Biological Assessment

Forest Plans Amendment: Forest Management Direction for Large Diameter Trees in Eastern Oregon and Southeastern Washington Environmental Assessment

Introduction

The Forest Service is submitting this Biological Assessment (BA) to the U.S. Fish and Wildlife Service (USFWS) pursuant to the Section 7(a)(2) of the Endangered Species Act (ESA), and follows the procedures established in Forest Service Manual direction (FSM 2670.32). Section 7(a)(2) requires federal agencies to consult with the USFWS to ensure their actions will not jeopardize the continued existence of any listed species or adversely modify designated critical habitats.

Listed Species and Critical Habitat

This Biological Assessment addresses federally-listed species gray wolf (*Canis lupus*) and Spalding's catchfly (*Silene spaldingii)*, and proposed species wolverine (*Gulo gulo*). The gray wolf is listed as an endangered species on the Deschutes, Ochoco, Fremont-Winema National Forests, the Crooked River Grasslands, and portions of the Malheur and Umatilla National Forests that occur to the west of Highway 395. Spalding's catchfly is a threatened species and is documented on the Wallowa-Whitman and Umatilla National Forests. The wolverine is a proposed threatened species and is documented to occur on the Wallowa-Whitman National Forest, and suspected to occur on the Deschutes, Fremont-Winema, Malheur, Ochoco and Umatilla National Forests, and Crooked River National Grassland.

Programmatic Biological Assessments and informal consultation have been completed for gray wolves covering a variety of forest management activities, including the types of vegetation management (e.g., forest thinning, commercial timber harvest, prescribed fire, etc.) that are related to this Forest Plan Amendment, on all of the National Forests for which gray wolves are federally listed (USFS 2017a,b; USFS 2020).

Proposed Action

The proposed action amends Forest Plans on six National Forests in eastern Oregon and southeast Washington: Wallowa-Whitman, Umatilla, Malheur, Ochoco, Deschutes, and Fremont-Winema (Fig. 1). The amendment is narrowly focused on two management standards for assessing potential timber sales and includes changing a limit on harvesting trees over 21 inches in diameter and updating the science used to determine snag and green tree retention levels. The history of these management standards, called the Eastside Screens, and the proposed change are detailed below. The remainder of the management direction in the Eastside Screens and the existing Forest Plans would not change.

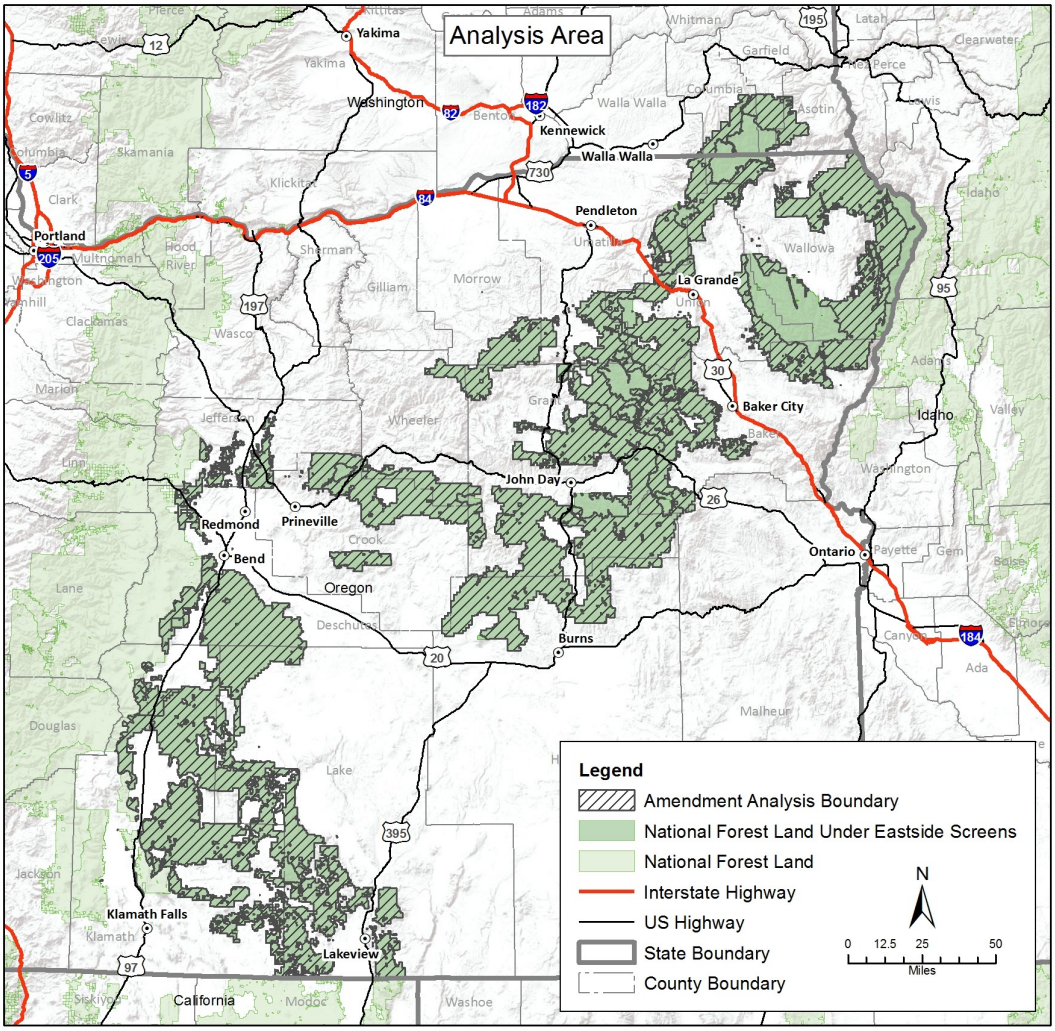

Figure 1. Map of the Analysis Area. Western boundary is defined by the area of the Northwest Forest Plan**.**

History of Eastside Screens

In the 1990s in response to concerns about large trees on the eastside of the Cascades, the Forest Service developed the Eastside Screens. House Speaker Tom Foley (Washington) and Senator Mark Hatfield (Oregon) requested that Agricultural Secretary Edward Madigan form an interagency panel to complete a scientific evaluation of the effects of Forest Service management practices on the sustainability of eastern Oregon and Washington forests. The panel produced the Eastside Forests Ecosystem Health Assessment (EFEHA) or the "Everett Report" (Everett et al. 1994).

Eastside Forest Health Assessment concluded that there was a loss of early-seral large trees and old forests caused by timber harvest, and conditions were ripe for

large and severe insect, disease, and wildfire disturbances due to large increases in forested area, density, and shade-tolerant forest cover. The panel did not address social or economic concerns, but acknowledged their importance for ecosystem sustainability and identified the need for more information about social values and expectations for management of eastside forests.

As a result of the Eastside Forest Health Assessment, the Eastside Screens were adopted in 1995 and amended the underlying forest plans. The Screens consisted of three components for screening proposed timber sales: riparian screen, ecosystem screen, and the wildlife screen. The Inland Native Fish Strategy (INFISH) and Pacific Anadromous Fish Strategy (PACFISH) now operate in place of the riparian screen. Under the ecosystem screen, the Forest Service compares current conditions of a proposed timber sale area with the historic range of variability (HRV). Under the wildlife screen, the Forest Service imposes certain harvesting restrictions according to whether the condition of a sale area is within the HRV for late and old structure (LOS) forest.

During the last three decades there have been multiple interpretations and guidance documents issued on how to implement the screens. Some guidance documents encouraged forests to complete plan amendments to cut trees over 21 inches while others outlined direction that trees greater than 21 inches could be cut under certain conditions. Thus, national forests have taken different approaches to addressing this issue. Some national forests in eastern Oregon have completed multiple project specific forest plan amendments that alter the 21" standard in some way. Other forests have avoided the harvest of trees over 21" to avoid forest plan amendments. Still others have started amendments and not finished or utilized them.

The limitations of the 21 inch standard have become increasingly apparent in recent years as the Forest Service has intensified its focus on restoring forest resistance and resilience to disturbance and as public and agency interest in creating forests better able to withstand and recover from disturbances like drought and wildfire has grown. At the same time, scientific knowledge about frequent-disturbance environments like those in eastern Oregon has grown. The need for new approaches to forest management has become even more urgent given ongoing changes such as an increase in the length of fire season and the area burned by wildfires. Managers often do not have the flexibility to take advantage of opportunities to protect and enhance large and old trees by removing fast-growing, shade tolerant species that compete with fire-tolerant ponderosa pine and larch for resources or to thin fast-growing pine stands to develop more disturbance-resistant conditions. Restoring and adapting forests and reducing mortality of old trees from large disturbances like wildfire, drought, and insect outbreaks requires a more strategic approach than the 21" standard allows.

Proposed Action

Change to 21-inch Standard

The Proposed Action is to replace the 21-inch **standard** with a **guideline** that emphasizes recruitment of old trees and large trees. Old trees are defined as ≥ 150 years of age. Large trees are defined as grand fir or white fir ≥ 30" dbh or trees of any other species (e.g., ponderosa pine, Douglas-fir) ≥ 21 inches dbh. This alternative would also include an adaptive management component (described below).

The current standard says:
Outside of Late and Old Structure (LOS), many types of timber sale activities are allowed. The intent is still to maintain and/or enhance LOS components in stands subject to timber harvest as much as possible, by adhering to the following standards: a) Maintain all remnant late and old seral and/or structural live trees ≥ 21-inch dbh that currently exist within stands proposed for harvest activities.

The new guideline would say:
Outside of LOS, many types of timber sale activities are allowed. The intent is to maintain and/or enhance LOS components in stands subject to timber harvest as much as possible, by adhering to the following plan components: a) Managers should retain and generally emphasize recruitment of old trees and large trees. Management activities should first prioritize old trees for retention and recruitment. If there are not enough old trees to develop a range of LOS conditions across the local landscape, the largest trees should be retained. Old trees are defined as having external morphological characteristics that suggest an age ≥ 150 years. Large trees are defined as grand fir or white fir ≥ 30" dbh or trees of any other species ≥ 21-inch dbh. Old and large trees will be identified through best available science. Management activities should consider appropriate species composition for the biophysical environment, topographic position, stand density, historic diameter distributions, and spatial arrangement within stands and across the landscape in order to develop stands that are resistant and resilient to disturbance.

Snag and Green Tree Retention Change

The existing language and Snags and Green Tree Replacements, based on outdated science, would be replaced with the following standards and guidelines:

SNAGS

1. **Standard:** Maintain all snags ≥ 20"(or whatever is the representative DBH of the overstory layer if it is less than 20") **OR**
2. **Standard:** Complete a snag analysis using the best available science on species ecological requirements as applied through current snag tools, models, or other documented procedures to maintain or increase heterogeneous snag composition, structure, and distribution for a diverse composition of wildlife species and ecological site conditions
3. **Guideline:** If snags meeting the objectives of 1a or 1b must be felled for operational safety, then the following guidelines should be considered:

- Protect snags from operations by grouping or clustering in skips or leave areas.
- Work with wildlife biologist, silviculturist, and possibly a danger tree certified employee to assess snags in the project area both prior and while layout is occurring.
    - To the extent where topography and logic dictates, avoid long or duplicative skid trails.
    - Strive to identify landings ahead of time away from groups or clusters of snags or leave areas.
    - Strive to contain equipment and vehicles to identified landings and skid trails.
- Consider and encourage the use of a snag or course wood simulator model like FVS to assess snags after layout has been planned to compare the predicted loss due to safety requirements as a result of operation in stands where snags are deficient.
- Consider guidelines for green tree retention for existing snags.

GREEN TREE RETENTION

4. **Standard:** Retain and recruit old and large trees of the appropriate and diverse tree species and spatial arrangements to meet LOS objectives by increasing heterogeneous tree species composition, structure, and distribution for a diverse composition of wildlife species and ecological site conditions. Use best available science to determine green tree retention. Retain all hollow down wood as well as any hollow trees and snags that will become hollow logs upon falling.
5. **Guidelines:** Use natural decay processes and agents to recruit snags from green trees.

- Strive for diverse composition and size class of tree species including true firs and hardwoods.
- Strive for tree species that are tolerant, resistant, or immune to root disease, especially if root disease is known to occur nearby or on site.
- Prioritize and retain deformed or damaged, broken topped, and trees with external indicators of heart rot.
- Whenever possible, retain some trees having large- volume brooms with platforms, however retention selections for dwarf mistletoe brooms should be carefully designed to maximize wildlife benefits while minimizing the potential for spread to healthy trees and uninfected portions of the stand. Work with zone pathologist since this can be done with great benefit to wildlife and low risk to stand health.
- Consider retaining dense groups of trees; however, when doing so, take into consideration sub-stand level tree competition that might compromise the survival of desired trees within those groups that will create distributional heterogeneity.
- Consider retaining tall old and larger trees on ridgelines with sloughing bark.
- Consider retaining more true firs on north facing slopes.

- Consider retaining trees with mechanical wounds if possible, for future development of decayed wood development. Diversifying trees with wounds at various bole heights may increase diversity of decay fungi and habitat availability.
- Wildlife biologists, ecologists, silviculturists, entomologists, and pathologists should work together on prescriptions to maximize objectives.

Adaptive Management Requirement
There are four components to the Adaptive Management Strategy:
1) Implementation monitoring and analysis,
2) Effectiveness monitoring and analysis,
3) Regional Adaptive Management Work Group, and
4) Regional Review.

Implementation Monitoring
When projects are implemented that involve the harvest of **old and large trees** the Forest Service may coordinate project-level multiparty monitoring, especially if local partners are willing and able to leverage technical expertise or data, financial resources, or other identified resources. To capture efficiencies with other ecological objectives the Forest Service encourages integration of monitoring questions into the existing multiparty party monitoring efforts, such as those associated with the Collaborative Forest Landscape Restoration Program (CFLRP) or other programs.

- Recommended Questions:
    - Is management retaining enough large trees to develop a range of LOS forest conditions?
    - Are old trees (based on external morphological characteristics) being retained within treatment units, both individually and in clumps?
    - Are we favoring biophysically-aligned species composition, e.g. are we favoring fire-tolerant species in frequent-fire regime landscapes?

Effectiveness Monitoring
This amendment to the 21" standard enables managers to retain and promote large and old trees by creating species and structure compositions that are resistant and resilient to disturbance while maintaining the legacy characteristics (old trees, large trees, snags) that will be part of forest structure in the future. Effectiveness monitoring will assess resistance and resilience of the stand by looking at greenness of the tree canopy through time. This monitoring work can be accomplished using readily available remotely sensed data and standard corporate data such as treatment unit polygons (e.g., FACTS).

A. Is management creating stands that are resistant to disturbance?
    - Measured by annual mortality from disturbance [*use same data as below?]*
    - If possible with data on species and tree size
B. Is management creating stand conditions that are resilient to the impacts of disturbance?

- As measured by reflectance/ greenness recovery within 2 years of a disturbance?
- Do stands that are currently LOS, or contain features of LOS, begin to recover within 2 years of a disturbance?

C. Does management have any indirect effects on the severity of disturbance or forest recovery on adjacent stands that are not managed?
D. D. Does the reflectance of green overstory change with a predictable trend over time, with and without disturbance?

If restoration treatments prove ineffective at conserving old trees relative to passive management of unmanaged stands, a dbh limit would be re-imposed. The dbh limit that would be imposed would prohibit harvest of grand fir, white fir trees ≥ 30 inches and prohibit the harvest of all other tree species ≥ 21 inches. This standard is not suggested specifically by the scientific literature but rather is a recognition of trust issues deeply embedded in management activities involving old trees in the Northwest.

Regional Review

The Regional Forester will conduct a review of monitoring data once a year. Once every three years, a decision will be made on whether to continue with the guideline or bounce back to a standard. The Regional Forester may order a bounce back to a standard for an individual national forest or across several or all six national forests as warranted by the monitoring data. The Regional Review will include at least the Regional Forester, the Regional Planning and Natural Resources Directors, and a Forest Supervisor representing the six eastside Forests. They will review the monitoring findings compiled through Regional effectiveness monitoring and learnings from the Regional Adaptive Management Work Group.

Regional Adaptive Management Workgroup

To ensure transparency, build trust, and provide accountability the *Regional Adaptive Management Work Group* is proposed. The Work Group is designed to develop shared knowledge about LOS development on Forest Service lands in eastern Oregon and southeastern Washington. The Work Group would also be a place for Forest Service practitioners and partners to share on-the-ground experience and learning across Forests to promote learning and innovation. Project level monitoring could be used to provide insights into regional data trends.

<u>Objectives</u>

- Maintain transparency around planning and management methods to protect and develop biophysically-aligned late and old structure (LOS) forest characteristics by:
    - Reviewing and discussing regional monitoring data and trends that emerge from the implementation and effectiveness monitoring efforts.
    - Sharing information from local monitoring efforts to inform understanding of regional trends and improve effectiveness of project implementation.

- Provide accountability and demonstrate integrity in plan implementation.
- Facilitate communication and support relationships with and among stakeholders.

The work group would not supplant any local collaborative, multiparty monitoring, or other project-level collaborative efforts; local efforts are encouraged to continue to develop as capacity and interest allow. The work group would not be asked to come to consensus or make recommendations.
The work group would hold a meeting at least once a year and convene one multi-party field tour per year (if possible, global pandemic currently prevents this). The work group could also coordinate other activities as desired to facilitate experiential learning, resources permitting. The Work Group could leverage networks and resources including with academic institutions, collaborative partners, and others to support additional monitoring or communication and engagement activities. The work group would be invited to consider and discuss potential adaptations to broad-scale effectiveness monitoring.

Change the standard to a guideline and Assumptions
Given the historical context above, changing from the 21" standard "must do" to an old and large tree guideline "should do" would provide more flexibility to account for smaller diameter old trees and larger diameter young trees, the latter of which are typically shade-tolerant species that grow faster (white fir, grand fir) and dominate middle-aged stand structure and composition by outcompeting the desired shade-intolerant species (like Ponderosa pine, Douglas-fir). The proposed action would not change the desired condition from that of the original interim Eastside Screens, nor would it change the existing ecosystem standard and required HRV analysis for each forest. Creating opportunities for managers to create more heterogeneity on the landscape, particularly by changing some multi-storied stands to single-storied, open forest conditions that are currently below HRV, but still emphasizing the late and old structure desired condition for both stand types, remains the objective. It is anticipated that the actual footprint of treatment would not change from the past several years (approximately 40,000 acres/year across the planning area), as this is limited by several management conditions including, but not limited to, capacity. Within this footprint, the ability for treatments to remove more shade-tolerant trees regardless of size in order to create more open forest conditions when HRV is not being met would increase. In addition to current forest plan monitoring requirements, efficacy monitoring is being proposed as part of the decision and is described above in the adaptive management section.

Species Status, Environmental Baseline, and Effects Determination

Gray Wolf

<u>Status of Species and Environmental Baseline</u>

The recolonization of wolves in Oregon can mostly be attributed to an expanding population in Idaho and dispersing individuals crossing the Snake River into Oregon. During the initial dispersal events, wolves in central Idaho were protected

under the ESA as a non-essential experimental population and were covered under the 10(j) rule. In 2011, wolves were delisted in Idaho, Montana, and eastern Oregon and the 10(j) rule no longer applies. Wolves were state-delisted statewide in Oregon in 2015. However, this was a state delisting and did not affect their federal status.

Gray wolves are habitat generalists and once occupied most of the United States, with the exception of the southeast (Mech and Boitani 2003). However, a significant amount of gray wolf historical range in the contiguous United States was modified due to human use (Chambers et al. 2012). While lone wolves can travel through, or temporarily live almost anywhere, large portions of gray wolf historical range no longer contain habitat suitable to support wolf packs (Mladenoff et al. 1995, Carroll et al. 2006, Oakleaf et al. 2006, Jimenez et al. 2017). Suitable habitat primarily consists of forested terrain containing adequate prey (elk, white-tailed deer, and mule deer) to support a wolf population. Constituents of suitable habitat include but aren't limited to minimal roads and human development, as human access to areas inhabited by wolves can result in wolf mortality.

The Oregon Department of Fish and Wildlife developed a map of potential wolf range as part of its management plan update (ODFW 2019). The model used predictors of wolf habitat including land-cover type, elk range, human population density, road density, and land types altered by humans; they chose to exclude land ownership because wolves use forested cover on both public and private lands (ODFW 2019). ODFW identified approximately 41,256 mi^2 as potential wolf range in Oregon, and estimates that wolves occupy 31.6 percent of the potential wolf range in the east management zone (13,838 mi^2) and 2.7 percent of potential wolf range in the western management zone (27,417 mi^2) (ODFW 2019).

In the western United States, elk (*Cervus canadensis*) and deer (*Odocoileus* spp.) make up the bulk of the gray wolf diet. The proportion of each species in gray wolf diets appears to be dependent on the relative abundance of elk and deer on the landscape. In Oregon, approximately 63 percent of the Rocky Mountain elk (*C. c. nelsoni*) populations are at or above desired population management objectives for ODFW's wildlife management units. Nineteen percent of the wildlife management units are at or above population management objectives for Roosevelt elk (*C. c. roosevelti*). Typically, where populations are below ODFW management objectives, human-caused factors such as poaching, poor habitat conditions, and possibly predation contribute to low calf ratios that may be depressing populations. In 2018, ODFW estimated statewide elk population to be about 132,000 of which approximately 72,000 were Rocky Mountain and 60,000 were Roosevelt elk. Mule deer and black-tailed deer populations peaked in the mid-1900s and have since declined, likely due to human development, changes in land use, predation, and disease (ODFW 2019). The estimated 2018 population of mule deer was 190,500 and continues to remain below established management objectives in 47 of 49 wildlife management units (ODFW 2019). ODFW estimates the current black-tailed deer population for Oregon at approximately 320,000 animals. White-tailed deer (*Odocoileus virgininus* spp.) populations, including Columbian white-tailed deer (*O.*

v. leucurus), are small, but are increasing in distribution and abundance (ODFW 2019). Deer are a secondary prey item when elk are present. Areas lacking elk are only likely to support a low density of wolves (ODFW 2019).

There are numerous studies on den site selection and response of wolves to human disturbance during the denning period. While some wolves will tolerate limited human disturbance of dens (Thiel et al. 1998, Frame et al. 2007, Person and Russell 2009), other wolves will abandon their dens and move their pups (Mech et al. 1991).

Currently there are three Areas of Known Wolf Activity (AKWAs) and three Areas of Estimated Wolf Activity within or near the affected planning area (Fig. 2). The estimated number of wolves associated with these Wolf Activity Areas is shown in Table 2. Breeding was confirmed within four of these areas in 2019 (ODFW 2019).

Table 2. The gray wolf activity areas within or near the eastern Oregon and southeast Washington plan amendment area (based on ODFW 2019).

Gray Wolf Activity Area	Estimated Number of Wolves	Breeding Confirmed
Known Wolf Use Areas		
Heppner	5	Yes
Indigo	5	Yes
Rogue	4	No
Estimated Wolf Use Areas		
Fivemile	5	Yes
White River	5	Yes
Silver Lake	2	No

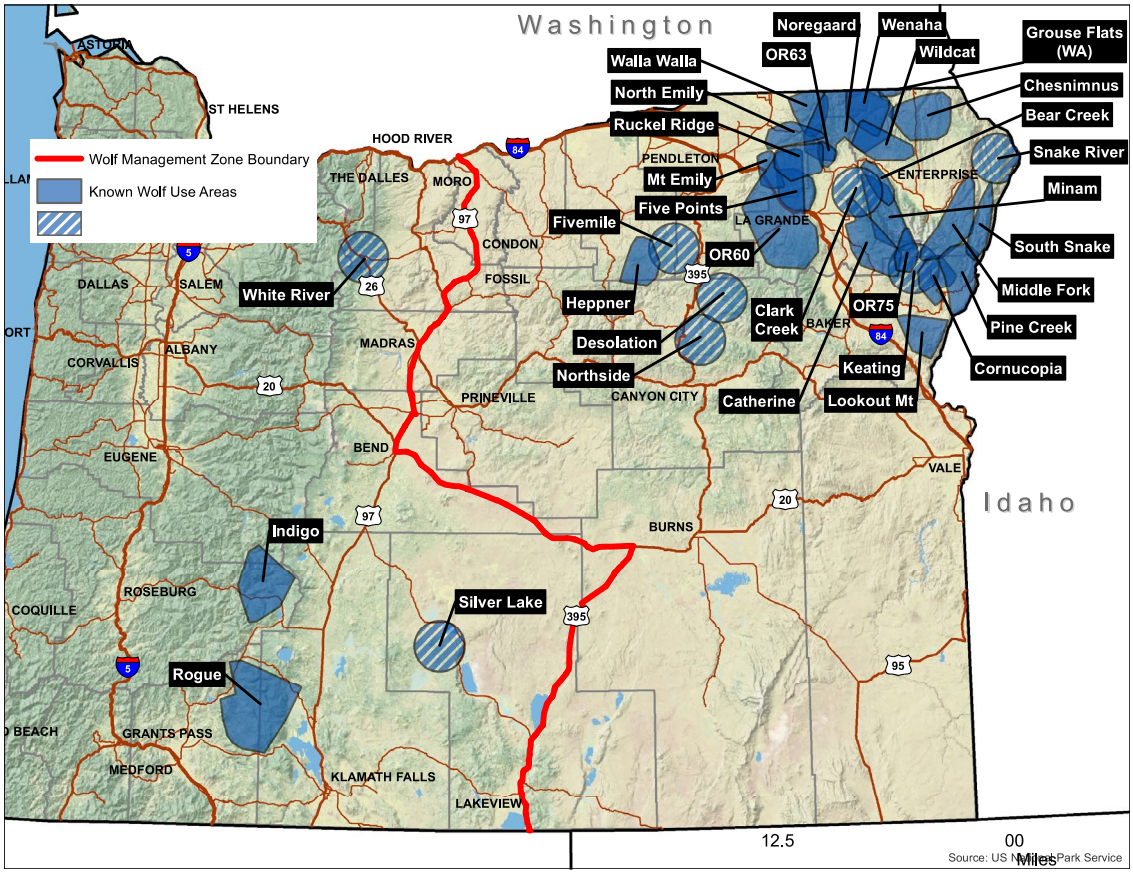

Figure 2. Map showing the wolf use areas as of the end of 2019 (from ODFW 2019). Six of these areas occur within the federally listed portion of the state of Oregon and are in or near National Forests that are part of this amendment. These wolf activity areas include: Heppner, Fivemile, White River, Indigo, Rogue, and Silver Lake.

<u>Direct and Indirect Effects</u>

The implementation of the proposed action would reduce canopy closure in the closed-canopy forest habitats that have increased as a result of fire suppression and past management practices (Haugo et al. 2015). As a result, the amount of forage available for deer and elk would be increased as understory plant diversity and composition is restored (Endress et al. 2012, Lehmkuhl et al. 2013, Hull et al. 2020).

Forest management activities that occur near active den and rendezvous sites can cause wolves to move or abandon the site. These potential effects would be minimized by implementing conservation measures agreed to in previous consultation on the national forests that are in the area that gray wolves are federally listed as Endangered (USFS 2017a,b, USFS 2019). The conservation measures restrict activities within 1 mile of a denning or rendezvous sites from April 1 to July 15, and doesn't allow salt and other livestock attractants near dens or rendezvous sites.

Wolves may be temporarily displaced by some types of human activities. Behavior of resident or dispersing wolves during or after any forest management activity may be affected. However, it would be difficult to attribute wolf movement to one of these specific activities and/or differentiate the movement from normal wolf behaviors. The scale of most management activities on the Forests is small in comparison to the normal range of wolves. Therefore, wolves may avoid or be displaced from a particular area during forest management activities, but this is likely to have discountable effects to wolves due to their wide-ranging behavior.

Vegetation and fuels management on the National Forests may cause big game to change their use patterns, which may change the use patterns of wolves. However, the scale of displacement is small and discountable in comparison to the normal range and movement of wolves.

Cumulative Effects

Cumulative effects are those effects of future State, Tribal, and private actions that are reasonably certain to occur within the Action Area. Effects resulting from future Federal actions are not included in cumulative effects and will be assessed during future Section 7 consultations.

Past, present, and reasonably foreseeable future non-Federal actions that affect wolf habitat include timber harvest and fuels reduction, recreation, human development, and grazing on private and state lands.

Fuels reduction projects are possible on all land ownerships, in particular where they are near residences. These can be done in such a way that they restore wildlife habitat that has been affected by fire exclusion.

Recreation is likely to increase on all land ownerships due to increasing demands from the public. This would increase human disturbance and result in areas with relatively low human disturbance on NFS lands becoming more important to wolves and other wildlife.

Determination of Effects to Gray Wolf

The proposed eastern Oregon and southeastern Washington Forest Plans amendment May Affect, but is Not Likely to Adversely Affect gray wolves. This determination is based on the following:

- Six wolf activity areas are on or adjacent to the National Forests in the planning area. Conservation measures would minimize disturbance and reduce the potential for conflicts with proposed actions at these six known wolf activity areas and any future discovered wolf activity areas.
- Wolves may avoid or not be present in a particular area during the types of forest management activities that are addressed in the amendment, but this is likely to have discountable effects to wolves due to their wide-ranging behavior.

- Forest management activities that are covered by this amendment may cause big game to change their use patterns, which may change the use patterns of wolves. However, the scale of displacement is small and discountable in comparison to the normal range and movements of wolves.
- Forest management activities that are covered by this amendment may increase restoration treatments used to reduce canopy closure in the closed-canopy forest habitats that have increased as a result of fire suppression and past management practices. As a result, the amount of forage available for deer and elk would be increased.
- Conservation measures agreed to in previous programmatic consultations on gray wolves would minimize potential effects to the gray wolf during the denning season by restricting activities within 1 mile of a den or rendezvous site from April 1 to July 15.

Wolverine

Species Status and Environmental Baseline

Wolverine habitat has been described as being primarily at high elevation and isolated from human activity (Carroll et al. 2001, Rowland et al. 2003, Aubry et al. 2007). Montane coniferous forests, suitable for winter foraging and summer kit rearing, may only be useful if connected with subalpine cirque habitats required for natal denning, security areas, and summer foraging (Copeland 1996, Copeland et al. 2010).

Wolverines are opportunistic feeders, consuming a variety of foods depending on availability. They primarily scavenge carrion, but also prey on small animals and birds and eat fruits, berries, and insects (Hornocker and Hash 1981, Wilson 1982, Hash 1987, Banci 1994). Wolverines have an excellent sense of smell, enabling them to find food beneath deep snow (Hornocker and Hash 1981).

Wolverines have large spatial requirements; the availability and distribution of food is likely the primary factor in determining wolverine movements and home range (Hornocker and Hash 1981, Banci 1994). Wolverines can travel long distances over rough terrain and deep snow, with adult males generally covering greater distances than females (Hornocker and Hash 1981, Banci 1994). Home ranges of wolverines are generally extremely large, but vary greatly depending on availability of food, gender, age, and differences in habitat. Home ranges of adult wolverines range from less than 38.5 mi^2 to 348 mi^2 (Banci 1994). Home range sizes are large relative to the body size of wolverines, and may indicate that wolverines occupy a relatively unproductive niche in which they must forage over large areas to consume the amount of calories needed to meet their life-history requirements (Inman et al. 2007a).

Breeding generally occurs from late spring to early fall. Females undergo delayed implantation until the following winter to spring, when active gestation lasts from

30 to 40 days (Rausch and Pearson 1972). Litters are born between February and April, containing one to five kits, with two to three kits being the most common (Hash 1987). Female wolverines use natal (birthing) dens that are excavated in snow. Persistent, stable snow greater than 5 feet deep appears to be a requirement for natal denning, because it provides security for offspring and buffers cold winter temperatures (Pulliainen 1968, Copeland 1996, Magoun and Copeland 1998, Banci 1994, Inman et al. 2007b, Copeland et al. 2010). Female wolverines go to great lengths to find secure den sites, suggesting that predation is a concern (Banci 1994). Natal dens consist of tunnels that contain well-used runways and bed sites, and may naturally incorporate shrubs, rocks, and downed logs as part of their structure (Magoun and Copeland 1998, Inman et al. 2007b). Occupation of natal dens is variable, ranging from approximately 9 to 65 days (Magoun and Copeland 1998).

Wolverines do not appear to specialize on specific vegetation or geological habitat aspects, but instead select areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season (Copeland et al. 2010). The requirement of cold, snowy conditions means that, in the southern portion of the species' range where ambient temperatures are warmest, wolverine distribution is restricted to high elevations, while at more northerly latitudes, wolverines are present at lower elevations and even at sea level in the far north (Copeland et al. 2010). Deep, persistent, and reliable spring snow cover (April 15 to May 14) is the best overall predictor of wolverine occurrence in the contiguous United States (Aubry et al. 2007, Copeland et al. 2010).

The current distribution of wolverines is likely determined by the intensity of human settlement, the persistence of spring snow cover, and the distribution of alpine/subalpine habitats (Aubry et al. 2007, Inman et al. 2012). Several researchers have documented the effects of roads and other human activities, on wolverines and their habitat and have included roads in models of source habitat (Carroll et al. 2001, Copeland et al. 2007, Krebs et al. 2007, Raphael et al. 2001, Rowland et al. 2003, Wisdom et al. 2000). Carroll et al. (2001) found areas with road densities less than 1 mile per square mile to be strongly correlated with the presence of wolverines. Rowland et al. (2003), in a test of the Raphael et al. (2001) source habitat model, found that road density was a better predictor of wolverine abundance than the amount of habitat when applied to a watershed scale. Motorized recreation and the use of National Forest System roads may influence the habitat use and populations of wolverines. These potential effects include displacement from key habitats, disturbance during critical periods, and an increased risk of mortality (Wisdom et al. 2000, Gaines et al. 2003). The effects of motorized recreation and roads can occur during the non-winter period or during the winter period when snowmobiling or ski-trail grooming occurs.

The sensitivity of wolverine to the effects of climate change is considered to be high (McKelvey et al. 2011, Gaines et al. 2012). Because the extent of persistent spring snow cover has constrained current and historical distributions, then it is reasonable to assume that it will also constrain the wolverine's future distribution

(Aubry et al. 2007, Copeland et al. 2010). An important climate change adaptation that has been recommended for wolverine is to reduce the negative effects of non-climate related stressors such as the effects of roads (and trails) on habitat (Gaines et al. 2012, Lawler et al. 2014). By reducing the negative effects of roads, habitats can become more resilient to the effects of climate change, and habitat connectivity can be restored allowing wolverines to adjust their ranges as conditions change.

In Oregon, the wolverine was likely extirpated by 1936 (Hiller 2011). Reports of wolverines occurred in northeastern Oregon during the 1960s to the 1990s based on records from the Oregon Department of Fish and Wildlife (Hiller 2011).

A wolverine research project resulted in the confirmation of three individual wolverines in the Wallowa Mountains of northeastern Oregon on the Wallowa-Whitman National Forest (Magoun et al. 2013). The wolverine is Suspected to occur on other national forests and the Crooked River National Grassland within the planning area, however, they have not been confirmed.

Wales et al. (2011) completed a viability assessment for a wide range of focal species in northeastern Oregon, including wolverine, to establish baseline conditions and inform Forest Plan revisions. The viability assessment considered the current condition of vegetation, potential denning habitat, road density, and winter recreation routes on wolverine habitat. The current viability outcome scores for wolverines across the three national forests in the Blue Mountains were considerably lower than the viability outcomes estimated for historical conditions, largely due to the prevalence of roads (Wales et al. 2011).

Direct and Indirect Effects

The primary effects that vegetation management projects may have on wolverines include the potential for disturbance during denning and effects to deer and elk that comprise an important component of their diet.

The implementation of the proposed action would increase the amount of forest restoration treatments used to reduce canopy closure in the closed-canopy forest habitats that have increased as a result of fire suppression and past management practices (Haugo et al. 2015). As a result, the amount of forage available for deer and elk would be increased as understory plant diversity and composition is restored (Endress et al. 2012, Lehmkuhl et al. 2013, Hull et al. 2020). Deer and elk are an important prey component for wolverine (Proposed Threatened-Documented on Wallowa-Whitman National Forest, suspected on the other five Forests).

The potential for wolverines to be disturbed during denning is low due to the limited number of wolverines that occur in the planning area, their wide-ranging nature, their dens are typically located in high elevation alpine and subalpine cirques away from the dry and moist-mixed conifer forests that are most likely to be where forest management activities would occur. For example, most of the potential wolverine habitat modeled by Wales et al. (2011) occurs in areas with limited access

(e.g., wilderness). Therefore, any potential for disturbance during denning is likely to be insignificant and discountable.

Wolverines may be temporarily displaced by some types of human activities. The scale of most management activities on the Forests is small in comparison to the normal range of wolverines, especially given their use of remote areas that are generally at higher elevations. However, there is a small potential that wolverines may avoid or be displaced from particular area during forest management activities, but this is likely to have discountable effects to wolverines due to their wide-ranging behavior.

Cumulative Effects

Cumulative effects are those effects of future State, Tribal, and private actions that are reasonably certain to occur within the Action Area. Effects resulting from future Federal actions are not included in cumulative effects and will be assessed during future Section 7 consultations.

Since most wolverine habitat is found on remote, high-elevation Forest Service lands, few cumulative effects are expected from lands under private, State or other Federal agency administration. Past, present, and reasonably foreseeable future non-Federal actions that affect wolverine habitat include timber harvest and fuels reduction, recreation, human development, and grazing on private and state lands.

Fuels reduction projects are possible on all land ownerships, in particular where they are near residences. These can be done in such a way that they restore wildlife habitat that has been affected by fire exclusion.

Recreation is likely to increase on all land ownerships due to increasing demands from the public. This would increase human disturbance and result in areas with relatively low human disturbance on NFS lands becoming more important to wolverine and other wildlife.

Effects Determination for Wolverine

The proposed eastern Oregon and southeastern Washington Forest Plans amendment has effects on wolverine (*Gulo gulo*), but such effects would not have the consequence of losing key populations and therefore an effect determination of "not likely to jeopardize the continued existence of the proposed species. This determination is based on the following:

- Low potential for forest management activities addressed in this amendment to disturb wolverines during denning.
- Increased restoration treatments that reduce canopy closure and increase understory plant diversity and composition could increase forage available for deer and elk, an important food resource for wolverines.
- Wolverines may avoid or not be present in a particular area during the types of forest management activities that are addressed in the amendment, but

this is likely to have discountable effects to wolverines due to their wide-ranging behavior.
- Other risk factors (recreation, roads, etc.) also influence wolverine populations will continue to occur but are not addressed in this amendment.

Spalding's catchfly
Species Status and Environmental Baseline
Spalding's catchfly (*Silene spaldingii*) was listed as a threatened species under the Endangered Species Act in 2001 (USFWS 2001). In 2007, a Recovery Plan was finalized that outlined the species' status, threats, and recovery strategy for protecting and maintaining its populations (USFWS 2007). A Biological Opinion on the Blue Mountains Forest Plans included the species and was issued in 2018; it summarized new population information obtained since the writing of the Recovery Plan (USFWS 2018).

The status and environmental baseline for the species are summarized here, based on the reviews provided in USFWS 2007 and 2018; please see those documents for additional details.

Spalding's catchfly is an herbaceous perennial plant in the family Caryophyllaceae (pink family). It is taprooted and long-lived (15-30 years), and can exhibit prolonged dormancy for 1-6 years, when plants remain belowground with no aboveground vegetation. It reproduces only by seed, with the best reproductive success when outcrossed by pollinators (despite being partially self-compatible) and not in competition for pollinators with the nonnative St. Johnswort (*Hypericum perforatum*; review of studies by USFWS 2007).

Spalding's catchfly occurs at elevations between 1,200 and 5,300 feet, primarily in bunchgrass grasslands. It is occasionally found in open, park-like ponderosa pine forests with Idaho fescue in the understory (USFWS 2007, Jerold Hustafa pers. comm. 30 June 2020). In 2004, seventy-three percent of known Spalding's catchfly occurrences were within grassland habitat types, 20 percent within shrub habitat types, and seven percent within forest habitat types (summarized in USFWS 2007). It is generally found in deep loamy soils (fertile soils comprised of organic material, clay, sand, and silt) and in more mesic, moist sites such as northern slopes, swales, or other small landscape features (USFWS 2007). Across its range, summers are generally hot and dry, while winters are cool to cold and moist. During the drought period in mid and late summer, Spalding's catchfly actively grows while most vegetation is dormant.

Spalding's catchfly is a regional endemic. It is known from Idaho, Montana, Oregon, Washington, and British Columbia (Figure 2). In Oregon, there are approximately 21 populations; these populations vary from a few (22 plants on BLM land, Grande Ronde River canyon grasslands) to over 40,000 documented on the Zumwalt Prairie Preserve (USFWS 2018). It is expected that more populations of Spalding's catchfly will be found in the future as survey efforts increase.

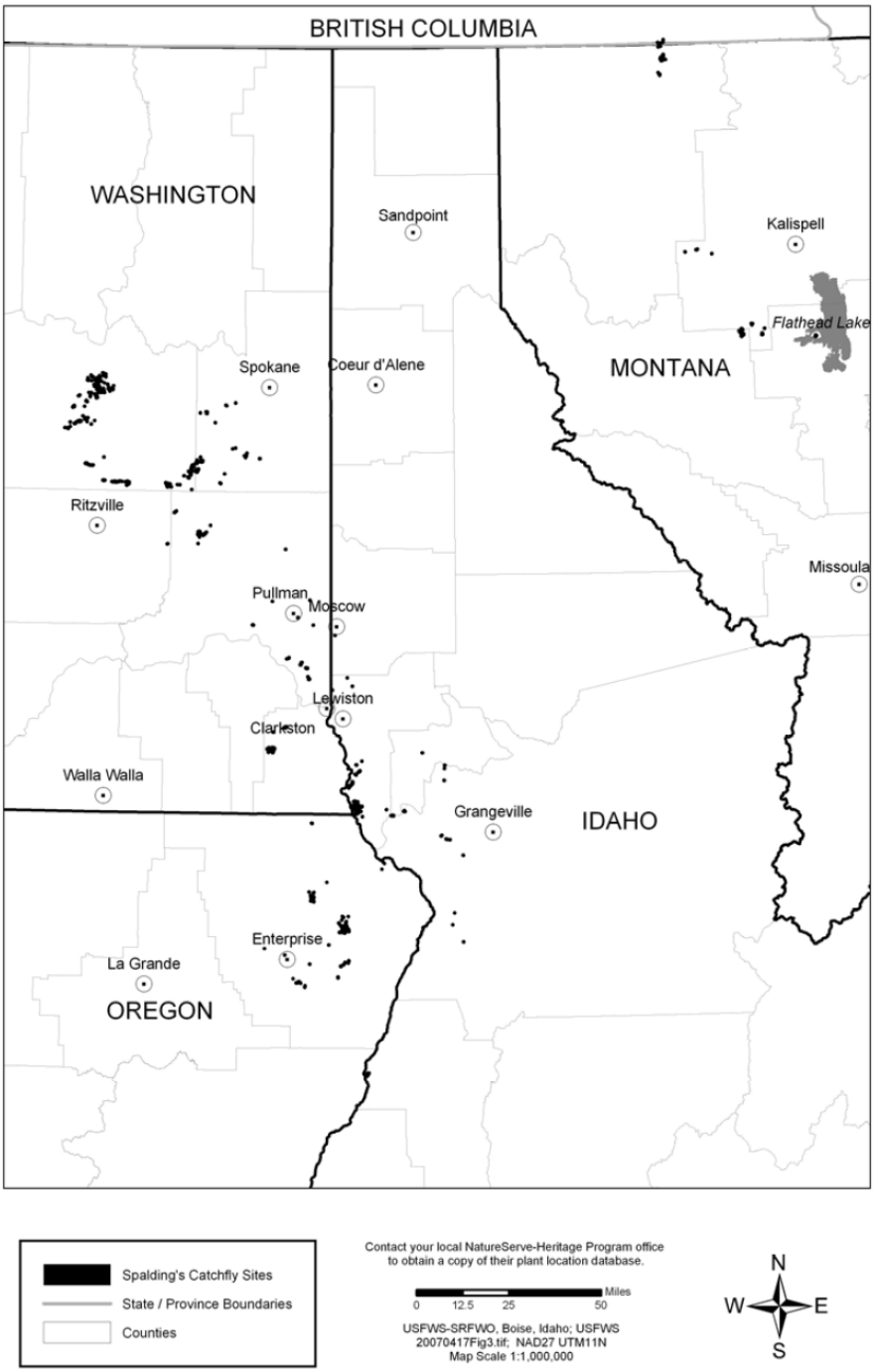

Figure 2. Range-wide distribution of Spalding's catchfly as of 2007 (USFWS 2007).

In the planning area, Spalding's catchfly has been documented on the Umatilla and Wallowa-Whitman National Forests.

Umatilla National Forest Baseline

As of 2016, the Forest Service had mapped 111 acres of occupied habitat on the Umatilla National Forest. These mapped areas are all within the Canyon Grassland physiographic province in the Blue Mountains Foothill key 161 conservation area. Within this key conservation area (KCA), the Sourdough area where Spalding's catchfly occurs includes portions of four open ridges on the south side of Lick Creek (Cabin, Sheep, Sourdough, and Bracken ridges) and their intervening draws that support plant communities typical of the Canyon Grasslands (USFWS 2005, Johnson and Simon 1987, Tisdale 1986).

The condition of grasslands in the vicinity inhabited by Spalding's catchfly is described as variable: the northerly slopes and ridge tops are reported in good to excellent condition (USFS 2006), whereas the southerly slopes have been invaded by exotic plants, including state-listed noxious weeds, such as yellow-star thistle (*Centaurea solstitialis*). Within the Blue Mountains Foothills KCA, Spalding's catchfly occurs within two range allotments, MacKee and Peola. The MacKee allotment is closed so there is no domestic livestock grazing there. Most of the plants occur in the Upper and Lower Sourdough pastures of the Peola Allotment, which has been in voluntary non-use for several years, due to the presence of the Spalding's catchfly, and also due to weed concerns (Paula Brooks pers. comm. June 2017 for USFS 2018). There are two small populations in the Lick pasture, which is currently grazed. The cows go through there twice each season, as they are passing between other pastures. For example, in 2017 livestock were scheduled to be present June 18-28 (150 pairs) and August 23 through October 3 (333 pairs). There are also some Spaulding's catchfly in the Cottonwood pasture, which is normally grazed early in the season; in 2017 grazing by 150 cow/calf pairs was scheduled to occur for 15 days from June 3rd to June 17th. Yellow-star thistle, an aggressive invasive plant, does threaten the Spalding's catchfly in this area. Off road vehicle use is impacting Spalding's catchfly habitat in the Blue Mountains Foothills KCA contributing to nonnative plant spread and degradation of habitat. In 2010, a fence was discovered severed with fresh vehicle tracks within 50 feet of Spalding's catchfly.

Abundance and vigor trends for the Umatilla National Forest populations of Spalding's catchfly are unknown. Long-term population monitoring as specified in recovery criterion 3 was initiated in 2015 but to date no conclusions can be drawn.

Wallowa-Whitman National Forest Baseline

Within the Wallowa-Whitman National Forest, Spalding's catchfly populations appear stable or increasing where multiple years (15 to 20 years) of inventory has been done (USFS 2008). Populations range from 20 to more than 500 plants. In total, occupied habitat on National Forest lands on the Wallowa-Whitman National Forest (outside of the Hells Canyon National Recreation Area) amounts to approximately 100 acres, all within key conservation areas.

The populations on Wallowa-Whitman National Forest are within grazing allotments, and plant status within each allotment varies. The Mud Duck allotment

is closed. The FEIS and Record of Decision (ROD) for the Joseph Creek Rangeland Analysis and associated biological assessment and biological opinion (USFWS 2005) for Spalding's catchfly in the Swamp Creek and Crow Creek Allotments were completed in 2005. Direction from these allotment RODs continues grazing within the Crow Creek and Swamp Creek allotments where 162 Spalding's catchfly occurs; however, an adaptive approach to grazing management was implemented with specific protections for sensitive areas. Management direction is designed to improve range condition through monitoring, reduction of trailing through the pastures, and rotation so that spring grazing is rested. Conservation measures in these allotment RODs for Spalding's catchfly include spring drought protections and rest every third year, restrictions on herding through the Doe Gulch pasture (Crow Creek allotment), and restricting use to spring and fall, mostly outside the active growing season. Current management direction allows the Dorrance pasture (Swamp Creek allotment) to be used during June, but not in every year. The revised plan continues these measures.

Effectiveness monitoring has been conducted on a large portion of the Swamp Creek and Crow Creek allotments for the last two decades and reveals that populations are stable within detection limits. No population declines or increases are obvious (Jerold Hustafa pers. comm. June 2017 for USFWS 2018). The goal of effectiveness monitoring is to ensure that the conservation measures are working as designed.

Annual exotic bromes (*Bromus tectorum, B. japonicus, B. secalinus*) are present at most Spalding's catchfly sites. The Spalding's catchfly population within the Clear Lake Ridge key conservation area is infested with sulfur cinquefoil (*Potentilla recta*). North Africa grass (*Ventenata dubia*) is present at the Crow Creek key conservation area. Two populations of Spalding's catchfly within the Swamp Creek allotment are within one-quarter mile of a diffuse knapweed site (about 10 acres) along Crow Creek. In one Crow Creek population, both Kentucky bluegrass (*Poa pratensis*) and North Africa grass have been documented. Other annual grasses, yellow starthistle, and sulfur cinquefoil occur within one-quarter to one-half mile of populations on the Wallowa plateau (USFS 2005).

Threats

According to the 2007 Recovery Plan (USFWS 2007), Spalding's catchfly continues to be impacted by habitat loss due to human development, habitat degradation associated with adverse grazing and trampling by domestic livestock and wildlife, and invasions of aggressive nonnative plants. In addition, a loss of genetic fitness (the loss of genetic variability and effects of inbreeding) is a problem for many small, fragmented populations where genetic exchange is limited. Other impacts include changes in fire frequency and seasonality, off-road vehicle use, and herbicide spraying and drift.

<u>Direct and Indirect Effects</u>

The proposed action could affect Spalding's catchfly plants that occupy open pine habitat—approx. 7% of plants (USFWS 2007); however, the desired condition

would still be to retain or enhance open, park-like late and old structure (LOS) forest characteristics within that 7%. As described below, both adverse and beneficial effects are possible but highly unlikely; they are thus insignificant and discountable.

Adverse effects to Spalding's catchfly that could occur as a result of the proposed action would be related to timber harvesting activities. Specifically, adverse effects could occur due to ground disturbance in occupied habitat. While effects specifically from timber harvest are unknown, ground disturbance generally impacts Spalding's catchfly by damaging the caudex (thickened stem base) of the plant. It has the biggest effect during the flowering and seeding period (late July to September) and during seedling and shoot emergence in early spring. Ground disturbance can also have indirect impacts by facilitating the invasion of nonnative plants that compete with catchfly for pollinators or underground resources.

These adverse effects, however, are unlikely to occur. The proposed action affects timber harvest by increasing management flexibility in treating forests to promote late and old structure. While this allows for the opportunity to create more open forest conditions, it is **not** predicted to increase the area of timber harvest, as harvest area is limited by management capacity (see Assumptions p. 6). As a result, the potential adverse effects described above would be very unlikely to occur more frequently than they currently do. Furthermore, project-level surveys and analyses prior to any timber harvest would still be required, with the objective of avoiding or mitigating adverse impacts to the species. The existing standards and guidelines in Forest Plans and Amendments that require these project-level NEPA analyses and ESA consultation would not change as a result of the proposed action.

Beneficial effects for Spalding's catchfly under the proposed action are theoretically possible with the removal of encroaching conifers on grasslands, or the determination and attainment of stocking levels required in its pine habitat (Jerold Hustafa pers. comm. 30 June 2020). However, restoration activity of this type for the purpose of catchfly recovery is unlikely for several reasons. First, conifer encroachment is a minor threat to the species; human development, grazing, and invasive species are more impactful (USFWS 2007). Second, the disturbance associated with conifer removal would likely pose more of a threat than the conifers themselves, and most encroaching conifers are of diameters smaller than 21 inches (and thus outside the scope of this analysis). Finally, the manipulation of forest structure is not recommended as a restoration strategy for this species (USFWS 2007). As a result, beneficial effects to catchfly as a result of the proposed action are highly unlikely.

All the effects described above are even more unlikely because the open-canopy, park-like forests where Spalding's catchfly is occasionally found would be treated in very rare instances, if at all. Under the proposed action, the Eastside Screens would still prohibit timber sales in LOS stages that are below their Historic Range of Variation (HRV) – and across the much of the planning area, open-canopy, park-like

forests (a.k.a. late-open or old forest single stratum) are indeed below HRV (note that HRV analyses are conducted within individual biophysical environments within watersheds). Only if this late-open stage (within a biophysical environment within a watershed) was within or above HRV, could harvest occur in it. Even so, the Screens would continue to require maintaining open, park-like stand conditions where they occurred historically, and no LOS stage could fall below HRV. Furthermore, as described above, project-level surveys and analyses to protect catchfly would still be required prior to any timber harvest.

Climate Change

Primary strategies to address climate change threats focus on increasing resilience to ecological disturbance (wildfire, insects, and nonnative species) (Halofsky and Peterson 2016). Rare and disjunct species like Spalding's catchfly require adaptation strategies and tactics focused on encouraging regeneration, preventing damage from disturbance, and establishing refugia. The objectives of the Eastside Screens to promote resilient forests (which would be unchanged by the proposed action), along with the continued implementation of the Recovery Plan, would promote resilience and conservation of known populations of Spalding's catchfly, even in the face of climate change.

Cumulative Effects

Cumulative effects are those effects of future State, Tribal, and private actions that are reasonably certain to occur within the Action Area. Effects resulting from future Federal actions are not included in cumulative effects and will be assessed during future Section 7 consultations.

Effects of past actions are reflected in the existing condition and are not described or listed in extensive detail because they inherently contributed to the present state of the landscape. Past actions that are reflected in the existing condition include:

- Fire exclusion
- Large wildfires
- Pre-1994 (Eastside Screens) removal of large trees
- Restoration management
- Timber production and harvest
- Recreation
- Roads management
- Grazing
- Invasive species management

In the foreseeable future, recreation, roads management, grazing, invasive species management, fuels management, and other forest management activities that influence Spalding's catchfly habitat and viability will continue. The implementation and monitoring of catchfly's Recovery Plan, particularly in its grassland habitat, will also continue.

The Action Area includes lands within the proclaimed boundaries of the Umatilla and Wallowa-Whitman National Forests. Tribal lands exist adjacent to the National Forests on the Confederated Tribes of the Umatilla Indian Reservation and the Nez Perce Precious Lands. Most catchfly populations are near the forest boundaries of both the Umatilla and Wallowa-Whitman National Forests. Actions on adjacent nonfederal lands have a possibility to affect catchfly populations on National Forest land, but likely only for those populations nearest the forest boundaries. It is not possible to state what actions are likely to occur on adjacent private or tribal lands, but it is assumed these lands will be managed as they are today (e.g., farming, ranching, timber management, land and water restoration, railroad maintenance and use, etc).

The nonfederal action most likely to affect catchfly plants on adjacent National Forest is invasive plant control on adjacent private and tribal lands, as well as county and state roads leading to and coursing through the national forests. Active weed management programs on adjacent private and tribal lands, as well as state and local government roadside weed control, will likely benefit catchfly habitat on federal lands because fewer weed propagules will be available for transport, whether by people, vehicles, wind, or wildlife, and result in establishment in catchfly habitat on the national forests. The effects of other management activities on adjacent private, state and tribal lands is expected to be confined to those lands and not overlap in time and space with catchfly populations on NFS lands.

<u>Effects Determination for Spalding's catchfly</u>
The proposed eastern Oregon and southeastern Washington Forest Plans amendment May Affect, but would Not Likely Adversely Affect Spalding's catchfly. This determination is based on the direct, indirect, and cumulative effects described above. In summary:

- Catchfly occurs primarily in grasslands and only occasionally (~7%) in ponderosa pine forest. Any effects are thus limited a small portion of the populations.
- Both adverse and beneficial effects are unlikely: Forest Plan and Amendments standards and guidelines would continue to require that projects avoid or mitigate adverse effects to the species, such as ground disturbance from thinning. Beneficial effects from restoration projects for catchfly would likely target its grassland habitat rather than its pine habitat.
- Any timber harvest in the late-open pine forests where catchfly occasionally occurs is unlikely. This is because the Eastside Screens would continue to prohibit harvest in LOS forests that are below HRV (Scenario A), which includes many late-open pine forests. Only if the forest were within or above HRV, or outside of LOS, would there be the possibility of harvest activity; even then, the Eastside Screens would still require maintaining the park-like stand conditions that occurred historically.

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