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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R6-ES-2010-0047]

[MO 92210-0-0008]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List <E T="0714">Pinus albicaulis (Whitebark Pine) as Endangered or Threatened with Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of petition finding and initiation of status review.

SUMMARY:

We, the U.S. Fish and Wildlife Service, announce a 90-day finding on a petition to list Pinus albicaulis (whitebark pine) as endangered or threatened under the Endangered Species Act of 1973, as amended and to designate critical habitat. Based on our review, we find that the petition presents substantial scientific or commercial information indicating that listing P. albicaulis may be warranted. Therefore, with the publication of this notice, we are initiating a review of the status of the species to determine if listing P. albicaulis is warranted. To ensure that this status review is comprehensive, we are requesting scientific and commercial data and other information regarding this species. Based on the status review, we will issue a 12month finding on the petition, which will address whether the petitioned action is warranted, as provided in section 4(b)(3)(B) of the Act.

DATES:

To allow us adequate time to conduct this review, we request that we receive information on or before [insert date 60 days after date of publication in the federal register]. Please note that if you are using the Federal eRulemaking Portal (see ADDRESSES section, below), the deadline for submitting an electronic comment is 11:59 p.m. Eastern Standard Time on this date.

After [insert date 60 days after date of publication in the federal register], you must submit information directly to the Field Office (see FOR FURTHER INFORMATION CONTACT section below). Please note that we may not be able to address or incorporate information that we receive after the above requested date.

ADDRESSES: You may submit information by one of the following methods: • Federal eRulemaking Portal: <http://www.regulations.gov>. In the box that reads Enter Keyword or ID, enter the docket number for this finding, which is FWS-R6-ES-2010-0047. Check the box that reads Open for Comment/Submission, and then click the Search button. You should then see an icon that reads Submit a Comment. Please ensure that you have found the correct rulemaking before submitting your comment.

• U.S. mail or hand-delivery: Public Comments Processing, Attn: FWS-R6-ES-2010-0047; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203.

We will post all information received on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see the Request for Information section below for more details).

FOR FURTHER INFORMATION CONTACT: Brian T. Kelly, Field Supervisor, Wyoming Ecological Services Field Office, 5353 Yellowstone Road, Room 308A, Cheyenne, WY 82009; by telephone (307-772-2374); or by facsimile (307-772-2358). If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION: Request for Information

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly review the status of the species (status review). For the status review to be complete and based on the best available scientific and commercial information, we request information on *Pinus albicaulis* from governmental agencies, Native American Tribes, the scientific community, industry, and any other interested parties. We seek information on:

(1) The status of the species throughout its range in the United States and Canada including:

- (a) Historic and current range, including distribution patterns;
- (b) Historic and current population levels, and current and projected trends;
- (c) Past and ongoing conservation measures for the species, its habitat, or both; and
- (d) Distribution and extent of threats faced by the species.

(2) The factors that are the basis for making a listing determination for a species under section 4(a) of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.), which are:

- (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.

(3) The Potential effects of climate change on this species and its habitat.

If, after the status review, we determine that listing *Pinus albicaulis* is warranted, we will propose critical habitat (see definition in section 3(5)(A) of the Act), under section 4 of the Act, to the maximum extent prudent and determinable at the time we propose to list the species. Therefore, within the geographical range currently occupied by *P. albicaulis*, we request data and information on:

- (1) What may constitute physical or biological features essential to the conservation of the species,
- (2) Where these features are currently found, and
- (3) Whether any of these features may require special management considerations or protection.

In addition, we request data and information on specific areas outside the geographical area occupied by the species that are essential to the conservation of the species. Please provide specific comments and information as to what, if any, critical habitat you think we should propose for designation if the species is proposed for listing, and why such habitat meets the requirements of section 4 of the Act.

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

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. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made solely on the basis of the best scientific and commercial data available.

You may submit your information concerning this status review by one of the methods listed in the ADDRESSES section. If you submit information via <http://www.regulations.gov>, your entire submission including any personal identifying information will be posted on the website. If you submit a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this personal identifying 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>.

Information and supporting documentation that we received and used in preparing this finding is available for you to review at <http://www.regulations.gov>, or you may make an appointment during normal business hours at the U.S. Fish and Wildlife Service, Wyoming Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).

Background

Section 4(b)(3)(A) of the Act requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the Federal Register.

Our standard for substantial scientific or commercial information within the Code of Federal Regulations (CFR) with regard to a 90day petition finding is that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted (50 CFR 424.14(b)). If we find that substantial scientific or commercial information was presented, we are required to promptly review the status of the species, which is subsequently summarized in our 12month finding.

Petition History

On December 9, 2008, we received a petition dated December 8, 2008, from Natural Resources Defense Council (NRDC) requesting that we list *Pinus albicaulis* 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 required by 50 CFR 424.14(a). 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 regulation 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 90day petition finding as quickly as possible. This finding addresses the petition.

On December 23, 2009, we received NRDC's December 11, 2009, notice of intent to sue over the Service's failure to respond to the petition to list *Pinus albicaulis* and designate critical habitat. The Service responded in a letter dated January 6, 2010, indicating that preceding listing actions had priority but that we expected to complete the 90day finding during the 2010 fiscal year. On February 24, 2010, the Service received a formal complaint from NRDC for the Service's failure to comply with issuing a 90day finding on the petition.

Previous Federal Actions

On February 5, 1991, the Great Bear Foundation of Missoula, Montana, petitioned the Service to list *Pinus albicaulis* under the Act. After reviewing the petition, we found that the petitioner had not presented substantial information indicating that listing *P. albicaulis* may be warranted. A not-substantial finding on the petition was made on January 13, 1994, and published in the Federal Register on January 27, 1994 (59 FR 3824).
Species Information

Pinus albicaulis is a 5-needled conifer species classified in the *Pinus* subsection *Cembrae*, or stone pines, which include five species worldwide (Tomback et al. 2001, p. 30; Lanter 1996, p. 26). The taxonomic characterization of *P. albicaulis* as a species is not disputed. Characteristics of stone pines include indehiscent cones (cones that remain essentially closed at maturity) and wingless seeds that are specialized for seed dispersal by nutcrackers in the avian family *Corvidae* (Tomback et al. 2001, p. 30; Burns and Honkala 1990, p. 271; Lanter 1996, p. 2). *Pinus albicaulis* seeds cannot be wind-disseminated like seeds of some other species of pines, and the species relies almost exclusively on Clark's nutcracker (*Nucifraga columbiana*) for seed dispersal (Lanter 1996, p. 7; Schwandt 2006, p. 2).

Pinus albicaulis typically occurs on cold, windy, moist, high-elevation or high-latitude sites in western North America, and as a result, many stands are geographically isolated. Its range extends longitudinally between 107 and 128 degrees west and latitudinally between 37 and 55 degrees north. The distribution of *P. albicaulis* includes coastal and Rocky Mountain ranges (Burns and Honkala 1990, p. 268) that are connected by the Selkirk Mountains of northeastern Washington and southeastern British Columbia. The coastal distribution of *P. albicaulis* extends from the Bulkley Mountains in British Columbia to the northeastern Olympic Mountains and Cascade Range of Washington and Oregon, to the Kern River of the Sierra Nevada Range of east-central California. Isolated stands are known from the Blue and Wallowa Mountains in northeastern Oregon and the subalpine and montane zones of mountains in northeastern California, south-central Oregon, and northern Nevada. The Rocky Mountain distribution of *P. albicaulis* ranges from northern British Columbia and Alberta to Idaho, Montana, Wyoming, and Nevada. Extensive stands occur in the Yellowstone ecosystem. The Wind River Range in Wyoming is the eastern-most distribution of the species (Tomback et al. 2001, p. 33; Burns and Honkala 1990, p. 268).

The upper elevational limits of *Pinus albicaulis* decrease with increasing latitude. It occurs from approximately 900 meters (2,950 feet) at its northern limit in British Columbia up to 3,660 meters (12,000 feet) in the Sierra Nevada. *Pinus albicaulis* is typically found at or slightly lower than alpine timberline in the upper montane zone, where it is associated with other conifer species that include Rocky Mountain lodgepole pine (*Pinus contorta* var. *latifolia*), Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), and mountain hemlock (*Tsuga mertensiana*) in the Rocky Mountains, and Sierra-Cascade lodgepole pine (*Pinus contorta* var. *murrayana*) in the Sierra Nevada and Blue and Cascade Mountains in the western portion of its range (Tomback et al. 2001, pp. 33-34; Lanter 1999, revised 2007, p. 83). In the United States, approximately 98 percent of all *P. albicaulis* communities occur on public lands (Tomback et al. 2001, p. 12).

The interaction of *Pinus albicaulis* with its environment varies over its geographic range due to differences in climate, substrate, physical environment, competitors, and seasons (Tomback et al. 2001, p. 52). It is a stress-tolerant pine, and its hardiness allows it to grow where other conifer species cannot (Tomback et al. 2001, p. 10). *Pinus albicaulis* expresses superior hardiness in cold, dry, and windy settings; therefore, it becomes established and survives in

environmental conditions where other conifer species are unable to establish and compete for space and light (Tomback et al. 2001, p. 75). In the upper subalpine ecosystem, *P. albicaulis* is considered a keystone species, or one that determines the ability of many other species to persist in a community, thereby increasing biodiversity (Tomback et al. 2001, pp. 7-8). It does this in multiple ways, including regulating runoff by slowing the progression of snowmelt, reducing soil erosion by physically stabilizing soils, initiating succession as a hardy pioneer or as an early seral (an intermediate stage in ecological succession) species after fire or other disturbance events, and providing seeds that are a high-energy food source for some birds and mammals (Tomback et al. 2001, pp. 8-11), including Clark's nutcracker (Tomback et al. 2001, pp. 121-131; Lanner 1996, p. 38), red squirrels (*Tamiasciurus* spp.), and grizzly bears (*Ursus arctos horribilis*) (Tomback et al. 2001, p. 123; Lanner 1996, pp. 71 and 73).

Evaluation of Information for this Finding

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act: (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.

In making this 90day finding, we evaluated whether information regarding threats to *Pinus albicaulis*, as presented in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action may be warranted. Our evaluation of this information is presented below. If we had information available to us that differed from the information or conclusions presented in the petition, we describe the differences.

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat

The petitioner states the threats causing the present or threatened destruction, modification, or curtailment of *Pinus albicaulis*' high alpine habitat include changes in fire regimes due to fire suppression; the white pine blister rust pathogen, which is an introduced disease caused by the fungus *Cronartium ribicola*; and mountain pine beetles (*Dendroctonus ponderosae*) (NRDC 2008, p. 11). White pine blister rust and mountain pine beetles are addressed in greater detail under Factor C, Disease or Predation. The petitioner also addressed climate change under Factor E, Other Natural or Manmade Factors Affecting Its Continued Existence; however, because the petitioner's assertions regarding the impacts of climate change relate to changes to the species' habitat, we are addressing climate change under Factor A for this finding. Fire Suppression and Changes in Fire Regimes

Information Provided in the Petition

The petitioner asserts that where fire suppression policies are in place, fire suppression has reduced fire frequency in subalpine communities, resulting in the successional replacement of *Pinus albicaulis* by more shade-tolerant species in many areas. The petitioner indicates that once *P. albicaulis* communities become established, they are perpetuated by low-intensity fires that kill the competing understory fir and spruce. Thus, the lack of fire provides a competitive advantage to other tree species, resulting in the eventual loss of *P. albicaulis* (NRDC 2008, p. 13).

Evaluation of Information Provided in the Petition

The petitioner indicates that the long-term consequence of fire suppression in the *Pinus albicaulis* ecosystem is successional replacement by other conifer

species, resulting in conversion to a more shade-tolerant forest type. The petitioner cites decreases in *P. albicaulis* relating to advancing succession and subsequent increases in other conifer species at several sites in Montana, Idaho, Washington, and Oregon (NRDC 2008, p. 13). The fire regime subsequently changes from a low-to-moderate severity regime typical of *P. albicaulis* communities, to a stand-replacing, crown fire regime (NRDC 2008, p. 13). The petitioner does note that high-intensity, stand-replacing fires in many *P. albicaulis* seral communities have occurred historically (NRDC 2008, p. 13).

Evaluation of Information Available in Service Files

Information in our files indicates that stand-replacing fires (ones in which *Pinus albicaulis* trees are killed) can provide a successional advantage to the species. Although fire may accelerate the loss of *P. albicaulis* at a local level, fire is necessary to perpetuate the species' communities at a landscape scale (Tomback et al. 2001, p. 226). Stand-replacing fire disrupts the successional process and creates openings for repeated establishment of early colonizers like *P. albicaulis* (Tomback et al. 2001, p. 13). Nutcrackers disperse *P. albicaulis* seeds farther and faster than wind can disperse the seeds of competing tree species, and use openings created by stand-replacing fires as seed-caching sites (Tomback et al. 2001, pp. 8, 13, and 226). Therefore, *P. albicaulis* can establish more quickly in burned areas than can competing species (Tomback et al. 2001, p. 13).

Fire suppression, however, limits the burned areas available for nutcrackers to cache *Pinus albicaulis* seeds, thereby reducing areas for the species to regenerate (Tomback et al. 2001, p. 237), resulting in range contraction and potentially the species' decline. Information in our files indicates fire suppression during the last 60 to 80 years may have limited natural regeneration and subsequently contributed to conversion of some *P. albicaulis* stands to shade-tolerant species (Arno 2001, as cited in Schwandt 2006, p. 4). Prior to that period, the average *P. albicaulis* stand burned every 50 to 300 years. While only small amounts of *P. albicaulis* sites have burned more recently (less than 1 percent within the last 25 years; Schwandt 2006, p. 4), the 60- to 80-year fire suppression period is not outside the range of the 50- to 300-year average burn interval, suggesting that *P. albicaulis* systems may not be outside the historic range of fire frequency.

Information in our files (Tomback et al. 2001, pp. 237) indicates that wildland fire policies of natural resource management agencies have been revised in the recent past, allowing for greater levels of prescribed fire across large areas of forest with *Pinus albicaulis* communities. However, while wildland fire suppression policies are being modified to address potential concerns of fire suppression on this species, fire suppression and subsequent succession by other conifer species have been responsible for many stand conversions.

Fire has been an important landscape disturbance factor in the Cascade Range of Washington and Oregon, and the Rocky Mountains, for the past 10,000 years (Agee 1993, p. 54). The origin of fire suppression policies may be traced to about 1910 when the Big Burn of northern Idaho and northwestern Montana consumed approximately 1.2 million hectares (2.8 million acres). This fire generated national interest in protecting forests from fire, and thus led to the development of fire suppression policies (Agee 1993, p. 59). Suppression of fire has resulted in shifts in the composition of subalpine forests from shade-intolerant species like *P. albicaulis* to more shade-tolerant species such as *Abies lasiocarpa*, *Picea engelmannii*, or *Tsuga mertensiana*, thereby increasing the fuel load (Shoal et al., 2008, p. 19; Schwandt 2006, p. 5), reducing the opportunity for *P. albicaulis* regeneration, and adding stress to the remaining trees. The result is that remaining trees are more susceptible to stand replacing (high intensity) fires and to other damaging agents like white pine blister rust or mountain pine beetles (Schwandt 2006, p. 5). This may be the case in the northwestern United States (Tomback et al., p. 82), but we lack data

to analyze the extent of the decline throughout the species' entire range. Therefore, we find that the petition and information in our files presents substantial information that *P. albicaulis* habitat is being reduced or curtailed by fire suppression activities. We will seek additional information regarding the potential effects of fire suppression and fire suppression policies during the status review process.

Climate Change

Information Provided in the Petition

The petitioner asserts that climate change is one of the most significant threats to *Pinus albicaulis*. The petitioner cites a variety of sources supporting the claim that climate change will result in a shifting in the ranges of vegetation northward, and upward in elevation (NRDC 2008, p. 29), resulting in a reduction of *P. albicaulis* range and population. The petition also cites evidence of climate change-induced range shifts in an associated pathogen and pest, white pine blister rust and mountain pine beetle. The petition discusses how climate change is expected to facilitate the expansion of white pine blister rust and mountain pine beetles (further discussed under Factor C. Disease or Predation). The petitioner also cites literature indicating climate change may result in changes to fire patterns in western North America (NRDC 2008, p. 33).

Evaluation of Information Provided in the Petition

To support their assertion of *Pinus albicaulis* decline resulting from climate change, the petitioner cites model projections from the International Panel on Climate Change (IPCC) indicating that human-induced changes to natural greenhouse gases may result in warming of 1.1 °C (2 °F) to 6.4 °C (12 °F) in the 21st century (NRDC 2008, p. 28). These projections are consistent with our review of IPCC models for other listing actions (e.g., 75 FR 13910, March 23, 2010). The petitioner also cites several other models under different scenarios predicting up to a 98 percent decline in *P. albicaulis* by the end of the century (NRDC 2008, p. 29). Additional literature is cited indicating that the predicted rate of climate change may threaten species incapable of migrating to more suitable habitats or unable to migrate due to human-caused landscape fragmentation. As a high-elevation, long-lived species with limited mobility, *P. albicaulis* will be particularly vulnerable to climate change (NRDC 2008, p. 28). The information in our files, which includes Tomback et al. (2001, pp. 58-59) and Schwandt (2006, p. 6), supports this conclusion; however, these authors caution that predicting the overall effects of climate change is difficult due to the number of factors involved and the fact that the magnitudes of the likely changes are unknown (e.g., rangewide or local).

The petitioner asserts that climate change will alter fire patterns in western North America (NRDC 2008, p. 33). Changes in fire pattern include an increased fire season duration associated with increased spring and summer temperatures and associated early spring snow melt, increased time to extinguish fires, and increased area burned. The petitioner notes that one of the complications with identifying climate change as the definitive cause of increased fire frequency and intensity is the confounding effect of forest management and fire suppression (NRDC 2008, p. 34).

Evaluation of Information Available in Service Files

Literature in our files supports the assertion that increased fire frequency due to climate change is likely (Agee 1993, p. 405). The rationale for this claim is that as vegetation communities migrate north, the high frequency fire regimes of these forest types will change the fire frequency of a given area (Agee 1993, p. 405). The intensity of future fires in a changing climate is less certain; however, we do support the contention that changes in forest composition will occur, which will increase fuel loads and lead to greater stress in *Pinus albicaulis* forests. In turn, we conclude that this leads to a higher proportion

of dead trees in stands, therefore making them more susceptible to fire (Agee 1993, p. 405; Agee pers. comm., 2010).

Information in our files provides numerous climate change model predictions describing future *Pinus albicaulis* scenarios (Tomback et al. 2001, pp. 57-59). Climate change is predicted to affect several aspects of the ecology of whitebark pine, including an increase in the length of the growing season (Cayan et al. 2001, p. 410-411), an increase in fire frequency and severity (McKenzie et al. 2004, p. 893; Westerling et al. 2006, pp. 942-943), spatial shifts in the distribution of suitable growing sites (Bartlein et al. 1997, p. 788), and an increase in both mountain pine beetle (Logan and Powell 2001, pp. 165-170; Williams and Liebhold 2002, p. 95) and white pine blister rust (Koteen 2002, pp. 352-364) outbreaks. However, because environmental conditions in *P. albicaulis* communities are highly variable and the magnitudes of potential changes are unknown, effects of climate change are uncertain (Kendall and Keane 2001, p. 236). Although the climate change information contains high variability as to the predicted magnitude of effects, both our files and the petition indicate that there are effects that warrant further examination.

Summary of Factor A

In summary, we find that the information provided in the petition, as well as other information in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to present or threatened destruction, modification, or curtailment of its habitat from fire suppression, subsequent alterations of fire regimes, and climate change. We will review the possible effects of these threats to *Pinus albicaulis* more thoroughly in our 12month status review.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The petitioner did not present information, nor do we have information in our files, suggesting that overutilization is threatening *Pinus albicaulis*. However, we will further investigate whether overutilization for commercial, recreational, scientific, or educational purposes is a potential threat in our 12month status review of *P. albicaulis*.

C. Disease or Predation

Information Provided in the Petition

The petitioner indicates that *Pinus albicaulis* is currently being devastated by the combination of white pine blister rust and an epidemic outbreak of mountain pine beetle, a native species. The petitioner cites literature showing temporal and spatial changes in the distribution of white pine blister rust infections and mountain pine beetle infestations and describes the synergistic effects of white pine blister rust and mountain beetle to *P. albicaulis* (NRDC 2008, pp. 14-28). The petitioner summarizes literature on *P. albicaulis* declines from white pine blister rust in areas throughout the range of *P. albicaulis* in the United States and Canada.

Evaluation of Information Provided in the Petition

White Pine Blister Rust

The petitioner indicates that *Pinus albicaulis* and all 5-needled pines are highly susceptible to white pine blister rust (NRDC 2008, p. 14). Each year an infected tree lives, the rust continues to produce fungal spores, thereby perpetuating the disease. Where the fungus' alternate host (typically in the genus *Ribes* (currants or gooseberries)) is abundant and when summer weather is conducive to multiple cycles of fungal spore production, the result is a wave of new rust infections that spread into new areas or intensify in already infected stands. The frequency of wave years depends on various factors, including elevation, geographical region, topography, wind patterns, temperature, and humidity. White pine blister rust can kill cone-bearing branches years before the tree actually dies. While large *P. albicaulis* trees may survive white pine blister rust infection for a long time, the rust can kill small trees within a

few years (NRDC 2008, pp. 16-17). The information in our files corroborates the petitioner's information (Tomback et al. 2001, pp. 193-214).

The petitioner cites surveys showing white pine blister rust infection rates of 83 percent in the Bob Marshall Wilderness Complex in Montana to 100 percent of trees in other unidentified locations within this geographic area. Overall infection rates in the drier, southern portion of the Rocky Mountains have increased from 10 to 20 percent during the last decade; however, the petitioner cites a 2004 study that found white pine blister rust on 71 percent of transects, indicating the disease is now more widespread and expanding (NRDC 2008, p. 18). In the coastal distribution of the species, the petitioner cites several studies indicating variable infection incidence, ranging from 0 to 100 percent, with the highest *Pinus albicaulis* mortality from white pine blister rust occurring in Mt. Hood National Forest (NRDC 2008, p. 19). Similarly, in British Columbia and Alberta, infection rates vary from 0 to 100 percent depending on location and other variables, with one study showing a *P. albicaulis* mortality increase from 26 to 61 percent in 7 years (NRDC 2008, p. 19). The petitioner claims that the incidence of the disease is steadily increasing in all areas sampled (NRDC 2008, p. 20).

The petitioner cites literature indicating white pine blister rust is currently present at the northern range limits of *Pinus albicaulis* and at treeline, which may inhibit northerly and altitudinal migration of the species (NRDC 2008, p. 30), a necessary adaptation to climate change. The petitioner indicates that changes in frequency or persistence of rainfall patterns from climate change may also contribute to favorable white pine blister rust conditions, resulting in disease proliferation and intensification in various locations. The petitioner states that these conditions, combined with the buildup of white pine blister rust over the past decades, will likely result in larger transmission events in the future (NRDC 2008, p. 31).

Evaluation of Information Available in Service Files

Information in our files indicates that in the Rocky Mountains, the highest mortality from white pine blister rust generally occurs in northwestern Montana, northern Idaho, and the southern Canadian Rockies, where cool, moist climatic conditions are more favorable to white pine blister rust growth (Tomback et al. 2001, p. 15). Blister rust infections attack seedlings and mature trees, causing damage to upper canopy and cone-bearing branches, or death to branches or the entire tree (Tomback et al. 2001, pp. 15, 116, 195); however, some trees may persist, and long-term survival depends on local environmental conditions and specific tree health (Tomback et al. 2001, p. 195). Survey information in our files indicates that many stands have been infected with white pine blister rust, but we do not know how much regeneration is occurring in these areas; however, most remaining high-elevation *P. albicaulis* stands in the U.S.

Intermountain West that are climax communities have little regeneration (Tomback et al. 2001, p. 228). White pine blister rust has spread throughout the range of *P. albicaulis* since introduction into the United States a century ago, and a summary of white pine blister rust analyses suggests that blister rust will continue to cause damage to *P. albicaulis* in the central Rocky Mountains (Tomback et al. 2001, pp. 197-211). Based on information in our files (Tomback et al. 2001, pp. 15-16, 193-214, 221, and 234-237), the geographic extent of white pine blister rust appears to have changed little during the past 30 years; however, the incidence and intensity of infections have increased sharply, and it appears unlikely that any *Pinus albicaulis* stand is safe from damage by white pine blister rust.

Mountain Pine Beetle

Evaluation of Information Provided in the Petition

The petitioner states that *Pinus albicaulis* forests are suffering heavy mortality from mountain pine beetles, which usually colonize larger, mature trees where inner bark is thick enough to support beetle larvae. In addition,

the beetles carry a blue-stain fungus (*Grosmannia clavigera*) on their mouth parts. The fungi interrupt the flow of resins that would ordinarily pitch out or kill the beetles, thus promoting beetle invasions and reducing a tree's defenses to beetle attack. The fungi also interrupt water flow to the tree's crown and within approximately 2 weeks of colonization, the tree's phloem layer is damaged enough to cut off water and nutrient flows and the tree starves to death. This impact is visible by the presence of reddened needles, often encompassing entire stands of trees (NRDC 2008, p. 23). The petitioner cites one study indicating that historically, conditions in high-elevation *P. albicaulis* habitat prevented sustained mountain pine beetle outbreaks, but today, climate change appears to be allowing outbreak populations to expand into these previously inhospitable areas (NRDC 2008, p. 22). The petitioner summarizes literature on *Pinus albicaulis* declines from mountain pine beetle outbreaks in the Yellowstone Ecosystem; in the Selkirk Mountains of northern Idaho, Washington, and Oregon; and in British Columbia and Alberta, Canada (NRDC 2008, pp. 24-27). In the Yellowstone Ecosystem, the petitioner cites survey data within the last 3 years indicating *P. albicaulis* mortality from mountain pine beetles was 80 percent and 74 percent of trees greater than 5 inches diameter at breast height (DBH) on plots in Yellowstone National Park and the Gallatin National Forest, respectively (NRDC 2008, pp. 24-27). In northern Idaho's Selkirk Mountains, a loss of 45 to 82 percent of *P. albicaulis* trees greater than 5 inches DBH, primarily due to mountain pine beetle, was documented in 2000. In Washington and Oregon, overall mountain pine beetle incidence ranged from 0 to 34 percent and mortality from both mountain pine beetle and white pine blister rust averaged 33 percent. In British Columbia and Alberta, the petitioner cites literature from 2008, stating that given the extent of the current mountain pine beetle outbreak in lower elevation forests, a massive and imminent *Pinus albicaulis* decline is expected (NRDC 2008, p. 27). Losses by 2002 were considered minor, but more recent data indicate that pine beetle outbreaks are rapidly expanding in Canada. The petitioner asserts that outbreak severity has been aided by a series of warm winters and extensive availability of susceptible mature pine forests (NRDC 2008, p. 27).

The petitioner indicates that warming temperatures in recent years have provided favorable conditions for increasing widespread mountain pine beetle outbreaks. The petitioner cites literature indicating that a 2 °F (1.11 °C) temperature increase is the amount predicted to shift the mountain pine beetle's life cycle from semivoltine (more than one year required to produce a brood of offspring) to univoltine (produces one brood of offspring per year) and allow for synchronous emergence (from overlapping generations) conditions that are conducive to massive beetle outbreaks (NRDC 2008, p. 32). Further, while mountain pine beetles are a native species in western North American forests, they have been rare in cold, high-elevation areas; however, outbreaks have occurred earlier than predicted in climate change models and are expanding into previously unoccupied areas (NRDC 2008, p. 33).

Evaluation of Information Available in Service Files

Information in our files (Tomback et al. 2001, pp. 14 and 299) indicates that large-scale outbreaks of mountain pine beetle have caused widespread *Pinus albicaulis* mortality. Mountain pine beetle infestations killed many *P. albicaulis* trees in the Selway-Bitterroot Wilderness in the late 1870s, 1930s, and late 1980s. Further, mountain pine beetles have expanded throughout the range of *P. albicaulis*, and because beetles preferentially attack larger cone-bearing trees, there has been a decrease in *P. albicaulis* seed production. Our information also states that absence of fire has resulted in *P. albicaulis* and *Abies lasiocarpa* forests increasing in age, thereby increasing their susceptibility to mountain pine beetle infestations. Trees infected by white pine blister rust are stressed and appear to be more attractive to mountain pine beetles or more vulnerable to attack (Tomback et al. 2001, p. 225). As a

result, *P. albicaulis* has declined throughout major portions of its range during the past 50 years from several factors, including white pine blister rust and mountain pine beetle. Therefore, the information in our files corroborates the petitioner's information.

Summary of Factor C

We find that the information provided in the petition, as well as other information in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to disease or predation, specifically white pine blister rust and mountain pine beetle. We will review the possible effects of these threats to *Pinus albicaulis* more thoroughly in our 12-month status review.

D. The Inadequacy of Existing Regulatory Mechanisms

Information Provided in the Petition

The petitioner provides information indicating that there are few, if any, regulatory mechanisms in place to protect *Pinus albicaulis* from the threats of climate change, white pine blister rust, and mountain pine beetles, or the combination of effects from some or all of these threats. The petitioner also asserts there are no mechanisms to effectively control greenhouse gas emissions in the United States and Canada (NRDC 2008, pp. 34-37).

Evaluation of Information Provided in the Petition

The petitioner states that existing forest management law in the United States, in particular the Healthy Forest Restoration Act of 2003 (916 U.S.C. 6501 et seq.), provides few regulatory standards or enforceable mandates to conserve *Pinus albicaulis* specifically and forest diversity in general. The petitioner asserts there are only ineffective mechanisms in place to control climate change pollution and there are inadequate mandates to conserve *P. albicaulis*. The petitioner also states that the Forest Service has not issued any directives mandating or prescribing *P. albicaulis* conservation (NRDC 2008, p. 35). The petitioner notes the Forest Service has put some effort into conserving *P. albicaulis* by assessing it rangewide and developing a conservation and restoration plan. However, the petitioner asserts that to date, efforts have been haphazard and uncoordinated between regions and lack funding for successful implementation (NRDC 2008, p. 36). The petitioner notes the Forest Service has acknowledged that climate change is beyond the capacity of the agency itself to address effectively (NRDC 2008, p. 36).

The petitioner asserts that Canadian laws and regulations also lack adequate protections for *Pinus albicaulis* and its habitat. However, the petitioner also cites the British Columbia Ministry of Environment's addition of *P. albicaulis* to its blue-list, which lists special conservation concerns, in this case due to a severe negative long-term trend expected from mountain pine beetle infections, white pine blister rust epidemics, climatic warming trends, and successional replacement (NRDC 2008, pp. 36-37).

Evaluation of Information Available in Service Files

However, on December 18, 2009 (after the NRDC petition was submitted and received) (74 FR 67059), the U.S. Forest Service reinstated their 2000 Planning Rule, which does include standards (a required action in a land management plan) for timber management. Further, publications from the Forest Service in our files (Lorenz et al. 2008; Shoal et al. 2008; Aubry et al. 2008) advocate actions to reduce threats from white pine blister rust and mountain pine beetles to *P. albicaulis*. These strategies, however, are relatively recent, are specific to the Pacific Northwest, and may be inadequate to reduce threats throughout the entire range of the taxon. Additionally, the need for funding to implement the actions may be inadequate to reduce threats rangewide. While there is uncertainty about whether or not existing regulatory mechanisms are adequate for protecting *P. albicaulis*, the petitioner presents substantial information for further consideration of this factor.

Summary of Factor D

In summary, we find that the information provided in the petition, as well as other information in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to the inadequacy of existing regulatory mechanisms addressing threats specifically from climate change, white pine blister rust, mountain pine beetle, fire suppression, and forest management. We will review the possible effects of these threats on *P. albicaulis* more thoroughly in our 12month status review.

E. Other Natural or Manmade Factors Affecting its Continued Existence
The petitioner discussed the threat of climate change under this factor; however, we have addressed it under Factor A. We will investigate whether there are any other natural or manmade factors that are potential threats to *Pinus albicaulis* when we address Factor E in our 12month status review.

Finding

On the basis of our determination under section 4(b)(3)(A) of the Act, we have determined that the petition presents substantial scientific or commercial information indicating that listing *Pinus albicaulis* throughout all or a significant portion of its range may be warranted. This finding is based on substantial information provided by the petitioners and in our files for Factor A, Factor C, and Factor D.

Because we have found that the petition presents substantial information indicating that listing *Pinus albicaulis* may be warranted, we are initiating a status review to determine whether listing *P. albicaulis* under the Act is warranted. As part of our status review we will examine available information on the threats to the species and make a final determination in a 12month finding on whether the species is warranted for listing as endangered or threatened under the Act. To ensure that the status review is complete, we are requesting scientific and commercial information regarding *P. albicaulis* (as described above under the Information Requested section). The petition also asks us to designate critical habitat for this species. If we determine in our 12month finding that listing *P. albicaulis* is warranted, we will address the designation of critical habitat in the subsequent proposed listing rule, if we conclude critical habitat is prudent and determinable.

The substantial information standard for a 90day finding differs from the Act's best scientific and commercial data standard that applies to a status review to determine whether a petitioned action is warranted. A 90day finding does not constitute a status review under the Act. In a 12month finding, we will determine whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90day finding. Because the Act's standards for 90day and 12month petition findings are different, as described above, a substantial 90day finding does not mean that the 12month finding will result in a warranted finding.

References Cited

A complete list of references cited 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 notice are the staff members of the Wyoming Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).

Authority: The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.).

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Dated: July 9, 2010
Wendi Weber, Acting Director, U.S. Fish and Wildlife Service.

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