



Private Forest Landowners and the Oregon Plan

OREGON PLAN ACTIONS FOR LANDOWNERS, BY LANDOWNERS



*A guide to voluntary actions to assist threatened
and endangered fish*



***The Oregon Plan
for Salmon and
Watersheds***

February 2012

Introduction



This document describes the set of voluntary actions that private forest landowners are implementing to assist the recovery of threatened and endangered fish species as part of **The Oregon Plan for Salmon and Watersheds** (Oregon Plan, 1997). The actions extend beyond the requirements of the Oregon Forest Practices Act and Rules (FPA). Existing technical guides and other resources provide information about how to plan, implement, and monitor actions. Additional resources are listed on page 20.

Why take additional voluntary actions?

Authors of the Oregon Plan recognized that voluntary actions have the potential to be more successful than government regulations for the restoration of salmon habitat. For the Plan to succeed, voluntary actions by communities and landowners with local knowledge and ownership are necessary. These additional voluntary landowner actions help speed the achievement of important watershed enhancement goals. In response to this need, private forest landowners and many others in Oregon have been making extraordinary investments to improve watersheds for the benefits of society, watersheds, and native fish since the Plan's inception.

As part of this collective effort, private forest landowners have contributed over \$84 million (Source: *Oregon Watershed Enhancement Board*, Watershed Restoration Inventory Data, Bobbi Riggers, 2007 Summary) resulting in the following actions:

Oregon Plan actions reported from 1997 to 2006 by private forest landowners	
Amount of Road Miles Surveyed	7833
Amount of Road Miles Improved	1582
Amount of Road Miles Vacated, Closed or Relocated	188
Number of Peak Flow Improvements (increase culvert or bridge size to pass high stream flows)	3200
Number of Surface Drainage Improvements	7851
Number of Stream Crossing Improvements	809
Number of Large Wood Placement Projects	307
Other Instream Projects (boulder placement, side channels & alcoves)	96
Number of Conifer Restoration Projects	44
Number of Riparian Management Projects	1075

Where did these actions come from?

Private forest landowners developed their first set of Oregon Plan measures in response to Governor John Kitzhaber’s 1997 challenge to citizens to take action to restore Coastal coho salmon. The second edition reflected the inclusion of all salmonids (salmon-like fish) statewide. New ideas gained from experience, the advice of forestry advisory committees, and emerging needs identified by fish scientists and public members are included in this third update.

Oregon is in the process of developing Native Fish Conservation and Recovery Plans in collaboration with NOAA Fisheries and local citizens. For more information about Native Fish Conservation and Recovery Plans, visit www.dfw.state.or.us/fish/CRP

This edition provides general information about conservation needs. Native fish conservation and recovery plans, whether completed or in draft form, will provide detailed information about key challenges and opportunities. These plans will identify conservation goals and locally supported actions to recover native fish.

What are the actions?

The following four categories provide a frame of reference to describe and organize the Oregon Plan actions for additional watershed improvements on private forestlands:

1. Aquatic Habitat (in-stream)
2. Riparian Habitat (near-stream)
3. Upland Habitat (upper reaches of the watershed that influence aquatic and riparian areas)
4. Roads and Stream Crossings (road conditions that directly influence aquatic and riparian areas)

Watersheds function as an integrated whole. The four categories simply provide a means to organize a set of goals, objectives, and actions. When choosing watershed enhancement actions, forest landowners should consider the relationship of one category to another. The goals and objectives are intentionally outcome-based and open to creative interpretation to encourage landowners to select the best projects or actions to achieve a particular result.

Past Oregon Plan efforts on private forestlands tended to focus on improvements to roads and stream crossings. The perception that sediment from roads and stream crossing structures that restricted fish movement were the most critical threats to salmon in fresh water habitats influenced project choices over the last decade. Landowners responded to the need with road improvements and the installation of fish passage structures. In doing this work, landowners recognized that many actions considered ‘good for fish’ are also ‘good for business.’ For example, well-constructed and well-maintained

forest roads contribute to an economically viable forest that can also reduce sediment delivery to fish streams. While roadwork is continuing where needed, more recent fish habitat assessments identify improvements to *aquatic habitat* as an important focus for many Oregon streams. Active placement of large wood is an expedient way to improve aquatic environments while riparian conditions improve over time. Each watershed presents unique sets of challenges, opportunities, and priorities. Often a combination of project types will be necessary if we are to achieve native fish conservation goals.

What is most important?

Forestlands provide many benefits including clean water and fish habitat. The single most important way to maintain water quality and good fish habitat on private forestland is to keep working forests working, rather than converting them to non-forest use. Oregon's working forests contribute to the state's environmental, social and economic well being. Working forests in Oregon and other regions not only provide the wood and paper we use every day, but they also contribute to the quality of our air and water, draw carbon dioxide—a greenhouse gas—from the atmosphere, and provide wildlife habitat and recreational opportunities. In short, our working forests serve a diverse array of vital, public values (OFRI, 2007). In many ways, sustaining Oregon's working forests is essential to help reach conservation goals for native fish.

Aquatic Habitat

"in-stream conditions"

Biologists describe 'high quality habitat' in terms of the number of smolts the habitat can produce. High quality habitat has good water quality, with in-stream wood and boulder structures, clean spawning gravel, deep slackwater pools, undercut banks, and off-channel areas where the stream and floodplain connect. High quality freshwater habitat provides a greater capacity for production and a healthier fish population.

A smolt is a young salmon before it has swum to the sea. Smolts undergo physiological changes during this life stage in preparation for living in salt water, such as silver coloration.

Benefits of High Quality Habitat

Voluntary Measures for Aquatic Habitat

Goal: Forest streams with an abundance of large wood, good water quality, clean spawning gravel, and connections between the stream and floodplain.

Objective: Improve the quality of aquatic habitat.

Actions beyond FPA Requirements

- Place in-stream structures such as large wood
- Reconnect side channels and alcoves with streams
- Identify, control, and/or prevent aquatic invasive species

What is High Aquatic Potential?

Stream sizes are based on calculated average stream flow (using annual precipitation and other information), but can be estimated by measuring the bankfull width of a stream. When a stream channel is full but not overflowing, it is said to be at bankfull. Roughly, small streams have bankfull widths of 8 feet or less while medium streams range in width from 8-20 feet at bankfull.

Your local ODF stewardship forester has maps that show the sizes of most streams.

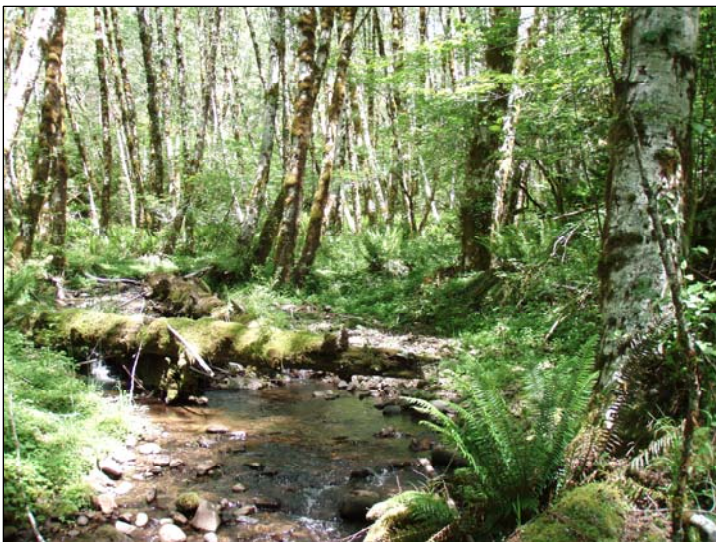
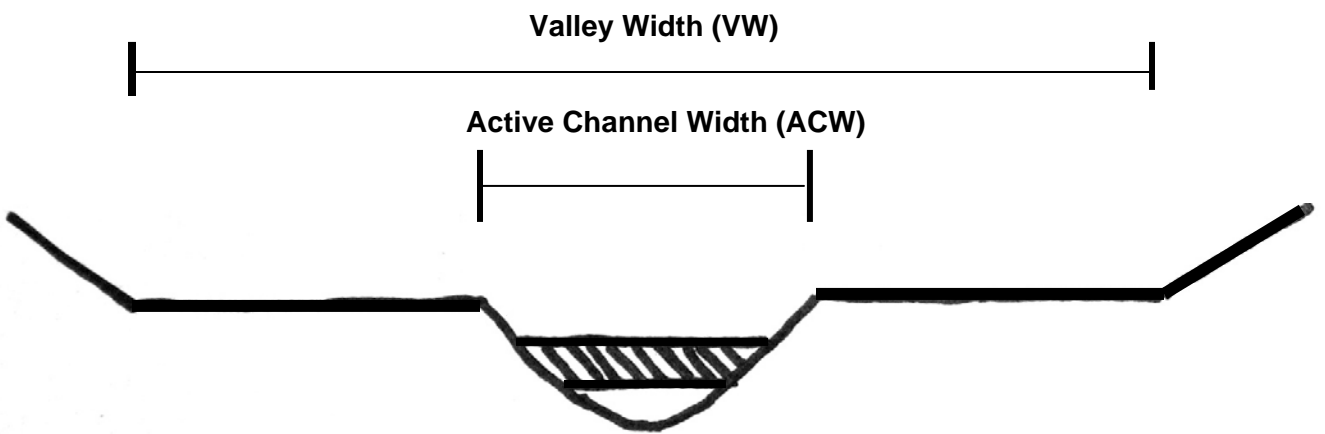
Some stream reaches offer greater potential to provide fish habitat. We refer to stream reaches with greater potential as **'High Aquatic Potential' (HAP)** locations. HAP stream reaches exist in medium and small streams (see sidebar for additional definitions) that tend to have low gradient channels and wide valleys in which the stream channel has the potential to migrate. These are "hot spots" where fish like to hang out. A stream reach may have 'potential' to provide high quality habitat but may not currently have high quality habitat present. This could occur for a variety of reasons such as a lack of large wood or other habitat features.

HAP stream reaches are the best locations to provide large wood. Active placement of large wood in these locations can provide immediate benefits for fish. HAP may also indicate where managing riparian conditions to grow large trees for future supplies may be helpful.

Although HAP was developed to address high potential for coho streams, other fish such as steelhead and cutthroat will also occupy HAP locations and benefit from habitat improvements in these locations. Even though HAP locations are a priority, fish also occupy and migrate through stream reaches that are not HAP. Landowners may want to improve riparian conditions for fish habitat outside HAP locations for a variety of reasons such as improving water quality or providing fish passage or cover for fish.

High Aquatic Potential exists when
the following conditions are met:

The ratio of VW / ACW is greater than 2.5 AND
the channel gradient is less than or equal to 6 percent



**An example of a stream reach with High
Aquatic Potential - Broad Valley**

Riparian Habitat

"near-stream conditions"

Benefits of Riparian Areas

Riparian forests provide shade over the channel, large wood in the channel, channel influencing root masses along the edge of the high water level, and regular inputs of nutrients through litter fall. The Forest Practices Act provides a mechanism to achieve a range of conditions to maintain fish habitat and meet water quality standards. A landowner who voluntarily manages the riparian area can achieve a number of additional benefits in a faster timeframe.

Note: Disturbance within an ecosystem is part of a natural cycle and expected. Disturbances that damage or replace mature riparian forests such as landslides, wind throw, damage from insects and disease, and wildfire are inevitable.

Sometimes the tendency is to describe forests within a context of disturbance, followed by 'recovery' through succession to mature forest. Scientists have learned that *disturbance* can be viewed as the 'recovery,' and a range of stand ages and conditions from post-disturbance reforestation to mature forest may be a key to riparian and stream health. In some cases, the best approach to riparian management might be to emulate key disturbance functions and processes necessary to maintain fish habitat and water quality.

For example, when a watershed is lacking in large wood yet the riparian stands are predominantly hardwoods with little or no large wood recruitment potential, a conifer restoration project may be desirable. These sorts of projects are best when forestry and fish experts work together to achieve a particular outcome.

Voluntary Actions Promoting Riparian Habitat

Goal: The landscape goal of riparian structures is to grow and retain vigorous and diverse vegetation with a range of native tree species, size, and age classes with an understory of native shrubs and herbs. An individual landowner's riparian management areas will contribute to, but need not provide all aspects.

Objective: Manage riparian stands to increase the potential for large downed wood, channel-stabilizing root masses, shade, and nutrients.

Actions beyond FPA Requirements:

Implement *site specific plans* to speed progress to achieve desired riparian function including:

- Thin over-dense forest stands
- Reforest under-producing areas
- Retain more trees than rules require where current forest stands are not overly dense
- Improve tree growth and resilience to disturbance events such as wildfire, insects, and disease by thinning, growing a healthy diversity of native trees and shrubs, and use of integrated pest management plans
- Manage vegetation along small non-fish bearing streams to provide stream structure
- Revegetate or reforest riparian areas within two years of disturbance events
- Re-establish conifer tree diversity alongside stream reaches where conifer cover and/or large wood pieces are deficient, e.g. alder-dominated watersheds
- Identify, control and/or prevent invasive species

Conduct Other Riparian Improvements

Many forest landowners also manage livestock or experience riparian damage from elk, deer or other wildlife. The following actions, though not ‘core forestry actions,’ are likely to help achieve fish habitat and water quality goals.

- Develop and implement a grazing management plan for livestock to encourage grazing distribution away from streams. This can be done by providing off-channel watering or salting areas, herding, rotation or pasture management and/or fencing key areas
- Develop and implement a management plan that addresses riparian use and management for deer, elk, and other native species

Note: Local Soil and Water Conservation Districts, USDA Natural Resources Conservation Service and the Oregon Department of Agriculture can provide technical assistance to plan and implement these projects.



ODFW



ODF



Example of a large-wood placement riparian project in western Oregon (ODFW)



Example of a large-wood riparian project in NE Oregon (ODF)

Upland Habitat

"head-waters areas"

Benefits of Upland Forests

Upland areas intercept rainfall, filter sediment from overland flow, and are an important source of large wood and sediment (gravel) that contribute to fish habitat.



Voluntary Actions Promoting Upland Habitat

Goal: Provide a source of large wood and gravel, capture carbon dioxide (a greenhouse gas) and produce oxygen, and filter water.

Objectives: Maintain, restore or enhance upland forest resilience to disturbance events and increase capacity to protect soil, air and water resources.

Actions beyond FPA Requirements

- Prepare a forest management plan and implement timely actions that would improve tree growth and resilience to disturbance events such as wildfire, insects, and disease by thinning, growing a healthy diversity of native trees and shrubs, and use of integrated pest management plans
- Leave trees on landslide prone slopes for delivery of large wood and gravel if landslides do occur. As an alternative, place large wood directly in fish streams below these areas. Consult with ODF and ODFW before taking this action.
- Identify highly erosion-prone areas in uplands and take extra actions (beyond those required) to prevent sediment delivery to streams:
 1. Alter harvest methods to reduce erosion risk
 2. Alter slash treatment methods to reduce erosion risk
 3. Speed reforestation within first year after harvest.
 4. Control gully erosion
 5. Mulch, seed, revegetate, or leave down wood on exposed soils
- Manage upland recreational use to minimize erosion impacts
- Identify, control, and/or prevent invasive species, which have high potential to impact nearby riparian areas

Roads & Stream Crossings

"conditions influenced by roads"

Benefits of Well Constructed and Maintained Roads and Stream Crossings

Well-built and maintained forest roads and stream crossings minimize impacts to fish and water quality while protecting a landowners' investment. The Forest Practices Act already establishes protective measures that maintain fish habitat and water quality. Voluntary actions can address legacy problems and avoid negative impacts from invasive species or catastrophic events.

Voluntary Actions for Road and Stream Crossings

Goal: Road systems managed beyond the basic requirements that contribute to good water quality and fish passage, regardless of the age of the road in relation to current Forest Practice Act rules

Objectives:

- Seek opportunities to improve or enhance existing roads where fish passage barriers exist.
- Seek opportunities to improve or enhance existing forest road locations where adverse watershed and fish passage barriers at crossings or road drainage are delivering sediment into streams.

Voluntary Actions for Road and Stream Crossings

Actions beyond FPA Requirements

New Roads

- Incorporate '**extra**' erosion control actions during road construction and maintenance that reduce the risk of or eliminate impacts to watersheds, e.g. accelerate revegetation, seed, mulch, end-haul construction, or apply rock to road surfaces near stream crossings.
- Eliminate a stream or wetland crossing from a planned new road location.
- Construct temporary roads and stream crossings instead of permanent ones, when this results in less sediment entering streams.
- Locate and design roads to reduce or eliminate the risk of damage to water sheds. For example, a road might be built on a ridge top instead of in a flat area near a stream. Road construction and timber harvesting costs might be higher, but the risk of road drainage water carrying sediment into the stream would be much lower.

Existing Roads

- Identify potential road-related and fish habitat problems and prioritize restoration actions, particularly with legacy roads.
- Monitor road surface and/or drainage in the absence of any planned forest operation, and take action to eliminate potential water quality problems.
- Install new fish passage structures where artificial barriers occur, prior to end of the structure's service life
- Reduce the length of road connected directly to streams through improved road drainage.

Continued on next page

Voluntary Actions for Road and Stream Crossings, continued

- Relocate road segments that closely parallel streams or have stream crossings that adversely affect watersheds if a net benefit to the watershed exists.
- Remove, improve or replace road fills (or waste areas) that have a higher potential for failure which would deliver sediment into streams.
- Upgrade legacy railroad grade fills, original log or 'puncheon' structures that may result in failure.
- Revegetate road cuts and fills to reduce erosion and prevent delivery of sediment into streams.

All roads

- Develop and implement a road management plan. The plan should reduce watershed impacts by actions such as monitoring road drainage function, uses, and repairs.
- Develop and implement an emergency response plan to maintain road drainage function during and after major disturbance events, such as floods, storms, or wildfires.
- Vacate or close roads where unconstrained recreational uses or other factors are having negative watershed impacts.
- Develop and implement a beaver management plan that protects roads and drainage functions.
- Identify, prevent, and/or control invasive species on roads which have high potential to impact nearby riparian areas.
- Coordinate access plans with adjacent landowners to reduce the length of roads, number of stream crossings, and/or the potential for sediment to enter streams.



Heavy equipment can be a valuable tool during large wood placement in streams
(ODFW)

This stream enhancement project on Rock Creek in NW Oregon was accomplished using a skyline logging system to place large wood in the stream
(ODF)



Planning, Implementing & Reporting Projects

Planning Your Project

Planning your project in consultation with your local ODF stewardship forester, ODFW habitat biologist and/or watershed council or OSU Extension office provides the range of technical expertise that can result in an effective project that will achieve the intended outcomes as well as help find sources of funding to help offset the costs. There are many other organizations such as a Soil and Water Conservation District or forestry consultants that routinely provide assistance to plan and implement Oregon Plan projects.

- **HAP maps** can be obtained from your local ODF stewardship forester, or from the ODF web site:
egov.oregon.gov/ODF/GIS/HapStreams.shtml

HAP refers to *High Aquatic Potential* locations where conducting fish habitat projects can be effective; see page 6 for an explanation of what HAP is.

- **HIP maps** are — or will soon be — available from your local ODFW habitat biologist. HIP refers to *High Intrinsic Potential*. These maps are similar to HAP maps but also describe the suite of actions biologists and local citizens believe are needed to reach Oregon's native fish conservation goals.

Reporting your project to the Oregon Watershed Enhancement Board is important!

Your activities help draw competitive funds to Oregon, which you and others use to help protect and improve our natural resources. This has a positive impact on local economies as well. Reporting helps:

- Recognize local efforts
- Evaluate effectiveness of voluntary efforts
- Guide the use of funds

How do I report projects?

Reporting is easy! Follow these steps:

1. Report forms and instructions are located on OWEB's web site at <http://www.oregon.gov/OWEB/MONITOR/OWRI.shtml> — The roads, uplands, harvest and riparian sections include a page tailored to the types of projects you may be doing.
2. You can fill out the report online, print and fill out by hand and mail in, or call OWEB at 503-986-0178 to obtain a copy.
3. If you have questions about filling out the form contact OWEB or ask your local ODF stewardship forester for assistance.

Monitoring your project results - before and after project completion - can help inform whether your project is resulting in the intended outcomes. Although various agencies, educational institutions, and groups like the Watersheds Research Cooperative conduct monitoring and research, landowners can also collect information about their projects.

To learn more about monitoring landowners can do obtain a copy of the *Water Quality Monitoring: Technical Guide Book* (July 1999), available through OWEB.

Technical Guides to help you get started

- **Guide to Placement of Wood, Boulders and Gravel for Habitat Restoration** -- Oregon Departments of Forestry, Fish and Wildlife, State Lands and the Oregon Watershed Enhancement Board, 2010. Copies are available through ODF and on DSL's web site:

www.oregon.gov/DSL/PERMITS/forms.shtml

- **Oregon Aquatic Enhancement Habitat Restoration and Enhancement Guide**, available through the Oregon Watershed Enhancement Board.
- **Oregon Watershed Assessment Manual**, also available through OWEB.

References

The Oregon Plan: Restoring an Oregon Legacy through Cooperative Efforts, Coastal Salmon Restoration Initiative, Oregon Coastal Salmon Restoration Initiative, State of Oregon, 1997.

Oregon Department of Forestry and USFS State and Private Forestry -- **Community Oregon Plan Statewide Work Program**, June 2000.

Glossary of terms

ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
OWEB	Oregon Watershed Enhancement Board
Oregon Plan	short title of the <i>Oregon Plan for Salmon and Watersheds, 1997</i>
OSU	Oregon State University
HAP	High Aquatic Potential
HIP	High Intrinsic Potential

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