SOUTH GIFFORD PINCHOT COLLABORATIVE

COMBINED ZONES OF AGREEMENT

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Acknowledgments

This document was written with contribution from and editing by the ZOA Subcommittee, Executive Director, and previous Coordinator, with ongoing input from the full Collaborative. The SGPC appreciates the ongoing support from the Washington Department of Natural Resources and United States Forest Service.

ZOA Subcommittee Members (as of 3/21/24)

- Jon Paul Anderson, WKO/High Cascade
- Jeremy Grose, Green Diamond Resource Co
- Ashley Short, Cascade Forest Conservancy
- Emily Stevenson, Skamania County Noxious Weed Control Program
- Sue Wright, Concerned Citizen
- Joshua Petit, SGPC Executive Director

About the South Gifford Pinchot Collaborative

In the fall of 2008, Skamania County Commissioners formed the Mt. Adams District Collaborative and the Lewis River Collaborative in an effort to explore how collaboration with the U.S. Forest Service (USFS) and the Stewardship Sale Authority could improve forest health and provide economic benefits to local communities on the southern end of Gifford Pinchot National Forest (GPNF). Recognizing they were often working on similar issues with shared members, the two groups combined to form the South Gifford Pinchot Collaborative (SGPC) in December of 2011.

The SGPC's mission is to collectively improve development, facilitation, and implementation of projects that enhance economic vitality, forest ecosystems, outdoor recreation, and public safety on the south end of GPNF and surrounding communities. Collaborative members include conservation/environmental organizations, recreation groups, small-scale forest contractors, large timber companies, retired USFS employees, and individual community members (i.e., concerned citizens).

The SGPC works closely with the USFS' GPNF South Zone National Environmental Policy Act (NEPA) Planner and Interdisciplinary Team (IDT) during the planning stage of vegetation management projects. In this advisory role, the SGPC provides ongoing feedback during monthly meetings and often submits written comments during the scoping or other public comment periods within the NEPA process.

The SGPC is also involved with the development of Stewardship Timber Sales that generate retained receipts which are used forest-wide for restoration projects such as meadow and fish habitat improvement, road drainage improvement, and invasive species treatment. The SGPC coordinates the review process for these restoration project proposals and offers recommendations to the District Ranger. Over the past several years, the SGPC has broadened its programmatic scope to include sustainable recreation, project monitoring, and statewide forest health planning efforts that are not reflected in this document.

Document Purpose

The purpose of this Zones of Agreement (ZOA) document is to provide the USFS with a record of the SGPC's current areas of agreement on a number of forest management topics in the South Zone planning area of GPNF. Although not exhaustive, this document highlights the SGPC's rationale and recommendations where agreement has and has not yet been reached. The USFS may use this document as sideboards when considering project locations and treatments to help expedite time-sensitive work on the Forest. We are happy to provide additional input as project-specific concerns arise that are not covered herein and recognize that the USFS retains full decision-making authority and discretion to follow or deviate from these recommendations.

In support of the overarching goal to increase the pace and scale of restoration on the South Zone of GPNF, this ZOA effort is guided by the following approach:

Comprehensive Decision-Making

The SGPC is committed to using a comprehensive decision-making process that considers the best available science, as well as ecological, economic, and social values.

Living Document

This ZOA is intended to be a "living document" that is reviewed periodically and updated as the SGPC reaches new areas of agreement.

Historical Record

This document serves as a historical record of the SGPC's work on vegetation projects within the GPNF South Zone planning area. New members, partner organizations, and the USFS can utilize this document to better understand the work and history of the SGPC. This ZOA does not reflect the full range of the SGPC's projects and involvement on the Forest.

ZOA: FOREST RESTORATION

Overview

The South Gifford Pinchot Collaborative (SGPC) encourages the U.S. Forest Service (USFS) to apply a broad landscape and temporal perspective to proposed restoration activities across the South Zone Planning Area of the Gifford Pinchot National Forest. We recognize that much of this area has in recent times been fragmented and simplified for human resource extraction needs, leaving a disturbed but recovering forest ecosystem facing significant challenges in biodiversity, structure, functionality, and heterogeneity. We also acknowledge that large-scale disturbances, such as fire, have long been part of our forests and have diversified forest structure throughout the landscape by creating areas of early seral habitat.

To facilitate recovery of a mature and diverse forest, science-based interventions can be beneficial in some circumstances and provide ecological, economic, and social benefits. Though these interventions cannot perfectly replicate natural processes, we recommend that critical structures, dynamics, and components of ecological recovery be protected and/or encouraged as appropriate. If critical components are missing or delayed, they may also be simulated. For example, instead of waiting for large-scale natural disturbances such as fire to diversify natural structure, active management to recover early forest stages may be appropriate. Such management may incorporate various treatments including mechanical (e.g., timber harvest) and natural (e.g., fire, wind, insects, and disease) methods. All forest successional stages should be managed to support current and evolving structural diversity.

In addition, any landscape level recovery and restoration effort must include the riparian component and address the same issues of biodiversity, structure, functionality, and heterogeneity. Specifically, we recommend that the USFS consider these activities where appropriate: beaver reintroduction/beaver dam analogues, meadow restoration, floodplain reconnection, and active riparian forest management.

We also encourage the USFS to apply an adaptive management approach that continuously monitors, evaluates, and adjusts efforts to accelerate natural recovery.

Based upon the best scientific understanding of the current ecosystem and how it is likely to naturally recover, the USFS should develop and implement measurable management goals and actions that are informed by the historic range of variability for forest types in the region; what similar, less impacted systems can reveal; and the anticipated effects from climate change.

In summary, the Collaborative supports a comprehensive, landscape-scale approach to restoration across the South Zone Planning Area. The sections that follow describe our Zones of Agreement for early seral habitat creation and the Upper Wind Vegetation Project, in particular. While we acknowledge that the devil is often in the detail, we invite the USFS to approach Upper Wind vegetation planning as an opportunity, call it a pilot perhaps, to accelerate the recovery of a complex forest ecosystem. We are committed to working with our Forest Service partners to meet this end, and look forward to ferreting the devil out of the details with you.

Beaver dam analogues (BDAs) are channel-spanning structures that mimic or reinforce natural beaver dams. Source: Pollock, M.M.,

G.M. Lewallen, K. Woodruff, C.E. Jordan and J.M. Castro (Editors) 2018. *The Beaver Restoration Guidebook: Working with Beaver to*

Restore Streams, Wetlands, and Floodplains. Version 2.01. United States Fish and Wildlife Service, Portland, Oregon. 189 pp. Online

at: https://www.fws.gov/oregonfwo/Documents/2018BRGv.2.01.pdf.

ZOA: PLANTATION THINNING

SGPC supports thinning in plantations (35-80 years old) for these reasons:

- Improving stand resiliency (e.g., disease, insect, and fire) and species heterogeneity.
- Increasing viable plant and wildlife habitat.
- Bringing conifer plantations more closely into alignment with natural stand composition, functionality, and dynamics.
- Increasing growth and yield in plantations on Matrix designated land.
- Increasing growth and resiliency in plantations on Late Successional Reserve (LSR) designated land.
- Providing economic opportunity for local communities through ecologically and economically viable timber sales.

SGPC supports the following management actions in plantations:

- Thinning in Matrix Plantations without Critical Habitat Overlay[3]

Where the management objective is multiple use with an emphasis on timber production, implement silvicultural prescriptions that produce sustainable forest recovery and facilitate growth and yield over the long term.

We support the increased use of Designation by Prescription (DxP)[4] because this method provides a varied prescription that allows the healthiest, tallest, and most vigorous trees to be left across the cutting unit. DxP specifies what the end result should look like on the ground and must include specific information that allows all parties to arrive at a similar result. Designation by Description (DxD)[5] does not allow for

variations in tree spacing and selection since the spacing is fixed and leaves the largest tree regardless of species or health.

[3] "Critical habitat is a term defined and used in the Endangered Species Act. It is specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but will be needed for its recovery." Source: US Fish and Wildlife Service, "Listing and Critical Habitat," https://www.fws.gov/endangered/what-we-do/critical-habitats-faq.html.

[4] Designation by Prescription (DxP): "A method of designating trees for removal by describing the desired end result of the treatment; for example, retain 60 percent basal area. Designation by prescription may be used for noncommercial material or for commercial material when, for payment purposes, the quantity of products removed is determined post harvest."

[5] Designation by Description (DxD): "A method of designating trees for removal, without marking individual trees, by describing the trees to be removed based on characteristics that can be verified after removal; for example, lodgepole pine less than a specified stump diameter. Designation by description may be used for commercial or noncommercial material." Source for DxP and DxD definitions: Forest Service Handbook 2409.19, Renewable Resources, Chapter 60, Stewardship Contracting: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5392208.pdf.

We encourage the retention of legacy trees and down wood.

- Variable Density Thinning in LSR Plantations and Matrix Plantations with Critical Habitat Overlay

We encourage variable density thinning to put plantation stands on a trajectory to more closely resemble the natural stands of a healthy and resilient forest.

We support the retention of legacy trees and downed wood, as well as the use of skips, quarter- to half-acre gaps, and clumping when possible.

- Wildlife Forage Seeding

We encourage that closed roads, and in some cases created openings or exposed soil areas, be managed to support biodiversity and reduce edge effects on existing and potential wildlife habitat. For example, the Forest Service should consider wildlife forage seeding, and planting when possible, in lieu of

heavy slash covering to support ungulate mobility and benefits to other early seral wildlife species.

- Operating Season

The Collaborative recommends that the Forest Service use a condition-based threshold, rather than hard dates, for plantation thinning projects. In particular, the Forest Service should consider fall and winter logging, when conditions are appropriate, to provide environmental benefits (e.g., reduced soil compaction and lessened vegetation impacts when ground is frozen or snow-covered) and economic benefits (e.g., longer operating season could expand employment opportunities for local operators and eliminate the time and extra work involved with obtaining waivers that are currently required to work before or after the July 15 through September 30 time period).

- Invasive Weeds

We encourage the incorporation of invasive species mitigation measures in timber sale administration plans in order to reduce the spread of invasive plants during and following timber harvest activities.

- Firewood and Biomass

The Forest Service should maximize firewood and biomass utilization practices that are of interest and benefit to the public. We recommend leaving firewood on landings or adjacent to open roads.

ZOA: Riparian Reserve Management in Plantations

Synthesis of Agreement

Overview

The Collaborative agrees that riparian and aquatic components of the forest landscape are essential for maintaining and restoring biodiversity and natural ecosystem functions. Additionally, we recognize that connectivity between habitats is a critical component for maintaining a diverse, healthy, and functional forest ecosystem.

Past management activities (e.g., road construction, clearcut logging, conifer replanting, and fire suppression) have altered natural germination, regeneration, and disturbance processes in some areas of the forest. Unnaturally dense stands with reduced structural and species diversity are often the result. We acknowledge that it may be necessary and beneficial to treat riparian areas within plantation stands in the short term in order to restore forest ecosystem health over the long term. Such treatments may involve terrestrial, riparian, and aquatic habitats and should be guided by the need to maintain and restore forest permeability, heterogeneity, complexity, and functionality.

This section focuses on activities within Riparian Reserves, a land management allocation identified in the Aquatic Conservation Strategy (ACS) from the Northwest Forest Plan (NWFP). Riparian Reserves are portions of watersheds where riparian-dependent resources receive primary emphasis. The ACS outlines nine objectives that must be considered when evaluating projects and defines reserve widths for five categories of streams or water bodies. Commercial timber harvest within Riparian Reserves can only be a byproduct of management actions required to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain ACS objectives (see Appendix B for details).

While the ACS determines the footprint of Riparian Reserves and management objectives, it does not specify what actions may occur within the reserve or the no-cut buffer distances for particular aquatic features. Given the scale of current thinning projects, the Mt. Adams Ranger District determined that is not viable to develop case-by-case thinning prescriptions for each Riparian Reserve.

Therefore, the District created a Riparian Management Strategy for Thinning Projects to document their logic track and science-based approach to prescribing silvicultural treatments in Riparian Reserves. The Strategy describes an inner no-cut (no commercial harvest) buffer for each Riparian Reserve stream or waterbody category to be used where field data is nonspecific or does not indicate specific areas of concern. The collaborative recognizes that the Forest Service has discretion on how no-cut buffers are applied to a particular planning area.

We intend that the recommendations described below be considered along with the Strategy when developing prescriptions for Riparian Reserves.

SGPC Recommendations for Riparian Reserve Management in Plantations

In addition to supporting NWFP ACS objectives, activities in Riparian Reserves should seek to maintain and restore biodiversity and ecosystem functions through landscape-level connections of riparian and upland areas.

- Vary inner no-cut Riparian Reserve buffer widths to capture unique landscape features such as snags, downed wood, hardwood pockets, stream-adjacent seeps, and unstable slopes.

- Utilize a variety of management options (e.g., skips, gaps, and variable density thinning) to support landscape connectivity. For example, consider the use of leave patches adjacent to inner no-cut Riparian Reserve buffers.

- Consider creating fuel breaks in fire-prone stands to reduce overstocking near stream edges and to develop larger and more resilient trees.

- Manage for threatened, endangered, proposed, and listed (TEPL) species with specific habitat management activities where appropriate. For example, provide for amphibian connectivity across thinned stands and ridgelines or protect microclimate for shade dependent plant species such as Corydalis.

- Provide both the science-based rationale and forest management objective for increasing or decreasing buffers from the minimums set in the default table. When custom buffers are used, provide the percent of proposed treatment area affected.

- Consider management options to create heterogeneity within the inner no-cut Riparian Reserve buffer (e.g. drop and leave trees).

- To promote heterogeneity and reduce edge effects in heavily thinned units, use a feathered thinning approach (e.g. transition from thinned unit to inner no-cut Riparian Reserve with standard to light thinning of the outer Riparian Reserve).

ZOA: Road Access to Plantations

Synthesis of Agreement

To meet the goals for plantation thinning projects described earlier, the collaborative recommends the following prioritized road access options to maintain forest and aquatic ecosystem health and provide for economically viable timber sales.

Road Access Prioritization

We recognize the challenges that the Forest Service faces in maintaining a safe, environmentally sound, affordable, and efficient road system that is responsive to public needs and considers future

management activities. The collaborative also understands that the road maintenance backlog and declining appropriated funding require the Forest Service to carefully consider management actions that involve system roads. When considering road access to plantations, we acknowledge these challenges and support the overall goal of not increasing net system road mileage. However, we recognize that there may be circumstances when, in order to reduce ecological impacts, modifying an existing road is appropriate and will result in a net increase in system road mileage. For example, to address sedimentation and road maintenance concerns caused by a short, steep road segment with a stream crossing, it may be appropriate to replace this section with a longer, more gradual road segment that has less overall ecological impact.

1. ***Open System Roads (Level 2)***

   The Forest Service should prioritize use of open system roads above the following access options for plantation thinning projects.

2. ***Closed System Roads (Level 1)***

   If open system roads are unavailable on a given project, the Forest Service should maximize use of closed system roads before building temporary roads unless a temporary road provides better ecosystem protection.

3. ***Temporary Roads***

   When temporary roads offer the least ecologically impactful mode of access to a plantation, the Forest Service should both maximize the plantation area accessed and minimize stream crossings to protect forest and aquatic ecosystem health.

3.A: Locate temporary roads on previously disturbed areas (e.g. old temporary roads and skid trails).

These disturbed areas should be prioritized for use as temporary roads over creation of new temporary roads whenever the aquatic

risks associated with their use are less than those from new construction.

3.B: Using a Decommissioned Road Bed as a Temporary Road

The SGPC recognizes that in some situations using a decommissioned road bed as a temporary road may be the most ecologically appropriate way to access a plantation. In these cases, it is understood that the roadbed will be returned to its prior decommissioned status upon completion of the thinning project.

The collaborative would like to be informed on a case-by-case basis of any proposed temporary roads on previously decommissioned road beds in a given planning area and consulted for feedback and concerns.

The collaborative recommends that the Forest Service consider these criteria when considering using a decommissioned road as a temporary road for a project:

- Number of aquatic crossings
- Economic cost of reopening
- Initial reason for decommissioning (recognize that most roads are decommissioned for aquatic restoration reasons)
- Restoration status (i.e., progress made and duration of recovery)
- Biodiversity impacts at varying scales (i.e., stand to watershed)
- Socio-economic impacts to local communities/Counties (e.g., potential impacts from increased, unauthorized use of the road such as search and rescue costs, waste concerns, fire risk, etc.)
- Existing and Potential Recreation Use
    - Current volume and types of recreation

- Potential for road to create, or increase, recreation use and of what types

- Landscape Scale Planning Context
  - Future needs over the long term and at landscape scale
  - Benefit of thinning project within context of long-term, landscape-scale management objectives (i.e., ecological, economic, acres treated, etc.)
  - Project sequencing/timing (i.e., sequence projects to minimize need for using decommissioned roads as temp roads)

3.C: Build a New Temporary Road

As a last option, build a new temporary road that maximizes the plantation area accessed, while minimizing ecological disturbance and aquatic impacts.

User-Created Roads and Trails

We recommend that the Forest Service identify user-created roads and trails in plantations and prioritize for closure those that are causing demonstrable harm to forest resources. User-created roads and trails may include recently developed unauthorized routes as well as abandoned trails, decommissioned roads, or temporary roads that the Forest Service previously blocked or closed to public access.

Improvements to System Roads Used on Sales

We suggest that the Forest Service complete these improvements to system roads utilized in project sales: roads should be rocked, improve culverts if needed, complete ditching and brushing, and improve road signage.

Forest Service Road Management Definitions

The Forest Service uses a complex set of nested road terminology to classify roads found on the Gifford Pinchot National Forest (GPNF).

System roads are inventoried, maintained, and managed by the Forest Service. Maintenance levels define the level of service provided by, and maintenance required for, a specific road, and range from the highest level or service (5) to the lowest level of service (1). The following System Road Maintenance Levels were identified from the National Forest Road System and Use report.[7] For visual representatives of the different road maintenance levels, see the FS Guidelines for Road Maintenance Levels.[8]

Maintenance Level 5:

Roads that provide a high degree of user comfort and convenience. Normally double lane, paved facilities, or aggregate surface with dust abatement. This is the highest standard of maintenance.

Maintenance Level 4:

Roads that provide a moderate degree of user comfort and convenience at moderate speeds. Most are double lane, and aggregate surfaced. Some may be single lane. Some may be dust abated.

Maintenance Level 3:

Roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Typically low speed, single lane with turnouts and native or aggregate surfacing.

Maintenance Level 2:

Roads open for use by high-clearance vehicles. Passenger car traffic is discouraged. Traffic is minor administrative, permitted or dispersed recreation. Non traffic generated maintenance is minimal.

Maintenance Level 1:

These roads are closed. Some intermittent use may be authorized. When closed, they must be physically closed with barricades, berms, gates, or other closure devices. Closures must exceed one year. When open, it may be maintained at any other level. When closed to vehicular traffic, they may be suitable and used for nonmotorized uses, with custodial maintenance.

Road Decommissioning

Activities that result in the stabilization and restoration of unneeded roads to a more natural state. (36 CFR 212.1).[9]

Temporary Road

A road necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road and that is not included in a forest transportation atlas. (36 CFR 212.1).[10]

ZOA: EARLY SERAL HABITAT CREATION

The Role of Early Seral Habitat

Early seral habitat (ESH) is a habitat type common after large-scale disturbances (e.g., fire, insects, regeneration harvests). This habitat is characterized by grasses, forbs, shrubs, and an open canopy; and is simpler and more disorganized in terms of composition than subsequent seral stages. The later seral stages include mid seral, late seral, and the potential natural community stages. Healthy and

resilient forested landscapes have a mix of seral stages represented. Not to be confused with successional (i.e., grass-forb, shrub-seedling, pole-sapling, young, mature, old growth) or structural stages/classes (i.e., stand initiation, stem exclusion, young forest multi- strata, understory reinitiation, old forest), seral stage relates to ecological change and complexity post-disturbance.

Along with many in the scientific community[1], the SGPC is concerned about the diminished quantity and quality of early seral habitat in moist westside forests in the Pacific Northwest.

The SGPC acknowledges the role that fire suppression and past timber harvest and post-harvest practices have played in creating the conditions present today. Early seral conditions are a natural structural component of western forests. Without natural fire regimes, much of the regenerating pre-canopy forest has passed through the open/early seral stage to become dense young or mid-seral forests lacking the structural complexity necessary for diverse plant and animal species. While the scientific understanding and appropriate response to these evolving conditions is still developing, we feel that the FS should begin acting now to recover this critical habitat type. Further delay or inaction on this front could exacerbate these already imbalanced and unhealthy conditions.

The Collaborative agrees that vegetation planning in the South Zone Planning Area of GPNF offers an opportunity to address the need for ESH as part of the landscape- scale restoration approach described above.

[1] For an overview of the science that informed this ZOA, see Appendix B: Early Seral Vegetation in Moist Forests of Western Washington and Oregon by Thomas A. Spies.

Methods Used for Reaching Agreement on ESH

In an attempt to find areas of agreement on the topic of ESH creation, we employed a multi-method approach. These included:

- Multiple ZOA Subcommittee meetings (1.5-hours)

- Multiple expert guest speakers
- Interpretive field trips
- An online survey

Over the past 1.5 years, the ZOA Subcommittee has worked hard to find areas of agreement related to ESH in general and specific to the Upper Wind project. This involved recurring (generally monthly) 1.5-hour meetings to discuss the topic as a group, often with FS staff present to answer questions. Prior to March of 2020, these meetings were held in-person in Stevenson, Washington, but have been held remotely via Zoom since. At these meetings, we discussed outstanding concerns, the science around ESH, and tried to find commonalities. The subcommittee's progress and ongoing initiatives, as well as the barriers they encountered, were subsequently shared with the full Collaborative at monthly SGPC meetings for broader input and discussion.

In addition to discussing ESH in ZOA Subcommittee and SGPC monthly meetings, the Collaborative hosted multiple guest speakers with areas of expertise specific to ESH. These guest speakers gave presentations to the full Collaborative on ESH and fielded questions.

ESH guest speakers (i.e., monthly meetings, field trips) included:

- Dr. Tom Spies (Oregon State University)
- Dr. Jerry Franklin (University of Washington)
- Dr. Mark Swanson (Washington State University)
- Dr. David L. Peterson (University of Washington)
- Dr. Matt Betts (Oregon State University)

In conjunction with the above methods, we also administered an online survey via Qualtrics to SGPC members to assess opinions and outstanding concerns related to ESH specific to the Upper Wind project. The questions and results of this survey can be found in Appendix E.

Synthesis of Areas of Agreement on ESH (as of 4/23/21)

- The SGPC supports ESH creation in plantations younger than 80 years old for these reasons:
    - ESH serves as critical habitat for many post-disturbance species
    - ESH is currently underrepresented on GPNF due to historic management practices and social/economic considerations
    - Creating more ESH would bring conifer plantations into closer alignment with natural landscape composition, functionality, and dynamics
    - Creating high-quality ESH would make for more resilient landscapes
- We recommend that any ESH creation project occur only in matrix stands younger than 80 years old and incorporate the following:
    - Monitoring Plan

      We encourage the development of a detailed long-term monitoring plan in conjunction with the Collaborative and other stakeholders. We also encourage the FS to develop clear metrics for assessing success, including pre-harvest metrics/information, control areas, and a strong study design focusing on a few key variables.
    - High-quality ESH

      We encourage the FS to create complex ESH that closely mimics natural ESH created by large-scale disturbances. Such habitat should retain the following attributes:

- ♣ Downed wood
- ♣ Legacy materials
- ♣ Snags
- ♣ Heterogeneity in patch size and structure

- Operating Season

When possible, the Collaborative recommends that the FS use a condition- based threshold, rather than hard dates, for ESH creation. In particular, the FS should consider fall and winter logging when conditions are appropriate to provide environmental benefits (e.g., reduced soil compaction and vegetation impacts while the ground is frozen or snow-covered) and economic benefits (e.g., longer operating season could expand employment opportunities for local operators).

- Invasive Plants

We encourage the incorporation of invasive species mitigation measures where appropriate to reduce the recruitment and spread of invasive plants during and following ESH-related harvest activities.

- Firewood and Biomass

We encourage the FS to maximize firewood and biomass utilization practices that are of interest and benefit to the public. We recommend leaving firewood on landings or adjacent to open roads. However, the importance of creating high-quality ESH supersedes this point whereby we encourage the FS to prioritize leaving downed wood and legacy materials wherever ecologically appropriate.

- Post-logging Practices

We recommend post-logging practices that promote

complex early seral habitat and that the FS consider a variety of management options (e.g., prescribed fire, snag retention, no tree planting, vary stocking level post-harvest, seeding with natives, etc.). We also suggest changing contracts to require large woody debris to be left on site where appropriate.

- Multi-scale Planning Approach

Work toward building landscape-level goals for different seral classes while experimenting with different treatment approaches at the stand scale. When thinking about prescriptions, we suggest considering stand features within a broader landscape context (e.g., do we need snags in a 5-acre patch of LSR in an area already full of natural snags?).

- Patch Size/Scale

Consider a contiguous patch that replicates a natural disturbance, is ecologically functional, and provides characteristics of complex ESH.

- Variability of Treatments

Distribute risk and enhance learning by comparing/monitoring different treatments and outcomes.

- Layout

We suggest the FS take a larger/landscape view when considering where to place ESH openings. We support creating meandering openings and edges. We also suggest not placing gaps/openings 30 feet from open roads and recommend sizable buffers from old growth, northern spotted owl habitat, and riparian management zones. To enhance meadows, we suggest creating ESH around existing openings. In mature shelterwood areas, the FS might consider cutting young trees in these stands to enhance huckleberry growth.

Synthesis of Areas Currently Lacking Agreement on ESH (as of 4/23/21)

- Older Stands

The Collaborative was unable to find agreement on the treatment of stands older than 80 years due to ecological concerns among some group members. How might the creation of ESH in older versus younger stands yield more/less complex and/or high/low-quality ESH?

- Location

Should new/additional ESH be created in areas where natural (e.g., fire- affected areas) or anthropogenic (e.g., regeneration harvests) ESH already exists, or solely in areas where this habitat type does not currently exist?

- Monitoring and Metrics

What would 'success' look like? How will this be measured? What are the specific metrics/indicators to be monitored (e.g., use of ESH by target wildlife/indicator species) and what are the details of the monitoring plan (e.g., duration, funding, re-treatment)?

- Temporal Concerns

How will ESH be managed over time (i.e., allow succession, maintain as ESH)? Will there be an early seral "stronghold" area that would be managed for continuous ESH? Or would it be more advantageous to have certain areas transition out of early seral in order to meet harvest objectives?

- Natural Versus Created ESH

How is the FS thinking about natural early seral habitat creation? With increasing frequency of high-severity fires (i.e., hotter, larger) in west-side areas as seen in Summer 2020, is there a need to manually create ESH? If forests may be more prone to naturally-created ESH (i.e., through climate change, drought, disease), how are we taking these changing landscape conditions into consideration in project areas?

- Acreage/Scale

What is the appropriate acreage/scale? Why is 500-600 acres optimal? What is the science and driving factors for this? Should the FS focus on expanding existing areas of ESH, or creating ESH in new areas, to achieve the chosen acreage?

ZOA: POST-FIRE SALVAGE LOGGING

BACKGROUND INFORMATION

Forest Disturbances

Ecological disturbances are temporary environmental changes that result in more prominent transformations within ecosystems. Forest disturbances can include wildfires, ice and wind events, insect outbreaks, diseases, and drought, among others. Additionally, anthropogenic climate change can catalyze or exacerbate these forest disturbance agents.

Given the frequency and potential scale of modern-day “megafires,” the SGPC focused our efforts on finding agreement around post-fire salvage. Other common forest disturbances are briefly described below, which may be addressed when this document is revisited/updated.

Wildfires

Fires can impact forests in many ways. Although fire is a natural component of forested ecosystems with positive effects on landscapes, large, modern “megafires” can be uncharacteristically destructive due to factors such as historic fire suppression, drought, high winds, and encroachment into the wildland/urban interface (WUI).

Following high severity fires (HSV), forest ecosystems are more susceptible to damage caused by select management practices. Soil conditions, biodiversity, wildlife, water quality, and other forest ecosystem services are vulnerable to subsequent disturbances

caused by management practices. Therefore, extra caution must be taken when conducting post-fire operations in HSF-affected areas.

Wind events

High winds can damage trees and create downed wood in forested landscapes. In extreme cases, this abundant downed woody debris can serve as fuel for future wildfires. Additionally, wind events can both exacerbate existing forest disturbances (e.g., active wildfires), and allow new wildfires to ignite more readily. High wind events can also stress adjacent areas by exposing trees to the effects of high winds when they were previously sheltered.

Ice events

Ice is another abiotic stressor that can kill trees. Ice events can structurally damage trees beyond recovery when their branches face rapidly increasing loads.

Drought

Extended periods of drought can result in root damage and tree death. Additional impacts include wood rot, stunted growth, and branch dieback.

Insects

Insect outbreaks can lead to high mortality rates in many tree species. Examples include the mountain pine beetle (Dendroctonus ponderosae), emerald ash borer (Agrilus planipennis), hemlock wooly adelgid (Adelges tsugae), etc. Insects can bore into a tree's bark to "mine" phloem and hatch larvae, which prevents nutrient flow and eventually leads to death.

Diseases

Similar to insect outbreaks, forest pathogens can lead to high tree mortality. Examples of pathogens impacting trees in the western US include sudden oak death (Phytophthora ramorum), Swiss needle cast

(Phaeocryptopus gaeumannii), red band needle blight (Dothistroma needle blight), Western gall rust (Endocronartium harknessii), etc. Many tree diseases are fungal in nature and can damage a trees' leaves, stems, or roots and often impair water and nutrient uptake.

Other disturbances

Additional disturbances impacting WA forests include flooding, volcanic eruptions, landslides, avalanches, and other natural stressors.

Climate change

Anthropogenic climate change can impact wide-ranging weather patterns and exacerbate the aforementioned forest disturbances. For

example, climate change can lead to both drought and extreme wind events–a volatile combination that can fuel megafires. Insect outbreaks have also been associated with climate change where less-extreme and/or shorter winters do not kill as many insect larvae, leading to larger subsequent hatches.

Post-Disturbance Vegetation Management

To address forest disturbances, managers employ a variety of vegetation strategies after a given forest disturbance. Depending on the disturbance type, scale, severity, and other factors, strategies can include natural regeneration, artificial replanting, herbicide application, and salvage logging, among others (see descriptions below). The SGPC recognizes that a multifaceted approach is necessary for managing forests after disturbances. However, given the breadth of forest disturbances and their potential associated management prescriptions, the ZOA Subcommittee focused on post-fire salvage logging. Although a contentious topic, this work will allow the USFS to make more streamlined decisions in the wake of future fires, benefiting local communities and economies (i.e., mills, revenue to counties and schools).

Natural regeneration

Allowing natural forest succession to run its course is the most "hands-off" management approach following a disturbance. In some circumstances or locations on the landscape (e.g., sensitive wildlife habitat, riparian areas), natural regeneration can be a useful strategy. This may involve leaving downed woody debris to serve as habitat, supply additional soil nutrients, and provide a mosaic of structure and function.

Replanting

Planting trees in disturbed areas is a common management practice. This involves removing any existing dead trees and downed woody debris remaining after a low or medium severity fire before replanting an area when soil conditions allow. Managers can elect to replant the same species or a different species (i.e., assisted migration) that may be deemed better-suited to changing climate conditions.

Herbicide application

The application of herbicides is another practice often used in conjunction with other management strategies. This is often aimed at preventing non-native species encroachment or to support shade intolerant species.

Salvage logging (focus area)

Salvage logging is defined as: "*The removal of dead trees or trees damaged or dying because of injurious agents other than competition, to recover economic value that would otherwise be lost*" (Helms, 1998). Harvesting hazardous, dangerous, and/or commercially-viable trees after disturbances–especially fires–was the primary focus of our work.

Research has shown both potential benefits and risks associated with post-fire salvage logging (see Appendix B). For example, some research suggests that salvaged stands might be less susceptible to reburns and that subsequent fires can burn at a lower severity due to

less downed woody debris. Other research, however, has cautioned against post-fire salvage due to concerns for potential impacts to sensitive soils (e.g., compaction, erosion) and watersheds (i.e., runoff).

Activities associated with salvage logging include hazard tree removal, danger tree removal, area salvage near roads, and landscape salvage beyond roadsides. These practices are briefly described below:

- *Hazard tree removal*: The removal of dead or dying trees that pose a risk in developed recreation areas.
- *Danger tree removal*: The removal of dead or dying trees that pose a risk along roadsides.
- *Area salvage*: The removal of timber from disturbed areas primarily for commercial gain (i.e., versus safety). For the purposes of our work, we differentiated between salvage logging at the landscape scale (and away from roads), versus smaller scale area salvage near existing road systems.

- *Over 250 acres*: "Landscape" salvage logging of more than 250 acres (i.e., landscape-scale) of commercially viable timber, which can take place far from existing roads. This type of salvage is contentious due to environmental concerns toward accessing and removing timber from disturbed/sensitive landscapes (e.g., soil compaction, erosion, runoff). Furthermore, landscape salvage projects are unlikely to be approved given the NEPA requirements and timelines for projects exceeding the current 250-acre categorical exclusion (CE), and associated concerns related to wood degradation and economic viability. Therefore, the SGPC will address potential landscape salvage projects on a case-by-case basis (see Appendix C).
- *Under 250 acres*: Smaller scale area salvage projects that are limited by the 250-acre CE and contained to areas nearby existing roads. When the requisite conditions are present (see following sections and Decision Tree in Appendix C), we view area salvage near roads as a novel category of salvage logging and as a compromise or "middle ground" where meaningful timber value can be captured after fires while also protecting

sensitive resources. Therefore, this was our main focus in seeking agreement around post-fire salvage logging.

METHODS USED TO REACH AGREEMENT

To find agreement on the topic of post-fire salvage logging, the SGPC employed the following approach:

- Monthly ZOA Subcommittee meetings lasting 60-90 minutes (USFS invited as needed)
- Hosted expert guest speakers with relevant expertise related to salvage logging at monthly full Collaborative meetings
- Interpretive field tour of Cougar Creek Fire salvage sites (6/22/23)

Over the past two years (Summer 2021-2023), the ZOA Subcommittee has worked to find agreement around post-fire salvage logging. This involved monthly meetings to discuss this topic in a small group setting. USFS staff were occasionally invited to answer questions related to management policies and sideboards. Meetings were held via Zoom or as hybrid meetings (i.e., Zoom and in-person). At these meetings, outstanding concerns were addressed and relevant science was discussed in an effort to find commonalities around specific aspects of post-fire salvage logging. The Subcommittee's progress and ongoing activities, and any barriers encountered, were periodically shared with the full Collaborative at monthly meetings for broader input.

The SGPC also hosted several guest speakers with relevant and diverse areas of expertise (listed below). These speakers communicated the drawbacks and merits of post-fire salvage logging and fielded related questions to help educate our membership. Collectively, these guest speakers helped inform the full group and ZOA Subcommittee's thinking, along with building a shared understanding of this topic.

- Dr. Morris Johnson (USFS) - 11/18/21
  Modeling post-fire salvage impacts on future fires
- Dr. Laura Burkle (Montana State University) - 12/16/21 Salvage impacts (i.e., positive, negative) on pollinators
- Andy Geisler (American Forest Resources Council) - 2/17/22
  Economic and other benefits associated with salvage logging
- Dr. Dick Hutto (University of Montana) - 3/17/22 Avian impacts from salvage logging
- Graham Frank & Dr. Meg Krawchuk (Oregon State) - 5/19/22
  Salvage logging and early seral habitat

In addition to monthly meetings and hosting guest speakers, the group conducted a post-fire salvage project field tour on the Forest on 6/22/23. This trip into the Cougar Creek fire (2015) area in the Upper White watershed allowed our members to see an example of post-fire salvage logging firsthand. At this field tour, our members asked questions to the USFS and discussed outstanding concerns to help inform the ZOA Subcommittee's efforts to finalize this document. See Appendix E for photos.

AREAS OF AGREEMENT

The ZOA Subcommittee has reached agreement around post-fire salvage logging under certain circumstances. While the SGPC fully supports both danger and hazard tree removal, the group also supports area salvage logging projects near existing roads under 250 acres when conditions are appropriate (e.g., fire severity, land use allocation, minimal resource impacts). This will capture a portion of timber value in burned areas and provide opportunities for habitat improvement, creating fuel breaks, and enhancing potential operational delineation containment/travel vectors when conditions allow. Our recommended salvage logging management sideboards and associated acceptable resource conditions are outlined below and in the Decision Tree (Appendix C).

Area salvage logging near existing roads *(main focus)*
In addition to roadside danger tree removal, the SGPC supports post-

fire area salvage logging projects near roads when the following conditions and considerations are met (see Appendix C):

Matrix: Beyond hazard and danger tree removal, we support post-fire area salvage logging near roads in matrix plantations. We recognize that these areas were designated for timber production and not intended for creating the mature forest characteristics found in late seral reserve (LSR) or old growth forests. See the SGPC's existing ZOA for Plantation Thinning for details. Any proposed post-fire salvage logging in late seral reserve (LSR) or old growth stands will be reviewed on a case-by-case basis to better understand the ecological rationale behind such management actions and address related concerns.

Categorical exclusion: We support post-fire area salvage logging projects near roads that are limited to 250 acres. This acreage mirrors the existing USFS CE for salvage logging 36 CFR 220.6(e)(13), which allows for "Salvage of dead and/or dying trees not to exceed 250 acres, requiring no more than 1⁄2 mile of temporary road construction. The proposed action may include incidental removal of live or dead trees for landings, skid trails, and road clearing." While we recognize the low probability of larger salvage projects due to NEPA timelines/requirements and social buy-in, we feel that 250 acres is also an acceptable limit for executing salvage projects in a timely fashion (i.e.,1-2 year turnaround before wood deterioration) while also ameliorating concerns related to landscape-sized projects. However, we also support the USFS examining more than 250 acres in preliminary assessments to identify and manage candidate stands that eventually total no more than 250 acres.

Younger and middle-aged stands: We support area salvage logging near roads in younger and middle-aged stands. That said, we recognize the challenge in designating hardline metrics (e.g., number of years old, diameter at breast height) for determining the acceptability of proposed harvests given the diversity of species present on the Forest and associated differences in growth rates. Where age/size considerations are ambiguous, therefore, the SGPC will make determinations on a case-by-case basis.

Dead and dying versus green trees: We understand that post-fire salvage operations can require harvesting some live trees for incidental purposes (e.g., landings, skid trails). However, we suggest that harvests otherwise be limited to dead or dying trees to provide a seed source for future growth.

Proximity to roads: We recognize that existing USFS policy sideboards dictate that "roadside" salvage is technically limited to a specific distance from the road. On the other hand, we support post-fire area salvage adjacent to roads when other conditions are appropriate. This will provide site-specific management flexibility when needed. The SGPC will address any proposed projects further afoot from existing roads on a case-by-case basis.

Sensitive species: We support post-fire salvage practices that protect any sensitive species in a planning area, especially after large-scale disturbances. As such, we support salvage in areas that are unsuitable to sensitive species, including mammals, birds, fish, amphibians, mollusks, and plants.

Higher elevations and steep slopes: We suggest avoiding areas with sensitive plant species and slope stability issues.

Riparian areas: We support roadside area salvage outside of riparian areas in accordance with existing USFS policies and management practices to avoid impacts to sensitive aquatic species (e.g., fish, invertebrates, plants) and protect watershed health more broadly. For details on standards and management restrictions in riparian areas, see the Aquatic Conservation Strategy outlined in The Northwest Forest Plan here: https://www.fs.usda.gov/r6/reo/acs/.

Fire severity: Fire severity is a measure of the effects of a fire on the environment and can relate to damage to vegetation and/or soil impacts. While we trust the USFS to make appropriate management decisions relative to salvage projects in areas with medium to high severity fire vegetation impacts, areas experiencing HSF soil impacts should generally be avoided to prevent erosion and associated watershed impacts (e.g., increased turbidity).

We also recognize that fires have variable impacts across landscapes with pockets of fire refugia, low severity fire, moderate severity fire, and HSF. As such, we recommend careful post-fire impact assessments to locate stands and implement salvage logging in locations where post-fire salvage logging impacts are anticipated to be minimal.

Minimize erosion: We support management practices that reduce soil impacts from post-fire salvage operations. For example, we support salvage operations during winter months (December through February) and over snow when project timing allows (see section below). In dry months when post-fire salvage over the snow is not possible, we support using slash mats to reduce soil impacts from heavy machinery. Collectively, these actions will help prevent erosion and associated watershed impacts (e.g., faster runoff rates).

Heavy equipment use: We recognize that some heavy equipment (e.g., feller bunchers) must leave the road during salvage logging operations. However, we support efforts to minimize the distance that heavy equipment leaves mainline roads after fires. These actions will help mitigate erosion, associated watershed impacts, and potential damage to habitat adjacent to mainline roads.

Economic viability and project timing: We strongly support roadside commercial salvage projects that are economically viable and that benefit local logging contractors and communities. For example, harvesting second-generation Douglas firs would be more profitable than younger trees of a different species. We also support projects whereby local mill infrastructure exists with the capacity to process salvaged trees after fires without stressing normal operations. Finally, projects should be completed within 1-2 years (varies by species), or as soon as possible, to maximize wood quality and profitability.

Danger tree removal

Although our focus has been post-fire area salvage near roads, we also fully support the commercial sale and removal of ‘danger trees’

that pose a risk along roadsides as determined by USFS designations and assessments (Appendix D).

Hazard tree removal

We also fully support the commercial sale and removal of 'hazard trees' that pose a risk within developed recreation sites, as determined by USFS assessments and existing policies (Appendix D). Although often conflated, 'hazard' trees are distinct from 'danger' trees. While individuals are generally only briefly exposed to danger trees (e.g., drivers on road passing by a dead tree), developed recreation site users might be exposed to 'hazard' trees for a much longer duration (e.g., campers at a campground camping/picnicking beneath a dead or dying tree).

AREAS LACKING AGREEMENT

While efforts to find agreement over many aspects of post-fire salvage logging were successful, the group also identified areas where differing opinions persist. These principally related to broader landscape salvage and salvage logging in older stands (i.e., LSR, old growth). Such projects, therefore, will be addressed by the SGPC on a case-by-case basis.

Landscape salvage (>250 acres and away from roads): We were unable to find broad agreement over salvage logging beyond roadsides or over 250 acres in size. Outstanding concerns exist toward landscape salvage due to potential impacts to sensitive ecosystems being magnified at a larger scale.

Salvage in LSR or old growth: We were unable to find broad agreement over salvage logging in LSR or old growth forests. Outstanding concerns primarily relate to an effort to protect late seral habitat that will eventually become old growth habitat, which can then harbor associated dependent species.

Proportion of acceptable green tree harvesting: We were unable to find agreement over the extent to which we support taking a portion of

live trees during post-fire area salvage near roads. This topic will continue to be discussed as the SGPC revisits this document.

Other disturbance types: We were unable to find broad agreement over salvage logging projects after forest disturbances other than wildfires, although this was largely outside the scope of our work. As such, the group may address other disturbances (e.g., insects, diseases, drought, wind) as they become more relevant and/or when revisiting this document in the future.

Post-Fire Salvage Logging DecisionTree