DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R6–ES–2019–0054; FF09E21000 FXES11110900000 212]

RIN 1018-BE23

Endangered and Threatened Wildlife and Plants; Threatened Species Status for *Pinus albicaulis* (Whitebark Pine) with Section 4(d) Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to list whitebark pine *(Pinus albicaulis*), a high-elevation tree species found across western North America, as a threatened species under the Endangered Species Act of 1973 (Act), as amended. If we finalize this rule as proposed, it would extend the Act's protections to this species. We also propose a rule issued under section 4(d) of the Act that is necessary and advisable to provide for the conservation of the species. We have determined that designation of critical habitat for the whitebark pine is not prudent at this time.

DATES: We will accept comments received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES**, below) must be received by 11:59 p.m. Eastern Time on the closing date. We must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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

(1) *Electronically*: Go to the Federal eRulemaking Portal:

http://www.regulations.gov. In the Search box, enter FWS–R6–ES–2019–0054, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rule box to locate this document. You may submit a comment by clicking on "Comment Now!"

(2) *By hard copy*: Submit by U.S. mail to: Public Comments Processing, Attn: FWS–R6–ES–2019–0054, U.S. Fish and Wildlife Service, MS: BPHC, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

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

FOR FURTHER INFORMATION CONTACT: Tyler Abbott, Field Supervisor, U.S. Fish and Wildlife Service, Wyoming Ecological Services Field Office, 5353 Yellowstone Road, Suite 308A, Cheyenne, WY 82009; telephone 307–772–2374. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION

Executive Summary

Why we need to publish a rule. Under the Act, if a species is determined to be an endangered or threatened species throughout all or a significant portion of its range, we are required to promptly publish a proposal in the *Federal Register* and make a determination on our proposal within 1 year. Critical habitat shall be designated, to the maximum extent prudent and determinable, for any species determined to be an endangered or threatened species under the Act. Listing a species as an endangered or threatened species and designations and revisions of critical habitat can only be

completed by issuing a rule. We have determined that designating critical habitat at this time is not prudent for *Pinus albicaulis* (hereafter, whitebark pine), for the reasons discussed below.

This rule proposes the listing of the whitebark pine as a threatened species. The whitebark pine has been a candidate species for listing since 2011. This rule and the associated species status assessment (SSA) report assess all previous and new available information regarding the status of and threats to the whitebark pine. We also propose a rule issued under section 4(d) of the Act that is necessary and advisable to provide for the conservation of the species.

The basis for our action. Under the Act, we can determine that a species is an endangered or threatened species based on 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 primary stressor driving the status of the whitebark pine is white pine blister rust, a fungal disease caused by the nonnative pathogen *Cronartium ribicola* (Factor C). Whitebark pine is also impacted by the mountain pine beetle (*Dendroctonus ponderosae*) (Factor C), altered fire regimes (Factor E), and the effects of climate change (Factor E).

Peer review. We requested comments from independent specialists on the SSA report upon which this proposed rule is based, to ensure that we based our determination on scientifically sound data, assumptions, and analyses. Their comments have been incorporated into the SSA report as appropriate. Because we will consider all additional comments and information received during the comment period, our final determination may differ from this proposal. The SSA report and other materials relating to this proposal can be found on the Service's Mountain Prairie Region website at

https://www.fws.gov/mountain-prairie/es/whitebarkPine.php and at *http://www.regulations.gov* under Docket No. FWS–R6–ES–2019–0054. Because this proposed rule is based on the scientific information in the SSA report, which has already been peer reviewed, we are not seeking additional peer review of this proposed rule, in accordance with Service's August 22, 2016, Director's Memo on the Peer Review Process.

Information Requested

Public Comments

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

(1) The whitebark pine's biology, range, and population trends, including:

(a) Biological or ecological requirements of the species, including requirements for habitat, nutrition, reproduction, and dispersal;

(b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

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

(e) Past and ongoing conservation measures for the species, its habitat, or both, as well as planned conservation efforts.

(2) Factors that may affect the continued existence of the species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors, including:

(a) Information regarding the distribution, magnitude, and severity of impacts from white pine blister rust;

(b) Mortality, cone production, and regeneration in areas impacted by mountain pine beetle, wildfire, or white pine blister rust; and

(c) The potential effects of climate change on whitebark pine, its habitat, and the aforementioned factors.

(3) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this species, and existing regulations that may be addressing those threats.

(4) Additional information concerning the historical and current status, range, distribution, and population size of this species, including the locations of any additional populations of this species.

(5) Information concerning activities that should be considered under a rule issued in accordance with section 4(d) of the Act (16 U.S.C. 1531 *et seq*.) as a prohibition or exemption within U.S. territory that would contribute to the conservation of the species. In particular, information concerning whether import, export, and activities related to sale in interstate and foreign commerce should be prohibited, or whether any other activities should be considered excepted from the prohibitions in the 4(d) rule.

(6) The reasons why we should or should not designate habitat as "critical habitat" under section 4 of the Act, including information to inform the following factors such that a designation of critical habitat may be determined to be not prudent:

(a) 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;

(b) 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;

(c) 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;

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

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

Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made "solely on the basis of the best scientific and commercial data available."

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

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

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov*, or by appointment, during normal business hours, at the U.S.

Fish and Wildlife Service, Wyoming Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Public Hearing

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposed rule in the *Federal Register* (see **DATES**). Such requests must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the *Federal Register* and local newspapers at least 15 days before the hearing. For the immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the *Federal Register*. The use of these virtual public hearings is consistent with our regulation at 50 CFR 424.16(c)(3).

Peer Review

In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and the Service's August 22, 2016, Director's Memo on the Peer Review Process, we sought the expert opinions of seven appropriate and independent specialists regarding the SSA report on which this proposed rule is based, and received responses from five. The purpose of peer review of the SSA report is to ensure that our listing determination is based on scientifically sound data, assumptions, and analyses. The peer reviewers had expertise in whitebark pine's biology, habitat management, genetics, and stressors. The peer reviewers reviewed the SSA report, which informed our determination. Comments from peer reviewers have been incorporated into our SSA report as appropriate, and will be available along with other public comments in the docket for this proposed rule.

Previous Federal Actions

On February 11, 1991, we received a petition, dated February 5, 1991, from the Great Bear Foundation of Missoula, Montana, to list the whitebark pine under the Act. The petition stated that whitebark pine was rapidly declining due to impacts from mountain pine beetles, white pine blister rust, and fire suppression. After reviewing the petition, we found that the petition did not provide substantial information indicating that listing whitebark pine may be warranted. We published this finding in the *Federal Register* on January 27, 1994 (59 FR 3824).

On December 9, 2008, we received a petition, dated December 8, 2008, from the Natural Resources Defense Council (NRDC) requesting that we list whitebark pine as endangered throughout its range and designate critical habitat under the Act. The petition clearly identified itself as such and included the requisite identification information for the petitioner, as then required by 50 CFR 424.14(a). The petition included supporting information regarding the species' natural history, biology, taxonomy, lifecycle, distribution, and reasons for decline. The NRDC reiterated the threats from the 1991 petition, and included climate change and successional replacement as additional threats to whitebark pine. In a January 13, 2009, letter to NRDC, we responded that we had reviewed the information presented in the petition and determined that issuing an emergency rule temporarily listing the species under section 4(b)(7) of the Act was not warranted. We also stated that we could not address the petition promptly because of staff and budget limitations. We indicated that we would process a 90-day petition finding as quickly as possible.

On December 23, 2009, we received NRDC's December 11, 2009, notice of intent to sue over our failure to respond to the petition to list whitebark pine and designate critical habitat. We responded in a letter dated January 12, 2010, indicating that other preceding listing actions had priority, but that we expected to complete the 90-

day finding during Fiscal Year 2010. On February 24, 2010, NRDC filed a complaint alleging a failure to issue a 90-day finding on the petition. We completed a 90-day finding on the petition, which published in the *Federal Register* on July 20, 2010 (75 FR 42033). In that finding, we determined that the petition presented substantial information such that listing whitebark pine may be warranted, and we announced that we would conduct a status review of the species. We opened a 60-day information collection period to allow all interested parties an opportunity to provide information on the status of whitebark pine (75 FR 42033); during that information collection period, we received 20 letters from the public.

On July 19, 2011, we published a 12-month finding in the *Federal Register* (76 FR 42631), following a review of all available scientific and commercial information. In that finding, we found that listing whitebark pine as endangered or threatened was warranted. However, at that time, listing whitebark pine was precluded by higher priority actions to amend the Lists of Endangered and Threatened Wildlife and Plants, and we added whitebark pine to our candidate species list with a listing priority number of 2, indicating threats that were of high magnitude and were considered imminent. On January 15, 2013, Wildwest Institute and Alliance for the Wild Rockies filed a complaint challenging our finding that listing was "precluded" for whitebark pine, based on its listing priority number. On April 25, 2014, the District Court for the District of Montana upheld our finding that listing the whitebark pine was warranted but precluded. The plaintiffs appealed this ruling, and on April 28, 2017, the Ninth Circuit Court of Appeals affirmed the district court's summary judgement in favor of the Service.

Whitebark pine has remained a candidate for listing under the Act since 2011, and we have reevaluated its status on an annual basis through the candidate notice of review (see 76 FR 66370, October 26, 2011; 77 FR 69994, November 21, 2012; 78 FR 70104, November 22, 2013; 79 FR 72450, December 5, 2014; 80 FR 80584, December 24, 2015;

81 FR 87246, December 2, 2016). The species currently has a listing priority number of 8, indicating threats that are of moderate magnitude and are imminent.

Species Status Assessment

The Service prepared an SSA report for whitebark pine (Service 2018). The science provided in the SSA report is the basis for this proposed rule. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species. The SSA report underwent independent peer review by scientists with expertise in whitebark pine's biology, habitat management, genetics, and stressors (factors negatively affecting the species). The SSA report and other materials relating to this proposal can be found on the Service's Mountain Prairie Region website at *https://www.fws.gov/mountain-prairie/es/whitebarkPine.php* and at *http://www.regulations.gov* under Docket No. FWS–R6–ES–2019–0054.

I. Proposed Threatened Species Status for the Whitebark Pine

Background

A thorough review of the distribution, taxonomy, life history, and ecology of the whitebark pine is presented in the SSA report (Service 2018, chapter 2), which is available at *https://www.fws.gov/mountain-prairie/es/whitebarkPine.php* and at *http://www.regulations.gov* under Docket No. FWS–R6–ES–2019–0054. A brief summary appears below.

Whitebark pine is a slow-growing, long-lived tree, occurring at high elevations across the western United States and Canada. The species is a five-needle conifer placed in the subgenus *Strobus,* which includes other five-needle white pines. No taxonomic subspecies or varieties of whitebark pine are recognized (COSEWIC 2010, p. 6). Based on this taxonomic classification information, we recognize whitebark pine as a valid species and, therefore, a listable entity under the Act. Because whitebark pine is a plant

species, our policy on distinct population segments is not applicable, and, therefore, the entire range of the species within the United States and Canada is the entity evaluated in our SSA report and considered in this listing determination.

Whitebark pine has a broad range both latitudinally (occurring from a southern extent of approximately 36° north in California to 55° north latitude in British Columbia, Canada) and longitudinally (occurring from approximately 128° west in British Columbia, Canada, to an eastern extent of 108° west in Wyoming). Whitebark pine typically occurs on cold and windy high-elevation or high-latitude sites in western North America, although it also occurs in scattered areas of the warm and dry Great Basin (Service 2018, p. 13).

Rangewide, whitebark pine occurs on an estimated 32,616,422 hectares (ha) (80,596,935 acres (ac)) in western North America. Roughly 70 percent of the species' range occurs in the United States, with the remaining 30 percent of its range occurring in British Columbia and Alberta, Canada. In Canada, the majority of the species' distribution occurs on federal or provincial crown lands (COSEWIC 2010, p. 12). In the United States, approximately 88 percent of land where the species occurs is federally owned or managed. The majority is located on U.S. Forest Service (USFS) lands (approximately 74 percent). The bulk of the remaining acreage is located on National Park Service (NPS) lands (approximately 10 percent). Small amounts of whitebark pine also can be found on Bureau of Land Management lands (approximately 4 percent). The remaining 12 percent of the species' range is under non-Federal ownership, on State, private, and Tribal lands (Service 2018, pp. 14–15).

There are four stages in the life cycle of the whitebark pine: seed, seedling, sapling, and mature trees (*i.e.*, reproductive adults). Whitebark pine trees may produce both male and female cones, are considered reproductive at approximately 60 years of age, and can survive on the landscape for hundreds of years (Service 2018, p. 19).

Primary seed dispersal occurs almost exclusively by Clark's nutcrackers (*Nucifraga columbiana*), a bird in the family Corvidae (whose members include ravens, crows, and jays) (Lanner 1996, p. 7; Schwandt 2006, p. 2). Whitebark pine trees are typically 5 to 20 meters (m) (16 to 66 feet (ft)) tall with a rounded or irregularly spreading crown shape. Whitebark pine is considered both a keystone and a foundation species in western North America, where it increases biodiversity and contributes to critical ecosystem functions (Tomback *et al.* 2001, pp. 7–8).

In general, whitebark pine has similar requirements to other tree species. That is, all four life stages require adequate amounts of sunlight, water, and soil for survival and reproduction (mature trees only). The needs of each life stage are described further in the SSA report (Service 2018, table 1, p. 23), and include Clark's nutcrackers, a lack of seed predators, cold stratification, ground fires or other disturbance, open space and limited shading, suitable temperatures and precipitation, and available nitrogen and phosphorous. Whitebark pine is a hardy conifer that tolerates poor soils, steep slopes, and windy exposures; it is found at alpine tree line and subalpine elevations throughout its range (Tomback *et al*. 2001, pp. 6, 27). Whitebark pine is slow-growing and relatively shade-intolerant, and can be outcompeted and replaced by more shade-tolerant trees in the absence of disturbances like fire (Arno and Hoff 1989, p. 6). The species grows under a wide range of annual precipitation amounts, from about 51 to over 254 centimeters (cm) (20 to 100 inches (in.)) per year, and it is considered relatively drought-tolerant (Arno and Hoff 1989, p. 7; Farnes 1990, p. 303). There are a variety of soil types that support whitebark pine (Weaver 2001, pp. 47–48; Keane *et al*. 2012, p. 3). These soil types are generally described as well-drained soils that are poorly developed, coarse, rocky, and shallow over bedrock (COSEWIC 2010, p. 10).

Seeds of whitebark pine are typically cached by seed predators such as the Clark's nutcracker. Seed predation plays a major role in whitebark pine population dynamics, as

seed predators largely determine the fate of seeds. However, whitebark pine has coevolved with seed predators and has several adaptations, like masting (regional synchrony of mass production of seeds), that has allowed the species to persist despite heavy seed predation (Lorenz *et al.* 2008, pp. 3–4). Whitebark pine trees usually do not produce large cone crops until 60 to 80 years of age (Krugman and Jenkinson 1974, as cited in McCaughey and Tomback 2001, p. 109), with average earliest first cone production at 40 years of age (Tomback and Pansing 2018, p. 7). Therefore, the generation time of whitebark pine is approximately 40 to 60 years (Tomback and Pansing 2018, p. 7; COSEWIC 2010, p. v).

Whitebark pine is almost exclusively dependent upon the Clark's nutcracker for seed dispersal. Clark's nutcrackers are able to assess cone crops, and if there are insufficient seeds to cache, they will emigrate in order to survive (McKinney *et al.* 2009, p. 599). A threshold of approximately 1,000 cones per ha (2.47 ac) is needed for a high likelihood of seed dispersal by Clark's nutcrackers, and this level of cone production occurs in forests with a live basal area (the volume of wood occurring in a given area) greater than 5 square meters per ha (McKinney *et al.* 2009, p. 603). Therefore, at the population level, whitebark pine populations need sufficient density and abundance of reproductive individuals to facilitate masting and to attract Clark's nutcrackers, in order to achieve adequate recruitment and maintain resiliency to stochastic (random or unpredictable) events (Service 2018, pp. 27–28). At the species-level, for long-term viability, whitebark pine requires multiple (redundancy), self-sustaining populations (resiliency) distributed across the landscape (representation) to maintain the ecological and genetic diversity of the species (Service 2018, pp. 29–30).

Regulatory Framework

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 is an "endangered

species" or a "threatened species." The Act defines an endangered species as a species that is "in danger of extinction throughout all or a significant portion of its range," and a threatened species as a species that is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The Act requires that we determine whether any species is an "endangered species" or a "threatened species" because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

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

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an "endangered species" or a "threatened

species." In determining whether a species meets either definition, we must evaluate all identified threats by considering the 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. The term foreseeable future extends only so far into the future as the Services can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

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

productivity, certain behaviors, and other demographic factors.

Summary of Biological Status and Threats

The Act directs us to determine whether any species is an endangered species or a threatened species because of any factors affecting its continued existence. We completed a comprehensive assessment of the biological status of the whitebark pine, and prepared a report of the assessment (SSA report, Service 2018), which provides a thorough account of the species' overall viability. We define viability here as the ability of the species to persist over the long term (*i.e*., to avoid extinction). In the discussion below, we summarize the conclusions of that assessment, which we provide in full under Docket No. FWS–R6–ES–2019–0054 on *http://www.regulations.gov* and at *https://www.fws.gov/mountain-prairie/es/whitebarkPine.php*.

We focused our analysis of whitebark pine's viability on four main stressors: altered fire regimes, white pine blister rust, mountain pine beetle, and climate change. We focused on these four stressors because, according to the best available data, these stressors are the leading factors attributed to the decline of whitebark pine (Keane and Arno 1993, p. 44; Tomback *et al*. 2001, p. 13; COSEWIC 2010, p. 24; Tomback and Achuff 2010, p. 186; Keane *et al*. 2012, p. 1; Mahalovich 2013, p. 2; Mahalovich and Stritch, 2013, entire; Smith *et al*. 2013, p. 90; GYWPMWG 2016, p. v; Jules *et al*. 2016, p. 144; Perkins *et al*. 2016, p. xi; Shanahan *et al*. 2016, p. 1; Shepard *et al*. 2018, p. 138). While all of these stressors impact the species, we found that white pine blister rust is the main driver of the species' current and future conditions. Each of these stressors is described in detail in our SSA report (Service 2018), and is summarized below.

Altered Fire Regimes

Fire is one of the most important landscape-level disturbance processes within high-elevation whitebark pine forests (Agee 1993, p. 259; Morgan and Murray 2001, p. 238; Spurr and Barnes 1980, p. 422). Fires in the high-elevation ecosystem of whitebark

pine can be of low intensity, high intensity, or mixed intensity. These varying intensity levels result in very different impacts to whitebark pine communities. Without regular disturbance, primarily from fire, these forest communities follow successional pathways that eventually lead to climax communities dominated by shade-tolerant conifers, to the exclusion of whitebark pine (Keane and Parsons 2010, p. 57). Fire also creates sites that are suitable for the Clark's nutcracker's seed-caching behavior and provides optimal growing conditions for whitebark pine (Tomback *et al*. 2001, p. 13). Low-intensity ground fires occur frequently under low-fuel conditions. These fires remove small-diameter, thin-barked seedlings and allow large, mature whitebark pine trees to thrive (Arno 2001, p. 82), as long as the mature trees are not subjected to bole (main stem of the tree) scorching (*e.g*., Hood *et al*. 2008). Whitebark pine also has a thinner crown and a deeper root system than many of its competitors, which can allow it to withstand low-intensity fires better (Arno and Hoff 1990 in Keane and Parsons 2010, p. 58). Conversely, whitebark pine cannot survive high-severity fires; during such fires, all age and size classes can be killed. High-intensity fires, often referred to as stand replacement fires, or crown fires (Agee 1993, p. 16), produce intense heat, resulting in the removal of all or most of the vegetation from the ground (*i.e*., high severity). Newly burned areas can provide a seedbed for whitebark pine, and if stands of unburned cone-producing whitebark pine are nearby (*i.e*., within the range of Clark's nutcracker's seed-caching behavior), Clark's nutcrackers will cache those seeds on the burned site, and regeneration is likely. However, the introduction of white pine blister rust and the recent epidemic of the predatory mountain pine beetle (see discussion below) have reduced or effectively eliminated whitebark pine seed sources on a landscape scale, meaning that regeneration of whitebark pine following high-severity fire is unlikely in many cases (Tomback *et al*. 2008, p. 20; Leirfallom *et al*. 2015, p. 1601).

Fire exclusion policies have had unintended negative impacts on whitebark pine populations (Keane 2001a, entire). Stands once dominated by whitebark pine have undergone succession to more shade-tolerant conifers (Arno *et al*. 1993 in Keane *et al*. 1994, p. 225; Flanagan *et al*. 1998, p. 307). However, we do not know at what scale the impacts of fire exclusion and resultant forest succession have affected whitebark pine. In general, wildfire characteristics across the range of whitebark pine are expected to shift with future climate changes. Substantial increases in fire season length, number of fires, area burned, and intensity are predicted (reviews in Keane *et al*. 2017, pp. 34–35, and Westerling 2016, pp. 1–2). For a more detailed discussion of the impacts of fire on whitebark pine, see the SSA report (Service 2018, pp. 31–34).

White Pine Blister Rust

White pine blister rust is a fungal disease of five-needle pines caused by a nonnative pathogen, *Cronartium ribicola* (Geils *et al*. 2010, p. 153). The fungus was inadvertently introduced around 1910, near Vancouver, British Columbia (McDonald and Hoff 2001, p. 198; Brar *et al*. 2015, p. 10). The incidence of white pine blister rust at stand, landscape, and regional scales varies due to time since introduction and environmental suitability for its development. It continues to spread into areas originally considered less suitable for infection, such as the Sierra Nevada Mountains, and it has become a serious threat, causing severe population losses to several species of western pines, including whitebark pine (Schwandt *et al*. 2010, pp. 226–230). Its current known geographic distribution in western North America includes all U.S. States and British Columbia and Alberta, Canada.

The white pine blister rust fungus has a complex life cycle: It does not spread directly from one tree to another, but alternates between primary hosts (*i.e*., five-needle pines) and alternate hosts. Alternate hosts in western North America are typically woody shrubs in the genus *Ribes* (gooseberries and currants) (McDonald and Hoff 2001, p. 193;

McDonald *et al.* 2006, p. 73). The spreading of white pine blister rust spores depends on the distribution of hosts, the prevailing microclimates, and the different genotypes of white pine blister rust and hosts (McDonald and Hoff 2001, pp. 193, 202). A wave event (a massive spreading of new white pine blister rust infections into new or relatively unaffected areas, or intensification of spread from a cumulative buildup in already infected stands) occurs where alternate hosts are abundant and when late summer weather is favorable to spore production and dispersal, and subsequent infection of pine needles. Because its abundance is influenced by weather and host populations, white pine blister rust also is affected by climate change. If conditions become cooler or moister, white pine blister rust will likely spread and intensify; conversely, where conditions become both warmer and drier, it may spread more slowly (Service 2018, p. 39). However, even if climatic conditions slow the spread of white pine blister rust, it remains ever-present on the landscape, infecting seedlings that attempt to reestablish.

White pine blister rust attacks whitebark pine seedlings, saplings, and mature trees, damaging stems and cone-bearing branches and restricting nutrient flows; it eventually girdles branches and boles (tree trunks or stems), leading to the death of branches or the entire tree (Tomback *et al.* 2001, p. 15, McDonald and Hoff 2001, p. 195). While some infected mature trees can continue to live for decades (Wong and Daniels 2017, p. 1935), their cone-bearing branches typically die first, thereby eliminating the seed source required for reproduction (Geils *et al*. 2010, p. 156).

Although some areas of the species' range have been impacted by white pine blister rust for 90 years or more, for whitebark pine that timeframe equates to only 1.5 generations (Mahalovich 2013, p. 17), which means the species has had a limited time to adapt to or develop resistance to white pine blister rust. However, low levels of rust resistance have been documented on the landscape in individual trees and their seeds, indicating that there is some level of heritable resistance to white pine blister rust (Hoff *et*

al. 2001, p. 350; Mahalovich *et al*. 2006, p. 95; Mahalovich 2015, p. 1). In some populations and geographic areas, there is moderate frequency and level of genetic resistance, while in others, the frequency of resistance appears to be much lower (Sniezko 2018, p. 1–2).

Most current management and research focuses on producing and planting whitebark pine seedlings with proven genetic resistance to white pine blister rust, but also includes enhancing natural regeneration and applying silvicultural treatments, such as appropriate site selection and preparation, pruning, and thinning (Zeglen *et al.* 2010, p. 347). However, management challenges to restoration include remoteness, difficulty of access, and a perception that some whitebark pine restoration activities conflict with wilderness values (Schwandt *et al.* 2010, p. 242). In addition, the vast scale at which planting rust-resistant trees would need to occur, long timeframes in which restoration efficacy could be assessed, and limited funding and resources will make it challenging to restore whitebark pine throughout its range. Based on modeling results (Ettl and Cottone 2004, pp. 36–47; Hatala *et al*. 2011; Field *et al*. 2012, p. 180), we conclude that, in addition to the ubiquitous presence of white pine blister rust across the entire range of the whitebark pine, white pine blister rust infection likely will continue to increase and intensify within individual sites, ultimately resulting in stands that are no longer viable and that potentially face extirpation. For a more detailed discussion of white pine blister rust, see the SSA report (Service 2018, pp. 35–42).

Mountain Pine Beetle

The native mountain pine beetle (*Dendroctonus ponderosae* Hopkins) is one of the principal sources of whitebark pine mortality (Raffa and Berryman 1987, p. 234; Arno and Hoff 1989, p. 7). Mountain pine beetles feed on whitebark pine and other western conifers, and to reproduce successfully, the beetles must kill host trees (Logan and Powell 2001, p. 162; Logan *et al.* 2010, p. 895). At endemic, or more typical levels,

mountain pine beetles remove relatively small areas of trees, changing stand structure and species composition in localized areas. However, when conditions are favorable (abundant hosts and favorable climate), mountain pine beetle populations can erupt to epidemic levels and create stand-replacing events that may kill 80 to 95 percent of suitable host trees (Berryman 1986 as cited in Keane *et al.* 2012, p. 26). Such outbreaks are episodic, and typically subside only when suitable host trees have been exhausted or temperatures are sufficiently low to kill larvae and adults (Gibson *et al.* 2008, p. 2). Therefore, at epidemic levels, mountain pine beetle outbreaks may have population-level effects on whitebark pine.

Mountain pine beetle epidemics affecting whitebark pine have occurred throughout recorded history (Keane *et al.* 2012, p. 26). The most recent mountain pine beetle epidemic began in the late 1990s, and although it has since subsided, it continues to be a measurable but much reduced source of mortality for whitebark pine (Macfarlane *et al*. 2013, p. 434; Mahalovich 2013, p. 21; Shelly 2014, pp. 1–2). Unlike previous epidemics, the most recent mountain pine beetle outbreak had a significant rangewide impact on whitebark pine (Logan *et al.* 2003, p. 130; Logan *et al.* 2010, p. 898; MacFarlane *et al*. 2013, p. 434). Trends of environmental effects from climate change have provided favorable conditions necessary to sustain the most recent, unprecedented mountain pine beetle epidemic in high-elevation communities across the western United States and Canada (Logan and Powell 2001, p. 167; Logan *et al.* 2003, p. 130; Raffa *et al*. 2008, p. 511). This most recent epidemic is waning across the majority of the range (Hayes 2013, pp. 3, 41, 42, 54; Alberta Whitebark and Limber Pine Recovery Team 2014, p. 18; Bower 2014, p. 2; Shelly 2014, pp. 1–2). However, given ongoing and predicted environmental effects from climate change, we expect mountain pine beetles will continue to expand into higher elevation habitats and that epidemics will continue within the range of whitebark pine (Buotte *et al*. 2016, p. 2516; Sidder *et al*. 2016, p. 9).

For a more detailed discussion of mountain pine beetle, see the SSA report (Service 2018, pp. 42–49).

Climate Change

Our analyses under the Act include consideration of ongoing and projected changes in climate. In general, the pace of predicted climate change will outpace many plant species' abilities to respond to the concomitant habitat changes. Whitebark pine is potentially particularly vulnerable to warming temperatures because it is adapted to cool, high-elevation habitats. Therefore, current and anticipated warming is expected to make its current habitat unsuitable for whitebark pine, either directly or indirectly as conditions become more favorable to whitebark pine competitors, such as subalpine fir or mountain hemlock (Bartlein *et al*. 1997, p. 788; Hamann and Wang 2006, p. 2783; Hansen and Phillips 2015, p. 74; Schrag *et al.* 2007, p. 8; Warwell *et al.* 2007, p. 2; Aitken *et al*. 2008, p. 103; Loehman *et al.* 2011, pp. 185–187; Rice *et al*. 2012, p. 31; Chang *et al.* 2014, p. 10).

The rate of migration needed to respond to predicted climate change will be significant (Malcolm *et al.* 2002, pp. 844–845; McKenney *et al.* 2007, p. 941). It is not known whether whitebark pine is capable of migrating at a pace sufficient to move to areas that are more favorable to survival given the projected effects of climate change. It is also not known the degree to which the Clark's nutcracker could facilitate this migration. In addition, the presence of significant white pine blister rust infection in the northern range of the whitebark pine could serve as a barrier to effective northward migration. Whitebark pine survives at high elevations already, so there is little remaining habitat in many areas for the species to migrate to higher elevations in response to warmer temperatures. Adaptation in response to a rapidly warming climate would also be unlikely, as whitebark pine is a long-lived species with a long generation time (Bradshaw and McNeilly 1991, p. 10).

Climate models suggest that climate change is expected to act directly and indirectly, regardless of the emission scenario, to significantly decrease the probability of rangewide persistence in whitebark pine within the next 100 years (*e.g.*, Warwell *et al.* 2007, p. 2; Hamann and Wang 2006, p. 2783; Schrag *et al.* 2007, p. 6; Rice *et al.* 2012, p. 31; Loehman *et al.* 2011, pp. 185–187; Chang *et al.* 2014, p. 10–12). This time interval is less than two generations for this long-lived species. See the **Determination** section of this document for our discussion on the relationship of this modeled timeframe to our determination of the foreseeable future for this listing determination. In addition, projected climate change effects are a significant threat to the whitebark pine, because the impacts of climate change, including projected temperature and precipitation changes, interact with and exacerbate other stressors such as mountain pine beetle and wildfire, resulting in habitat loss and population decline. For a more detailed discussion of climate change impacts on whitebark pine, see the SSA report (Service 2018, pp. 49–55).

Current Conditions

In order to assess the current condition of the whitebark pine across its extensive range, we broke the range into 15 smaller analysis units (AUs), based primarily on Environmental Protection Agency Level III ecoregions as well as input from whitebark pine experts, as described in the SSA report (Service 2018, pp. 57–59). Ecoregions identify areas of general similarity in ecosystems, as well as topographic and environmental variables. We further divided AUs in the United States from those in Canada to reflect differences in management and legal status. A map of these AUs is available in the SSA report (Service 2018, pp. 58, figure 9). We then evaluated the best available data regarding the current impacts of wildfire, white pine blister rust, and mountain pine beetle on the resiliency (ability to withstand stochastic events) of each AU. These analyses are described in detail in the SSA report (Service 2018, pp. 56–81), and our conclusions are summarized below. We note that not all AUs are equal in size; they

encompass varying proportions of the species' range, ranging from the Middle Rockies AU (27.6 percent of the range) to the Olympics AU (0.4 percent of the range) (Service 2018, p. 59, table 3).

Resiliency

To assess the current impact of wildfire on the resiliency of whitebark pine AUs, we examined burn data collected from 1984 to 2016 from the following sources Monitoring Trends in Burn Severity [MTBS] (a multi-agency program compiling fire data from multiple sources including USGS and the USFS); GeoMac (a multi-agency program providing fire data from multiple agencies managed by USGS); and the Canadian Forest Service (Service 2018, p. 60). We found that from 1984 to 2016, between 0.08 percent and 42.64 percent of each AU burned (including burns of any severity level). Although we collected information on all fires, our analysis focuses on areas of high burn severity that could potentially negatively impact the species. Overall, a minimum of 1,273,583 ha (3,147,092 ac) of whitebark pine habitat burned in high severity fires during this time period, equating to approximately 5 percent of the species' range within the United States (Service 2018, pp. 60–63). Similar data for high severity fires were not available for AUs in Canada.

To assess the current impact of white pine blister rust on the resiliency of whitebark pine AUs, we examined the large volume of published literature and information provided by experts, as described in the SSA report (Service 2018, pp. 63–71). White pine blister rust infections have increased in intensity over time and are now prevalent even in trees living in cold, dry areas formerly considered less susceptible (Tomback and Resler 2007, p. 399; Smith-Mckenna *et al*. 2013, p. 224), such as the Greater Yellowstone Ecosystem. This trend has resulted in reduced seed production and increased mortality. We assessed the current impact of white pine blister rust on whitebark pine by evaluating data from a modeled dataset developed by the USFS in

2011 for the United States. This modeled dataset is based on white pine blister rust infection information from the USFS Whitebark and Limber Pine Information System (WLIS) database combined with environmental variables (Service 2018, p. 68-69). Canadian white pine blister rust data were derived from a combination of survey data from Parks Canada and empirical literature (e.g., COSEWIC 2010, p. viii and Table 4, p. 19; Smith *et al*. 2010, p. 67; Smith *et al*. 2013, p. 90; Shepherd *et al*. 2018, p. 6). Approximately 34 percent of the range is infected with white pine blister rust (Service 2018, p. 93), and every AU within the whitebark pine's range is currently affected by the disease. The current average white pine blister rust infection level within each AU ranges between 2 percent and 74 percent, with 12 of the 15 AUs having an average infection level over 20 percent, and 5 of the AUs having average infection levels above 40 percent (Service 2018, pp. 68–71). Average infection levels are lowest in the southern AUs (Klamath Mountains, Basin and Range, and Sierras) and then sharply increase moving north into the latitudes of the Rocky Mountains and Cascades. As stated above, once white pine blister rust is present in an area, there are no known methods to eradicate it. It will spread and infect more of the area when conditions are favorable.

To assess the current impact of mountain pine beetle on the resiliency of whitebark pine AUs, we aggregated aerial detection survey (ADS, a USFS dataset) data for the United States and aerial overview survey (AOS, a dataset of the British Columbia Ministry of Forests) data for Canada from 1991 through 2016 across the range of the whitebark pine (Service 2018, p. 71). As mountain pine beetles only attack mature trees, the effects of mountain pine beetle attacks observed during aerial surveys can be interpreted as the loss of seed-producing trees. From 1991 through 2016, 5,919,276 ha (14,626,850 ac) of the whitebark pine's range have been impacted by the mountain pine beetle, resulting in at least 18 percent of the whitebark pine's range being negatively impacted (Service 2018, pp. 71–75). Similar to white pine blister rust infection, the more

southern AUs are currently less impacted by the mountain pine beetle than their more northern counterparts. On the West Coast, the Cascades, Thompson Plateau, and Fraser Plateau AUs have had at least 25 percent of the whitebark pine's range impacted by the mountain pine beetle.

Overall, whitebark pine stands have seen severe reductions in reproduction and regeneration because of these stressors, thus resulting in a reduction in resiliency and therefore their ability to withstand stochastic events. High severity wildfires, white pine blister rust, and mountain pine beetle all act on portions of whitebark pine's range, killing individuals and limiting reproduction and regeneration (Service 2018, p. 81, Figure 14). Interactions between these factors have further exacerbated the species' decline and have reduced its resiliency.

Representation

Having evaluated the current impact of the above stressors on the resiliency of each whitebark pine AU, we next evaluated the species' current levels of representation, or ability to adapt to changing conditions (Service 2018, pp. 75–78). The range of variation found within a species, which may include ecological, genetic, morphological, and phenological diversity, may be an indication of its levels of representation. Whitebark pine can be found in a number of ecological settings throughout its range, mainly depending on elevation, latitude, and climate of an area. Whitebark pine has high genetic diversity relative to other conifer tree species (*i.e.*, high representation in terms of genetic variation), with poor genetic differentiation among zones, and similar levels of diversity to other highly geographically distributed tree species in North America (Mahalovich and Hipkins 2011, p. 126). The high levels of genetic diversity within the species may be impacted through bottleneck events caused by mortality resulting from white pine blister rust, mountain pine beetle, or fires. Whitebark pine also has higher rates of inbreeding than most other wind-pollinated conifers, likely due to the close

proximity of mature trees arising from clumps of seeds of related individuals or even from the same cone, suggesting that population genetic structure is driven by seed dispersal by the Clark's nutcracker (Keane *et al*. 2012, p. 14). The whitebark pine exhibits a range of morphologies, from tall, single-stemmed trees to shrub-like krummholz forms. These factors may contribute to the species' level of ability to adapt to changing conditions. Given the species wide geographic range and levels of ecological, genetic, morphological, and phenological diversity, it likely has inherently higher levels of representation than many species.

Redundancy

Finally, we evaluated the whitebark pine's current levels of redundancy, or ability to withstand catastrophic events. Whitebark pine is widely distributed, and thus inherently has higher levels of redundancy than many species. Rangewide, whitebark pine occurs on an estimated 32,616,422 ha (80,596,935 ac) in western North America. However, as a result of the rangewide reduction in resiliency due to the stressors discussed above, there has been a concomitant loss in species redundancy, as many areas become less able to contribute to the species' ability to withstand catastrophic events (Service 2018, p. 78).

Overall, rangewide data from USFS Forest Inventory and Analysis surveys indicate that 51 percent of all standing whitebark pine trees in the United States are now dead, with over half of that amount occurring approximately in the last two decades alone (Goeking and Izlar 2018, p. 7). Each of the stressors acts individually and cumulatively on portions of the whitebark pine's range, and interactions between stressors have further exacerbated the species' decline and have reduced its resiliency. This reduction in resiliency is rangewide, occurring across all AUs, with the Canadian, U.S., and Northern Rockies likely the most impacted. While the species is still wide-ranging and, therefore, has inherently higher levels of representation and redundancy than many species,

reductions to resiliency across the range are reducing the species' adaptive capacity and ability to withstand catastrophic events (Service 2018, pp. 78–80).

Future Conditions

To assess the future condition of whitebark pine, we projected the impacts of each of the stressors described above under three plausible scenarios (scenarios 1, 2, and 3, as noted below). This analysis, and the uncertainties associated with it, are described in more detail in the SSA report (Service 2018, pp. 82–114), and are summarized below. Scenarios constructed include variation in:

(1) The presence of white pine blister rust. Given historical trends, we assume in all scenarios that white pine blister rust will continue to spread and intensify throughout the range of whitebark pine. There is no information to suggest that the rate of spread or prevalence of white pine blister rust will decrease in the future. The incidence of white pine blister rust at stand, landscape, and regional scales varies due to time since introduction and environmental suitability for its development. It continues to spread into areas originally considered less suitable for persistence, and it has become a serious threat. In our future scenarios, we varied the future rate of white pine blister rust spread between one and four percent annually based on values presented in the literature (e.g., Schwandt et al. 2013; Smith et al 2013). The percentage of genetically resistant individuals and the effectiveness and scale of management efforts to collect, propagate, and plant genetically resistant individuals are key areas of uncertainty. Therefore, we varied the level of genetic resistance between a lower value of 10 percent and higher value of 40 percent based on a range of values presented in the literature (e.g., Mahalovich 2013, p. 33). We considered the higher 40 percent value to include both the presence of some level of natural resistance and planting of resistant individuals.

(2) The frequency of high severity wildfire. Given current trends and predictions for future changes in the climate, we assume in all scenarios that the frequency of stand

replacing wildfire will increase although the magnitude of that increase is uncertain (Keane et al. 2017, p. 18; Westerling 2016, entire; Littell et al. 2010, entire). Because of that uncertainty, we choose what are likely conservative values of a 5 or 10 percent increase in severe wildfire above current annual levels.

(3) The magnitude of future mountain pine beetle impacts. Given warming trends, we assume in all scenarios that mountain pine beetle epidemics will continue to impact whitebark pine in the future. There is no information to suggest that mountain pine beetle epidemics will decrease in magnitude or frequency in the future. In our future scenarios, we predicted a new mountain pine beetle epidemic would occur every 60 years, as that is the minimum time it would likely take for individual trees to achieve diameters large enough to facilitate successful mountain pine beetle brood production that is required to reach epidemic levels.

Climate change is understood to impact whitebark pine principally through its effect on the magnitude of the other three key stressors, and was therefore included in these projections as an indirect impact to whitebark pine resilience by modifying the rate of change in the other stressors (Service 2018, p. 82). Similarly, potential levels of current and future conservation efforts were also included indirectly in these projections by varying the rate of change of those stressors for which conservation could potentially have an effect. Due to the longevity and long generation time of the species, we modeled projections of impacts for several timeframes, going out 180 years, which corresponds to approximately three generations of whitebark pine (Tomback and Pansing 2018, p. 7; COSEWIC 2010, p. v). However, we focused our discussion of viability in the SSA report largely on the 60-year (1 generation) timeframe where our confidence is greatest with respect to the range of plausible projected changes to stressors and the species' response. We note that our projections are based on long-term geospatial data sets and a large body of empirical data, and the scenarios chosen encompass the full range of

conditions that could plausibly occur. Below, we briefly summarize each scenario that we considered, and the results of our analysis under each scenario.

Scenario 1 is a continuation of current trends, where impacts from high severity fires and mountain pine beetle continue at current levels. We predicted a new mountain pine beetle epidemic would occur every 60 years, as that is the minimum time it would likely take for individual trees to achieve diameters large enough to facilitate successful mountain pine beetle brood production that is required to reach epidemic levels. In this scenario, white pine blister rust begins at the current estimated proportion of the range infected and spreads at 1 percent per year with an assumed 10 percent level of genetically resistant individuals (Service 2018, p. 89).

In scenario 2, high severity wildfires increase by 5 percent over current trends. The spread of white pine blister rust continues at a relatively low annual rate (1 percent per year), and the assumed level of genetic resistance to white pine blister rust is relatively high at 40 percent (a value that includes both the presence of some level of natural resistance and planting of resistant individuals). Mountain pine beetle epidemics continue to occur at 60-year intervals, but with 20 percent recruitment of whitebark pine into the population between epidemics (Service 2018, p. 90).

In scenario 3, high severity wildfires increase by 10 percent over current trends. The spread of white pine blister rust increases (4 percent per year), and only 10 percent of individuals on the landscape have genetic resistance to white pine blister rust. Mountain pine beetle epidemics continue to occur at 60-year intervals, but impacts increase in severity by 10 percent, and there is no recruitment between epidemics (Service 2018, p. 90).

Under each scenario, we evaluated what percentage of the whitebark pine's range would be impacted by each stressor, relative to current levels. We focused our discussion of viability in the SSA report largely on the 60-year (1 generation) timeframe where our

confidence is greatest with respect to the range of plausible projected changes to stressors and the species' response. See the **Determination** section of this document for our discussion on the relationship of this modeled timeframe to our determination of the foreseeable future for this listing determination. Within this timeframe, a continuation of current trends in high severity fires (under scenario 1) would not likely severely negatively impact whitebark pine resiliency, redundancy, or representation in the absence of other threats, as newly burned areas can potentially provide a seedbed for whitebark pine if stands of healthy cone-producing whitebark pine are nearby, resulting in some level of natural regeneration. Similarly, if current trends in high severity fires continue or increase by 5 to 10 percent (the relatively small projected increase in severe wildfire under scenarios 2 and 3), high severity fires alone (in the absence of other threats) would not be likely to severely negatively impact whitebark pine (Service 2018, pp. 100–101).

Currently, approximately 34 percent of the range is infected by white pine blister rust. Within the 60-year timeframe, under scenario 1, approximately 61 percent of the range will be infected with white pine blister rust. Under scenario 2, approximately 52 percent of the range will be infected within the next 60 years. Under scenario 3, approximately 88 percent of the range will be infected within the next 60 years (Service 2018, pp. 101–103).

In addition, approximately 17 percent of the range is currently impacted by mountain pine beetle. Within the 60-year timeframe, under scenario 1, an estimated 31 percent of the range will be impacted by the mountain pine beetle in the absence of other stressors. Under scenario 2, an estimated 15 percent of the range will be impacted by the mountain pine beetle within 60 years. Under scenario 3, approximately 40 percent of the range will be impacted by the mountain pine beetle within 60 years (Service 2018, pp. 103–105). These results are further broken down by AU in the SSA report (Service 2018, pp. 100–105).

Although not specifically addressed in our projections, the best available science indicates that there are strong synergistic and cumulative interactions between the four key stressors (mountain pine beetle, white pine blister rust, severe fire, and climate change), which will increase negative impacts to whitebark pine under all three scenarios. Therefore, our assessment of the future effects of each individual stressor on whitebark pine likely underestimates the total impact of these stressors when combined on the species' overall viability. For example, environmental changes resulting from climate change are expected to alter fire regimes, resulting in decreased fire intervals and increased fire severity. More frequent stand-replacing fires will likely negatively impact whitebark pine resiliency by reducing the probability of regeneration in many areas (Tomback *et al.* 2008, p. 20; Leirfallom *et al*. 2015, p. 1601). Warming trends have also resulted in unprecedented mountain pine beetle epidemics throughout the range of the whitebark pine (Logan *et al.* 2003, p. 130; Logan *et al.* 2010, p. 896). In addition, the latest mountain pine beetle epidemic and white pine blister rust together have negatively impacted the probability of whitebark pine regeneration because both have acted to severely decrease seed cone production. These and other interactions are described in the SSA report (Service 2018, pp. 105–111).

In summary, the abundance of whitebark pine is forecasted to decline over time under all three scenarios we considered. In these scenarios, the rate of decline appeared to be most sensitive to the rate of white pine blister rust spread, the presence of genetically resistant individuals (whether natural or due to conservation efforts), and the level of regeneration (Service 2018, pp. 111–112). Whitebark pine viability has declined over time, and continuation of current trends and synergistic and cumulative interactions between wildfire, white pine blister rust, mountain pine beetle, and climate change will continue to result in actual or functional loss of populations. However, we acknowledge that there may be significant differences and a large degree of variation when examining

stressors at smaller landscape or stand scales. As a result of the highly heterogeneous ecological settings of this widespread species (*e.g.*, differences in topography, elevation, weather, and climate) and geographic variation in levels of genetic resistance to white pine blister rust, rates of whitebark pine decline will likely vary for each AU.

We predict all AUs will have a reduced level of resiliency in the future. This reduction in resiliency will be the result of continued increase in white pine blister rust infection, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source and subsequent regeneration. Whitebark pine remains widely distributed across the spatial extent and ecological settings of its historical range. However, under all three future scenarios, we predict redundancy and representation will decline, as fewer populations persist and the spatial extent and connectivity of the species declines (Service 2018, pp. 112–113).

See the SSA report (Service 2018, entire) for a more detailed discussion of our evaluation of the biological status of the whitebark pine and the influences that may affect its continued existence. Our conclusions in the SSA report, which form the basis for the determination below, are based upon the best available scientific and commercial data.

Management and Restoration

There are a variety of regulatory mechanisms, as well as management and restoration plans in place, that benefit or impact whitebark pine, as described in the SSA report (Service 2018, appendix A). Due to the broad distribution of whitebark pine in the United States and Canada, management of this species falls under numerous jurisdictions that encompass a spectrum of local and regional ecological, climatic, and management conditions and needs. Several management and restoration plans have been developed for specific regions or jurisdictions to address the task of conserving and restoring this widespread, long-lived species (Service 2018, p. 112). Conversely, some areas within the

range of whitebark pine do not have a specific management plan for whitebark pine (*e.g.*, central Idaho) (Service 2018, p. 112). Consequently, within the United States management actions in these areas would generally follow established forest or vegetation management plans developed under the National Forest Management Act of 1976 (16 U.S.C. 1600 *et seq*.) or other similar policies (*e.g.*, National Forest land management plans, National Park Service vegetation management plans). In Canada, the Committee on the Status of Endangered Wildlife designated whitebark pine as Endangered under the Canadian Species at Risk Act (SARA) on June 20, 2012, due to the high risk of extirpation. This listing provides protection from harming, killing, collecting, buying, selling or possessing, for individuals on Canadian Federal land.

See the SSA report for a description of management and restoration plans currently in place or under development, and some of their accomplishments (Service 2018, appendix A). Many of these efforts have had positive impacts on the species on local or regional scales. However, given the vast geographic range of the species and the ubiquitous presence of white pine blister rust, there is currently no effective means to control the disease and its cumulative impacts with other stressors on a species-wide scale through any regulatory or nonregulatory mechanism.

Twenty-nine percent of the range of whitebark pine within the United States (Service 2018, p. 15) is designated wilderness under the Wilderness Act of 1964 (16 U.S.C. 1131–1136). The Wilderness Act states that wilderness should be managed to preserve its natural conditions and yet remain untrammeled by humans. This designation limits management options and conservation efforts in those areas to some degree. How the Wilderness Act is implemented can vary between agencies, regions, or even between species. While the Wilderness Act allows for some "minimal actions" to address certain management needs, it does not directly allow for treatment of the impacts of white pine blister rust, fire exclusion policies, mountain pine beetle epidemics, or climate change.

For a more detailed discussion of how the Wilderness Act influences the management of whitebark pine, see the SSA report (Service 2018, pp. 129–130).

Determination of Whitebark Pine 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 "endangered species" or "threatened species." The Act defines "endangered species" as a species "in danger of extinction throughout all or a significant portion of its range," and "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 have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the whitebark pine across its range in the United States and Canada. Our analysis of the current and future condition of whitebark pine found that the species is being impacted by four main stressors: altered fire regimes (Factor E), white pine blister rust (Factor C), mountain pine beetle (Factor C), and climate change (Factor E). We found white pine blister rust (Factor C) to be the main driver of the species' current and future condition. White pine blister rust is currently ubiquitous across the range, and under all three future condition scenarios, it is expected to expand significantly. Under the three scenarios, within one generation, 52 to 88 percent of the range will be infected. The impacts of white pine blister rust combined

with other stressors will reduce the ability of whitebark pine stands to regenerate (*i.e.*, resiliency) following disturbances, such as fire and mountain pine beetle outbreaks. The decline is expected to be most pronounced in the northern two-thirds of the whitebark pine's range, where white pine blister rust infection rates are predicted to be highest. Despite the existing regulatory mechanisms (Factor D) and voluntary conservation efforts described above, these stressors have continued to spread and are predicted to increase in prevalence in the future. Our analysis did not find any stressors to be impacting the species at a population or species level under Factors A or B.

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we find that the whitebark pine is likely to become endangered throughout all of its range within the foreseeable future. This finding is based on anticipated reductions in resiliency, redundancy, and representation in the future as a result of continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source. White pine blister rust is already ubiquitous rangewide, and there is currently no effective method to reverse it on a meaningful scale. In addition, 51 percent of whitebark pine trees in the United States are now dead (Goeking and Izlar 2018, p. 7). For this long-lived species, we consider the foreseeable future to be within 40 to 80 years. This timeframe encompasses the length of approximately one generation (*i.e.*, 60 years) for whitebark pine, but also accounts for uncertainty in the precise rate of spread of white pine blister rust and associated mortality. While we were able to project the species response out to 180 years in our SSA, our confidence is greatest with respect to the range of plausible projected changes to stressors and the species' response under 80 years. We can reasonably determine that both the future threats and the species' responses to those threats are likely within this 40- to 80-year timeframe (*i.e.*, the foreseeable future).

We find that the whitebark pine is not currently in danger of extinction because the species is still widespread throughout its extensive range, and whitebark pine trees are expected to persist on the landscape for many decades, especially given their long lifespan, and the presence of some levels of genetic resistance to white pine blister rust. In addition, there is uncertainty regarding how quickly white pine blister rust, the primary stressor, will spread within the three southwestern AUs (the Sierras, Basin and Range, and Klamath Mountains AUs) where it currently occurs at low levels and greater levels of resiliency remain. Therefore, the species currently has sufficient redundancy and representation to withstand catastrophic events and maintain adaptability to changes, particularly in the southwestern part of the range, and is not at risk of extinction now. However, we expect that the stressors, individually and cumulatively, will reduce resiliency, redundancy, and representation within all parts of the range within the foreseeable future. Therefore, on the basis of the best available scientific and commercial information, we determine that the whitebark pine is not currently in danger of extinction, but 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 in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity v. Everson*, 2020 WL 437289 (D.D.C. Jan. 28, 2020) (*Everson*), vacated the aspect of the 2014 Significant Portion of its Range Policy that provided that the Services do 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 whitebark pine, we will address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species may be endangered.

The statutory difference between an endangered species and a threatened species is the time frame 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 in the foreseeable future. Thus, we reviewed the best scientific and commercial data available regarding the time horizon for the threats that are driving the whitebark pine to warrant listing as a threatened species throughout all of its range. We then considered whether these threats are geographically concentrated in any portion of the species' range in a way that would accelerate the time horizon for the species' exposure or response to the threats. We examined the following threats: altered fire regimes, white pine blister rust, mountain pine beetle, and climate change, including synergistic and cumulative effects. We found white pine blister rust to be the main driver of the species' status.

We found a concentration of threats in the northern two-thirds of the whitebark pine's range, including the following Analysis Units: Nechako Plateau, Fraser Plateau,

Thompson Plateau, Columbia Mountains, Canadian Rockies, Olympics, Cascades, Northern Rockies, Blue Mountains, Idaho Batholith, US Canadian Rockies, and Middle Rockies (see Service 2018, Figures 9, 11, 14). As described above, the impacts of white pine blister rust combined with other stressors is expected to reduce the ability of whitebark pine stands to regenerate following disturbances. Although white pine blister rust is currently ubiquitous across the range, white pine blister rust infection rates are currently the highest, and will further increase in the future, in the northern two-thirds of whitebark pine's range; as such, we expect future declines in resiliency to be most pronounced in the northern two-thirds of the whitebark pine's range.

However, despite the prevalence of white pine blister rust and other stressors in the northern two-thirds of the whitebark pine's range, whitebark pine trees are still widespread throughout this extensive geographic area. Given their long lifespan and the presence of some levels of genetic resistance to white pine blister rust, whitebark pine trees are expected to persist on the landscape for many decades. As we discuss above, white pine blister rust may not immediately kill infected trees; many trees with white pine blister rust can live for decades before they succumb to the disease. Thus, currently, levels of redundancy and representation are reduced, but sufficient to withstand catastrophic events and maintain adaptability to changes, and therefore the species is not currently in danger of extinction in this portion of the range.

However, white pine blister rust will likely continue to spread throughout the species' range in the future, reducing available seed source and recruitment into the future. We expect that white pine blister rust, individually and cumulatively along with other stressors, will reduce resiliency, redundancy, and representation within the northern two-thirds of the range such that whitebark pine is likely to become an endangered species in this portion within the foreseeable future.

Although some threats to the whitebark pine are concentrated in the northern two-thirds of the species' range, the best scientific and commercial data available does not indicate that the concentration of threats, or the species' responses to the concentration of threats, are likely to accelerate the time horizon in which the species becomes in danger of extinction in that portion of its range. As a result, the whitebark pine is not in danger of extinction now in the northern two-thirds of its range. Therefore, we determine, that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This is consistent with the courts' holdings in *Desert Survivors* v. *Department of the Interior*, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018), and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d , 946, 959 (D. Ariz. 2017).

Determination of Status

Our review of the best available scientific and commercial information indicates that the whitebark pine meets the definition of a threatened species. Therefore, we propose to list the whitebark pine 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, 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 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. Subsection 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. 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.

Recovery planning includes the development of a recovery outline shortly after a species is listed and preparation of a draft and final recovery plan. The SSA Report developed to inform this listing determination may also inform the development of the recovery outline and recovery plan, and may be updated as new information becomes available. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan and the SSA may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened ("downlisting") or removal from listed 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. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (*http://www.fws.gov/endangered*),

or from our Wyoming Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (*e.g.*, restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands. If this species is listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of Wyoming, Montana, Idaho, Washington, Oregon, California, and Nevada would be eligible for Federal funds to implement management actions that promote the protection or recovery of the whitebark pine. Information on our grant programs that are available to aid species recovery can be found at *http://www.fws.gov/grants*.

Although the whitebark pine is only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing

this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by the U.S. Forest Service, National Park Service, and Bureau of Land Management.

Effects of Listing

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of the species proposed for listing. Based on the best available information, and considering the proposed 4(d) rule described below, the following actions are unlikely to result in a violation of section 9, if these activities are carried out in accordance with existing regulations and permit requirements; this list is not comprehensive:

- Silviculture practices and forest management activities that address fuels management, insect and disease impacts, and wildlife habitat management (*e.g.*, cone collections, planting seedlings/sowing seeds, mechanical cuttings as a restoration tool in

stands experiencing advancing succession, full or partial suppression of wildfires in whitebark pine communities, allowing wildfires to burn, or survey and monitoring of tree health status.)

Based on the best available information, the following activities may potentially result in a violation of section 9 of the Act (except in the case of the exceptions listed in our proposed 4(d) rule; see discussion below); this list is not comprehensive:

- Removal and reduction to possession of the species from areas under Federal jurisdiction;
- Malicious damage or destruction of the species on any areas under Federal jurisdiction; or
- Removal, cutting, digging up, or damage or destruction of the species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.

For example, the removal or damage of whitebark pine trees, when not conducted or authorized by the Federal agency with jurisdiction over the land where the activity occurs, would be prohibited.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Wyoming Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

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

Background

Section 4(d) of the Act states that the "Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation" of species listed as threatened. The U.S. Supreme Court has noted that very similar statutory language demonstrates a large degree of deference to the agency (see *Webster* v. *Doe*, 486 U.S. 592 (1988)). Conservation is defined in the Act to mean "the use of all methods and

procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to [the Act] are no longer necessary." Additionally, section 4(d) of the Act states that the Secretary "may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants." Thus, regulations promulgated under section 4(d) of the Act provide the Secretary with wide latitude of discretion to select appropriate provisions tailored to the specific conservation needs of the threatened species. The statute grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have approved rules developed under section 4(d) that include a taking prohibition for threatened wildlife, or include a limited taking prohibition (see *Alsea Valley Alliance* v. *Lautenbacher*, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council* v. *National Marine Fisheries Service*, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also approved 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 him with regard to the permitted activities for those species." He may, for example, permit taking, but not importation of such species, or he may choose to forbid both taking and importation but allow the transportation of such species, as long as the prohibitions, and exceptions to those prohibitions, will "serve to conserve, protect, or restore the species concerned in accordance with the purposes of the Act" (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

The Service has developed a proposed species-specific 4(d) rule that is designed to address the whitebark pine's specific threats and conservation needs. Although the statute does not require the Service to make a "necessary and advisable" finding with respect to the adoption of specific prohibitions under section 9, we find that this rule is necessary and advisable to provide for the conservation of the whitebark pine, as explained below. As discussed in above under **Determination**, the Service has concluded that the whitebark pine is at risk of extinction within the foreseeable future primarily due to the continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source. The provisions of this proposed 4(d) rule would promote conservation of the whitebark pine by encouraging management of the landscape in ways that meet land management considerations while meeting the conservation needs of the whitebark pine, as explained further below. The provisions of this rule are one of many tools that the Service would use to promote the conservation of the whitebark pine. This proposed 4(d) rule would apply only if and when the Service makes final the listing of the whitebark pine as a threatened species.

Provisions of the Proposed 4(d) Rule

This proposed 4(d) rule would provide for the conservation of whitebark pine by prohibiting the following activities (except in the case of the exceptions listed below), unless otherwise authorized or permitted:

- Import or export of the species;
- Delivery, receipt, transport, or shipment of the species in interstate or foreign commerce in the course of commercial activity;
- Sale or offer for sale of the species in interstate or foreign commerce;
- Removal and reduction to possession of the species from areas under Federal jurisdiction;

- Malicious damage or destruction of the species on any area under Federal jurisdiction; or

- Removal, cutting, digging up, or damage or destruction of the species on any area under Federal jurisdiction in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.

These prohibitions and the exceptions below would apply to whitebark pine trees and any tree parts, such as cones, tree cores, etc.

The following activities would be excepted from the prohibitions identified above:

- Activities authorized by a permit under 50 CFR 17.72; and

- Forest management, restoration, or research-related activities conducted or authorized by the Federal agency with jurisdiction over the land where the activities occur.

- Removal, cutting, digging up, or damage or destruction of the species on areas not under Federal jurisdiction by any qualified employee or agent of the Service or State conservation agency which is a party to a Cooperative Agreement with the Service in accordance with section 6(c) of the Act, who is designated by that agency for such purposes, when acting in the course of official duties.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened plants under certain circumstances. Regulations governing permits are codified at 50 CFR 17.72. With regard to threatened plants, a permit may be issued for the following purposes: scientific purposes, to enhance propagation or survival, for economic hardship, for botanical or horticultural exhibition, for educational purposes, or for other purposes consistent with the purposes of the Act. Additional statutory exemptions from the prohibitions are found in sections 9 and 10 of the Act.

Broadly, the forest management, restoration, or research-related activities referred to above may include, but are not limited, to silviculture practices and forest management activities that address fuels management, insect and disease impacts, and wildlife habitat management (*e.g.*, cone collections, planting seedlings or sowing seeds, mechanical cuttings as a restoration tool in stands experiencing advancing succession, full or partial suppression of wildfires in whitebark pine communities, allowing wildfires to burn, survey and monitoring of tree health status), as well as other forest management, restoration, or research-related activities. We purposefully do not specify precisely when, where, or how these activities must be conducted because they are not a threat to whitebark pine in any form, and they may vary in how they are conducted across the species' wide range. This proposed 4(d) rule would enhance the conservation of whitebark pine by prohibiting activities that would be detrimental to the species, while allowing the forest management, restoration, and research-related activities that are necessary to conserve whitebark pine by maintaining and restoring forest health on the Federal lands that encompass the vast majority of the species' habitat within the United States.

The Service recognizes the special and unique relationship with our state natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Services shall 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 the Service in accordance with section 6(c) of

the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve the whitebark pine that may result in otherwise prohibited activities without additional authorization.

We note that the prohibitions related to removing and reducing to possession; maliciously damaging and destroying; or removing, cutting, digging up, or destroying the species in this proposed 4(d) rule only apply to areas under Federal jurisdiction. Therefore, the exceptions to those prohibitions also only apply to areas under Federal jurisdiction. However, we still encourage forest management, restoration, and research-related activities on areas outside of Federal jurisdiction such as State, private, and Tribal lands within the United States or any lands within Canada. The proposed 4(d) rule only addresses Federal Endangered Species Act requirements, and would not change any prohibitions provided for by State law. Additionally, nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of whitebark pine. However, the consultation process may be further streamlined through programmatic consultations between Federal agencies and the Service for these activities. This proposed 4(d) rule would be finalized only after consideration of public comments and only if and when the Service makes final the listing of whitebark pine as threatened.

Necessary and Advisable Finding

The Service has determined that a 4(d) rule is appropriate for the whitebark pine. The proposed 4(d) rule would provide for the conservation of the species by use of protective regulations, as described here. Within the United States, the vast majority of the species' range (approximately 88 percent) is located on Federal lands. Given the reductions in resiliency that have already occurred to varying degrees across the range

(Service 2018, pp. 56–82), we are proposing to apply the prohibitions of section 9(a)(2) of the Act to the whitebark pine by making the following activities unlawful:

- Import or export of the species;
- Delivery, receipt, transport, or shipment of the species in interstate or foreign commerce in the course of commercial activity;
- Sale or offer for sale of the species in interstate or foreign commerce;
- Removal and reduction to possession of the species from areas under Federal jurisdiction;
- Malicious damage or destruction of the species on any area under Federal jurisdiction; or
- Removal, cutting, digging up, or damage or destruction of the species on any area under Federal jurisdiction in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.

However, we are also proposing to apply two broad exceptions to those prohibitions to allow authorization under 50 CFR 17.72, and to allow Federal land management agencies to continue managing the forest ecosystems where the whitebark pine occurs and to continue conducting restoration and research activities that benefit the species. The Service has concluded that the whitebark pine is likely to become endangered within the foreseeable future primarily due to the continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source. This fungal disease is not human-spread or influenced by human activity, and few restoration methods are currently available to restore whitebark pine in areas affected by the disease. The whitebark pine is not commercially harvested, and while some human activities could potentially affect individual trees or local areas, we found no threats at the species level resulting from human activities, such as development or forest

management activities. In fact, forest management activities are important to maintaining the health and resiliency of forest ecosystems that include whitebark pine.

As described in the SSA report (Service 2018, Appendix A), most current whitebark pine management and research focuses on producing trees with inherited (genetic) resistance to white pine blister rust, as well as implementing mechanical treatments and prescribed fire as conservation tools. As part of this process, cones may be collected from trees identified as apparently resistant to white pine blister rust, or "plus" trees. Additional current areas of research involve investigating natural regeneration and silvicultural treatments, such as appropriate site selection (*i.e*., identifying areas where restoration will be most effective) and preparation, pruning, and thinning in order to protect high-value genetic resources, increase reproduction, reduce white pine blister rust damage, and increase stand volume (Zeglen *et al*. 2010, p. 361).

Conservation measures for whitebark pine can generally be categorized as either protection (of existing healthy trees and stands) or restoration (of damaged, unhealthy, or extirpated trees and stands). Inventory, monitoring, and mapping of whitebark pine stands are critical for assessing the current status and implementing strategic conservation strategies. The precise nature of management, restoration, and research activities that are conducted may vary widely across the broad range of whitebark pine, as management of this species falls under numerous jurisdictions that encompass a spectrum of local and regional ecological, climatic, and management conditions and needs.

As no forest management, restoration, or research-related activities pose any threat to the whitebark pine in any form, we purposefully do not specify in detail what types of these activities are included in this exception, or how, when, or where they must be conducted, as long as they are conducted or authorized by the Federal agency with jurisdiction over the land where the activities occur. Therefore, this proposed 4(d) rule would allow the continuation of all such forest management, restoration, and research-

related activities conducted by or authorized by relevant Federal land management agencies, as these activities pose no threat to the whitebark pine and are crucial to the species' conservation into the future, while allowing for flexibility to accommodate specific physical conditions, resource needs, and constraints across the species' vast range.

For the reasons discussed above, we find that this rule under section 4(d) of the Act is necessary and advisable to provide for the conservation of the whitebark pine. We ask the public, particularly Federal and State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that the Service could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see **Information Requested**, above).

III. Critical Habitat Designation

Background

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

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

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

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

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

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (*i.e.*, range). Such areas may include those areas used

throughout all or part of the species' life cycle, even if not used on a regular basis (*e.g.*, migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

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

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) of the Act would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features that occur in specific areas, we focus on the specific features that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic, or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. When designating critical habitat, the Secretary will first evaluate areas occupied by the species. The Secretary will only consider unoccupied areas to be essential where a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species. In addition, for an unoccupied area to be considered essential, the Secretary must determine that there is a reasonable certainty both that the area will contribute to the conservation of the

species and that the area contains one or more of those physical or biological features essential to the conservation of the species.

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

Prudency Determination

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species to the maximum extent prudent and determinable. Our regulations (50 CFR 424.12(a)(1)) state 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.

As explained below, we conclude that the present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the whitebark pine, and therefore designating critical habitat is not prudent for the species.

Our analysis of the species' status found that the primary stressor driving the status of whitebark pine is disease (white pine blister rust, Factor C). White pine blister rust also interacts with other stressors, including predation by mountain pine beetles (Factor C), altered fire regimes (Factor E) and climate change (Factor E). While wildfires could in some cases be considered a negative impact on habitat as well as on individuals, wildfires may also have positive impacts on whitebark pine depending on severity and extent (*e.g.*, they may create spaces for seed-caching and eliminate competition from shade-tolerant species) (Keane and Parsons 2010, p. 57; Service 2018, pp. 31–34). In addition, we do not consider altered fire regimes, climate change, or the mountain pine beetle to be the main drivers of the status of the species.

Furthermore, habitat is not limiting for whitebark pine, which is widely distributed over a range of 32,616,422 ha (80,596,935 ac) (Service 2018, pp. 13–18). Our analysis evaluated the needs of whitebark pine at the individual, population, and species level. These needs include open space on the forest floor, and limited shading for all life stages of whitebark pine (Service 2018, pp. 21–27). In addition, populations need to maintain a sufficient density of reproductive adults for pollen dispersal and pollen clouds to facilitate masting, and to attract Clark's nutcrackers (Service 2018, pp. 27–28).

These needs may be met in a variety of habitat types, as long as there are Clark's nutcrackers and limited competition. In fact, the habitat needs of whitebark pine are flexible and not specific, as evidenced by the fact that the species is extremely widespread, occupying a wide range of elevations, slopes, forest community types, latitudes, and climates across its 32,616,422-ha (80,596,935-ac) range (Service 2018, pp. 13–18). In other words, habitat for whitebark pine is plentiful, and is not a limiting factor determining the distribution of the species. Therefore, we do not consider the present or threatened destruction, modification, or curtailment of a species' habitat or range to be a threat to the species.

Since we have determined that the present or threatened destruction, modification, or curtailment of the species' habitat or range is not a threat to the whitebark pine, in accordance with 50 CFR 424.12(a)(1), we determine that designation of critical habitat is not prudent for the whitebark pine.

IV. Required Determinations

Clarity of the Rule

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

(1) Be logically organized;

(2) Use the active voice to address readers directly;

(3) Use clear language rather than jargon;

(4) Be divided into short sections and sentences; and

(5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the

sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

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

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244).

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 recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. We solicited information from Tribes within the range of whitebark pine to inform the development of our SSA, and notified Tribes of our upcoming proposed listing determination. We also provided these Tribes the opportunity to review a draft of the SSA report and provide input prior to making our proposed determination on the status of the whitebark pine. We

will continue to coordinate with affected Tribes throughout the listing process as appropriate.

References Cited

A complete list of references cited in this proposed rule is available on the Internet at *http://www.regulations.gov* and upon request from the Wyoming Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this proposed rule are the staff members of the Service's Mountain Prairie Regional Office.

List of Subjects in 50 CFR Part 17

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

V. Proposed Regulation Promulgation

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

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

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

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

2. In § 17.12(h), add an entry for "*Pinus albicaulis*" to the List of Endangered and Threatened Plants in alphabetical order under CONIFERS to read as set forth below:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules

* * * * * * *				
CONIFERS				
* * * * * * *				
Pinus albicaulis	Whitebark pine	Wherever found	T	[*Federal Register* citation when published as a final rule]; 50 CFR 17.74(a).[4d]
* * * * * * *				

3. Add § 17.74 to read as set forth below:

§ 17.74 Special rules—conifers and cycads.

(a) *Pinus albicaulis* (whitebark pine).

(1) The following prohibitions that apply to endangered plants also apply to the whitebark pine except as provided under paragraph (a)(2) of this section:

(i) Import or export, as set forth at §17.61(b) for endangered plants.

(ii) Removal and reduction to possession of the species from areas under Federal jurisdiction; malicious damage or destruction of the species on any such area; or removal, cutting, digging up, or damage or destruction of the species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.

(iii) Interstate or foreign commerce in the course of commercial activity, as set forth at §17.61(d) for endangered plants.

(iv) Sale or offer for sale, as set forth at §17.61(e) for endangered plants.

(v) Attempt to commit, solicit another to commit, or cause to be committed, any of the acts described in paragraphs (a)(1)(i) through (iv).

(2) *Exceptions from prohibitions.* In regard to the whitebark pine, you may:

(i) Conduct activities as authorized by a permit under § 17.72.

(ii) Conduct forest management, restoration, or research-related activities conducted or authorized by the Federal agency with jurisdiction over the land where the activities occur.

(iii) Remove, cut, dig up, damage or destroy on areas under Federal jurisdiction by any qualified employee or agent of the Service or State conservation agency which is a party to a Cooperative Agreement with the Service in accordance with section 6(c) of the Act, who is designated by that agency for such purposes, when acting in the course of official duties.

(b) [Reserved]

Aurelia Skipwith,
Director,
U.S. Fish and Wildlife Service.

[FR Doc. 2020-25331 Filed: 12/1/2020 8:45 am; Publication Date: 12/2/2020]