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## PROPOSED CONSERVATION MEASURES AND BENEFITS FOR A REVISED NORTHWEST OREGON STATE FOREST MANAGEMENT PLAN (2015)

### 1. Introduction

The Board of Forestry (BOF) has directed the Oregon Department of Forestry (ODF) State Forests Division to evaluate revisions to the current Forest Management Plan (FMP) to achieve financial viability and increased conservation outcomes. The current BOF guidance is to analyze the use of a land allocation approach to achieve these goals in the context of greatest permanent value (GPV). To understand if desired conservation outcomes are likely to be achieved, it is necessary to define conservation goals and related measures.

Conservation elements from the current FMP provide a strong foundation for establishing conservation guiding principles, goals, and measures. Concepts from the current FMP combined with stakeholder input are used to propose a framework to support conservation-related BOF policy decisions.

The current FMP for northwest Oregon's state forests<sup>1</sup> presents a comprehensive, multi-resource approach to forest management. The plan is built on concepts for integrated forest management goals and strategies that balance conservation of native flora and fauna, timber production, and social resources to provide the greatest permanent value for all Oregonians. The current FMP was designed to produce and maintain an array of forest stand conditions across the landscape in a functional arrangement that provides social, economic, and environmental benefits.

The current FMP was developed according to a series of guiding principles and working hypotheses that framed ODF's management approach regarding conservation. The most relevant of these in the context of a land allocation approach are:

- "The plan recognizes that the goal for management of Board of Forestry lands is to secure the greatest permanent value to the citizens of Oregon by providing healthy, productive, and sustainable forest ecosystems that over time and across the landscape provide a full range of social, economic, and environmental benefits to the people of Oregon. The goal for management of Common School Forest Land is the maximization of income to the Common School Fund over the long term."
- "The plan presents a comprehensive, integrated forest management approach taking into account a wide range of forest values."
- "The plan recognizes that the forest is intended to be an important contributor to timber supply for present and future generations."
- "Lands are identified and managed to provide for a sustained contribution, biological capability, and economic and social values. The plan recognizes that there will be trade-offs between revenue-producing activities and non-revenue-producing activities."
- "The plan considers the overall biological diversity of state forest lands, including the variety of life and accompanying ecological process."

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<sup>1</sup> Oregon Department of Forestry. 2010. Northwest Oregon state forests management plan. Revised plan, April, 2010. 581pp.

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- “Northwest Oregon state forest lands are managed to meet state and federal Endangered Species Acts while fulfilling the Board of Forestry’s other statutory responsibilities. Management plans for threatened or endangered species seek to complement habitat provided by other landowners to the extent that such provision of habitat is compatible with administrative rules defining greatest permanent value.”
- “An active and integrated forest management approach provides for high levels of sustainable and predictable timber and revenue while concurrently providing habitat for native fish and wildlife species.”

The revised FMP can build on many of these same guiding principles and working hypotheses. The principles would be applied within the context of a land allocation approach in which a certain percentage of the landscape will be managed to reach conservation goals and benefits, while the rest of the landscape will be managed for a higher level of timber production.

### 2. Conservation Emphasis Areas

Oregon’s state forests are managed to achieve the greatest permanent value (GPV) for all Oregonians (ORS 530.050). This mandate directs the State Forests Division to manage for social, economic, and environmental benefits to provide both sustainable and predictable revenue from forest products and long-term conservation of fish and wildlife habitats. The balance between these two goals is the defining feature of the management plan for Oregon’s state forests.

The proposed overarching goal of conservation for the revised FMP is to manage for the long-term persistence of the native fish and wildlife species that inhabit Oregon’s state forests. Operationally, the goal is to maintain a diverse array of habitats across the landscape through time. Diversity within and among forest stands and other habitats across the landscape fosters resilience of populations to disturbances at various spatial scales. It is this diversity of environments and the resilience of populations that determine the persistence of a species to a changing environment.

#### Conservation Defined

Conservation has intuitive meaning but can be challenging to define. For the purposes of this plan, ODF proposes the following definition:

*“Conservation is the maintenance of essential ecological processes, preservation of genetic diversity, and sustainable use of species and ecosystems across the landscape”.*<sup>2</sup>

This definition provides a conceptual framework to guide development of strategies that will be applied in both the conservation- and production-emphasis areas to meet conservation objectives. For the uses of this plan, conservation-emphasis areas are not exclusive of human activities, but rather will be

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<sup>2</sup> Adapted from: International Union for Conservation of Nature and Natural Resources (IUCN). 1980. *World Conservation Strategy: Living Resource Conservation for Sustainable Development*. 77pp.

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managed to achieve conservation goals. Likewise, the production-emphasis areas provide processes, genetic diversity, and habitats that supports a diversity of species and contribute to conservation goals.

### Conservation Strategies

Consistent with a Land Allocation Approach, this plan establishes production-emphasis areas and conservation-emphasis areas. This strategy is a long-term commitment to the development, maintenance, and protection of habitat for fish and wildlife in both areas, as well as maintenance and protection of soil and water resources. Conservation-emphasis areas include areas managed as habitat for Endangered Species Act (ESA) listed species and other state or federal species of concern and habitats such as riparian forest and wetlands.

Conservation strategies are the suite of management actions that, taken together, provide for the persistence of native species that inhabit the landscape. With this approach, the entire landscape supports this conservation goal, including those stands managed for timber production and areas established for conservation emphasis. For example, a conservation strategy in production-oriented stands is to provide important habitat elements that would otherwise limit the species that occupy or utilize the site. Examples include “legacy” components from the previous stand such as green (i.e. live) trees and standing dead and downed wood. Many species of birds, small mammals, and terrestrial amphibians require such structures and would not be present or productive without them. Concurrent declines in their predators could be expected if management strategies consistently remove them from the landscape or prevent recruitment. Thus retention and recruitment of legacy structures in managed stands is an integral and critical component of a landscape approach to conservation.

Conservation strategies at the landscape scale consider the diversity, size, and arrangement of habitats required for the persistence of native species. Young stands and associated early-seral characteristics are important for diverse game and non-game species including many of state and/or federal species of concern. Older stands on the landscape foster a variety of late-seral associates, such as northern spotted owls, marbled murrelets, and red tree voles. Forests in mid-seral stages (e.g. 30 – 80 years old) provide habitat for most native forest species, including early- and late-seral associates, and enhance broader landscape function. Additional variation in stand composition and structure due to stand development, management history, site productivity, topography, region, and numerous other factors contributes to diversity across spatial scales. Riparian areas, wetlands, and unique habitats (e.g. talus slopes) add to diversity and thus also to broader ecological function and associated resilience.

Designation of some lands for production or conservation may change over time as circumstances change on the landscape. As conservation areas are established in production-emphasis areas in response to, for example, a newly occupied site of a federally listed species, other areas that are no longer occupied or where conservation status is no longer warranted or needed may be re-designated as production-emphasis areas to ensure financial viability goals are met over time along with the goal to increase conservation.

### Conservation Goals

Table 1 presents draft conservation goals and their expected benefits as related to the conservation-related elements of greatest permanent value. These components reflect threatened and endangered (T&E) protection requirements, experience from implementation of the current FMP, and input from

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several stakeholder groups. Appendix 1 identifies stakeholder concepts and indicates those that have been included in the table.

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**Table 1: Conservation Goals and Benefits**

<b>GPV Element</b>	<b>Conservation Goal</b>	<b>Conservation Benefits</b>	<b>Measure</b>	<b>Species</b>	<b>Potential Conservation Strategy</b>
Habitat for Native Wildlife	Maintain native biodiversity and ecological function; Protection of species of concern; Provide forest structural diversity and arrangements across the landscape to support a range of life history behaviors.	Early- and late-seral associates; Provide habitat connectivity; Structural and compositional diversity; Breeding, foraging, denning, and dispersal of many obligates and associates; Nutrient cycling and soil productivity; Habitat complexity; Species of concern.	Acres; Patch size; Interior habitat; Connectivity; Abundance and distribution at stand- and landscape-levels; Late-seral forests; Diverse mid-seral forests; Complex early-seral stands; Rare, special, and unique areas; Green trees, snags, downed wood, Understory vegetation; Areas managed for T&E and other constrained areas; Protection from fire.	Many wildlife species: Northern spotted owls; Marbled murrelets; Red tree voles; Pacific marten; Songbirds; Bats; Terrestrial amphibians; Cavity nesting birds, Flying squirrels, Fisher; Ungulates	Site- and species-specific active and passive management approaches; Legacy structures; Leave-tree abundance and distribution; Decadence mgmt; Protect wetland, rocky habitats, un-burned areas, etc.; Maintain access for effective fire suppression.  Conservation Fund: <sup>3</sup> Develop coordinated program for habitat conservation projects. Monitoring and research strategy for important wildlife topics.
Habitat for Fish	Protect, maintain, and enhance riparian and stream function to support aquatic species; Provide high water quality; Maintain natural sediment supply and routing (Gravels, fines, etc.) within the range of historic variability; Enhance potential habitat quality	Increased habitat complexity; Increased summer and winter carrying capacity; Positive effects on growth and survival rates; High quality salmon and trout spawning habitat; Cold and clear water for salmon; Mimic historic habitat reaches; Large wood recruitment from riparian zones and upslope area.	Long Term/adaptive management measures: Stream wood inventory; Bed-material sampling; Temperature; Turbidity measures (e.g. suspended solids); Fish-passage barriers removed; transportation planning/redesign of road system; Short term: the following if possible by Fish and Non-fish and Debris Flow); % of Acres or miles of stream of thinning within X, Y, Z distances from stream (e.g. 100 ft. and FPA widths); Same as above but use regen harvest in place of thinning (correlates with; LW recruitment and shade); Conifer/Hardwood patterns in RMAs( e.g. Conifer dominated, HWD dominated, and mixed); BA or QMD within RMAs;	Entire species complex: salmon, trout, lamprey and their supporting food webs Water temperature; Water turbidity;	Riparian buffers on all fish-bearing streams to provide long-term supply of wood and shade; Riparian buffers on non-fish-bearing streams that could deliver wood to fish-bearing streams; Hydrologic disconnects and other road BMPs; Replace or upgrade road related barriers to fish passage; Maintain properly functioning landslide processes by managing unstable slopes; Move roads to ridges away from streams where feasible.  Conservation Fund: Develop coordinated program for habitat conservation projects. Monitoring and research strategy for important fish topics.

<sup>3</sup> Proposal from OFIC to establish a Conservation Fund to provide increased and stable funding for conservation projects through a \$10/mbf assessment levied on incremental harvests compared to current FMP.

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GPV Element	Conservation Goal	Conservation Benefits	Measure	Species	Potential Conservation Strategy
Flood and Erosion Protection	Maintain natural drainage processes; Mimic natural watershed processes; Maintain peak flow; Manage turbidity and sediment routing.	Maintains soil productivity, water quality and aquatic habitat	Percent of watershed in young age classes; % of hydrologic connectivity; roads within 100 feet of streams, Flow rates; Stand characteristics on unstable slopes	Fish and amphibians	Road BMPs: Minimize number of stream crossings, Design for peak flows, Hydrologic disconnect, avoid critical locations, stabilize road prism, drainage mgmt.; Manage unstable slopes by applying slope buffers in harvest areas.  Conservation Fund: Conservation enhancement projects across entire watersheds in cooperation with Watershed Councils
Productive Soils	Maintain soil productivity for forest production and robust riparian forest conditions	Accumulation of rich soil at the valley bottoms; Productive and resilient riparian and upland forests	Soil metrics	Aquatic and terrestrial species, forest health	Apply riparian buffers and unstable slope buffers; Make operational considerations suitable for site soils and slopes
Clean Air and Water	Maintain high water and air quality	Resilient forest conditions; social benefits (breathing/visibility)	Smoke management stats; Number of municipal watersheds and domestic water sources affected.	Down wind or down- stream communities; aquatic species	Maintain forested landbase; Reforest harvested areas; Manage wildfire; Large wood placement in streams;

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## Principles for Establishing and Managing Conservation-Emphasis Areas

- Designated conservation-emphasis areas distinguish portions of the landscape where the primary purpose of forest management activities is to maintain ecosystem functions. These areas should include the majority of habitat that is required to achieve clean water standards, comply with state and federal ESAs and achieve habitat requirements for native fish and wildlife. Timber harvest and other management activities should be allowed in these areas as required to restore or maintain ecosystem functions or to recover value in the case of salvage operations.
- Conservation strategies will address appropriate passive and active practices for each area, including any allocations where only passive management is employed, and where advanced active vegetation treatments are used to create or maintain stand structures and successional stages to achieve intended trajectories.
- Conservation strategies will address dominant and secondary management applications that would occur for each conservation-emphasis area.
- Conservation strategies will address areas with high conservation value to restore, maintain, and protect unique resources.
- If necessary, both the conservation and production-emphasis areas will be modified to obtain desired conservation benefits, respond to disturbance events (e.g., fire windthrow), and reflect new information and field verification. Such changes would be made using transparent methods through the forest planning process.

## Implementation

Implementing strategies in conservation-emphasis areas will consider the diversity, size, and arrangement of habitats and species across the landscape and over time. Management within conservation areas will occur to support ecological goals.

Implementation will be considered at the stand, aquatic network-, district- and planning-area scales. A likely set of strategies may include but is not limited to:

- Maintain habitat for ESA listed species (e.g. northern spotted owl and marbled murrelets) and other species of concern.
- Maintain all existing old growth trees and stands and manage to promote old growth conditions where appropriate.<sup>4</sup>
- Retain green trees in harvest units and maintain or create snags and downed wood.
- Establish riparian buffers to provide for a range of riparian and watershed functions, and to meet the federal clean water act as administered by the State Department of Environmental Quality.

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<sup>4</sup> From current FMP: Old growth – A forest stand with patchy, multi-layered, multi-species canopy dominated by large overstory trees; numerous large snags; abundant large downed wood. In western Oregon, old-growth characteristics begin to appear in unmanaged forests at 175 to 250 years of age.

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- Establish and maintain protection areas to address landslide prone and debris flow prone areas.

The intent of these scenarios is to meet the conservation-emphasis goals and strategies.

### Measures of Success

Broad-scale measures that evaluate the conservation-emphasis area's success in meeting or exceeding conservation objectives:

- Diverse stand types (ages, seral stages, composition, structural elements etc.) and habitats across spatial and temporal scales to foster and enhance resilient systems and landscapes and diverse wildlife and fish communities.
- Native functional groups (i.e. species guilds and assemblages) to promote ecosystem resilience and adaptation.
- Functional habitat patch sizes, distributions and configurations for multiple native wildlife species. Consider adjacent ownership management regimes.
- Riparian networks across the landscape that serve as migration corridors for aquatic and terrestrial organisms and pathways for nutrients and organic matter.
- Mature riparian forests capable of delivering large wood and other organic material to streams.
- Maintain water quality standards for water temperature and turbidity.

### Summary and Next Steps

The BOF concluded in 2012 that the current approach for managing state-managed forestlands was not financially viable. A BOF Subcommittee was formed to address these financial viability issues. Outcomes included directing the State Forests Division to examine alternatives to the current FMP for northwest Oregon. The Board further directed the Division to focus the FMP alternatives project with "twin goals" to develop a new FMP that is both financially viable and improves conservation outcomes in state forestlands compared to the current FMP. The BOF also directed the Division to evaluate a "land allocation" approach as the primary strategy for a comprehensive forest management plan.

This paper presents more detailed background as well as definitions, goals, and strategies focused on achieving improved conservation outcomes. This document provides a basis for establishing goals and measures within a land allocation approach to support BOF decision making and direction for plan development. The measures were informed by BOF/Subcommittee direction, relevant elements of the current plan, and stakeholder input. The Division is seeking review and feedback from the BOF Subcommittee.

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## Appendix 1: DRAFT Conservation Goals: Stakeholder Input

The Division has been meeting with stakeholder groups and county commissioners to seek input on ways of measuring conservation benefits that are provided through the management of state forests. Some of the measures can be quantified in the near term to support Board of Forestry decision making. Some functional benefits can be described through research and monitoring findings. Other measures may require a longer time frame and may be most appropriately measured within an adaptive management context. Check marks indicate that assessment is possible in the short-term using outputs from the current model. Zeros indicate that more time is necessary for development of state forest-specific models.

### Coalition DRAFT Input

- √ Murrelet Habitat (acres)
  - Modify existing habitat models and develop better indicators for state forests from ODF inventory and evaluation of habitat components at existing occupied sites.
  - ∅ Measure recovery: acres that would become habitat in a shorter time frame (older or layered stands)
  - ∅ Measure acres of habitat regardless of occupied status
  - ∅ Measure of how much habitat there is now and how much there can be in the future
  - ∅ Assess spatial distribution of habitat
- √ Owl Habitat (acres)
  - Modify existing habitat models and develop better indicators for state forests from ODF inventory and evaluation of habitat components at existing occupied sites.
  - ∅ Nesting habitat
  - ∅ Foraging habitat
  - ∅ Spatial distribution of habitat
  - √ Basal area/trees per acre
- √ Old Growth
  - √ OFS as potential to become old growth
  - √ Current old growth
  - √ Patch size
- √ Complex Early-seral
  - √ Acres now
  - √ Acres in the future

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- √ Legacy Components (as a proxy for early complex structure)
  - √ Green tree retention
  - √ Downed Wood
  - √ Snags
  - √ Mid-seral Habitat
- √ Streams (compare 115 foot no-cut with current FMP)
  - √ Percent light and heavy thinning and regen harvest within 170' feet of the stream
  - √ Shade
  - √ Wood recruitment
  - √ Off-channel winter habitat
  - √ Debris flow prone streams: stand conditions (regen, mid, late successional) within 25' of streams as compared to 50'
  - √ Relationship of Riparian Conditions and Functions with or without landscape design:
    - Riparian characteristics and miles of stream in a landscape design context (i.e. flowing through stands with a DFC of layered or OFS)
  - Compared to
    - Riparian characteristics and miles of stream in context of Land Allocation (i.e. flowing through stands with a production focus)
  - √ Water Quality: municipal water sources and domestic water use
  - √ Roads
    - √ Roads within 100' of streams
    - √ Stream Crossings
    - √ Hydrologic Connectivity
- √ Steep Slopes
  - Acreage of harvest or miles of road in areas where slopes exceed some designated percentage (e.g. 70%)

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## Comments provided by The State lands Committee of OFIC

- The entire landscape (conservation areas and production areas) brings forward conservation benefits.
  - The new plan will create areas designated primarily for conservation purposes, where goals will be outlined based on conservation targets. This focus will be additive compared to the current plan from a conservation perspective.
  - Connectivity and conservation/ecosystem functionality across the whole landscape for multiple species is key component of the plan revision.
  - √ Riparian stream protections are the same on both areas benefiting fish and all other species dependent upon that habitat.
  - √ ESA protections are the same, take avoidance strategies remain similar.
  - √ Road inventory and infrastructure and improvements will occur on both sets of allocated lands. This provides a new opportunity to inventory roads at the watershed level and prioritize work or plans to get the greatest benefit. This road inventory will identify and prioritize future project work that will benefit fish passage and reduce implied sediment delivery. Road betterment and or road abandonment projects also would be an important and incremental part of this new effort.
  - √ Green tree and snag retention across the landscape enhances wildlife attributes.
  - Increased research and monitoring programs that will measure and inform any changes in the multitude of wildlife issues or opportunities. With a fully funded Management Plan there is a great opportunity to restore this program and make it very robust.
  - Big game will definitely thrive in both the production and conservation zones as more acres per year are in an early and late seral condition as compared to today. Numbers of deer, elk and bear will definitely increase. This will provide an increased opportunity for Oregon hunters.
  - √ The increased creation of early seral habitat within the production areas, a habitat type that has been documented as being in decline within the PNW, will benefit birds and other small and large mammals.
  - √ The variety of landscape, with more openings will also benefit a multitude of other species including song birds and birds of prey.
- √ Conservation Fund Opportunities
  - The newly created Conservation Fund will provide increased and stable funding for perpetual increases in conservation outcomes. A \$10/mbf assessment would be levied on incremental harvests in comparison to today's FMP. (This assessment would be a portion of ODF's advertised minimum stumpage rate on incremental sale volume, with 100% of this Conservation Fund revenue coming from ODF's share of stumpage receipts and not from the forest trust county share.)
  - The assessment develops approximately \$1.0 million annually (assuming an incremental harvest of 100 MMBF/year X \$10/MBF). This system would create new and sustainable funding for conservation projects.

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- Develops a coordinated and prioritized program for conservation enhancement projects across the entire landscape, potentially even in agricultural and urban areas as deemed appropriate by the directors of the Conservation Fund.
- Develops a Board of Directors made up of stakeholders that would work in conjunction with agencies and watershed councils who are vested in fish and wildlife enhancement projects across the landscape.
- √ Placement of large wood and structures in wood deficient stream courses that are important to salmon, trout and steelhead.
- √ Establishes a robust monitoring, science and research strategy to measure and study important fish and wildlife topics as they relate to modern forest practices.

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### DRAFT Information from Meeting with Commissioners

- √ Forest Conditions
  - √ Early Seral Stage: Benefits for fish and wildlife-benefits to big game
  - √ Mid Seral Stage: Benefits for fish and wildlife
  - √ Late Seral Stage: Benefits for fish and wildlife
  - √ Complex Early- benefits for wildlife including big game
- √ Benefits within Clear Cuts
  - √ Snags
  - √ Downed wood
  - √ GTR
- √ Riparian
  - √ Functions
  - ∅ Dollars spent
- √ Roads
  - √ Fish passage
  - √ Road improvements
  - √ Decreased hydrologic connectivity
- √ Steep slopes
- √ Restoration
  - √ Fish passage

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- √ Road work
- √ In stream placement
- ∅ Owls (See comment above about indicator development)
- ∅ Murrelets (See comment above about indicator development)
- √ Disturbance
- ∅ Interactions between forest management, climate change and ecologic disturbance such as fire, ice storms, wind storms, insect and disease, floods and landslides.

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