-tailed ptarmigan. For example, the common raven is currently managed within the range of greater sage-grouse in Washington and common ravens have large home ranges. A professional biologist documented travel of a raven collared at the Terrace Heights landfill in Yakima to Mount Rainier National Park (White 2021, in litt.). Ptarmigan are threatened in the foreseeable future by climate change and the persistence of the subspecies will rely on the conservation of existing populations, so predator control may be authorized by the Service for the purposes of conservation of the Mount Rainier white-tailed ptarmigan. Therefore, take of Mount Rainier white-tailed-ptarmigan associated with authorized predator control coordinated in advance with the Service will not be prohibited, as the benefit to the subspecies from this activity outweighs the risk to individual ptarmigan. Predator control activities may include the use of fencing, trapping, shooting, and toxicants to control predators, and related activities such as performing efficacy surveys, trap checks, and maintenance duties. Reasonable care for predator control may include, but would not be limited to, procuring and implementing technical assistance from a qualified biologist on habitat management activities, and best efforts to minimize Mount Rainier white-tailed ptarmigan exposure to hazards (*e.g.,* predation, habituation to feeding, entanglement, etc.). Any predator control conducted for the purposes of conservation of Mount Rainier white-tailed ptarmigan is considered authorized if it is carried out in accordance with the rules and limits established by the State, Federal, or Tribal agency managing the land and coordinated in in advance with the Service.
- Take that is incidental to lawfully conducted timber harvest or forest management activities, separate from those actions covered under the habitat restoration actions exception described above. During the summer, when timber harvest or forest management activities are likely to occur, white-tailed ptarmigan are rarely found in the vicinity of forested areas, but they may occur in alpine areas adjacent to treeline and thus would be within sight and sound of such activities. In the winter, ptarmigan may be found in openings in forested areas adjacent to their alpine habitat. Forest management activities in proximity to ptarmigan habitat may cause short-term, temporary adverse effects, especially in the form of harassment or disturbance of individual ptarmigan using habitats adjacent to forested areas; however, in the long term, these activities may benefit the subspecies by reducing the risk of wildfire near ptarmigan habitat, or by opportunistically creating alpine area openings that ptarmigan may use in winter. Legal and authorized forest management activities include, but are not limited to, timber harvest and fire and vegetation management. We consider forest management activities legal and authorized if they are carried out in accordance with the forest practices rules and limits established by the State, Federal, or Tribal agency managing the land.
- Take that is incidental to the authorized maintenance of any public or private infrastructure (*e.g.,* buildings, roads, parking lots, viewpoints, trails, designated camp sites, developed ski areas, and helicopter landing pads) and supporting infrastructure (*e.g.,* benches, signs, safety features) within or adjacent to Mount Rainier white-tailed ptarmigan habitat. Within the subspecies' range, most development and infrastructure, the largest of which is associated with Mount Rainier National Park, has been in place for decades or longer. The amount of land developed for roads, buildings, trail head facilities and parking lots, trails, benches, signs, safety features, designated camping sites, developed ski areas, and helicopter landing pads is a very small percentage of the subspecies' range, and available suitable habitat is abundant and remote. The maintenance of trails and infrastructure within the subspecies' range has the potential to temporarily disturb individual ptarmigan in localized areas. The best available information does not indicate that these types of routine maintenance are a threat to the species. We consider maintenance activities authorized if they are carried out in accordance with the rules established by the State, Federal, or Tribal agency managing the land. This exception would not extend to take associated with the development of new infrastructure.

As discussed above under Summary of Biological Status and Threats, increasing temperatures (Factor E) and a loss of the conditions that support suitable alpine habitat (Factor A) are driving the current and future status of the Mount Rainier white-tailed ptarmigan. A range of current and future activities could directly and indirectly impact the Mount Rainier white-tailed ptarmigan via direct take or loss of habitat. These activities may cause disturbance, harm, or mortality to individual ptarmigan, trampling of habitat, introduction of invasive species in habitat, and loss of habitat. These activities include: human safety and emergency response; the work of law enforcement and on-the-job wildlife professionals; lawful outdoor recreation in alpine areas in summer, or subalpine areas in winter; habitat restoration and predator control actions for purposes of Mount Rainier white-tailed ptarmigan conservation; forest management actions; and routine maintenance of infrastructure (*e.g.,* roads, trails, buildings, parking lots, etc.). The best available information indicates that these activities, when conducted in accordance with the law, will not put the viability of the Mount Rainier white-tailed ptarmigan at risk. Allowing the continuation of these activities while also prohibiting all other forms of take will facilitate Federal agencies in managing their land according to their priorities without unnecessary regulation while still supporting the conservation of the subspecies.

Nothing in this 4(d) rule will 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 the ability of the Service to enter into partnerships for the management and protection of the Mount Rainier white-tailed ptarmigan. However, interagency cooperation may be further streamlined through planned programmatic consultations for the subspecies between Federal agencies and the Service.

III. Critical Habitat

Background

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

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. At the time of our June 15, 2021, proposed rule, we determined that a designation of critical habitat would not be prudent. Our regulations (50 CFR 424.12(a)(1)) in place at that time stated that the Secretary may, but is not required to, determine that a designation would not be prudent in the following circumstances:

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

(ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act;

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

(iv) No areas meet the definition of critical habitat; or

(v) The Secretary otherwise determines that designation of critical habitat would not be prudent based on the best scientific data available.

However, on April 5, 2024, jointly with the National Marine Fisheries Service, we published a final rule revising the regulations in 50 CFR 424.12 regarding circumstances when designation of critical habitat may not be prudent (89 FR 24300). In light of these regulation revisions, we will reevaluate our 2021 determination that the designation of critical habitat for the ptarmigan is not prudent under these revised regulations and publish a separate determination in the future in the **Federal Register**. In that determination, we will also respond to any comments related to critical habitat we received during the public comment period on the June 15, 2021, proposed rule (86 FR 31668).

Required Determinations

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), Executive Order 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. All potentially affected Tribes were sent a letter highlighting our assessment of this subspecies and requesting information about the subspecies or other feedback. These Tribes included the three adjacent to the range of Mount Rainier white-tailed ptarmigan, the Sauk-Suiattle Indian Tribe, Snoqualmie Indian Tribe, and Yakama Nation, as well as others (the Confederated Tribes of the Chehalis Reservation; Cowlitz Indian Tribe; Lummi Nation; Muckleshoot Indian Tribe; Nisqually Indian Tribe; Nooksack Indian Tribe; Port Gamble S'Klallam Tribe; Puyallup Tribe of Indians; Samish Indian Nation; Squaxin Island Tribe; Stillaguamish Tribe of Indians; Suquamish Tribe; Swinomish Indian Tribal Community; Tulalip Tribes; and Upper Skagit Tribe). We did not receive any replies. We also sent notification of the impending publication of our proposed listing rule with an invitation to comment to all Tribes in the State of Washington on June 14, 2021; we received no comments from Tribes during the proposed rule's comment period.

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 Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Washington Fish and Wildlife Office.

List of Subjects in 50 CFR Part 17

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

Regulation Promulgation

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

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

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

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

■ 2. In § 17.11, in paragraph (h), amend the List of Endangered and Threatened Wildlife by adding an entry for ''Ptarmigan, Mount Rainier white-tailed'' in alphabetical order under Birds to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
*	*	*	*	*
BIRDS				
*	*	*	*	*
Ptarmigan, Mount Rainier white-tailed.	*Lagopus leucura rainierensis*	Wherever found	T	89 FR [INSERT **FEDERAL REGISTER** PAGE WHERE THE DOCUMENT BEGINS], 7/3/2024; 50 CFR 17.41(i).[4d]
*	*	*	*	*

■ 3. Amend § 17.41 by adding paragraph (i) to read as follows:

§ 17.41 Species-specific rules—birds.

* * * * *

(i) Mount Rainier white-tailed ptarmigan (*Lagopus leucura rainierensis*).

(1) *Prohibitions.* The following prohibition that applies to endangered wildlife also applies to the Mount Rainier white-tailed ptarmigan. Except as provided under paragraph (i)(2) of this section and § 17.4, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

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

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

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

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

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

(2) *Exceptions from prohibitions.* With regard to this subspecies, you may:

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

(ii) Take, as set forth at § 17.21(c)(2) through (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 in accordance with these provisions:

(A) *Human safety and emergency response.* A person may incidentally take Mount Rainier white-tailed ptarmigan in the course of carrying out official emergency response activities related to human safety and the protection of natural resources.

(B) *Lawful outdoor recreation.* A person may incidentally take Mount Rainier white-tailed ptarmigan in the course of lawfully conducting outdoor recreational activities, such as hiking (including associated authorized pack animals and domestic dogs handled in compliance with existing regulations), camping, backcountry skiing, mountain biking, snowmobiling, climbing, and hunting where these activities are allowed. We consider outdoor recreation lawful if it is carried out in accordance with the recreation rules and limits established by the State, Federal, or Tribal agency managing the land.

(C) *Habitat restoration actions.* A person may incidentally take Mount Rainier white-tailed ptarmigan in the course of carrying out authorized habitat restoration consistent with the conservation needs of Mount Rainier white-tailed ptarmigan. We consider habitat restoration and enhancement activities authorized if they are consistent with Mount Rainier white-tailed ptarmigan conservation prescriptions or objectives that are specifically included in established Federal, State, or Tribal conservation plans and documents.

(D) *Predator control.* A person may incidentally take Mount Rainier white-tailed ptarmigan in the course of carrying out lawful, authorized predator control for the purpose of Mount Rainier white-tailed ptarmigan conservation if reasonable care is practiced to minimize effects to Mount Rainier white-tailed ptarmigan. Predator control activities may include the use of fencing, trapping, shooting, and toxicants to control predators, and related activities such as performing efficacy surveys, trap checks, and maintenance duties. Any predator control conducted for the purposes of conservation of Mount Rainier white-tailed ptarmigan is considered authorized if it is carried out in accordance with the rules and limits established by the State, Federal, or Tribal agency managing the land and coordinated in in advance with the Service.

(E) *Forest management.* A person may incidentally take Mount Rainier white-tailed ptarmigan in the course of carrying out legal and authorized forest management activities, including, but not limited to, timber harvest, and fire and vegetation management. We consider forest management activities legal and authorized if they are carried out in accordance with the forest practices rules and limits established by the State, Federal, or Tribal agency managing the land.

(F) *Routine maintenance to infrastructure.* A person may incidentally take Mount Rainier white-tailed ptarmigan in the course of carrying out authorized routine maintenance of public or private infrastructure (*e.g.,* buildings, roads, parking lots, viewpoints, trails, designated camp sites, developed ski areas, and helicopter landing pads) and supporting infrastructure (*e.g.,* benches, signs, safety features) within or adjacent to Mount Rainier white-tailed ptarmigan habitat. We consider maintenance activities authorized if they are carried out in accordance with the rules established by the State, Federal, or Tribal agency managing the land. This exception does not extend to take associated with the development of new infrastructure.

(G) *Reporting and disposal requirements.* Any take (injury or mortality) of Mount Rainier white-tailed ptarmigan associated with the actions excepted under paragraphs (i)(2)(v)(A) through (G) of this section must be reported to the Service and authorized State wildlife officials within 72 hours, and specimens may be disposed of only in accordance with directions from the Service. Reports should be made to the Service's Office of Law Enforcement; contact information for that office is located at 50 CFR 10.22.

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Martha Williams,

Director, U.S. Fish and Wildlife Service.

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