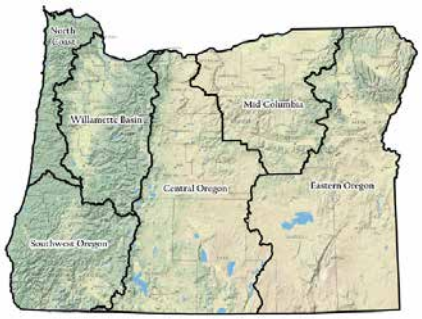
Oregon Plan for Salmon and Watersheds
2009-2011 Biennial Report



This eighth report on the Oregon Plan for Salmon and Watersheds (Oregon Plan) provides an update on the accomplishments and continuing efforts of Oregonians to protect and improve clean water and maintain and recover healthy populations of fish and wildlife and their habitats.

The Executive Summary (PDF) provides a high-level look at issues, describes OWEB Board observations and recommendations, and highlights key accomplishments of partners and teams.

The Oregon Plan is an initiative where all Oregonians join in to help restore healthy watersheds that support the economy and quality of life in local communities. The Oregon Plan has four necessary elements:

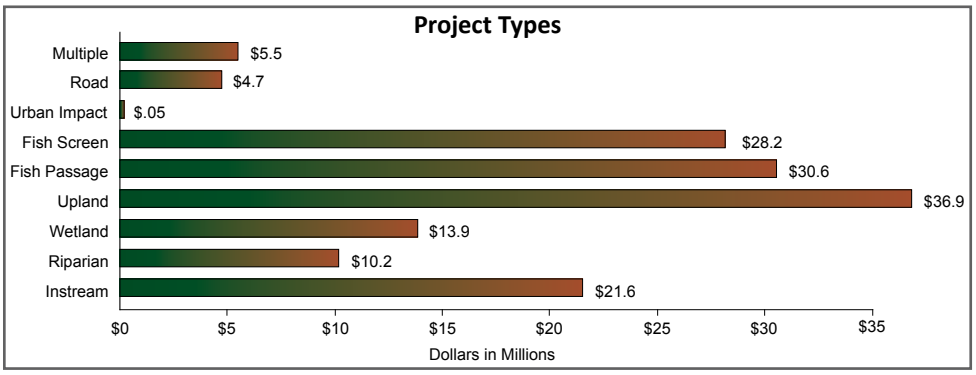
- Voluntary restoration actions by private landowners - individuals and industry, rural and urban - with support from citizen groups, businesses, and local government.
- Coordinated state and federal agency and tribal actions to support private and voluntary restoration efforts, effectively implement regulatory programs, soundly manage public land, and promote public education and awareness about watersheds and salmon.
- Monitoring of watershed health, water quality, and salmon recovery to document existing conditions, track changes, and determine the impact of programs and actions.
- Scientific oversight by the Independent Multidisciplinary Science Team, an independent panel of scientists who evaluate the plan's effectiveness, identify needed changes, and guide research investments.

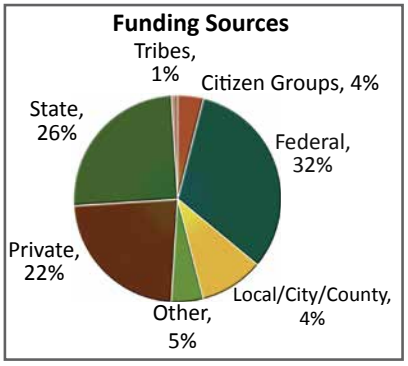
More information can be found on the Oregon Plan for Salmon and Watersheds website.

Oregon Plan Restoration Investments and Outcomes, 2008-2009

The 2009-2011 Report contains the results of restoration activities completed and reported in 2008 and 2009. The amount of funding reported for restoration projects under the Oregon Plan has tripled from $48 million in 1997-1998 to more than $151 million in 2008-2009. The graphical displays of reported statewide funding are contained in the Executive Summary.

This data comes from the Oregon Watershed Restoration Inventory (OWRI), the Federal Interagency Restoration Database, and Oregon Department of Fish and Wildlife Fish Screening and Passage Program Database. The OWRI was established in 1995 to track completed restoration work across Oregon. Except for projects funded by OWEB or implemented under certain permits, all reporting to this database is voluntary.





Voluntary Restoration

The voluntary restoration work completed by private landowners – ranging from individuals to industries in rural and urban communities – allows Oregon to accomplish significant watershed, fish and wildlife habitat, and water quality results that cannot be achieved by governmental regulatory programs alone. Landowners are often assisted by a local watershed council or soil and water conservation district to improve management practices or implement restoration projects. Local government and other nonprofit organizations also work with landowners.

Between July 1, 2009, and December 20, 2010, watershed councils and soil and water conservation districts were the recipient of nearly 86% of OWEB's competitive grant awards for assessment, monitoring, education and outreach, technical assistance, habitat protection, and on-the-ground restoration projects.

Watershed councils are locally organized, voluntary, non-regulatory groups established to improve the condition of watersheds in their local area. They are comprised of people from the local community who work across jurisdictional boundaries and across agency mandates to look at the watershed more holistically. Councils monitor and assess watershed conditions, provide learning opportunities, build community, leverage funding, and implement restoration projects. Funding is provided from OWEB to support council capacity to effectively engage the participation of private landowners and local communities. More information is available on the Network of Oregon Watershed Councils website.

Soil and water conservation districts (SWCDs) are local government entities that provide the link between state and federal programs and landowners. The SWCDs complement the work of watershed councils. Funding from OWEB is distributed through the Oregon Department of Agriculture (ODA) to 45 SWCDs for conducting outreach and providing technical assistance to landowners. ODA Report on SWCD Activities.

Coordinated Agency Actions

Effective actions by government agencies are essential to improve Oregon's watersheds. This premise recognizes the role of state and federal agencies to implement existing regulatory and conservation programs to protect natural resources. Agency actions, in partnership with local groups and landowners, are important to improve water quality, recover salmon populations, and restore watershed health. Details about the accomplishments and activities of Oregon natural resource agencies are provided for the 2009-2011 biennium.

A number of Oregon state agencies are responsible for conservation investments, water quality and quantity protection, fish and wildlife habitat protection, and restoration activities, fishery harvest management, and production of hatchery fish. Each agency is given authority by legislative action and their capacity is limited by budget appropriations. The following describes each agency's mission and offers examples of agency Oregon Plan activities during the first half of the 2009-2011 biennium.

The **Oregon Business Development Department** (OBDD) works to create, retain, expand and attract businesses that provide sustainable, living-wage jobs for Oregonians. OBDD Report

The **Oregon Department of Agriculture** (ODA) provides leadership, service, and regulatory functions for food production and processing, and protection of the agricultural natural resource base. Plant Division Annual Report 2009, Noxious Weed Control Program, and ODA Report.

The **Department of Environmental Quality** (DEQ) is responsible for protecting and enhancing Oregon's water and air quality and for managing the proper disposal of solid and hazardous wastes. DEQ Report

The **Oregon Department of Fish and Wildlife** (ODFW) is responsible for all Oregon fish and wildlife resources and their habitats, including operating hatcheries, selling hunting and angling licenses, advising on habitat protection for Oregon's diverse wildlife populations and educating the public on natural resource issues. ODFW Report

The **Oregon Department of Forestry** (ODF), at the direction of the state forester, appointed by the State Board of Forestry, acts on all matters pertaining to forestry, including collecting and sharing information about the conditions of Oregon's forests, protecting forestlands, and conserving forest resources. ODF Report

The **Department of Geology and Mineral Industries** (DOGAMI) is Oregon's centralized source of geologic information.

The **Department of Land Conservation and Development** (DLCD) administers Oregon's statewide land-use planning program and Oregon's federally approved coastal-management program. DLCD Report

The **Department of State Lands** (DSL) manages grazing and agricultural land, forestland, off-shore land and estuarine tidelands, and submerged and submersible lands of the state's extensive navigable waterway system. DSL administers the state's removal-fill law and is the lead agency for the protection and maintenance of wetlands resources. DSL Report

The **Oregon Marine Board** is Oregon's recreational boating agency, dedicated to safety, education, and access.

The mission of the **Oregon Parks and Recreation Department** (OPRD) is to "provide and protect outstanding, natural, scenic, cultural, historic and recreational sites for the enjoyment and education of present and future generations." OPRD operates Oregon's state parks. OPRD Report

The mission of the **Oregon State Police** (OSP) is to develop, promote, and provide protection to the people, property and natural resources of the state, along with ensuring the state's safety and livability. In 2009-2010, lottery dollars funded 29 OSP fish and wildlife trooper positions across the state. OSP troopers completed 26,794 hours of resource protection, made 36,817 contacts, and documented 4,703 violations.

The **Oregon Department of Transportation's** (ODOT) mission is to provide Oregonians with a safe, efficient transportation system that supports economic opportunity and livable communities. ODOT invests funding to retrofit and replace culverts that block fish passage across state highways. This biennium, eight projects were completed to open or improve access to 7.4 miles of stream habitat. ODOT Report

The **Water Resources Department's** (WRD) core functions are to protect existing water rights, facilitate voluntary streamflow restoration, increase the understanding of the demands on the state's water resources, provide accurate and accessible water resource data, and facilitate water supply solutions. WRD Report

The **Oregon Watershed Enhancement Board** (OWEB) provides watershed improvement grants, technical guidance and assistance to local groups working with volunteer landowners to improve watershed health. OWEB also partners with other stakeholders, agencies, local governments, tribes, and industries to support watershed restoration efforts.

Monitoring

Monitoring programs allow Oregonians to learn about key watershed functions and to evaluate the benefits of conservation and restoration efforts in our watersheds. Monitoring programs established to support the Oregon Plan for Salmon and Watersheds are designed to do the following: describe the health of Oregon's watersheds; track important water quality, fish, wildlife, and habitat through time; evaluate the effectiveness of conservation and restoration efforts; and provide information used for setting priorities and making strategic decisions about resource investments. During the 2009-2011 biennium, the State of Oregon made significant strides under the three main components of the Oregon Plan Monitoring Strategy: 1) status and trends monitoring, 2) effectiveness monitoring, and 3) sharing data and monitoring results.

Monitoring Accomplishments

- State agencies' capacity to conduct large scale monitoring efforts has been reduced from past biennia, especially for watershed water quality monitoring. Potential federal funding has been identified that may increase monitoring capability in the next biennium, particular for salmon monitoring. Despite budgetary limitations, dedicated individuals made significant progress on several important monitoring and data distribution related efforts (see below).
- Climate change is increasingly a major watershed condition driver and requires more and different types of monitoring in new geographies. Future successes in restoration will depend upon a stronger understanding of climate change through strategic monitoring efforts.
- Watershed Councils and Soil and Water Conservation Districts continue to implement more than 40 environmental monitoring programs, particularly those focused on water quality and fish monitoring. These projects are conducted at the local level and involve citizens in key watershed management and restoration decisions.
- OWEB, in partnership with Oregon State University, the University of Oregon and the Department of Administrative Services, created new web-based tools to afford the public easy access to more information about grants and restoration projects.

- OWEB continued to make strong investments in its budding effectiveness monitoring program that is designed to gather results about outcomes from watershed restoration efforts.
- A Willamette Basin water quality assessment report was completed by the Oregon Department of Environmental Quality that combined 10 years of data collected through 15 different surveys by municipalities, local groups, agencies, and universities.
- The Oregon Department of Fish and Wildlife maintained the high intensity coastal Coho monitoring program and expanded the work into the Middle Columbia River Recovery Domain, expanded surveys and plans for additional Lower Columbia River monitoring including those important for chum salmon reintroduction, and influenced regional adaptation of Oregon Plan monitoring methods.
- OWEB hired the University of Oregon's Ecosystem Workforce Program to research and evaluate the economic and employment stimulus that results from watershed restoration conducted by local organizations and businesses.
- The OWEB Board invested nearly $2.4 million in grants to monitoring projects throughout Oregon.
- The Legislature allocated over $6.5 million in funds to state agencies for monitoring fish populations, water quality, and habitat.

Science Oversight

Independent Multidisciplinary Science Team

The Independent Multidisciplinary Science Team (IMST) is an impartial scientific review panel charged with advising the State of Oregon on science related to the Oregon Plan. The IMST's scientific guidance enhances Oregon's efforts in recovering native fish populations, improving water quality, and enhancing watershed health. The IMST represents a spectrum of scientific disciplines relevant to the management of Oregon's natural resources. Members are jointly appointed by the Governor, Senate President, and Speaker of the House of Representatives.

The goals of IMST activities are to foster:

- Enhanced credibility of the Oregon Plan through recognition that actions taken under the Oregon Plan are based on best available science.
- Improved design, implementation, and monitoring of actions by Oregon Plan partners to achieve specific outcomes related to Oregon Plan goals.
- Increased exposure to and understanding of relevant science on the part of those engaged in restoring salmonids and watersheds.

The IMST continually evaluates information needs related to the implementation of the Oregon Plan and other critical issues surrounding the management of Oregon's natural resources. The Team regularly communicates with state agencies, the Governor's Office and State Legislature, and other key Oregon Plan stakeholders and engages these entities in the formulation and prioritization of IMST work, ensuring that products are timely, relevant, and useful. Impartiality is a cornerstone of IMST's work, and they routinely engage with other scientists to obtain a spectrum of interpretations and perspectives on the meaning and implications of scientific research.

IMST Members

Michael J. Harte, College of Oceanic and Atmospheric Sciences, Oregon State University

Robert M. Hughes, Department of Fisheries and Wildlife (Courtesy), Oregon State University

Victor W. Kaczynski, Consulting Fisheries Scientist

Nancy Molina, Cascadia Ecosystems

Carl Schreck, Biological Resources Division, USGS, U.S. Department of Interior

Clinton Shock, Department of Crop and Soil Science, Oregon State University

J. Alan Yeakley, Department of Environmental Science & Resources, Portland State University

IMST Accomplishments

In 2009-2010, IMST focused on meeting state agency needs for scientific and technical information, and reviews of key programs, initiatives, and assessments.

The IMST provided scientific review of:

- Oregon Water Resources Department's draft document titled *White Paper: Ecological Flows: A Scientific Framework for Implementing Oregon HB 3369* (June 4, 2010 draft). The review was requested by the Water Resources Department. (Download review)
- Oregon Department of Environmental Quality's draft document titled *Development and Selection of Bedded Sediment Benchmarks in Oregon* (November 2009 draft). The review was requested the Department of Environmental Quality. (Download review)
- Oregon Department of Fish and Wildlife's draft document titled *Lower Columbia River Conservation and Recovery Plan for Oregon Populations of Salmon and Steelhead* (April 2009 draft). The review was requested by the Governor's Natural Resources Office. (Download review)
- Elliott State Forest's draft *Habitat Conservation Plan and draft Environmental Impact Statement* (April 2008 drafts). The review was requested by the Oregon Departments of Forestry and State Lands. (Download review)
- Oregon Department of Fish and Wildlife's draft document titled *Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead* (February 23, 2010 draft). The review was requested by the Governor's Natural Resources Office. (Download review)

A hallmark of IMST's independence is the capacity to determine its own projects. During the biennium the IMST completed a long-term project examining the role of urban and rural-residential land uses. The 2010 Technical Report titled *Urban and Rural-Residential Land uses: Their Effects on Watershed Health and the Rehabilitation of Oregon's Wild Salmonids* is available online. (Download review)

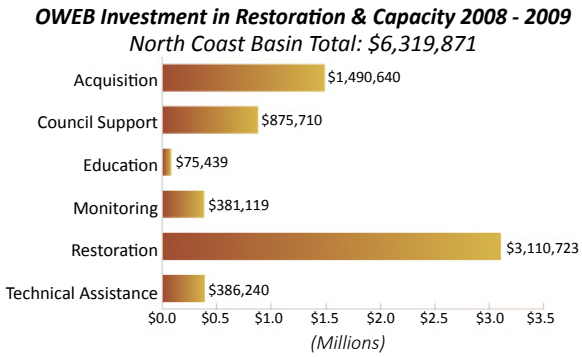
During 2009-2011, the IMST held monthly public meetings on a variety of topics, engaged state agency employees in formal and informal discussions of scientific questions, held briefings with other researchers on emerging scientific issues, participated in Oregon Plan Core Team meetings, and maintained a publicly available web-based searchable database of relevant scientific literature. IMST produces annual reports on its operations and products.

Current and Future IMST Projects and Reviews

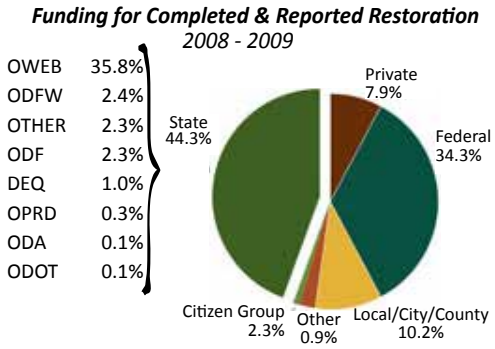
- Scientific review of ODFW's draft conservation plans for fall coastal Chinook salmon, Rogue fall Chinook salmon, and white sturgeon.
- Workshop to identify and define key watershed function and aquatic ecosystem research questions and monitoring needs for Oregon's urban and rural-residential areas
- Future projects will likely address the effects of climate change on native fish species, watershed conditions, and water needs/supply; the ecological roles and health of estuaries; invasive species; and enhanced integrated monitoring for climate change and ecosystem health.

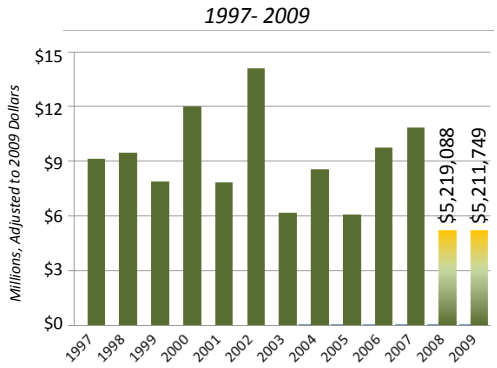
Oregon Plan Basin Reports

North Coast Basin



Composed of eight modestly sized, unobstructed tributaries to the Pacific Ocean, the North Coast basin supports coho, chum, and Chinook salmon, cutthroat trout, and steelhead. Coho salmon have been listed as "threatened" under the federal Endangered Species Act (ESA) and are the focus of significant conservation efforts. Fall Chinook runs are relatively healthy and support world famous fisheries. The Douglas fir and Western hemlock forests of the coast range support a strong forest industry. The Tillamook State Forest, site of the legendary Tillamook Burn in 1933, is beginning to come into harvestable condition. Rivers in this basin are underlain by basalt or sandstone geology with lush forest cover, and are primarily privately managed. The Tillamook County Creamery supports a strong dairy industry in the Tillamook Bay and Nestucca drainages. Estuaries often host recreational fishing and some are a home base for commercial fishing fleets. In recent years, there has been a significant effort to restore tidal flooding to many estuarine properties of the North Coast.





North Coast Restoration Issues

Riparian/Wetland

- Loss of estuarine and low gradient floodplains and wetlands
- Loss of riparian cover
- Invasive species
- Change of tidal inundation in tide-gated areas
- Diking and ditching, loss of rearing habitat and nutrient interchange
- Streambank armoring

Upland

- Sediment delivery from roads
- Herbicide use - industrial and residential

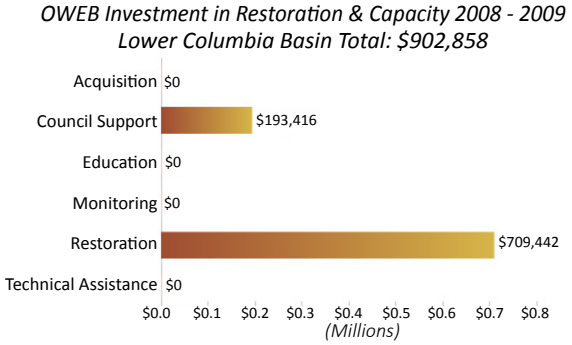
Instream & Passage

- Lack of stream complexity
- High stream temperature
- Tide-gate barriers to fish passage
- Fish passage barriers

Other

- Urban encroachment
- Water availability
- Beaver management

Lower Columbia Basin



In the Lower Columbia basin, a number of relatively small streams drain onto floodplains and into the tidal reaches of the Columbia River. Water flows either from the Coast Range (e.g. Skipanon, Young's, and Clatskanie rivers, Big and Gnat creeks), or from the west slope of the Cascades (Sandy River). These streams generally have heavily forested hillsides in headwater areas and steep valleys. Nearly the entire Columbia River floodplain has been diked to protect farms and urban areas. Undiked areas of the floodplain support high species diversity. Anadromous fish species listings under the federal Endangered Species Act include coho, chum and Chinook salmon, and steelhead. Maritime shipping, commercial fishing, forestry, and wood processing are key elements of the economy in this basin. Extensive hybrid cottonwood plantations occupy much of the diked floodplain. Dam removal in the Sandy River watershed was a significant event for salmon recovery. A targeted effort to address the limiting factors affecting salmon and steelhead in the Sandy Basin has significantly improved habitat through in-stream habitat improvement and up-slope road removal.

Lower Columbia Restoration Issues

Riparian/Wetland

- Loss of Columbia floodplain habitats
- Loss of estuarine wetlands
- Change of tidal inundation in tide-gated areas
- Flow changes due to management of hydroelectric projects
- Invasive species

Upland

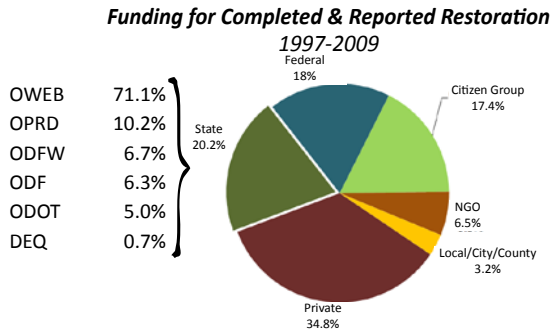
- Fine sediments from farm and forest roads

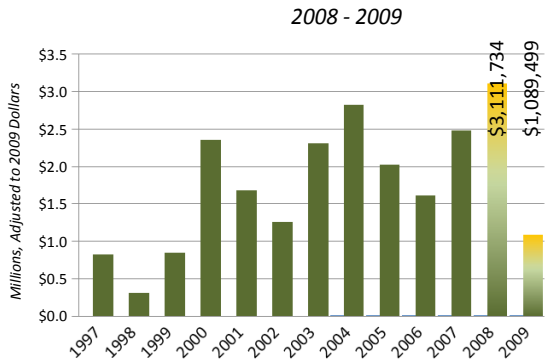
Instream & Passage

- High stream temperatures
- Inventory, prioritize and remove barriers
- Low gradient stream complexity

Other

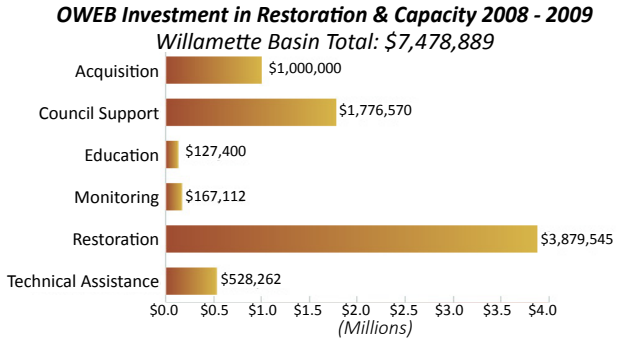
- Urban encroachment
- Water availability
- Diking, ditching/draining, subsequent loss of nutrient interchange





Willamette Basin

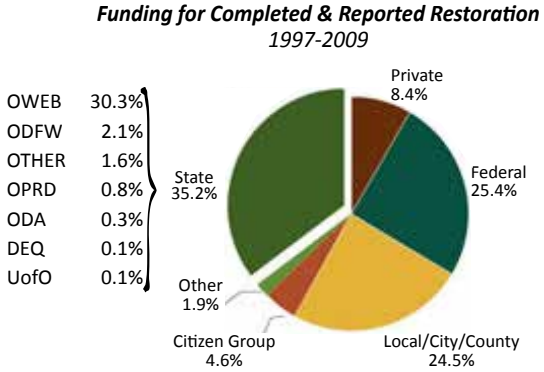
The Willamette basin is bounded on the west by the Coast Range and on the east by the Cascade Range, encompassing the Willamette Valley and adjacent forested foothills. Streams that flow from the Coast Range to the Willamette are lower gradient and rainfall-dependent systems that support native cutthroat trout, lamprey, and winter steelhead. Streams that drain from the Cascades are higher gradient rain and snowmelt-fed systems that support native cutthroat, rainbow, and bull trout; lamprey; spring Chinook salmon; and winter steelhead. Large dams on most Cascade tributaries control valley flooding, but significantly alter fish passage and streamflow regimes throughout the basin. Much of the Willamette basin was originally bottomland riparian hardwood forests, wet prairies, oak savannas, and oak woodlands. Extensive agricultural conversion, urbanization, and fire suppression have greatly reduced these habitats. Today, the basin supports concentrated areas of high technology, diverse agricultural production, forestry and wood products industries, and roughly three-quarters of Oregon's human population.



Willamette Basin Restoration Issues

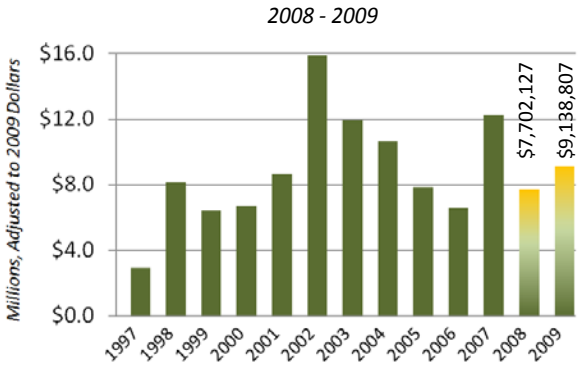
Riparian/Wetland

- Loss of floodplain riparian hardwood forests
- Loss of wet prairies and other wetlands
- Loss of floodplain connectivity
- Threatened and Endangered species
- Agricultural runoff
- Invasive species



Upland

- Loss of oak savanna, oak woodlands, and prairie habitats
- Threatened and Endangered species
- Significant nutrient and chemical inputs
- Urban development
- Invasive species



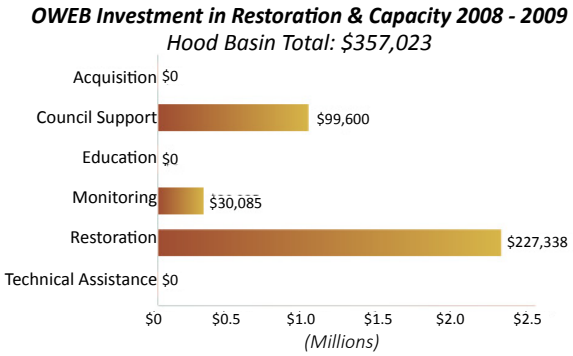
Instream & Passage

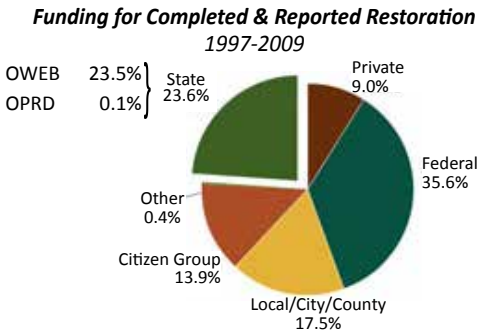
- Water quality degradation; sediment, temperature, mercury, nutrients, bacteria, chemicals, etc.
- Water quantity (over-appropriation)
- Threatened and Endangered species
- Lack of stream complexity
- Barriers to fish passage
- Impacts from hydropower infrastructure

Other

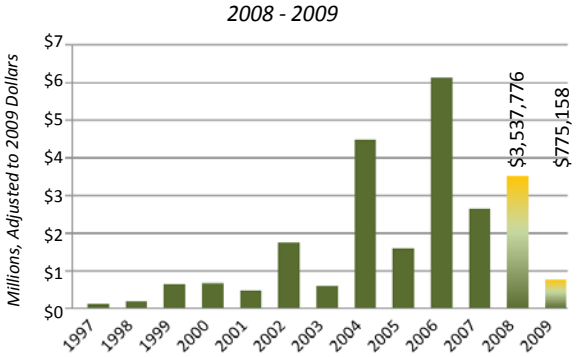
- Legacy of floodplain and landscape alteration
- Legacy of channel simplification
- Growing population/ development
- High dams prevent anadromous fish passage

Hood Basin





Draining directly from Mt. Hood's glaciers, the Hood River and Fifteenmile Creek are the primary Oregon waterways entering the spectacular Columbia River Gorge. The Gorge attracts thousands of visitors annually and is world famous for its windsurfing. Hood River Valley is known for its pears and other orchard crops and the river supports a significant salmon and steelhead fishery. The Fifteenmile Basin is the edge of wheat country and is a major cherry producing area. Fifteenmile Creek also sustains the easternmost population of wild winter steelhead. Agriculture, forestry, and tourism support the economy of this basin. Hood River and The Dalles are the major communities along this present day and historic travel and trade route between inland regions and the coast. The removal of Powerdale Dam on the Hood River, and development of a unique flat fish screen by the Hood River based Farmer's Cooperative Alliance, have helped address factors affecting salmon populations in the Hood River. A comprehensive program of addressing upland runoff in the Fifteenmile Creek watershed is paying off in improved water quality.



Hood Basin Restoration Issues

Riparian/Wetland

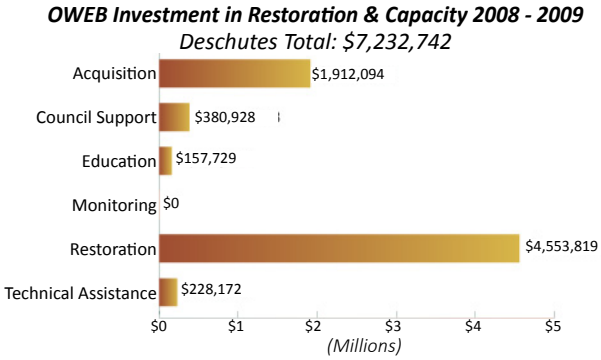
- Glacial silt and high glacial melt flows

Upland

- Sediment inputs from agriculture diversions
- Orchard pesticides inputs to aquatic habitats

Instream & Passage

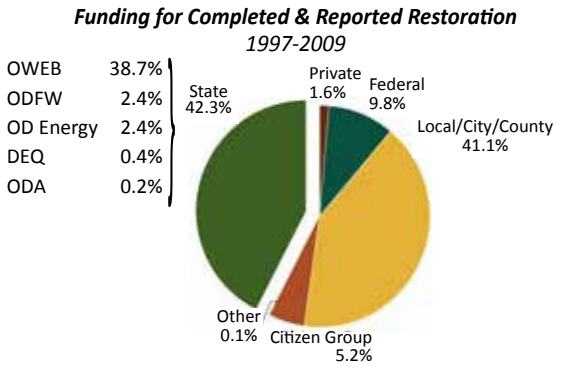
- Out-of-stream water use
- Loss of stream complexity
- Agricultural chemicals in stream and sediment
- Glacial silt

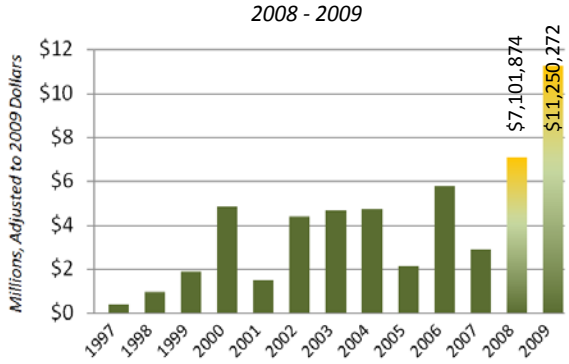


Deschutes Basin

Bordered by the Cascade Range to the west, this basin includes the high Cascade lakes, wild and scenic waterways, and a rapidly growing human population. Tourism, agriculture, forestry, ranching, and a high technology industry dominate the economy of the basin. Fed by snowfields of the Cascade and

Ochoco ranges, the basin's headwaters flow from springs through high elevation wet meadows and lava plains before dropping through scenic canyons and shrub steppe. The Deschutes River hosts world famous trout and steelhead fisheries. Bull trout and steelhead are listed under the federal Endangered Species Act. The Confederated Tribes of Warm Springs operate Kah-Nee-Ta Lodge, a lumber mill, and other tribal enterprises. Round Butte, Ochoco, and Prineville dams generate electricity and block fish runs to the upper basin. With the relicensing of the Pelton-Round Butte dam complex, fish passage has been provided to the upper basin. With reintroduction of anadromous fish into the upper basin, a partnership has been implementing land and water conservation and habitat enhancement to maximize the likelihood of success of the reintroduction.





Deschutes Basin Restoration Issues

Riparian/Wetland

- Drainage of high elevation wet meadows (streamflow)
- Loss of riparian cover

Upland

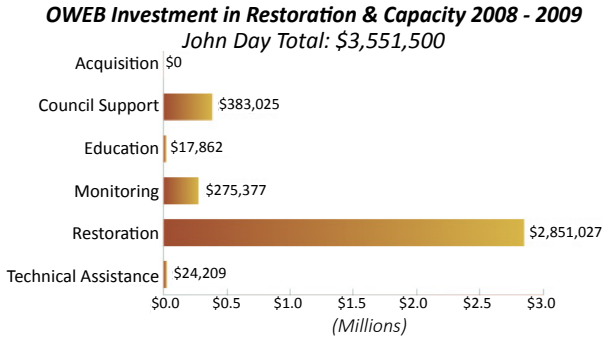
- Altered fire regime and overstocked stands in forested areas
- Sediment inputs from agriculture in lower basin
- Juniper encroachment of rangelands

Instream & Passage

- Loss of stream complexity
- Flow fluctuations for irrigation
- Irrigation diversions
- Hydro diversion
- Irrigation reservoirs

Other

- Rapid residential development
- Habitat restoration for reintroduction of anadromous fish above Lake Billy Chinook



John Day Basin

The John Day River is one of the most significant undammed stream systems in the West and the basin contains the Painted Hills, John Day Fossil Beds National Monument, and Strawberry Mountain Wilderness of the Blue Mountains. The economy is dependent on natural resource industries: forest products; farming; ranching; recreation; and mining. Summer steelhead and bull trout are listed under the federal Endangered Species Act, however the John Day River system has one of the strongest native stocks of summer steelhead in the Northwest. Nearly 40 percent of the basin is public land. Ponderosa pine and Douglas-fir forests in the Ochoco and Blue mountains dominate the headwaters. The north and middle forks of the John Day meander through open meadow and prairie ranch land. The mainstem of the river below Clarno flows through an incised canyon that bisects shrub-steppe and wheat ranches in the uplands before flowing into the Columbia River at the eastern edge of the Columbia River Gorge. Local restoration partners have eliminated more than 100 fish passage barriers in the main stem of the John Day River, and a concentrated restoration and monitoring effort in the middle fork John Day River is providing information about the effectiveness of different restoration treatments.

John Day Restoration Issues

Riparian/Wetland

- Drainage of high elevation wet meadows (streamflow)
- Loss of riparian cover

Upland

- Noxious weeds
- Juniper encroachment of rangelands
- Altered fire regime and overstocked and diseased stands in forested areas

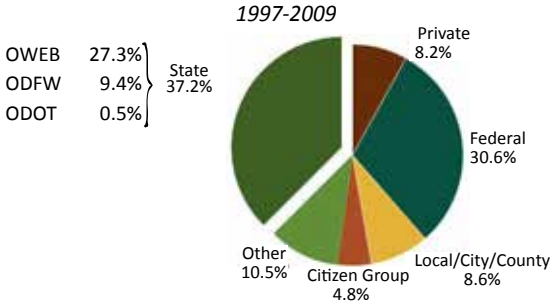
Instream & Passage

- Loss of stream complexity
- Fish passage barriers
- Loss of cold water habitat
- Reduced streamflows
- Irrigation diversions that block passage
- Historic mine contamination

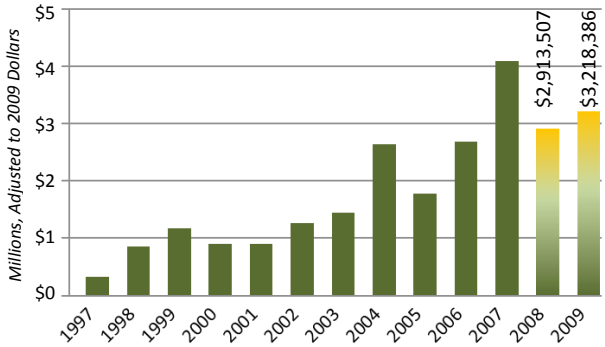
Other

- Significant cumulative temperature increases in the lower river and tributaries

Funding for Completed & Reported Restoration
1997-2009



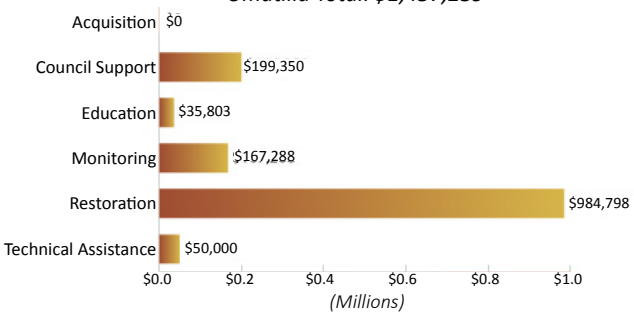
2008 - 2009



Umatilla Basin

This basin includes the Umatilla and Walla Walla rivers, and Willow Creek drainages. Ranching, forest products, wheat, and cattle ranching dominate the economy. The Confederated Tribes of the Umatilla Indian Reservation is in this basin and the tribe is active in fish and wildlife resource management. The Umatilla basin is the site of successful reintroduction of spring Chinook, which were extirpated for more than 75 years. The Umatilla and Walla Walla rivers spring from the forested hillsides of the Blue Mountains. Headwater areas of these rivers support remarkably high numbers and diversity of native species. Downstream reaches of these rivers flow through highly productive wheat farms, fruit orchards, vineyards, and other irrigated agriculture.

OWEB Investment in Restoration & Capacity 2008 - 2009
Umatilla Total: $1,437,239



Umatilla Restoration Issues

Riparian/Wetland

- Drainage of high elevation wet meadows (streamflow)
- Loss of riparian cover
- Degraded floodplain conditions

Upland

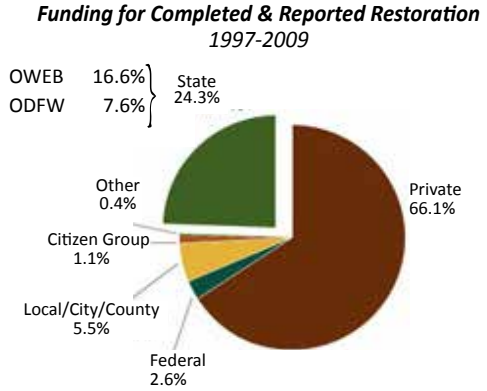
- Noxious weeds
- Loss of shrub steppe habitat
- Altered fire regime and overstocked and diseased stands in forested areas

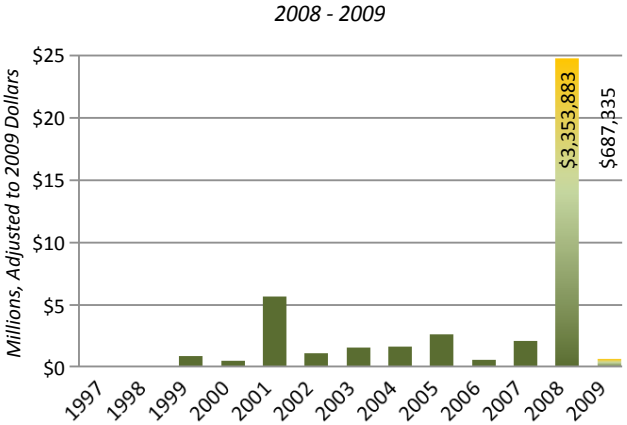
Instream & Passage

- Down-cutting of stream channels
- Loss of stream complexity
- High stream temperatures
- Irrigation diversions
- Groundwater contamination

Other

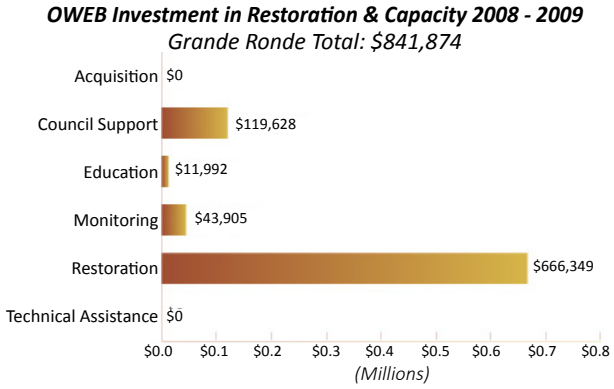
- Flow augmentation in the lower Umatilla and Walla Walla rivers
- Lowering of groundwater aquifers





Grande Ronde Basin

The Wallowa, Grande Ronde, and Imnaha rivers flow from the majestic Wallowa Mountains to the Snake River. The Wallowa Mountains frame the Grande Ronde Valley. Mountain headwater streams in subalpine forests transition through deep canyons and meander through agricultural communities in the lowlands before flowing through deep canyons to join the Snake River. This basin is the historic homeland of the Chief Joseph band of the Nez Perce Tribe. Ranching, agriculture, and forest products are key to the economy in this basin. Nestled between the Imnaha and Grande Ronde rivers, Zumwalt Prairie supports the highest density of raptors in Oregon. Bull trout, spring Chinook salmon and summer steelhead in this basin are listed as "threatened" under the federal Endangered Species Act. Significant efforts to re-meander the Wallowa River have improved habitat for these species.



Grande Ronde Restoration Issues

Riparian/Wetland

- Drainage of high elevation wet meadows (streamflow)
- Loss of riparian cover

Upland

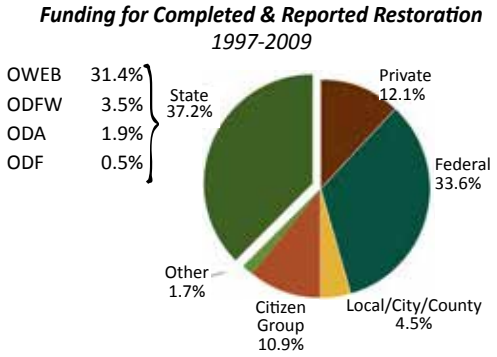
- Altered fire regime and overstocked stands in forested areas

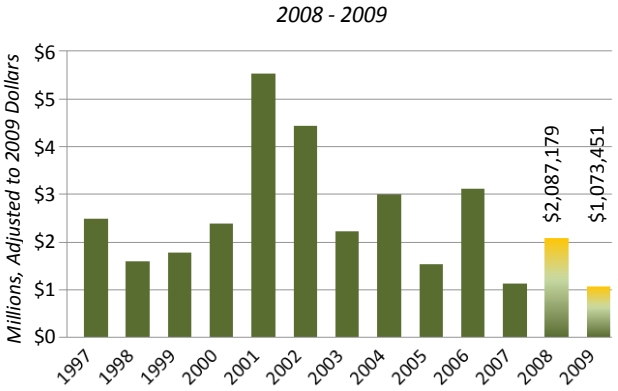
Instream & Passage

- Irrigation diversions
- Loss of late summer flows
- Loss of stream connectivity and complexity

Other

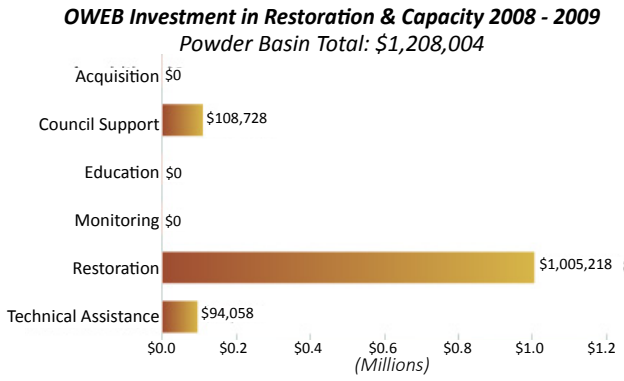
- Loss of Sockeye salmon from Wallowa Lake





Powder Basin

Draining south and east from the Blue Mountains, the Powder and Burnt rivers flow to the middle Snake River. This ranching country contains remnants of the original Oregon Trail traveled by settlers in covered wagons. Mining is still important in this basin, but agriculture and ranching are the key elements of the economy. Bull trout in this basin are listed as "threatened" under the federal Endangered Species Act. Baker Valley has been identified as a conservation opportunity area where riparian thickets and wetlands could be enhanced for native species.



Powder Restoration Issues

Riparian/Wetland

- Loss of riparian cover

Upland

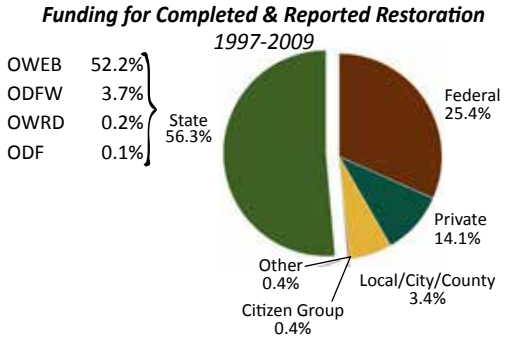
- Juniper encroachment
- Overstocked forest stands

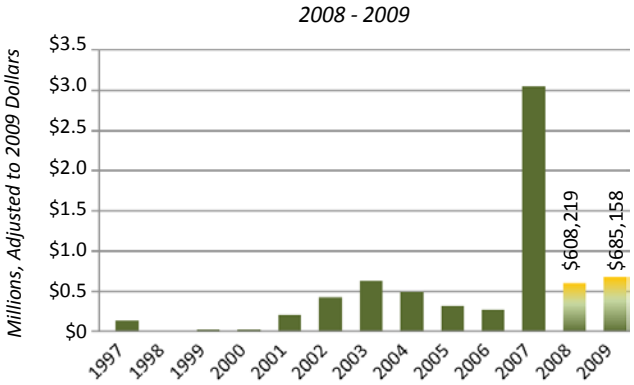
Instream & Passage

- Water quality degradation
- Loss of instream habitat
- Fish passage barriers and unscreened irrigation diversions

Other

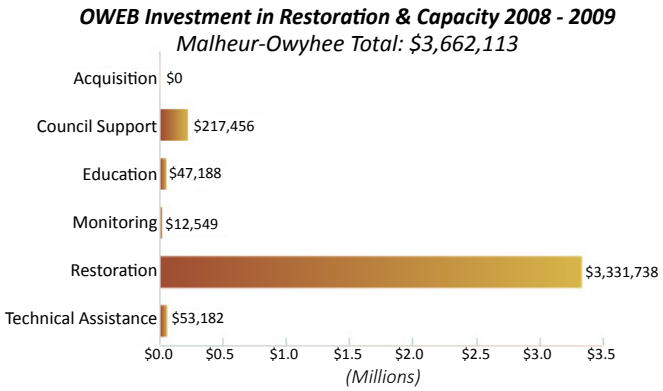
- Effects of historic dredge mining

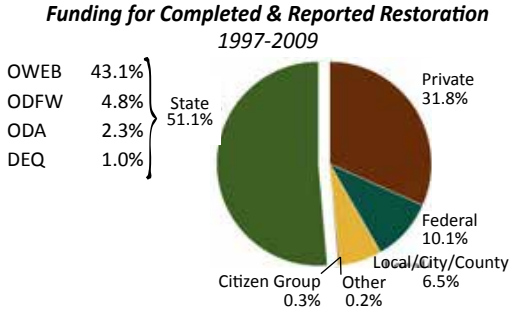


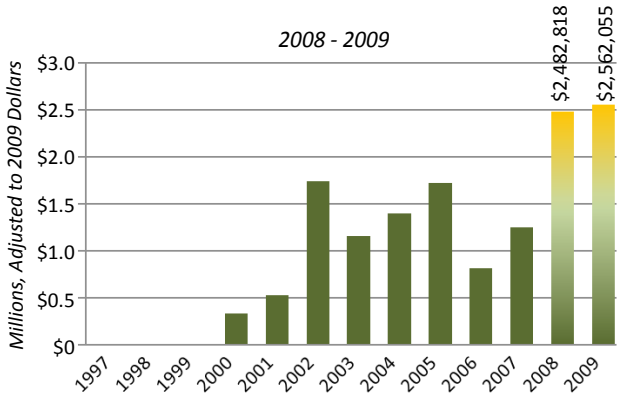


Malheur-Owyhee Basin

The upper Owyhee and Malheur River drainage is a very lightly populated portion of the state. The lower portions of both basins, the western edge of the Treasure Valley, supports rich irrigated row-crop agriculture and is particularly known for production of Spanish onions. Cattle ranching is the dominant use of the upper Owyhee basin that includes the stark beauty of Leslie Gulch and the Jordan Craters. The upper Malheur basin includes cattle ranching, large winterfeeding operations and other agricultural activities. Bull trout in this basin are listed as "threatened" under the federal Endangered Species Act. Recent efforts to use irrigation water more efficiently in the Willow Creek drainage, a tributary to the Malheur River, has reduced livestock effects and water use in the basin. These activities have made significant progress towards addressing the factors that affect water quality in the Willow Creek drainage.







Malheur-Owyhee Restoration Issues

Riparian/Wetland

- Loss of riparian cover
- Fecal coliform bacteria from wintering animals

Upland

- Loss of sagebrush steppe habitat
- Noxious weeds
- Juniper encroachment in rangelands
- Agricultural sediment and nutrient delivery

Instream & Passage

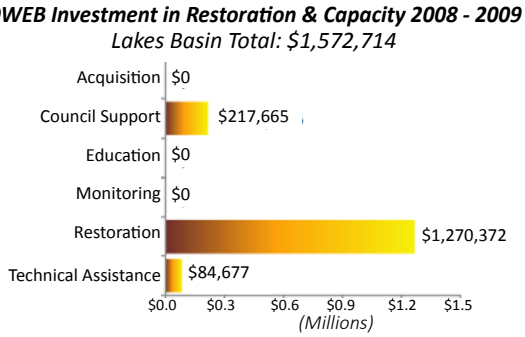
- Increased stream temperatures

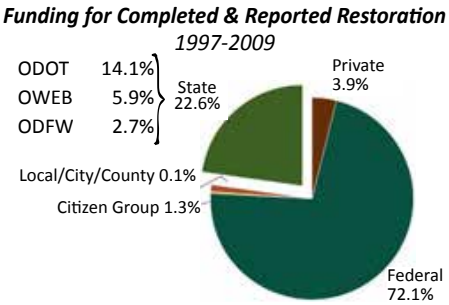
Other

- Groundwater quality degradation from agricultural activities
- Loss of sage grouse habitats

Lakes Basin

Waters that flow in the desert country of Lake, southern Harney, and southwestern Malheur counties drain toward lakes like Malheur, Abert, Silver, Summer, Goose, and Warner. These waterbodies and associated wetlands are remnants of ancient Pleistocene lakes that filled the basin. Scenic mountains rise abruptly from the valley floors. Streams that drain the uplifted ranges support Lahontan cutthroat trout, redband trout, Tui chub, Alvord chub, Warner Lake suckers, Modoc suckers, and Borax Lake chub. Hart Mountain and Malheur National Wildlife Refuges and the Steens Mountain Wilderness Area provide wildlife viewing and scenic vistas. Fort Rock and the Alvord Desert are home to antelope and sage grouse. Diamond Craters, the historic Round Barn of the P Ranch, and the Burns Paiute Reservation are located in this basin. Ranching and forest products principally support the basin's communities.





Lakes Restoration Issues

Riparian/Wetland

- Channelization of riparian (stream) systems
- Loss of riparian cover

Upland

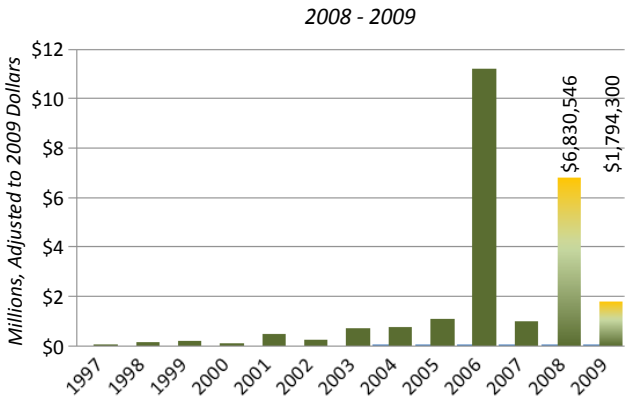
- Noxious weed encroachment
- Juniper encroachment
- Loss of shrub steppe habitats
- Altered fire regime
- Forest insect infestations

Instream & Passage

- Lack of connectivity for adfluvial redband trout

Other

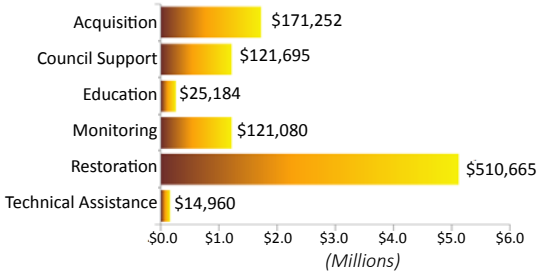
- Sage grouse habitat decline



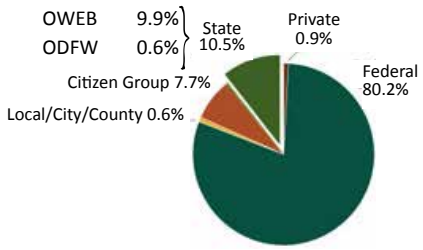
Klamath Basin

The Klamath basin has been the focus of national attention following the drought of 2001. Flowing south from Crater Lake National Park and the Gearhart Wilderness, the streams and springs that form Upper and Lower Klamath lakes exit Oregon into California as the Klamath River. Extensive lakes and wetlands along the Sycan, Sprague, Williamson, and Wood rivers dominate the basin. Numerous bald eagles and immense numbers of waterfowl overwinter in the basin. Irrigated agriculture, ranching, forestry, and recreational tourism are key elements of the economy in the basin. Significant restoration activity has taken place to recover rearing habitat for the listed Lost River and shortnose sucker fish.

OWEB Investment in Restoration & Capacity 2008 - 2009
Klamath Basin Total: $964,836



Funding for Completed & Reported Restoration
1997-2009



Klamath Restoration Issues

Riparian/Wetland

- Loss of lake fringe wetlands, riparian cover, and floodplain and spring connectivity
- Unstable streambanks

Upland

- Altered fire regime
- Juniper encroachment
- Forest insect infestations

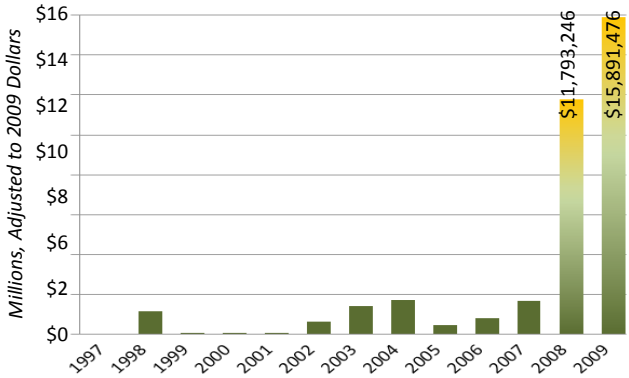
Instream & Passage

- Unscreened diversions
- High stream temperatures
- Channelization of stream systems

Other

- Surface and ground water withdrawals
- Nutrient loading into Upper Klamath Lake

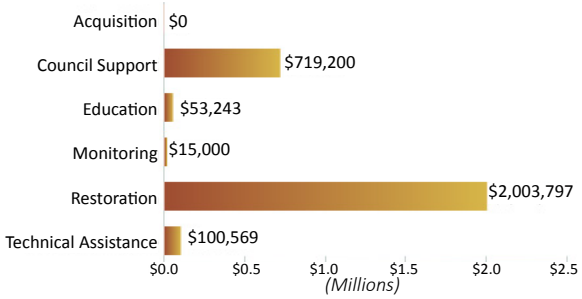
2008 - 2009



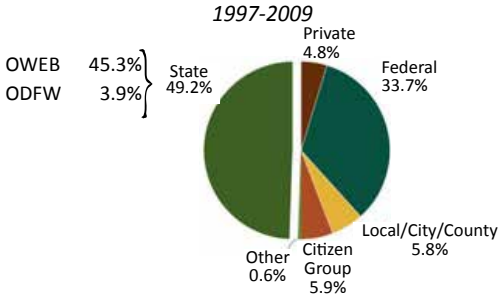
Rogue Basin

Headwaters of the Rogue River originate in Crater Lake National Park in the Southern Cascade Mountains. This basin has an extremely complex geologic structure and corresponding vegetation patterns. From the lava and pumice of the southern Cascade volcanoes, the middle Rogue River flows through the relatively populated Medford-Ashland area with its orchards and irrigated agriculture and expanding urban base. Forestry is also a significant economic sector in the basin with mining being a large historic industry. Fisheries for Chinook salmon and steelhead in the Rogue are world famous. Coho salmon in the Rogue are identified as part of the Southern Oregon/Northern California Evolutionarily Significant Unit and listed as "threatened" under the federal Endangered Species Act. The Wild and Scenic Rogue River cuts through the Coast Range and enters the Pacific Ocean at Gold Beach, where mail boat tours take visitors upriver and salmon fishing is a yearly ritual. The recent removal of three main stem dams allows anadromous fish free access for 157 miles of the Rogue River for the first time in almost 100 years.

OWEB Investment in Restoration & Capacity 2008 - 2009
Rogue Basin Total: $2,891,809



Funding for Completed & Reported Restoration
1997-2009



Rogue Basin Restoration Issues

Riparian/Wetland

- Reduced warm season streamflows
- Rapidly urbanizing areas
- Loss of riparian cover

Upland

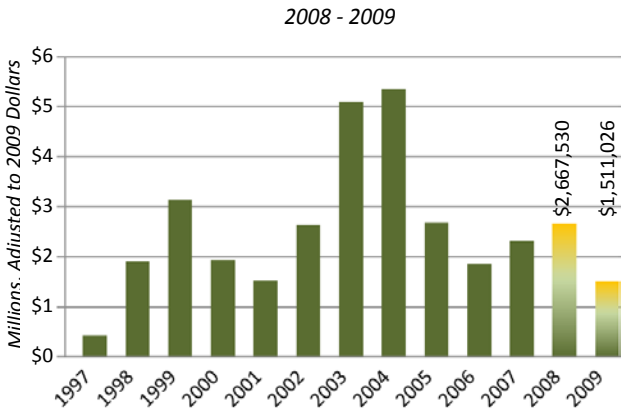
- High fire risk
- Sediment delivery from forest roads

Instream & Passage

- Tributary fish passage barriers
- Lack of stream complexity
- High stream temperature

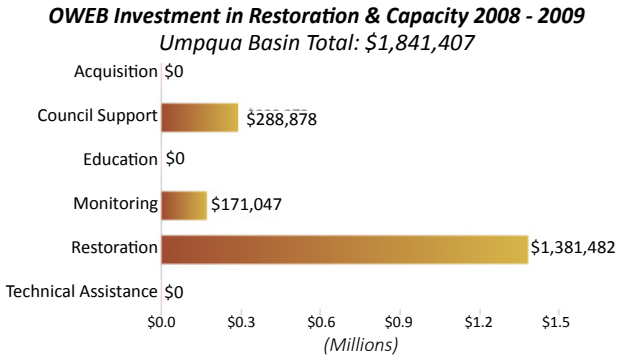
Other

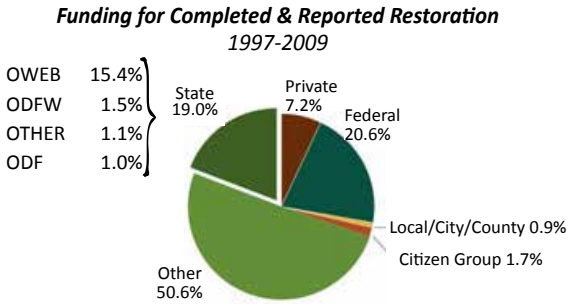
- Significant hatchery influence in the Applegate and mainstem Rogue



Umpqua

The Umpqua is one of only two Oregon rivers that have headwaters in the Cascade Mountains and cut through the Coast Range to the Pacific Ocean. Douglas fir forests of the Umpqua basin are legendary for their productivity and provide a historic foundation for the timber industry, local economies, and strong communities in this basin. Spring Chinook and summer steelhead runs to the North Umpqua River are relatively healthy and support world famous fisheries. Lowland meandering interior valleys support considerable ranching activity. Whitetail deer have recovered and have been delisted from the federal Endangered Species Act protection in this basin. The Umpqua River enters the Pacific Ocean in the center of Oregon's dune country near Reedsport.





Umpqua Basin Restoration Issues

Riparian/Wetland

- Reduced warm season streamflows
- Invasive riparian species

Upland

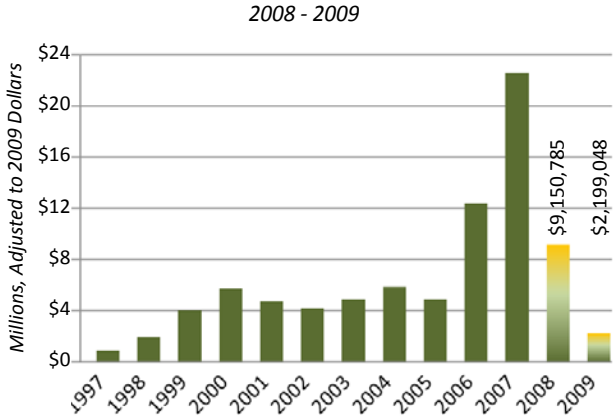
- Sediment delivery from forest roads
- High fire risk

Instream & Passage

- Lack of stream complexity
- Incomplete information on fish passage issues
- High stream temperature

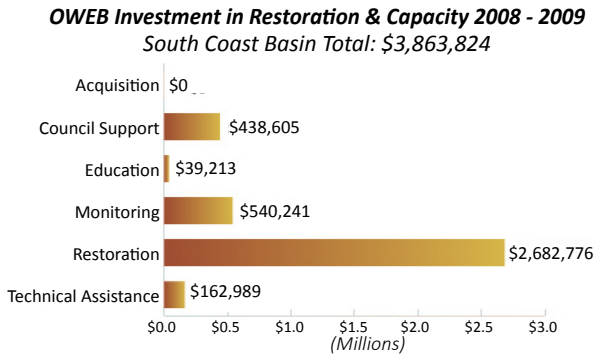
Other

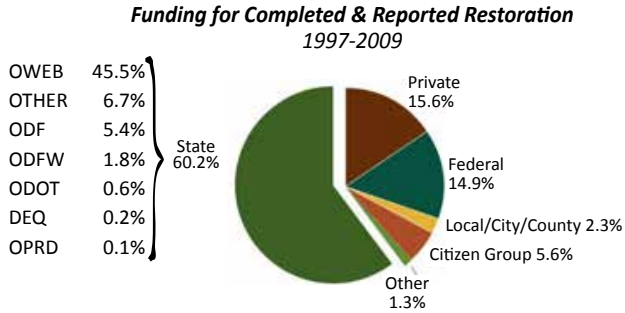
- Significant hatchery influence in the North Umpqua



South Coast

Two types of drainages lie in the South Coast basin. At the north end of the basin, the medium-sized Coos and Coquille rivers headwater in the Coast Range and flow to the ocean across the Coos Bay dune sheet. Further south, a number of relatively smaller streams (Floras, Sixes, Elk, Winchuck, and Hunter creeks and Chetco and Pistol rivers) headwater primarily in the Klamath Mountain Province. The southern portion of this basin is also in the Southern Oregon/ Northern California Evolutionarily Significant Unit for coho salmon that are listed as "threatened." Forestry, ranching, agriculture, commercial and recreational fishing, and tourism are significant factors in the economy of communities in the basin. Significant portions of ancient marine terraces in this basin have been converted to cranberry or lily production. The Coos and Coquille valleys historically were large timber producers along with cattle and dairy industries. Several of the watersheds in the southern part of this basin were affected by wildfires during the summer of 2002.





South Coast Basin Restoration Issues

Riparian/Wetland

- Loss of estuarine and low gradient floodplains and wetlands
- Loss of riparian cover
- Invasive riparian species

Upland

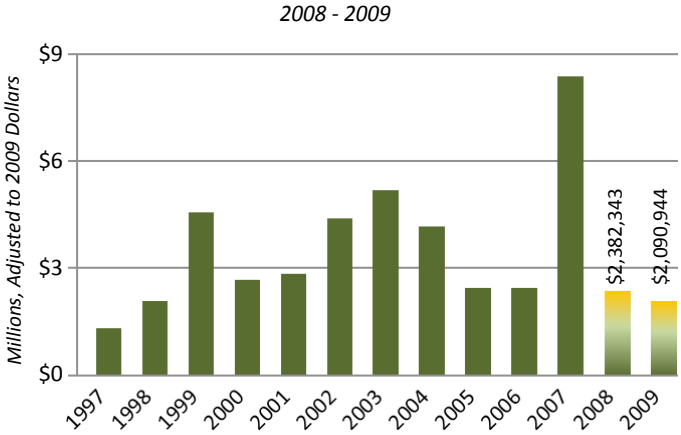
- Sediment delivery from forest lands

Instream & Passage

- Lack of stream complexity
- High stream temperature

Other

- Exotic fish in the Siltcoos, Tahkenitch and Tenmile watersheds
- Invasive weeds in Tenmile Lake



Data Sources

Oregon Watershed Restoration Inventory
(OWRI): Bobbi Riggers, Data Coordinator, and Ashley Seim, GIS. The OWRI is the primary statewide database for watershed restoration project information voluntarily submitted by restoration practitioners. The database includes completed projects funded by private landowners as well as projects funded with public monies such as OWEB grants. See the OWRI tool.

Federal Interagency Restoration Database
(IRDA): Jim Edmonds, Jeanne Keyes, Debra Kroeger, Jeff Uebel, and Al Doelker. Jointly administered by the BLM and USFS, the database represents completed projects implemented on federal land and/or funded by Title II. Visit the database page.

ODFW Fish Screening and Passage Program Database (FSPD)
Lisa Kingsley. The FSPD is utilized to track the progress and inventory of fish screening and passage projects

conducted through the ODFW's Fish Screening and Passage Program, which provides financial and technical assistance to landowners, irrigation districts and other water users to implement screening and passage projects that protect native fish.

2009-2011 Biennial Report Credits

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Acronyms

BLM U.S. Bureau of Land Management
BPA Bonneville Power Administration
CAFO Confined Animal Feeding Operation
cfs cubic feet per second
CREP Conservation Reserve Enhancement Program
DEQ Oregon Department of Environmental Quality
DSL Oregon Department of State Lands
EPA U.S. Environmental Protection Agency
ESA Endangered Species Act
ESU Evolutionarily Significant Unit
EQIP Environmental Quality Incentives Program
IMST Independent Multidisciplinary Science Team
NOAA National Oceanic and Atmospheric Administration
NFCP Native Fish Conservation Policy
NFF National Forest Foundation
NFWF National Fish and Wildlife Foundation
NMFS National Marine Fisheries Service
NRCS U.S. Natural Resources Conservation Service
NWPCC Northwest Power and Conservation Council
ODA Oregon Department of Agriculture
ODF Oregon Department of Forestry
ODFW Oregon Department of Fish and Wildlife
ODOT Oregon Department of Transportation
OECDD Oregon Economic and Community Development Department
OPRD Oregon Parks and Recreation Department
OSP Oregon State Police
OSU Oregon State University
OWEB Oregon Watershed Enhancement Board
OWRI Oregon Watershed Restoration Inventory
PCSRF Pacific Coastal Salmon Recovery Fund
PNAMP Pacific Northwest Aquatic Monitoring Partnership
REO U.S. Regional Ecosystem Office
RC&D Resource Conservation and Development
SWCD Soil and Water Conservation District
TMDL Total Maximum Daily Load
USDA U.S. Department of Agriculture
USDI U.S. Department of the Interior
USFWS U.S. Fish and Wildlife Service
USFS U.S. Forest Service
USGS U.S. Geological Survey
WC Watershed Council
WRD Oregon Water Resources Department

Questions?

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