United States Department of the Interior

FISH AND WILDLIFE SERVICE
334 Parsley Boulevard
Cheyenne, Wyoming 82007

In Reply Refer to:
2023-0097725

June 29, 2023

Kevin Khung, Deputy Forest Supervisor
Bridger-Teton National Forest, Supervisor's Office
340 North Cache Street
Jackson, Wyoming 83001

Dear Mr. Khung:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion (BO) based on our review of the request for initiation of consultation on four U.S. Forest Service (USFS) projects (Project) located within the Bridger-Teton National Forest (Forest) in Wyoming, and the effects on whitebark pine (*Pinus albicaulis*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. 1531 et seq.). The Project consists of four USFS projects totaling seven timbers sales with pending contracts within the Forest boundaries, including the (1) Rim Station Good Neighbor Authority (GNA), (2) North Rim GNA, (3) South Rim GNA, (4) Sledrunner GNA, (5) Allen Sliderock Salvage, (6) Little Springs, and (7) North Piney Salvage.

The Service previously provided consultation under section 7 of the ESA for projects 5 and 6 above in the 2023 Hams Fork Vegetation Project Environmental Assessment, regarding effects on the grizzly bear (*Ursus arctos horribilis*), Canada lynx (*Lynx canadensis*) and its designated critical habitat, and North American wolverine (*Gulo gulo luscus*). The other actions included in the Project were found to have no effect on the above species. Now that whitebark pine is listed as a threatened species under the ESA, the Forest is seeking formal consultation for effects of these four projects totaling seven sales on whitebark pine. The enclosed BO is based on information provided in the May 30, 2023, biological assessment (BA) and June 2, request for initiation of formal consultation for the whitebark pine.

We appreciate your efforts to ensure the conservation of endangered, threatened, and candidate species. If you have questions regarding this letter or your responsibilities under the ESA, please contact Nathan Darnall of my office at Nathan_Darnall@fws.gov or by phone at (307) 757-3708.

Sincerely,

NATHAN DARNALL
Digitally signed by NATHAN DARNALL
Date: 2023.06.29 16:08:48 -06'00'

for Tyler A. Abbott
Field Supervisor
Wyoming Field Office

Enclosure: Biological Opinion for impacts to the whitebark pine from the Bridger-Teton Contract Pending Timber Sales 2023

cc: USFS, Forest Botanist, Bridger-Teton National Forest, Jackson, WY (V. Cancino Hernandez) (valeria.cancinohernandez@usda.gov)
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BIOLOGICAL OPINION

1. Introduction

The U.S. Fish and Wildlife Service (Service) prepared this biological opinion (BO) in response to the U.S. Forest Service Bridger-Teton National Forest (Forest) biological assessment and request for formal consultation for the effects of the Pending Timber Sales Project (Project) to whitebark pine (*Pinus albicaulis*). The request for consultation is in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.; hereafter referred to as the ESA). The Forest determined that this Project "may affect and is likely to adversely affect" the whitebark pine. This BO is based on information regarding direct, indirect, and cumulative effects (together, "effects"); conditions forming the environmental baseline; and the species' ecological status. Based on the analysis presented in the biological assessment (BA) and in the Service's *Standing Analysis for Effects to Whitebark Pine (Pinus albicaulis) from Low Effect Projects and Whitebark Pine Restoration and Recovery Activities within Montana and Wyoming* (Service 2023), it is the Service's biological opinion is that the effects associated with the Project are likely to adversely affect but are not likely to jeopardize the continued existence of the whitebark pine.

2. Consultation History

This consultation is a request for reinitiation due to a new species being listed (whitebark pine). A complete administrative record of this consultation is on file at the Service's Wyoming Field Office, Cheyenne, Wyoming. It is summarized in the Consultation History below.

August 1, 2013	The Service provided concurrence on the effects of the Hams Fork Vegetation Project, which included the (5) Allen Sliderock Salvage and the (6) Little Springs projects (06E13000/WY13I0117).
December 19, 2022	The Service provided guidance to consult on existing timber sale projects for potential effects to whitebark pine.
December 21, 2022	The Service recommended a batching strategy for timber sale projects occurring in 2023.
June 2, 2023	The Forest provided the BA to the Service for this Project.
June 28, 2023	The Service provided a draft of the BO for the Forest to review; the Forest provided minor comments.

3. Description of the Proposed Action

3.1 Purpose and Need

Whitebark pine on the Forest has been heavily affected by mountain pine beetle, white pine blister rust, and fire suppression, and therefore extensive mortality of whitebark pine and other trees exists within the Forest. Such affects can either benefit or adversely impact important resource values such as water, timber, critical wildlife habitat, old-growth, aesthetics, and

recreation depending upon management objectives. Dead trees pose hazards to public safety. This epidemic has also altered the amount, composition, and arrangement of living and dead biomass in the pine and mixed conifer fuel complexes. The objective of the Hams Fork Vegetation Project (projects (5) Allen Sliderock Salvage and (6) Little Springs) is to address effects of forest health concerns by conducting aspen improvement, salvage and sanitation, and stand clearcut with reserves. The objective of the North Piney Post and Pole Categorical Exclusion (CE) (project (7) North Piney Salvage)) is to remove dead and dying timber to increase both structural and species diversity by promoting a younger age class of lodgepole pine (and other conifer species where appropriate) as well as enhance the growth of residual stems that, in tum, will promote habitat conditions for wildlife. The objective of the Sledrunner CE (projects (1) Rim Station Good Neighbor Authority (GNA) and (4) Sledrunner GNA)) is to use commercial harvest of dead and dying trees and non-commercial thinning to reduce wildfire hazard and to enhance and restore aspen within identified stands in response to the Roosevelt Fire. The objective of the Chall Creek CE (projects (2) North Rim GNA and (3) South Rim GNA)) is to use commercial harvest of dead and dying trees to recover economic value of the timber and reduce fuel loading, leading to regenerating stands of lodgepole and other conifer species.

3.2 Project Description

The Project consists of timber sales on approximately 736 acres within the Forest. These Projects are described briefly below, and the entire Project description for each Project from the BA (USFS 2023) is incorporated here by reference. The specific actions planned over the next year are included in this consultation.

(1) Rim Station GNA: a fire salvage timber sale on approximately 51 acres within the 2019 Sledrunner CE area within the Forest. This will include commercial harvest of dead and dying trees within timber stands, and non-commercial thinning to enhance and restore aspen within identified stands. This will recover economic value of the timber as well as reduce fuel loading and help with stand regeneration through natural or supplemental planting. Non-commercial thinning will be conducted with mechanical or non-mechanical removal of conifers encroaching on aspen clones to reduce competition and increase growing space, as well as girdling and felling mature aspen to promote root sprouting. Design features to minimize effects to whitebark pine include no cutting of all five-needle pines, locating burn piles to avoid damage to residual trees, and following prescribed no treatment buffers.

(2) North Rim GNA: a fire salvage on approximately 50 acres within the 2020 Chall Creek CE area within the Forest. This will include commercial harvest of dead and dying trees within timber stands to recover the economic value of the timber as well as reduce fuel loading and help with stand regeneration through natural or supplemental planting. Design features to minimize effects to whitebark pine include no cutting of all five-needle pines, locating burn piles to avoid damage to residual trees, and following prescribed no treatment buffers.

(3) South Rim GNA: a fire salvage on approximately 71 acres within the 2020 Chall Creek CE area within the Forest. This will include commercial harvest of dead and dying trees within timber stands to recover the economic value of the timber as well as reduce fuel loading and help with stand regeneration through natural or supplemental planting. Design features to minimize

effects to whitebark pine include no cutting of all five-needle pines, locating burn piles to avoid damage to residual trees, and following prescribed no treatment buffers.

(4) Sledrunner GNA: a fire salvage timber sale on approximately 123 acres within the 2019 Sledrunner CE area within the Forest. This will include commercial harvest of dead and dying trees within timber stands, and non-commercial thinning to enhance and restore aspen within identified stands. This will recover economic value of the timber as well as reduce fuel loading and help with stand regeneration through natural or supplemental planting. Non-commercial thinning will be conducted with mechanical or non-mechanical removal of conifers encroaching on aspen clones to reduce competition and increase growing space, as well as girdling and felling mature aspen to promote root sprouting. Design features to minimize effects to whitebark pine include no cutting of all five-needle pines, locating burn piles to avoid damage to residual trees, and following prescribed no treatment buffers.

(5) Allen Sliderock: a salvage and sanitation sale of approximately 294 acres within the 2013 Hams Fork Vegetation Project Environmental Assessment area. Design features that reduce effects to whitebark pine include no hand or aerial ignition of areas of sparse vegetation, retaining all five needle pines, planting or seeding with native plant species, monitoring and protecting regenerated stands, and planting rust-resistant whitebark pine seeds and seedlings in created openings not larger than 10 ha (25 ac).

(6) Little Springs: a salvage and sanitation sale and aspen improvement of approximately 86 acres within the 2013 Hams Fork Vegetation Project Environmental Assessment area. Design features that reduce effects to whitebark pine include no hand or aerial ignition of areas of sparse vegetation, retaining all five needle pines, planting or seeding with native plant species, monitoring and protecting regenerated stands, and planting rust-resistant whitebark pine seeds and seedlings in created openings not larger than 10 ha (25 ac).

(7) North Piney: a salvage and sanitation sale of approximately 61 acres of the 2018 North Piney Post and Pole CE area. Three of the four stands totaling 50 acres are entirely overstocked lodgepole pine, and the fourth stand is approximately 11 acres and consists of dense lodgepole pine pockets intermixed with Engelmann spruce, subalpine fir, and incidental whitebark pine. Design features that reduce effects to whitebark pine include locating slash and burn piles located at least twice their diameter away from residual trees to avoid damage to those residual trees, enhancing growing conditions by daylighting around mature healthy whitebark pine, rehabilitating temporary roads, and following Forest Management of Noxious Weeds design features.

The Bridger-Teton National Forest's 1990 Land Management Plan (USFS 2015) provides limited direction specific to whitebark pine; it does not provide desired conditions specific to the species. The Project meets all Forest Plan standards and guides for all ecosystems, including whitebark pine habitats, and Appendix A of the BA (USFS 2023) outlines consistency with all species-specific plan components for whitebark pine.

For all actions within the Project, design criteria to avoid and minimize effects to whitebark pine include identifying all five-needle pine trees as leave trees, avoiding all areas of five-needle pine

regeneration or advanced regeneration through sale administration, and avoiding impacts of machinery to small trees, particularly seedlings and saplings.

4. Status of the Species

The Service provided a thorough status of the species in the 2021 Species Status Assessment (Service 2021), and a summary of the status in the 2023 *Standing Analysis* (Service 2023). These detailed assessments are incorporated by reference, with a summary provided here.

4.1 Regulatory Status

On December 15, 2022, the Service published the final rule to list the whitebark pine as a threatened species (87 FR 76882) under the ESA. The Service also published a final 4(d) rule for whitebark pine that identified actions necessary for the conservation and recovery of the species and included prohibited acts as well as a limited number of exceptions to the prohibited acts (87 FR 76882). Previously, on December 2, 2020, the Service published a proposed rule to list the whitebark pine as threatened with a proposed 4(d) rule under the ESA (85 FR 77408). No critical habitat was proposed for whitebark pine. Section 4(d) rules cannot and do not absolve federal agencies of their consultation requirements under section 7 of the ESA.

4.2 Species Description and Taxonomy

The whitebark pine is a five-needle conifer species placed in the subgenus *Strobus,* which also includes other five-needle white pines. Recent phylogenetic studies (Liston *et al.* 1999; Syring *et al.* 2005, 2007; as cited in Committee on the Status of Endangered Wildlife in Canada (COSEWIC) 2010) showed no difference in monophyly (ancestry) between subsection *Cembrae* and subsection *Strobi* and merged them to form subsection *Strobus.* No taxonomic subspecies or varieties of whitebark pine are recognized (COSEWIC 2010). Based on this taxonomic classification information, we recognize whitebark pine as a valid species (Service 2021).

4.3 Distribution and Status

The range of whitebark pine spans an estimated 32,616,422 ha (80,596,935 ac) in western North America (Service 2023), though density and occupancy vary greatly throughout its windy, cold, high elevation or high latitude environments. It 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. It also occurs in scattered areas of the warm and dry Great Basin. As a result, many whitebark pine stands are geographically isolated (Arno and Hoff 1989).

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 (Service 2018). In Canada, the majority of the species' distribution occurs on federal or provincial crown lands (COSEWIC 2010). In the United States, approximately 88 percent of land where the species occurs is federally owned or managed (Service 2023, Figure 2). The majority is located on USFS lands (approximately 74 percent, or 17,391,455 ha (42,975,220 ac)). The bulk of the remaining acreage is located on National Park Service (NPS) lands (approximately 10 percent, or 2,275,746 ha (5,623,490 ac)). Small amounts of whitebark pine also can be found on Bureau of Land Management (BLM) lands (approximately 4 percent, or 1,002,152 ha (2,476,371 ac)). The

remaining 12 percent of the range is under non-federal ownership, on State, private, and tribal lands. In the United States, 29 percent of the range is designated as wilderness under the Wilderness Act of 1964 (16 U.S.C. 1131-1136). This designation limits management options and conservation efforts in those areas to some degree.

4.4. Life History and Population Dynamics

There are four stages in the life cycle of the whitebark pine: seed, seedling, sapling and mature trees, also referred to as reproductive adults. Seeds are produced in female cones and once on the ground may take 2 years or more, up to 11 years in some cases, to germinate. Germinated seeds become seedlings that are between 8 and 10 centimeters (cm) (3 to 4 inches (in)) tall with a taproot that can measure between 13 to 18 cm (5 to 7 in), with 7 to 9 cotyledons, also known as the embryonic first leaves (Arno and Hoff 1989). Whitebark pine seedlings may persist for multiple years, depending on growing conditions, until reaching the sapling stage of the life cycle. Whitebark pine saplings persist for few to many years, depending on growing conditions, until they produce male and female cones. Mature reproductive whitebark pines contain both female and male cones, which is known as monoecious reproduction, and can survive on the landscape for hundreds of years. This slow-growing, long-lived tree can live between 500 years and 1,000 years (Arno and Hoff 1989; Perkins and Swetnam 1996), or even longer low litter depth and high rock cover (Maloney et al. 2012). Therefore, in addition to the four general needs for all life stages, mature whitebark pine trees require a more open canopy, dispersal of seeds by Clark's nutcracker, two summers of suitable temperatures and precipitation for pollinated cones to mature, as well as levels of nitrogen and phosphorus that are adequate to restore values after being depleted in masting years (Service 2021).

Populations are typically defined by the potential for genetic exchange among their members, to the exclusion of members of other populations (in the absence of immigration or emigration). For whitebark pine, genetic exchange is limited by the dispersal distance of pollen, which is carried by wind, and the seed caching behavior of Clark's nutcracker (Lorenz *et al.* 2011; Keane *et al.* 2017). Both pollen dispersal and Clark's nutcracker seed dispersal can occur at a scale of few to many kilometers (km) or miles (mi) (*e.g.*, up to 30 km (18.6 mi) in the case of Clark's nutcracker seed dispersal). To promote a greater than 75 percent probability of occurrence of Clark's nutcracker at a site, recommended management plans that achieves landscape composition of a minimum 12,500-25,000 ha (30,888-61776 ac) of cone bearing whitebark pine habitat within a 32.6-km (20.26-mi) radius. The optimal Clark's nutcracker habitat mosaic includes moderate levels of Douglas-fir (*Pseudotsuga menziesii*) habitat (Douglas-fir seeds are another important food source for Clark's nutcracker in the GYE) (Schaming 2016 and Schaming and Sutherland 2020). Whitebark pine is a long-lived species that exhibits masting, where years of high seed production are synchronized within a population approximately every 3 to 5 years (McCaughey and Tomback 2001). This masting strategy is an adaption to heavy seed predation; during masting years seed consumers are satiated, resulting in excess seeds that escape predation (Lorenz *et al.* 2008). Whitebark pine populations need a certain density of reproductive individuals to produce sufficient pollen clouds that facilitate the synchronization of masting, and thus increased probability of regeneration (Rapp *et al.* 2013).

4.5. Habitat

The 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. As a result, many stands are geographically isolated (Arno and Hoff 1989; Keane *et al.* 2010). The distribution of whitebark pine includes coastal and Rocky Mountain ranges that are connected by scattered populations in northeastern Washington and southeastern British Columbia (Arno and Hoff 1989; Keane *et al.* 2010). The coastal distribution of whitebark pine extends from the Bulkley Mountains in northwestern 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 (Arno and Hoff 1989). Isolated stands of whitebark pine are known from the Blue and Wallowa Mountains in northeastern Oregon and the subalpine zone of mountains in northeastern California, south-central Oregon, and northern Nevada (Arno and Hoff 1989; Keane *et al.* 2010). The Rocky Mountain distribution of whitebark pine ranges from northern British Columbia and Alberta to Idaho, Montana, Wyoming, and Nevada (Arno and Hoff 1989; Keane *et al.* 2012), with extensive stands occurring in the Yellowstone ecosystem (McCaughey and Schmidt 2001).

In general, the upper elevational limits of whitebark pine decrease with increasing latitude throughout its range (McCaughey and Schmidt 2001). The elevational limit of the species ranges from approximately 900 m (2,950 ft) at its northern limit in British Columbia to 3,660 m (12,000 ft) in the Sierra Nevada (McCaughey and Schmidt 2001). Whitebark pine is typically found growing at the subalpine treeline or with other high-mountain conifers just below the treeline and subalpine zone (Arno and Hoff 1989; McCaughey and Schmidt 2001). In the Rocky Mountains, common associated tree species include lodgepole pine (*P. contorta* var. *latifolia)*, Engelmann Spruce (*Picea engelmannii)*, subalpine fir (*Abies lasiocarpa)*, and mountain hemlock (*Tsuga mertensiana)*. Common associated tree species are similar in the Sierra Nevada and Blue and Cascade Mountains, except lodgepole pine is present as Sierra-Cascade lodgepole pine (*P. contorta var. murrayana)* and mountain hemlock is absent from the Blue Mountains (Arno and Hoff 1989; McCaughey and Schmidt 2001).

4.6 Threats to the Species

Major threats to whitebark pine include mortality from disease that is caused by the non-native white pine blister rust and predation by the native mountain pine beetle. White pine blister rust is a disease of five-needle pines (*Pinus spp*.) caused by a nonnative fungus, *Cronartium ribicola* (Geils *et al.* 2010). While white pine blister rust occurs throughout the entire whitebark pine range, not all trees are infected and infection rates vary widely. 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) but also may include herbaceous species of the genus *Pedicularis* (lousewort) and the genus *Castilleja* (paintbrush) (McDonald and Hoff 2001; McDonald *et al.* 2006).

The mountain pine beetle is recognized as one of the principal sources of whitebark pine mortality (Raffa and Berryman 1987; Arno and Hoff 1989). Mountain pine beetles feed on whitebark pine and other western conifers and to successfully reproduce the beetles must kill host trees (Logan and Powell 2001; Logan *et al.* 2010). Upon locating a suitable host (*i.e.*, large

diameter tree with sufficient resources for brood production success), adult female mountain pine beetles emit pheromones that attract adult males and other adult females to the host tree. This attractant pheromone initiates a synchronized mass attack for the purpose of overcoming the host tree's defenses to mountain pine beetle predation. Once a tree has been fully colonized, the beetles produce an anti-aggregation pheromone that signals to incoming beetles to pass on to nearby unoccupied trees. Almost all host trees, even stressed individuals, will mount a physiological defense against these mass attacks. However, given a sufficient number of beetles, even a live tree's defensive mechanisms (*e.g.*, oleoresin and volatile organic compounds emission, mobilization of resin flow, additional formation of resin directed towards the sites of beetle activity (Bohlmann 2012)) can be exhausted (Raffa and Berryman 1987).

The whitebark pine also faces major threats from climate change, habitat loss from past and ongoing fire suppression activities, and the combined negative effects of these individual threats. Fire is one of the most important landscape-level disturbance processes within high-elevation whitebark pine forests (Agee 1993; Morgan and Murray 2001; Spurr and Barnes 1980) and is relevant to whitebark pine both as a stressor that can cause mortality of all life stages of whitebark pine and as a mechanism that may affect forest succession (Arno 2001; Shoal *et al.* 2008; Keane and Parsons 2010). Fire regimes in whitebark pine systems are often characterized as being of mixed severity (Arno 2001, Campbell and Antos 2003; Larson 2009).

Habitat loss is anticipated to occur across the whitebark pine range, with current habitats becoming unsuitable for the species as a result of both direct and indirect impacts from climate change (Bartlein *et al.* 1997; Hamann and Wang 2006; Schrag *et al.* 2007; Warwell *et al.* 2007; Aitken *et al.* 2008; Loehman *et al.* 2011; Rice *et al.* 2012; Chang *et al.* 2014). Researchers have hypothesized that there will be significant habitat loss as (1) temperatures become so warm that they exceed the thermal tolerance of whitebark pine and the species is unable to survive, (2) warmer temperatures favor other species of conifer that currently cannot compete with whitebark pine in cold high-elevation habitats, and (3) climate change alters the frequency and intensity of disturbances (*e.g.*, fire, disease) to such an extent that whitebark cannot persist. In summary, 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 (Service 2021).

As a result of these threats, it is estimated that as of 2016, 51 percent of all standing whitebark pine trees are dead (Goeking and Izlar 2018). Most current management and research focus on producing and planting white pines (including whitebark pine) with genetic resistance to white pine blister rust, but also include natural regeneration and silvicultural treatments, such as appropriate site selection and preparation, pruning, and thinning (Zeglen *et al.* 2010).

5. Environmental Baseline

Regulations for implementing the ESA (50 CFR 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early section 7

consultation, and the impact of state or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

5.1 Action Area

The action area is defined at 50 CFR 402.02 to mean “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." For the purposes of this consultation, the Service follows the detailed action area as described in the BA (USFS 2023). The analysis area consists of approximately 3,607,423 ac of the Bridger-Teton National Forest, located in Lincoln and Sublette Counties in Wyoming, and habitat modeling suggests that there is approximately 960,983 ac of existing whitebark pine habitat within the analysis area.

The action area is a subset of these areas, specifically within the Kemmerer and Big Piney Ranger Districts and within the Southern Wyoming Overthrust Belt (380 ac of assumed whitebark pine habitat in the action area), Wyoming (305 ac of assumed whitebark pine habitat in the action area), and the Gros Ventre (51 ac of assumed whitebark pine habitat in the action area) Mountain Ranges. The Forest assumes that all whitebark pine habitat within the action area (736 ac) will be affected, though modeled habitat suggests there is a much smaller area (zero ac) that will be affected within whitebark pine habitat. The temporal effects of the Project on whitebark pine is anticipated to extend between 10 and 80 years.

5.2 Status of and Factors Affecting the Whitebark Pine Within the Action Area

Within the action area, the status of the threats to the species are similar to those throughout the range of whitebark pine. Regarding white pine blister rust, we understand that there is some level of blister rust infection in most stands within the action area, and that there are no known plus trees located within the Project’s areas. Regarding mountain pine beetle, outbreaks peaked between 2008 and 2013, with low levels of activity detected until 2020 when increasing infection and mortality were again detected in the action area. Mountain pine beetle and white pine blister rust have affected whitebark pine populations within the action area more than the other factors of fire regime and climate change. Regarding altered fire regime, the fire regime conditions are not heavily departed from historic conditions (i.e., mixed severity fires with return intervals ranging from 33 to over 400 years). Changing climate is affecting whitebark pine throughout the action area, specifically through exacerbating existing threats, and is expected to continue to cause shifts in areas of suitable habitat for whitebark pine regeneration (USFS 2023).

5.3 Recent Section 7 Consultations

Due to the recent listing status of whitebark pine under the ESA, few prior consultations for whitebark pine have occurred within the Forest. The Service provided consultation with the Forest on the effects of whitebark pine restoration and recovery projects planned in 2023 (2023-0057919), including plus tree monument maintenance and genetic material collection from 70 plus trees within the Forest, application of mountain pine beetle deterrent, and the Commissary Ridge blister rust canker study. That project would have minor adverse effects on whitebark pine for the purposes of protecting important trees. Additionally, we have consulted on the Jackson Hole Mountain Resort on the Jackson Ranger District of the Forest for 2023 ski run

improvements project (2023-0045521) that would remove seven mature whitebark pine trees, and the 2023 removal of up to 75 whitebark pine brood trees to improve health of remaining whitebark pines in the area (2023-0067733). Most recently, the Service provided consultation with the Forest on the effects of eight fuel management projects in 2023 (2023-0074610), which will result in a total of approximately 409.5 ac of whitebark pine stands that will be damaged or killed within the Forest. Further, the Service provided consultation with the Forest on the effects of active timber sales in 2023 (2023-0081997), affecting approximately 1,025 ac of the Forest.

6. Effects of the Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (50 CFR 402.17).

The Project will result in the damage of some individual whitebark pine trees, though project design features will be in place to minimize the direct effects to whitebark pine trees from mechanical equipment. Additionally, each of the Project actions will have connected actions such as road maintenance and reconstruction, temporary road creation and removal, snag density reduction, and fire control line implementation. An unknown number of seeds and seedlings will be trampled and removed, and sapling and mature individuals may be affected by heavy equipment, through physical damage from road construction and maintenance, temporary road creation and removal, and as a result of thinning. A total of approximately 736 ac of whitebark pine stands may be damaged or killed as a result of implementation these Project actions.

The Project actions in the Southern Wyoming Overthrust Belt Mountain range portion of the Project (in the Kemmerer Ranger District, the Hams Fork Vegetation Project, specifically project actions 5 and 6) will affect 380 ac, or roughly 0.002 percent of the whitebark pine habitat acres in that mountain range. The Project actions in the Wyoming Mountain range portion of the Project (in the Big Piney Ranger District, specifically project actions 2 through 4 and 7) will affect 305 ac, or roughly 0.0005 percent of the whitebark pine habitat acres in that mountain range. The Project actions in the Gros Ventre Mountain range portion of the Project (in the Big Piney Ranger District, specifically project action 1) will affect 51 ac, or roughly 0.005 percent of the whitebark pine habitat acres in that mountain range.

The Project will reduce conditions conducive to blister rust infections, will improve stand health and reduce likelihood of mountain pine beetle infestations, will remove understory fuels to reduce the risk of high intensity wildfire, provides sites where whitebark pine seedlings can establish, and will reduce competition to remaining whitebark pine from subalpine fir and lodgepole pine to promote cone-bearing and create opportunities for release of currently out-competed whitebark pine.

7. Cumulative Effects

Cumulative effects are those “effects of future State or private activities, not involving federal activities, that are reasonably certain to occur within the action area” considered in this BO (50 CFR 402.02). Future federal actions that are unrelated to the proposed action are not considered

in this section because they require separate consultation pursuant to section 7 of the ESA. The Service is not aware of any future state, tribal, local, or private actions that are reasonably certain to occur within the Project action area at this time; therefore, no cumulative effects are anticipated.

8. Conclusion

Regulations direct the Service to evaluate whether a proposed action is likely to jeopardize the continued existence of threatened or endangered species. The continued existence of a listed species depends upon the fate of the populations that comprise them and the continued existence of a population is determined by the fate of individuals that comprise the population. That is, the abundance, reproduction, and distribution of a given species depends upon the collective performance of populations within the geographic extent of the species in the wild. Population performance is typically measured by rates of increase or decrease and is derived as a function of an individual's ability to live, die, grow, mature, and reproduce.

The analysis of effects to whitebark pine was based on the Forest's commitment that impacts to whitebark pine will be limited within each project area and that the Project may provide beneficial effects to whitebark pine. After reviewing the BA; the 2021 SSA; the current status of the whitebark pine, including stressors and conservation needs; sources of information incorporated by reference; the environmental baseline; the *Standing Analysis* for low effect projects including Conservation Measures; and the cumulative effects; it is the Service's opinion that the effects of the action, as proposed, are not likely to jeopardize the continued existence of the whitebark pine. No critical habitat has been proposed for whitebark pine; therefore, none will be affected. In this BO, we have described the status of the whitebark pine at the range wide scale, affected population scale, and the action area scale. We have also described the environmental baseline conditions at the scale of the action area and summarized the effects of the action. The Service has reached this conclusion by considering the following:

1. The primary stressors to whitebark pine range-wide are the high incidence of the non-native white pine blister rust, large intense fires in whitebark pine habitat (Keane 2001b), mountain pine beetle (Raffa and Berryman 1987, Logan et al 2010), and the impacts of climate change. These primary stressors also act on whitebark pine in the Middle Rockies analysis units (Schwandt et al. 2010, Tomback et al. 2001) within the action area. The Project actions will remove dead and dying trees and reduce wildfire danger, promoting healthy forests that can be more resilient to these stressors.
2. The Project will remove and/or damage some individual trees, but will not affect whitebark pine at a landscape or ecosystem level due to the limited mapped acreage of whitebark pine within the Project boundaries and the extent of existing whitebark pine stands within the Forest.
3. Many trees remain on the landscape, including trees that are resistant to white pine blister rust, the primary threat.
4. Past human activities have not had a negative impact on the persistence of whitebark pine stands and populations.
5. Many agencies and other institutions (e.g., USFS, NPS, Whitebark Pine Ecosystem Foundation) are undertaking restoration activities (e.g., planting rust resistant trees) to improve the species' condition, and these activities, are expected to continue.
7. The Forest's commitment to ensure the natural regeneration, genetic diversity and genetic variability through the protection of mature and seed-producing trees; the collection,

storage, and screening of seed for rust resistance and genetic conservation; and the restoration of whitebark pine through the promotion of natural regeneration, planting nursery grown blister rust resistance seedlings, and direct seeding are incorporated into the proposed action.

8. The Forest is committed to minimizing impacts to whitebark pine through project design features.
9. Rangewide, whitebark pine occurs across an estimated 80,596,935 ac. Whitebark pine is present on approximately 960,983 ac of the three mountain ranges within the analysis area, and whitebark pine will be affected on approximately 736 ac of the action area.

The anticipated level of whitebark pine removal caused by the proposed actions under this consultation will not appreciably reduce the overall population, reproduction, and distribution of whitebark pine throughout its range. Therefore, while the implementation of the Project will adversely affect the whitebark pine, the Project will not jeopardize the continued existence of whitebark pine throughout its range.

9. Incidental Take Statement

Section 9 of the ESA and federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm in the definition of "take" in the ESA means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Harass in the definition of "take" in the ESA means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity (50 CFR 17.3). Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Sections 7(b)(4) and 7(o)(2) of the ESA generally do not apply to listed plant species. However, the section 4(d) rule for whitebark pine prohibits the following activities unless otherwise authorized or permitted: (a) import or export of the species; (b) delivery, receipt, transport, or shipment of the species in interstate or foreign commerce in the course of commercial activity; (c) sale or offer for sale of the species in interstate or foreign commerce; (d) removal and reduction to possession of the species from areas under federal jurisdiction; (e) malicious damage or destruction of the species on any area under federal jurisdiction; and (f) 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. Under the 4(d) rule, the exceptions to the prohibitions include: (a) activities authorized by a permit under 50 CFR 17.72; (b) forest-management, restoration, or research-related activities conducted or authorized by the federal agency with jurisdiction over the land where the activities occur; (c) removal, cutting, digging up, or damage or destruction of the species on areas under federal jurisdiction by any qualified employee or agent of the Service or

state conservation agency that is operating a conservation program pursuant to the terms of a cooperative agreement with the Service in accordance with section 6(c) of the ESA, who is designated by that agency for such purposes, when acting in the course of official duties; and (d) collection of whitebark pine seeds from areas under federal jurisdiction for Tribal ceremonial use or traditional Tribal consumption if the collection is conducted by members of federally recognized Tribes and does not violate any other applicable laws and regulations. (87 FR 76882, December 15, 2022). Therefore, while there is no incidental take statement as part of this BO, we have additional monitoring and reporting needs, described below.

10. Monitoring and Reporting

After Project completion, we ask that you provide the Service with a report describing the effects of the Project, especially in comparison with the effects described in the BO. This report should include all conservation measures and recommendations implemented as well as results of post-Project monitoring with an estimate of the acreage of whitebark pine damaged and removed by this Project.

11. Conservation Recommendations

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations (CR) are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for the species:

CR1. Continue to identify, test, and protect both active and potential plus trees (whitebark pine that are or believed to be phenotypically resistant to white pine blister rust. In some instances, conservation and recovery of whitebark pine could be aided by even single, solitary trees, whether at the stand level or the landscape level depending on how widespread stressors have impeded the health of the whitebark pine in a particular area. Some whitebark pine trees are phenotypically resistant to blister rust, providing viable seeds sources for natural regeneration or cone collection for site rehabilitation.

CR2. Continue to collect cones, and plant seedlings and/or directly sow whitebark pine seeds, especially those from plus trees. Prioritize areas affected by the white pine blister rust, mountain pine beetle, wildfire, climate change, and natural disasters (*e.g.*, large, burned areas).

CR3. Support continued genetic research and development of whitebark pine seed orchards. Establish long-term monitoring plots to document whitebark pine cone production, natural disturbances (post fire response), climate change effects, and annual survivorship of restoration plantings. Continue to implement and as needed initiate long-term monitoring to measure the status and trends of whitebark pine health across its range.

CR4. Develop a monitoring program in whitebark pine habitat to determine regeneration and recruitment success for whitebark pine planting areas and natural regeneration areas. Identify, model and map future results of whitebark pine inventories and create fine scale maps to identify and develop whitebark pine core areas for high-impact restoration. Microsites, site edaphic variables and competition from grasses and shrubs play a key

role in recruitment of whitebark pine. Consider understanding these knowledge gaps before significant resources are invested into planting.

CR5. When designing and implementing this Project, avoid impacts that reduce reproduction or recruitment of whitebark pine into populations.

CR6. When designing and implementing this Project, consider, evaluate, and carry out opportunities to mitigate and offset the effects of global and climate change.

CR7. Prior to Project implementation, inventory whitebark pine stands and monitor populations of Clark's nutcracker (*Nucifraga columbiana*) providing the Service with signs of caching or other indications of Clark's nutcracker presence in the Project area.

CR8. Engage with and continue to work with partners on a National Restoration Plan for whitebark pine.

CR9. Seek new public educational opportunities concerning whitebark pine restoration and protection.

CR10. Encourage and work with public and private land managers, including non-profit organizations and landowners, to protect, restore, enhance, and manage habitat to maintain and expand suitable habitat for the whitebark pine, particularly within and adjacent to occupied areas.

CR11. Restore damaged, unhealthy, or extirpated whitebark pine trees and stands using propagation, screening and planting seedlings, and removing competing conifers.

For the Service to be informed of actions minimizing or avoiding adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

12. Reinitiation and Closing

This concludes consultation pursuant to the regulations implementing the ESA (50 CFR 402.14). This Project should be re-analyzed if (1) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the Biological Opinion or written concurrence; or (3) if a new species is listed or critical habitat designated that may be affected by the identified action.

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