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West Cascades Ecoregion: Getting to Know the West Cascades Ecoregion

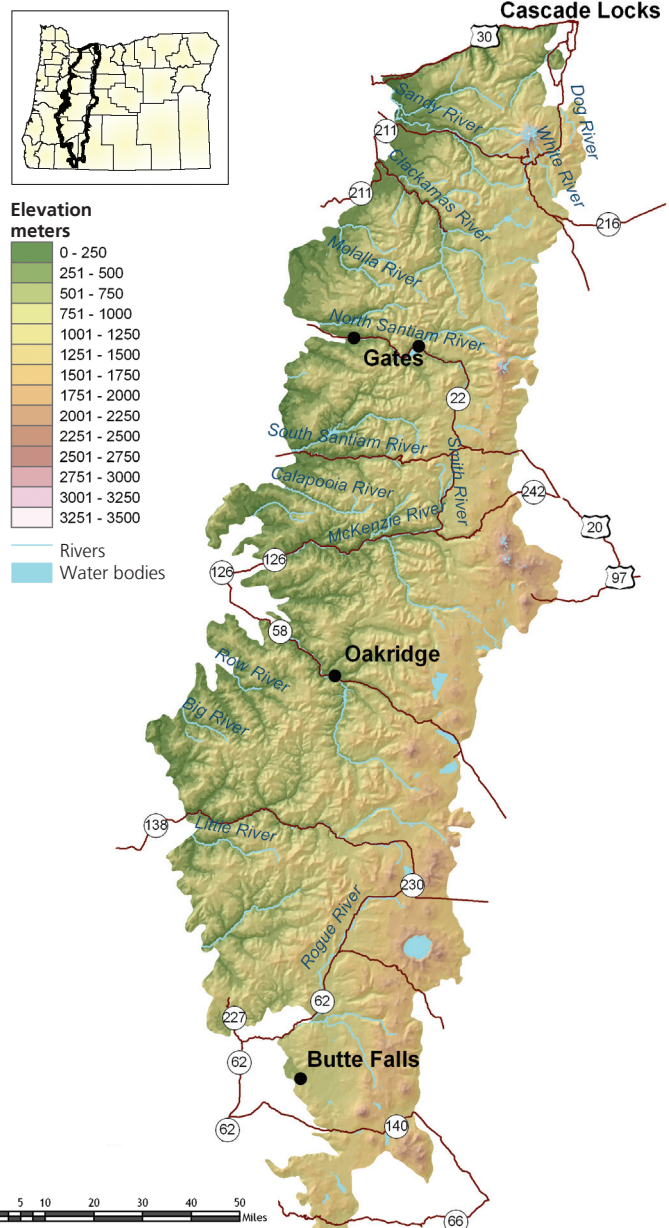
Getting to Know the West Cascades Ecoregion

Description

The West Cascades ecoregion extends from just east of the Cascade Mountains summit to the foothills of the Willamette, Umpqua and Rogue Valleys, and spans the entire length of the state of Oregon, from the Columbia River to the California border. The topography and soils of the West Cascades ecoregion has been shaped dramatically by its volcanic past. Geologically, the West Cascades has two distinct areas: the younger volcanic crest (approximately three million years old) and the “old Cascades” to the west of the crest (at least 30 million years old). The volcanic crest includes the highest peaks in Oregon: Mt. Hood, Mt. Jefferson, and North, Middle, and South Sisters, all more than 10,000 feet. The older western Cascade Mountain Range is characterized by long, steep ridges and wide, glaciated valleys.

This ecoregion is almost entirely forested by conifers, although the dominant tree species vary by elevation, site characteristics, and stand history. Douglas-fir is the most common tree below 4,000 feet, often with western hemlock as a co-dominant. At higher elevations, dominant tree species include Pacific silver fir, mountain hemlock, or subalpine fir. Other common conifers include western redcedar, grand fir, and noble fir. Above approximately 7000 feet, the conditions are too severe for tree growth, and alpine parklands and dwarf shrubs predominate, including some wetlands and barren expanses of rock and ice. The climate and resulting fire regime varies with latitude and elevation. Fire regimes in the forests vary across the ecoregion, with the northern portion of the ecoregion seeing less frequent but more severe fires, whereas the southern portion is typically drier with frequent, lightning-caused fires. In the southern areas with higher fire frequency, Ponderosa pine, sugar pine, and incense cedar often are found with Douglas-fir at the lower elevations. The climate varies with elevation. At the lower elevations, winter conditions are mild with high rainfall. Above 4,000 feet, much of the precipitation occurs as snowfall.

The West Cascades ecoregion houses just over one percent of Oregon's population, mostly in towns including Cascade Locks, Butte Falls, Detroit, Gates, Idanha, McKenzie Bridge, Blue River, Oakridge, Westfir, and part of Sweet Home (the remainder of which lies in the Willamette Valley ecoregion). Local economies were once entirely dependent on



"At a Glance"- Characteristics and Statistics**Land use (% of ecoregion):**

Agriculture	0%
Forest and woodland	96%
Other (lakes, wetlands, cliffs, etc.)	3.3%
Range, pasture, and grassland	0.5%
Towns and rural residential	0.1%
Urban and suburban	0%

Land ownership:

Private	23 %
Public, federal	76 %
Public, state and local	1 %
Native American	<1 %

Human population, government and transportation statistics:

Estimated population in 2000	48,000
% of Oregon's population in 2000	1.4%
Number of towns	11
Number of counties	12
<i>(includes parts of Clackamas, Deschutes, Douglas, Jackson Jefferson, Hood River, Klamath, Lane, Linn, Marion, Multnomah, Wasco counties)</i>	
Number of watershed councils	21
<i>(A watershed council is considered present if at least 10% of its area is located within the ecoregion.)</i>	
Miles of road	37,215

Economics:

Important industries: timber, recreation

Major crops: some fruits; mint

Important nature-based recreational areas: Mt Hood, Willamette, Umpqua, and Rogue River national forests; Waldo Lake; Odell Lake; Detroit and Hills Creek Reservoirs; includes about half of Crater Lake National Park

Ecology:

Average annual precipitation	42" – 89 " (snowfall 7" - 233")
Average July high temperature (1971-2000)	75.6°F –86°F
Average January low temperature (1971-2000)	21.7°F –33.5°F
Elevation	98 feet (along the western border of the ecoregion) to 11,040 feet (along the Cascades)
Number of regularly occurring vertebrate wildlife species	322
Important rivers	Clackamas (Oak Grove Fork); McKenzie; Rogue; Umpqua; Breitenbush; Middle Santiam; North and Middle Fork of the Willamette

Information Sources: Oregon Blue Book (2003-04), Oregon Climate Service data (1971-2000), Oregon State of the Environment Report (2000), Oregon Watershed Enhancement Board (2001), Oregon Wildlife Diversity Plan (1993), U.S. Census Bureau (2000).



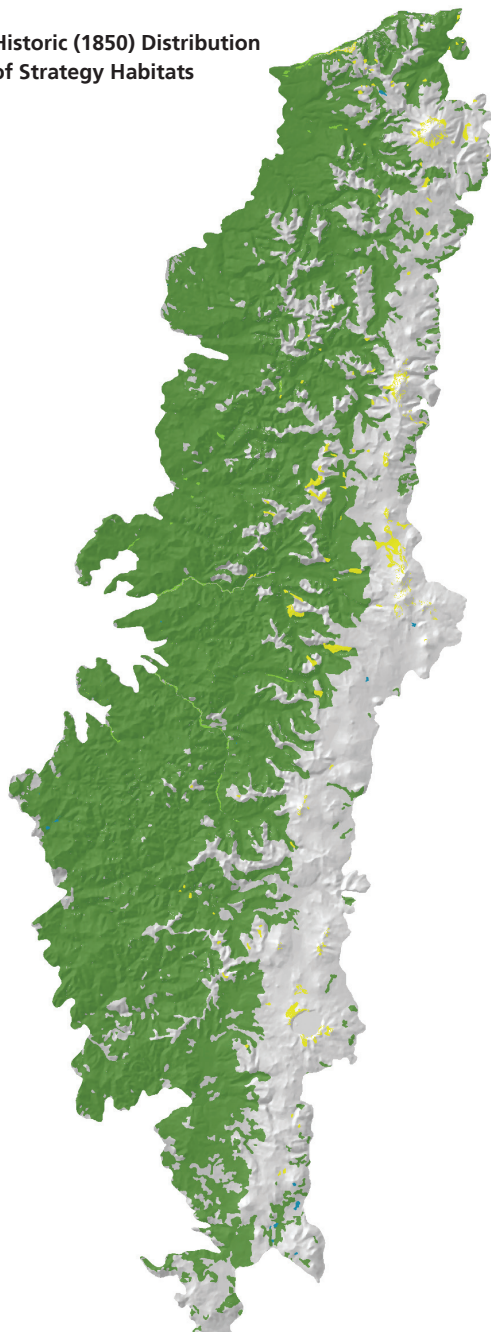
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Summary List of Strategy Habitats

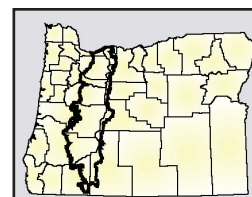
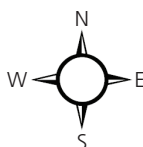
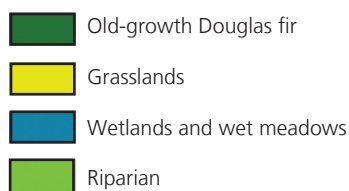
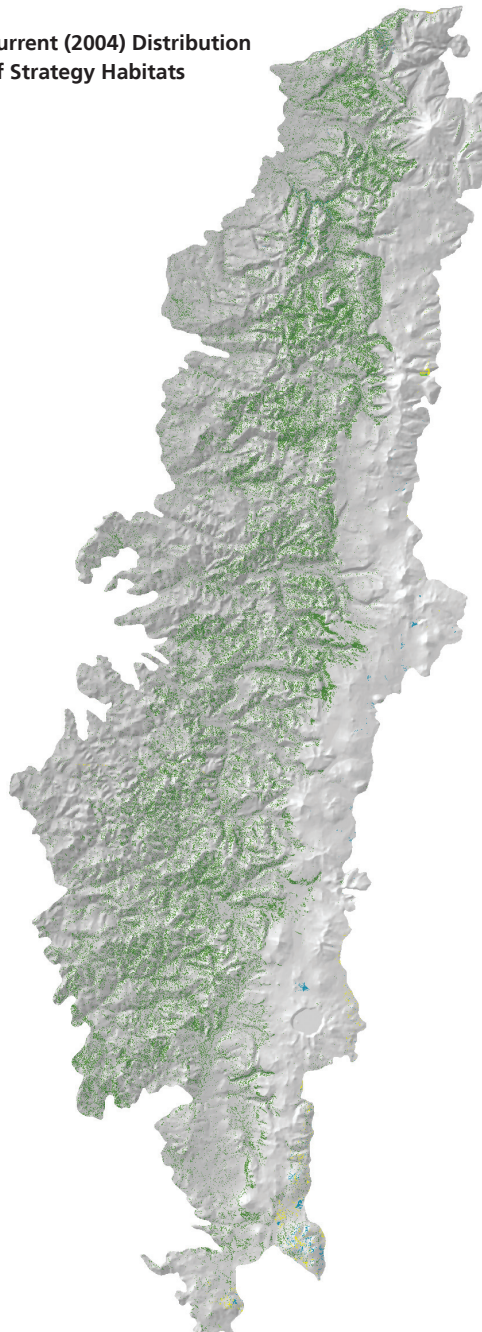
Strategy Habitats in the West Cascades ecoregion include: late successional conifer (especially Douglas-fir) forests, oak woodlands, grasslands (including montane grasslands and oak savannas), wetlands, riparian, and aquatic habitats.

Change in West Cascades Strategy Habitats

Historic (1850) Distribution
of Strategy Habitats



Current (2004) Distribution
of Strategy Habitats



Data Source: Oregon Natural Heritage Information Center, 2004.

timber harvest, but have been greatly affected as market conditions, long-term and broad-scale changes in the forest products marketplace, and shifts in public forest management priorities have shaped Oregon's timber industry. Many towns are increasingly promoting recreational opportunities - including hiking, camping, fishing, hunting, birding, mountain biking and skiing - to supplement timber harvest revenue. However, timber harvest is expected to remain important to local West Cascades economies in the future.

Conservation Issues and Actions

Overview

Of all of Oregon's ecoregions, the West Cascades is considered the healthiest by several indicators. For example, this ecoregion has the highest water quality in the state, and the fewest problems with water allocation and quantity. Very few species have been extirpated from this ecoregion, and there has been considerable effort toward recovering

Summary List of Strategy Species

Mammals

American marten
California myotis (bat)
Fisher
Fringed myotis (bat)
Hoary bat
Long-legged myotis (bat)
Red tree vole
Ringtail
Silver-haired bat
Townsend's big-eared bat

Plants

Northern wormwood
Umpqua mariposa-lily
Wayside aster
White Rock larkspur

Amphibians & Reptiles

Cascades frog
Cascade torrent salamander
Clouded salamander
Coastal tailed frog
Cope's giant salamander
Foothill yellow-legged frog
Larch Mountain salamander
Oregon slender salamander
Oregon spotted frog
Western toad
Northwestern pond turtle
Western painted turtle

Fish

Bull trout (Columbia Distinct Population Segment [DPS])

Fish Cont.

Bull Trout (Klamath River population)
Chinook salmon (Lower Columbia River ESU, spring run)
Chinook salmon (Lower Columbia River ESU, fall run)
Chinook salmon (Snake River ESU, spring/summer run)
Chinook salmon (Snake River ESU, fall run)
Chinook salmon (Southern Oregon/Northern California Coast ESU, fall run)
Chinook salmon (Upper Willamette River ESU, spring run)
Coastal cutthroat trout (Oregon Coast ESU)
Coastal cutthroat trout (Southern Oregon/California Coasts ESU)
Coastal cutthroat trout (Southwestern Washington/ Columbia River ESU)
Coastal cutthroat trout (Upper Willamette River ESU)
Coho salmon (Lower Columbia River/SW Washington Coast ESU)
Coho salmon (Oregon Coast ESU)
Coho salmon (Southern Oregon/Northern California Coasts ESU)
Oregon chub
Pacific lamprey
Steelhead (Klamath Mountains Province ESU, summer run)
Steelhead (Klamath Mountains Province ESU, winter run)
Steelhead (Lower Columbia River ESU, summer run)

Fish Cont.

Steelhead (Lower Columbia River ESU, winter run)
Steelhead (Middle Columbia River ESU, summer run)
Steelhead (Middle Columbia River ESU, winter run)
Steelhead (Oregon Coast ESU, summer run)
Steelhead (Oregon Coast ESU, winter run)
Steelhead (Snake River Basin ESU)
Steelhead Upper Willamette River ESU, winter run)
Umpqua chub
Western brook lamprey

Birds

Band-tailed pigeon
Barrow's goldeneye
Black swift
Bufflehead
Greater sandhill crane
Northern goshawk
Northern spotted owl
Olive-sided flycatcher

Invertebrates

Columbia Gorge caddisfly
"Constricted" caddisfly (no common name)
Johnson's hairstreak
Scott's apatanian caddisfly
Wahkeena Falls flightless stonefly
Terrestrial snails:
Chace sideband
Traveling sideband

threatened and endangered species. Much of the remnant classic late successional forests on public land are managed with an emphasis on biodiversity under the Northwest Forest Plan. Although focused on the spotted owl, the plan was intended to address the needs of a wide array of species affected by loss and fragmentation of late successional forests, and covers more than 1,000 species of plants, animals, and fungi. (See Northwest Forest Plan description in Appendix II). However, the adaptive management component of the Northwest Forest Plan has not been fully implemented. Also, many forests in the West Cascades ecoregion are in Fire Regime Condition Class II, with moderate risk of losing one or more ecosystem components.

Ecoregion-level limiting factors and recommended approaches

All six of the key conservation issues apply statewide, as do the approaches outlined in the Statewide Perspectives and Approaches chapter. However, altered fire regimes and invasive species are described further in this section, considering the West Cascades' ecoregional characteristics.

Factor: Altered fire regimes: Many forests in the West Cascades ecoregion are in Fire Regime Condition Class II, with moderate risk of losing one or more ecosystem components. Efforts to reduce

risks of uncharacteristically severe fires can help to restore habitat, but require careful planning to provide sufficient habitat features that are important to wildlife (e.g., snags, down logs, hiding cover for big game).

Approach: Use an integrated approach to wildfire issues that considers historic conditions, wildlife conservation, natural fire intervals, and silvicultural techniques. Encourage forest management at a broad scale to address limiting factors. Reintroduce fire where feasible; prioritize sites and applications. Maintain important wildlife habitat features such as snags and logs at a level to sustain wood-dependent species. Monitor these efforts and use adaptive management techniques to ensure efforts are meeting habitat restoration and wildfire prevention objectives with minimal impacts on wildlife.

Factor: Invasive species: Non-native plant and animal invasions disrupt native communities, diminish populations of at-risk native species, and threaten the economic productivity of resource lands. Although the West Cascades has fewer invasives than other ecoregions, invasives are a problem at lower elevations, in disturbed areas, and some sensitive habitats. False brome threatens to dramatically alter forest understories.

Approach: Emphasize prevention, risk assessment, early detection and quick control to prevent new invasives from becoming fully estab-

Dragonflies and Damselflies: Citizen-based monitoring in action

With an amazing array of colors and patterns, acrobatic flying skills, and an appetite for mosquitoes, dragonflies have become almost as popular as butterflies. Dragonflies and their damselfly "cousins" are probably "older", in an evolutionary sense, than dinosaurs and ancient birds. All dragonflies develop in water, but some have very specific habitat requirements while others will tolerate a wide range of conditions. Some dragonflies prefer still water, others prefer fast-flowing water, and still others prefer brackish water. In general, conservation actions that preserve high quality water bodies and wetlands benefit dragonflies. Because dragonflies are quickly attracted to suitable habitat, creating or maintaining pond and wetland habitat is one easy way to help dragonflies. Planting native plants and maintaining hedgerows and other brushy areas also will help dragonflies. Local conservation groups are even promoting "dragonfly watching" for recreation, education and monitoring populations. For example, variegated meadowhawk dragonfly migrations can be observed in late summer in Oregon. Some of these meadowhawks fly hundreds of miles along the northwest coast to spend the winter in warmer climates. Sometimes, dozens to

hundreds of dragonflies may be seen flying overhead each minute. There is still a great deal that people don't understand about this migration, including exactly where the dragonflies breed, where they are coming from, where they are going, why they are going there, or how often they also migrate inland. By observing dragonfly migration, people can help scientists answer some of these questions. Finding out this information will help in determining specific habitat requirements and, ultimately, conservation actions that will help to keep these common, but beautiful, species remain common. For more information see:

- Dragonfly Society of the Americas:
<http://www.afn.org/~jori/dsaintro.html>
- Oregon Dragonfly Migration project:
http://www.ent.orst.edu/ore_dfly/migrate.htm#top

Invasive Non-native Species

Invasive species currently are considered to be one of the primary causes of species becoming threatened and endangered, second only to habitat conversion. Many species are as threatening to people's livelihoods as they are to fish, wildlife and their habitats. This section identifies the species with the greatest current and potential impact in the West Cascades. They were determined through an analysis of Oregon Department of Agriculture's Noxious Weed List, ODFW's Wildlife Integrity Rules, ODFW's Introduced Fish Management Strategies report, information from Portland State University Center for Lakes and Reservoirs, and local expert review. Although some of these species also cause significant economic damage to farms, ranches, and managed forests, this list is focused on those that cause the most severe ecological damage. Impacts from introduced game fish vary from species to species and within ecoregions. As a result, the impacts need to be evaluated more locally (ODFW Introduced Fish Management Strategies Report).

Known invasive non-native animal and plant species

These species are established or documented in this ecoregion, and are known to impact native fish and wildlife populations and habitats. They may range from small, controllable populations to widespread infestations.

Documented Invasive Animals

Bluegill
Brook trout
Brown bullhead
Brown trout
Bullfrog
Carp
Catfish
Crappie
Eastern snapping turtle
European starling
Feral pig
Golden shiner
House sparrow
Lake trout
Largemouth bass
Mosquito fish (*Gambusia*)
Norway rat
Nutria
Smallmouth bass
Striped bass
Virginia opossum
Walleye

Documented Invasive Plants

Armenian (Himalayan) blackberry
Butterfly bush
Canada thistle
Curly leaf pondweed (aquatic)
Dalmation toadflax
Diffuse knapweed
Dyers woad
False brome
Giant hogweed
Japanese knotweed
Leafy spurge
Meadow hawkweed
Meadow knapweed
Mouse ear hawkweed
Orange hawkweed
Portuguese broom
Puncture vine
Purple loosestrife
Reed canarygrass
Rush skeletonweed
Scotch broom
Spanish broom
Spotted knapweed
St. Johnswort
Tansy ragwort
Tree of heaven
Woolly distaff thistle
Yellow flag iris (aquatic, riparian)
Yellow star-thistle

Non-native animals and plants of potential concern

Preventing the establishment of invasive non-native species is far more cost-effective and practical than trying to eradicate them once they are established. To make the best use of financial and personnel resources, prevention efforts need to be prioritized to address the greatest threats, especially since many non-native species do not pose a significant threat to fish and wildlife populations and habitats. Potentially harmful non-native species can be identified by examining biological factors, potential impacts and invasion patterns in similar climates. The species listed here are included because: 1) they are not known to occur in this ecoregion, but could pose a threat to fish and wildlife populations and habitats if they become established; or 2) they are known to occur in this ecoregion but the extent to which they impact native species and disrupt ecological processes is unclear at this time.

Potentially Invasive Non-native Animals

Asian carp (bighead, silver)
Banded killfish
New Zealand mudsnail
Oriental weatherfish
Round goby
Ruffe
Rusty crayfish
Snakeheads
Zebra mussel

Potentially Invasive Non-native Plants

Coltsfoot (*Tussilago*)
Gorse
Ovate goatgrass
Pondwater starwort (aquatic)
Purple star-thistle
Squarrose knapweed
Syrian beancaper
Texas blueweed

Conservation actions in the West Cascade Ecoregion identified through other planning efforts

Landowners and land managers can benefit a variety of fish and wildlife species by managing and restoring Strategy Habitats. The following recommendations are relevant to Strategy Habitats. They were identified through a review of existing plans.

Actions	Strategy Habitat and General Location	Source document
Maintain existing late successional habitat and initiate actions to develop or restore late successional forest where appropriate	Late successional forests throughout ecoregion	Oregon-Washington Partners in Flight Westside Coniferous Forests Conservation Strategy (Altman 2000) [recommended target: more than 15% of large landscapes in late successional forests throughout ecoregion]
Maintain connectivity, structural complexity and heterogeneity of landscapes	West Cascades; directed at priority sites based upon species surveys; specific recommendations for reserves and other features in light of species surveys	Northwest Forest Plan (1994; continual updates)
Consider the impact of recreational activities (e.g., motorized watercraft; shoreline activities; road usage) on water quality and watershed function	All locations (as appropriate)	State of the Environment Report; Oregon Plan (OWEB) As appropriate, see Senate Bill 1010 Plans (ODA) and Total Maximum Daily Load Planning (ODEQ)
Focus conservation attention on critical aquatic habitats identified via American Fisheries Society and other standards	Umpqua headwaters area; lower McKenzie watershed around Vida	Oregon Biodiversity Plan See: NOAA and NMFS biologists; ODFW; watershed councils; OWEB for further information.
Improve fish passage. For example, modify barriers or use spans where appropriate.	All locations (as appropriate)	NWPCC Subbasin Plans 2004; State of the Environment Report; Oregon Biodiversity Project; Oregon Plan (OWEB)
Modify practices in forests to meet large wood levels, reduce sediment, maintain water quality and continue to prevent warming and provide riparian habitat	All locations (as appropriate)	NWPCC Subbasin Plans 2004; Oregon Plan (OWEB); Senate Bill 1010 Plans (ODA); Total Maximum Daily Load Planning (ODEQ)
Establish integrated framework for wetland restoration assessment, priority setting, and actions at three scales: watersheds, ecoregions and project sites	Wetlands	Recommendations for a nonregulatory wetland restoration program for Oregon. J.W. Good and C.B. Sawyer. 1998. Prepared for Oregon Division of State Lands and U.S. EPA Region X.
Increase incentives for proactive, nonregulatory wetland restoration and enhancement on private land, focusing on a combination of financial assistance, tax benefits, technical assistance, and education	Wetlands	Recommendations for a nonregulatory wetland restoration program for Oregon. J.W. Good and C.B. Sawyer. 1998. Prepared for Oregon Division of State Lands and U.S. EPA Region X.
Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology. - Plant vegetation to stabilize banks; leaving stumps, fallen trees and boulders in waterways - Maintain or enhance off channel or side channel meanders, habitat and pools	Aquatic habitats (lakes, ponds, streams, pools)	Oregon Aquatic habitat restoration and enhancement guide. The Oregon Plan for Salmon and Watersheds May 1999. <i>See guide for specific technical recommendations, sources of information and assistance, and other guidelines.</i>
Maintain riparian and wetlands function: - Manage grazing, riparian vegetation planting and fencing, and livestock water facilities according to best practices, current techniques and with respect to natural hydrological conditions.	Riparian and wetlands habitats	Oregon Aquatic habitat restoration and enhancement guide. The Oregon Plan for Salmon and Watersheds May 1999. <i>See guide for specific technical recommendations</i>
Upslope erosion control: - Create water and sediment control basins to contain runoff, wastewater - Use windbreaks (tree and shrub rows – using native plants) to reduce erosion and deposition - Upland terracing	Aquatics, riparian and wetland habitats	Oregon Aquatic habitat restoration and enhancement guide. The Oregon Plan for Salmon and Watersheds May 1999. <i>See guide for specific technical recommendations</i>

**Note: Conservation Strategy monitoring indicators, linked with OSOER Key indicators, targets, and methods, will be identified in a statewide approach (See Monitoring chapter for more information).*

lished. Prioritize efforts to focus on key invasive species in high priority areas, particularly where Strategy Habitats and Species occur. Where needed, use multiple site-appropriate tools (mechanical, chemical and biological) to control the most damaging invasive species. Promote the use of native “local” stock for restoration and revegetation.

Conservation Success Story – Jim’s Creek

The West Cascades foothills once had extensive woodlands and savannas of widely-spaced large Oregon white oak, ponderosa pine and Douglas-fir trees with a grass and wildflower understory. Native Americans are thought to have maintained these habitats through the use of fire, which produced forage for big game, improved traveling conditions, and selected for important subsistence plants such as camas, tarweed, and desert-parsleys. As a result of changes in fire frequency and intensity after European settlement, Douglas-fir now dominates in many of these areas, and many of the open woodlands and savannas converted to forests. Almost 95 percent of open oak and pine habitats have been lost in this ecoregion. Currently, remnant patches of oak-pine woodlands and savannas are found on the margins of the Willamette, Umpqua, and Rogue valleys and some dry, south-facing mid-elevation slopes.

One site with a remnant oak-pine woodland and evidence of Native American use is the area around Jim’s Creek, on the Willamette National Forest near Oakridge. The site’s important ecological and cultural value has inspired a comprehensive planning effort to restore some of the oak-pine habitat. Once a savanna with large, scattered oak, pine, and Douglas-fir trees, the area is dominated by a relatively dense Douglas-fir forest. Several of the large ponderosa pines have scars characteristic of bark removal. Native Americans removed the inner bark (cambium) for medicine, so these large trees are considered “medicine trees.” However, the large pines are declining in health, and oaks are now restricted to the margins of small, rocky openings. With no pine or oak regeneration occurring, the site will convert to a Douglas-fir forest if no actions are taken. The large heritage ponderosa pine trees will be lost.

In response, the Willamette National Forest began an extensive outreach effort to the communities of Oakridge and Eugene, including political leaders, Native American leaders, the timber industry, and environmental groups to discuss the issues and ask people how they thought the landscape should be managed. Ecological studies on current and historic vegetation, small mammal populations, and fish populations have been initiated to determine restoration opportunities and to guide management in an adaptive management approach.

These ecological studies also will provide valuable lessons that could be applied to other sites. So far, competing conifers have been removed from around several large oak and ponderosa pine trees in three test treatment plots. The plots are being used to demonstrate potential techniques and results. The plots also will test the effects of treatment on the individual oak and pine trees. The extensive planning process will be completed in 2005, with potential treatments being implemented in 2006. The Jim’s Creek project is a comprehensive approach to building partnerships and planning science-based restoration that will hopefully restore an important cultural and ecological landscape for future generations to enjoy.

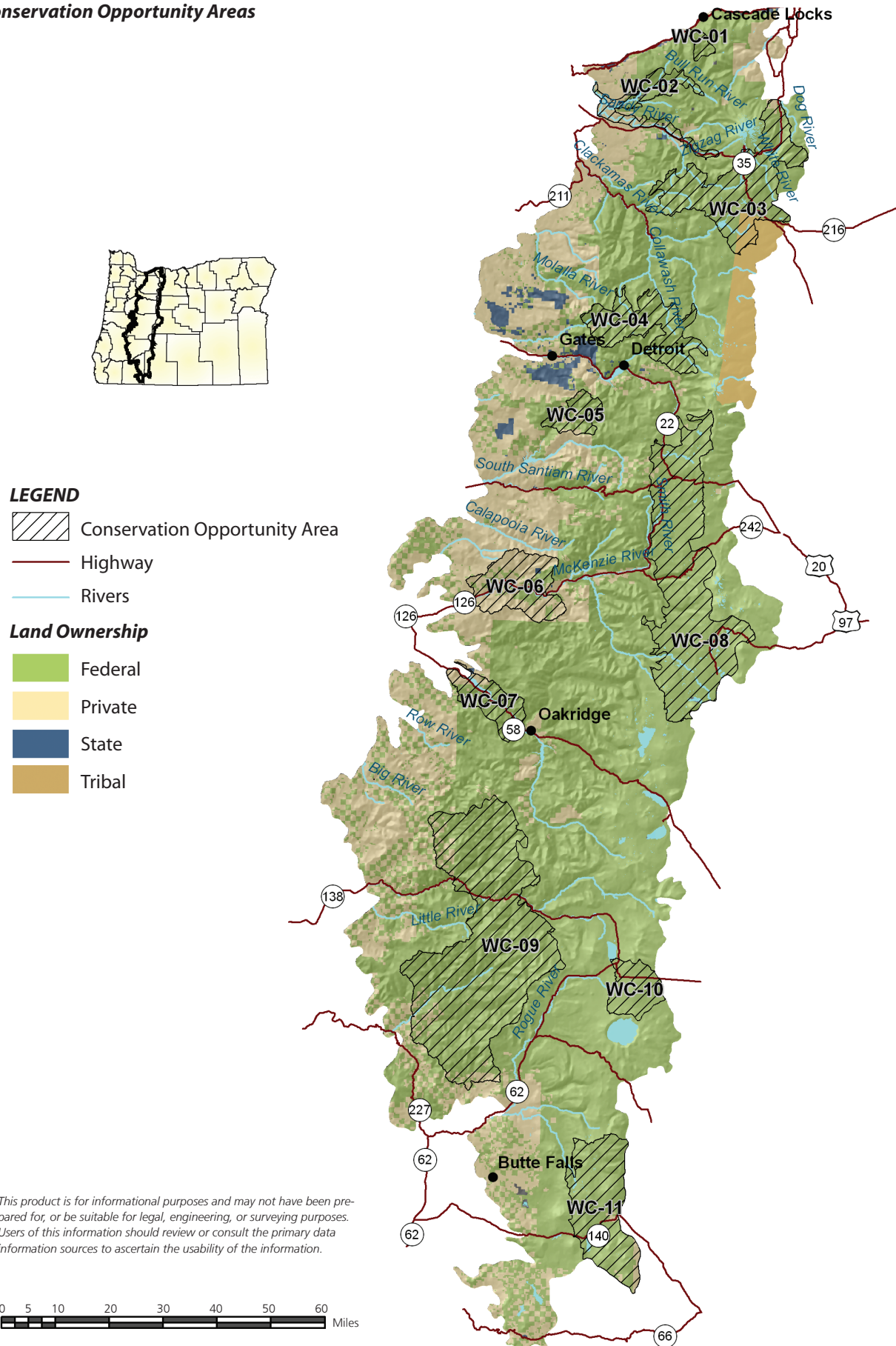
Deciding Where to Work

Conservation Opportunity Areas Map and Profiles

Landowners and land managers throughout Oregon can contribute to conserving fish and wildlife by maintaining, restoring, and improving habitats. Conservation actions to benefit Strategy Species and Habitats are important regardless of location. However, focusing investments in certain priority areas can increase likelihood of long-term success over larger landscapes, improve funding efficiency, and promote cooperative efforts across ownership boundaries. Conservation Opportunity Areas are landscapes where broad fish and wildlife conservation goals would be best met. Conservation Opportunity Areas were developed to guide voluntary, non-regulatory actions. This map and the associated data should only be used in ways consistent with these intentions. For more information on how Conservation Opportunity Areas were developed, see Appendix IV, “Methods” (beginning on page a:34).

The Conservation Opportunity Area profiles include information on recommended conservation actions, special features, key species, key habitats, and if the area has been identified as a priority by other planning efforts. These profiles highlight some priority actions to implement in individual Conservation Opportunity Areas, which can range from restoration projects to monitoring for invasive species. These recommendations were identified through existing plans, spatial analysis, and expert review. They are not meant to be exhaustive, so other actions also will be appropriate, as influenced by local site characteristics and management goals. Actions need to be compatible with local priorities, local comprehensive plans and land use ordinances, as well as other local, state, or federal laws. Actions on federal lands must undergo federal planning processes prior to implementation to ensure consistency with existing plans and management objectives for the area.

West Cascades Ecoregion Conservation Opportunity Areas



Conservation Opportunity Area Profiles

WC-01. Eagle Creek

Located at the northern edge of the ecoregion in the Hatfield Wilderness, this area is comprised of the Eagle Creek drainage which flows into the Columbia River.

Key Habitats:

- Aquatic
- Late Successional Douglas-fir Forests
- Riparian
- Wetlands And Wet Meadows

Key Species:

- Cascade Torrent Salamander
- Cope's Giant Salamander
- Larch Mountain Salamander
- Oregon Slender Salamander
- Northern Goshawk
- Coastal Cutthroat Trout

Recommended Conservation Actions:

- Initiate or continue wet meadow conservation and restoration efforts
- Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology
- Maintain or restore riparian habitat and ecological function; ensure sufficient habitat complexity for wildlife

WC-02. Bull Run-Sandy Rivers

Special Features:

- *Area contains the Sandy River Gorge Preserve and a portion of the Sandy designated as a Wild and Scenic River.*
- *Much of the Bull Run River area is within a Forest Service designated Late Successional Reserve.*
- *Important area for winter steelhead, fall Chinook salmon and spring Chinook salmon*

Key Habitats:

- Aquatic
- Late Successional Douglas-fir Forests
- Riparian

Key Species:

- Cascade Torrent Salamander
- Cope's Giant Salamander
- Oregon Slender Salamander
- Oregon Spotted Frog
- Northern Goshawk
- Coho Salmon

- Fall Chinook Salmon
- Winter Steelhead

Recommended Conservation Actions:

- Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology
- Maintain or restore riparian habitat and ecological function; ensure sufficient habitat complexity for wildlife

WC-03. Mt. Hood area

Special Features:

- *Area includes Bonney Butte, an important funnel for migratory raptors, which has been a Hawkwatch International monitoring site since 1994. Up to 18 species of raptors have been observed in a single season.*
- *This area represents a large percentage of the ecoregion's habitat for several amphibian species.*

Key Habitats:

- Late Successional Douglas-fir Forests

Key Species:

- Cascade Torrent Salamander
- Cascades Frog
- Coastal Tailed Frog
- Cope's Giant Salamander
- Larch Mountain Salamander
- Oregon Slender Salamander
- Bufflehead
- Northern Goshawk
- Coastal Cutthroat Trout

Identified in other planning efforts:

- American Fisheries Society Aquatic Diversity Areas (along the Salmon, White, and Roaring Rivers)
- Oregon's Important Bird Areas

WC-04. Bull of the Woods area

Special Features:

- *Area includes the Bull of the Woods Wilderness.*

Key Habitats:

- Aquatic
- Late Successional Douglas-fir Forests

Key Species:

- Cascade Torrent Salamander
- Great Gray Owl
- Northern Goshawk

Identified in other planning efforts:

- American Fisheries Society Aquatic Diversity Area

WC-05. Quartzville Creek area

Special Features:

- *BLM is negotiating to acquire the remaining parcels of private land that are adjacent to the creek within the Wild and Scenic corridor. [Oregon Important Bird Areas website]*
- *The Quartzville Creek Basin represents a significant percentage of breeding habitat for the harlequin duck.*

Key Habitats:

- Aquatic
- Late Successional Douglas-fir Forests

Key Species:

- Cascade Torrent Salamander
- Larch Mountain Salamander
- Oregon Slender Salamander
- Harlequin Duck

Identified in other planning efforts:

- Oregon's Important Bird Areas

Recommended Conservation Actions:

- Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology

WC-06. McKenzie River area

Special Features:

- *Federal land in this area is designated as an adaptive management area, designed to emphasize research on ecosystem function in forested landscapes.*
- *Area encompasses two aquatic diversity areas.*
- *Habitat for several amphibian species.*

Key Habitats:

- Aquatic
- Late Successional Douglas-fir Forests
- Riparian

Key Species:

- Coastal Tailed Frog
- Harlequin Duck
- Bull Trout (Columbia River Population)

Identified in other planning efforts:

- American Fisheries Society Aquatic Diversity Areas
- Oregon Biodiversity Project Conservation Opportunity Areas

Recommended Conservation Actions:

- Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology
- Maintain or restore riparian habitat and ecological function; ensure sufficient habitat complexity for wildlife

WC-07. Middle Fork Willamette River

Special Features:

- *Area contains the North Fork Willamette Wild and Scenic River.*

Key Habitats:

- Aquatic
- Late Successional Douglas-fir Forests

Key Species:

- Oregon Slender Salamander
- Bull Trout (Columbia River Population)
- Oregon Chub
- American Marten
- Fisher
- Fringed Bat

Recommended Conservation Actions:

- Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology

WC-08. Central Cascades Crest

Special Features:

- *Containing parts of several wilderness areas, this large area is almost entirely managed for conservation values.*

Key Habitats:

- Late Successional Douglas-fir Forests
- Montane Grasslands
- Wetlands And Wet Meadows

Key Species:

- Cascade Torrent Salamander
- Cascades Frog
- Coastal Tailed Frog
- Oregon Slender Salamander
- Oregon Spotted Frog
- Black Swift
- Bufflehead
- Northern Goshawk
- Sandhill Crane
- American Marten
- Fisher

Identified in other planning efforts:

- American Fisheries Society Aquatic Diversity Areas

Recommended Conservation Actions:

- Initiate or continue wet meadow conservation and restoration efforts

WC-09. Umpqua Headwaters

Area includes the headwaters of the North and South Umpqua Rivers.

Special Features:

- *This area encompasses some of the ecoregion's most important salmonid habitat, including 11 American Fisheries Society aquatic diversity areas.*
- *Much of this area has been designated by the US Forest Service as a Late Successional Reserve.*
- *The northwestern pond turtle can be observed in low elevation lakes and streams throughout this area, particularly in the South Umpqua area. There are documented nesting sites and observed hatchlings here.*

Key Habitats:

- Aquatic
- Late Successional Douglas-fir Forests

Key Species:

- Cascades Frog
- Foothill Yellow-legged Frog
- Larch Mountain Salamander
- Great Gray Owl
- Northern Goshawk
- Coastal Cutthroat Trout
- Coho Salmon
- Summer Steelhead
- Umpqua Oregon Chub
- Winter Steelhead
- American Marten
- Fisher
- Fringed Bat
- Townsend's Big-eared Bat
- Northwestern Pond Turtle

Identified in other planning efforts:

- American Fisheries Society Aquatic Diversity Areas
- Oregon Biodiversity Project Conservation Opportunity Areas
- The Oregon Plan Core Salmon Areas

Recommended Conservation Actions:

- Consider the impact of recreational activities (e.g., motorized watercraft; shoreline activities; road usage) on water quality and watershed function

- Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology

WC-10. Crater Lake**Special Features:**

- *Most of this area is within Crater Lake National Park, 90% of which is managed as a wilderness.*
- *Area contains 8% of the ecoregion's wetlands and wet meadows.*

Key Habitats:

- Wetlands And Wet Meadows

Key Species:

- Cascades Frog
- Bufflehead
- Olive-sided Flycatcher
- American Marten
- Canada Lynx

WC-11. Pelican Butte-Sky Lakes area**Special Features:**

- Most of this area is managed for conservation values, including the Sky Lakes Wilderness, Mountain Lakes Wilderness, and land designated as Late Successional Reserve.
- Area contains 87% of the ecoregion's grasslands and 48% of the ecoregion's wetlands and wet meadows.

Key Habitats:

- Montane Grasslands
- Wetlands And Wet Meadows

Key Species:

- Oregon Spotted Frog
- Sandhill Crane
- Bull Trout (Klamath River Population)
- Klamath Basin Redband Trout
- Lost River Sucker

Identified in other planning efforts:

- American Fisheries Society Aquatic Diversity Areas