



The  
**Oregon  
Plan**  
for Salmon  
and Watersheds

2001 - 2003  
Biennial  
Report

Oregon Watershed Enhancement Board

# The Oregon Plan for Salmon and Watersheds Biennial Report 2001 - 2003

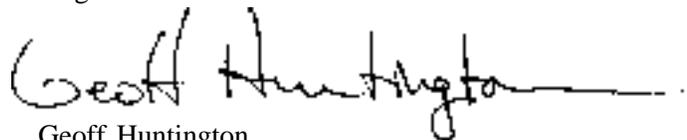
## **The Oregon Plan for Salmon and Watersheds Mission:**

To restore the watersheds of Oregon and to recover the fish and wildlife populations of those watersheds to productive and sustainable levels in a manner that provides substantial environmental, cultural, and economic benefits.

This is the fourth report on the Oregon Plan for Salmon and Watersheds. The first three reports focused on people – their stories and their efforts to restore watershed health and recover listed fish species. While these earlier reports contained what little information was available regarding the quantitative aspects of Oregon Plan work and investments, this document is quite different. This document provides the first template for a detailed account, on basin and statewide scales, of numbers, kinds, locations and values of work and investments related to watershed restoration, water quality enhancements, and fish recovery.

This first effort to meet the Oregon Legislature's charge to OWEB to assess ongoing Oregon Plan implementation efforts represents a huge step forward – a summary of place-based accomplishments, investments, restoration issues, and challenges. It also lays the groundwork for more precisely defined restoration and investment priorities for each basin based on broad community and technical agreement. Future reports will be presented in the context of these agreed upon priorities, and we hope will provide continuity for judging Oregon's progress in this important endeavor we call The Oregon Plan for Salmon and Watersheds.

Thanks are due to the many Oregonians who have helped provide information, time, and support developing this report – and to all those who have supported the Oregon Plan.



Geoff Huntington  
Executive Director  
Oregon Watershed Enhancement Board

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## In Part I

Pages 4 - 37

In Part I the reader will find a two page layout for each basin, including a map showing locations of restoration projects and a variety of public and private investments in restoration. At the end of this section (pp. 36 - 37) restoration investments by NRCS, BPA, USFS and BLM are highlighted.

## Establishing Common Basins for the Oregon Plan



Oregon Plan Basin Map

ORS 541.405 requires that the Oregon Plan Biennial Report address each drainage basin in the state but it does not specify which of many existing basin classification systems should be used for reporting. The Oregon Plan for Salmon and Watersheds (Oregon Plan) has brought renewed attention to the need to standardize basin boundaries and names in order to facilitate sharing and analysis of natural resource and investment data and to help evaluate the effectiveness of implementation efforts.

Many alternative basin reporting systems were reviewed before selecting the basin delineation used here. Ultimately, a model developed by the United States Geological Survey (USGS) was chosen because it adequately represents physical and biological conditions throughout Oregon and allows for aggregation of watershed information at different geographic scales. The Oregon Plan basins are at the 3<sup>rd</sup> field Hydrologic Unit Classification (HUC) level. We subdivided one of the USGS 3<sup>rd</sup> field basins in southwestern Oregon into three separate basins because of the area's tremendous physical and biological diversity. We also modified several basin names to provide a more familiar frame of reference to Oregonians. On the whole, however, basin boundaries are consistent with the USGS model.

In Part II the reader will find observations, accomplishments, and challenges related to implementation of the Oregon Plan.

## The Four Elements of the Oregon Plan

**T**he Oregon Plan for Salmon and Watersheds provides the foundation for tackling Oregon's natural resource challenges in a coordinated, sustainable fashion. Success depends upon implementing four key parts of the initiative that together can provide innovative solutions supporting salmon recovery, water quality improvements, and restoration of watersheds that support the economy and quality of life of Oregon. The four key elements of the Plan addressed in this implementation report are as follows:

see pages 38-41

**A**gency actions that are both coordinated and integrated to better implement existing programs are a critical component of Oregon Plan success. When effectively implemented, state agency regulatory programs provide the foundation for addressing natural resources issues. Likewise, land management decisions of federal and state agencies have significant impacts on the health of Oregon watersheds, recovery of salmonids, and improvement of water quality.

see pages 42-45

**V**oluntary restoration action on privately owned lands is the essence of the Oregon Plan. Private landowners – individuals and industries, rural and urban – are conducting essential restoration work with the support of citizen groups, businesses, and local government. Sustained investment and assistance from OWEB and other state and federal agencies is key to successful voluntary restoration.

see pages 46-49

**M**onitoring under the Oregon Plan includes documenting the current condition of watershed health, evaluating changes over time, and determining the effectiveness of actions and programs. OWEB is charged by statute to coordinate Oregon Plan Monitoring Program activities among natural resource agencies to answer a variety of questions related to watershed health, water quality, and salmon recovery. This requires an interdisciplinary approach to tracking trends of key indicators over time so that implementation efforts can be adapted to maintain progress towards watershed protection and restoration goals.

see pages 50-53

**S**cience oversight includes independent analysis and evaluation of Oregon Plan activities as well as a commitment to support needed research. This element of the Plan requires a strong team of independent scientists and investments in targeted research. Objective evaluation and ongoing research are critical to ensuring the best available science is incorporated into decision making and actions.

# Key to Basin Layouts

These two pages explain the material reported for each of the 15 Oregon basins represented in this report.

## John Day Basin

This basin includes the Painted Hills, John Day Fossil Beds National Monument, and Strawberry Mountain Wilderness, and contains one of the most significant undammed stream systems in the West. The economy is dependent on natural resource in steelhead and Species At Risk pine forest. headwaters meander through open meadow and prairie ranch land. The mainstem of the river below Spray flows through an incised canyon that bisects shrub-steppe and wheat ranches in the uplands before flowing into the Columbia River at the eastern end of its dramatic gorge.

This section provides a little background on the geologic, cultural, economic, and biologic character of the basin.

### Basin Facts

Population (2000) 11,690  
 Cities over 10,000 0  
 Area (acres) 5,079,798

Waterbody Classifications 6  
 SWQDs 6  
 State or Federal Listed  
 Priority Species 5  
 Anadromous Species 5



### Restoration Issues

- Restore
- Improve management

This section provides a few priorities with scientific and community recognition. Certainly, this is not a comprehensive representation suitable to subbasins, but is thought to have broad validity in the basin as a whole.

### Completed and Reported Restoration, 1995-2001



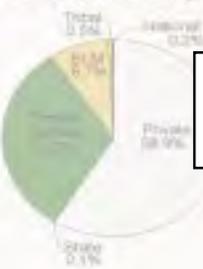
The points on this map show approximate locations where completed restoration work has been reported since 1995. Work that was not reported is not represented here. Each point could represent several projects in one or several years.

- Road projects are not mapped for 2000-2001.
- Projects reported by federal land management agencies are mapped.

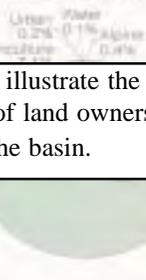
### Land Ownership



### Land Ownership



### Land Cover



These charts illustrate the distribution of land ownership and land use in the basin.

### Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001

This section reports dollar values represented by completed restoration work that was reported in 2000 or 2001. Values for individual basins do not include all BPA or federal land management agency investments. See page 43 for a statewide summary that includes all available federal data and pages 36-37 for a summary of federal investments.

## Stressors



## Water Quality Concerns

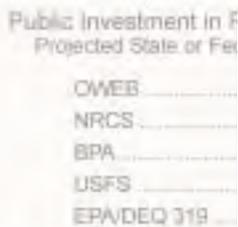


## 303d Listed Streams by Standard



This chart refers only to stream segments shown on the map at the left that are currently listed as water quality impaired. It shows the reason that the segment was listed.

## Investments

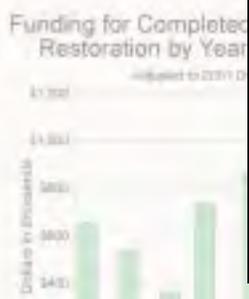


The information here refers to projected Federal and State commitments made this biennium to spend money on restoration work. We refer to these commitments as investments. This work may or may not be complete in the next two years. Some projects take years to complete.

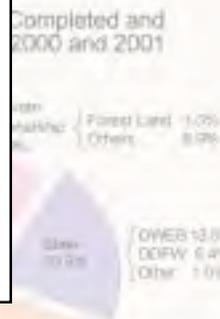
## OWEB Investment in Restoration and Capacity 2001-2003 Biennium



## Accomplishments



Unlike "Investments" reported above, these two figures refer only to restoration that was complete, reported, and accessible to OWEB. Values for individual basins do not include all BPA or federal land management agency work. See page 43 for a statewide summary that includes all available state and federal data.



Total reported funds for restoration for this basin, 1995-2001. Values for individual basins do not include all BPA or federal land management agency investments.

Source of funds for restoration projects that were complete and reported, in 2000 and 2001 only. Values for individual basins do not include all BPA or federal land management agency investments.

## Accomplishments

- 49 completed restoration projects were reported in 2000-01; 37 of these were on private lands
- 46 OWEB completed restoration projects in 2000-01
- Fish passage improvements
- Grant County SWCD established as a leader in partnering on fish passage improvements

This section notes a few restoration accomplishments that deserve broad recognition. In every basin, these are just the tip of the iceberg.

## Challenges

This section provides a few challenges to implementation of the Oregon Plan for Salmon and Watersheds. Truly, there are many economic, social, scientific, and organizational challenges to restoring watersheds while supporting thriving economies and communities – challenges listed here are thought to deserve special recognition.

# 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 in this basin are currently listed as threatened under the federal Endangered Species Act. Fall chinook runs are relatively healthy and support world famous fisheries. 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.

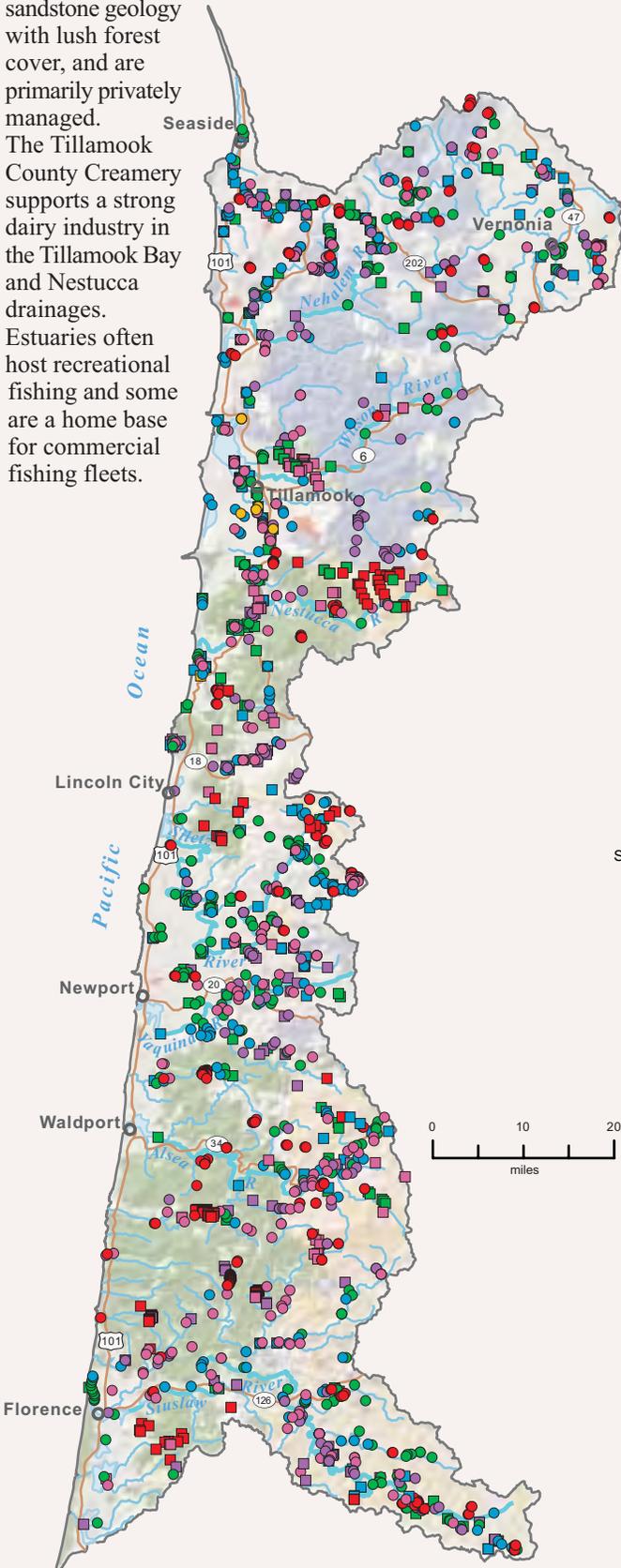
## Basin Facts

Population (2000) .....	103,224	Watershed Councils .....	8
Cities over 10,000 .....	0	SWCD's .....	8
Area (acres) .....	2,759,108	<b>State or Federal Listed</b>	
		Plant Species .....	10
		Animal Species .....	6



## Restoration Issues

- Increase stream complexity and coho over-winter habitat in appropriate areas
- Improve productivity of estuarine, diked, and lowland areas for salmonids
- Prevent or limit aquatic invasive species in estuaries & lower rivers
- Restore fish passage at culverts, dams, and dikes



## Completed and Reported Restoration, 1995–2001

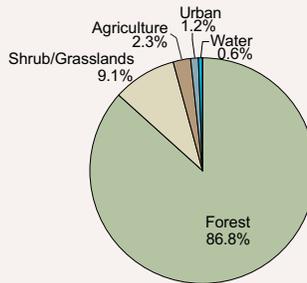


\* 247 road projects ('00-'01) not mapped

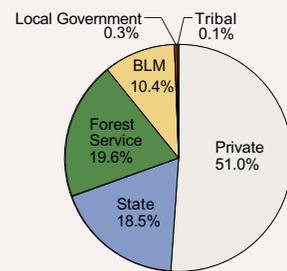
## Land Ownership



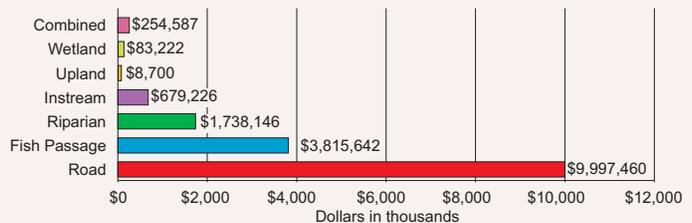
## Land Cover



## Land Ownership

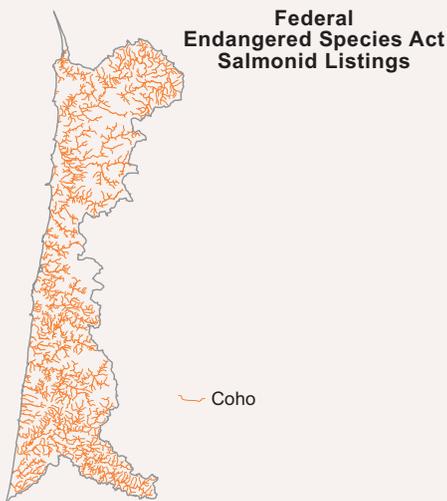


## Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



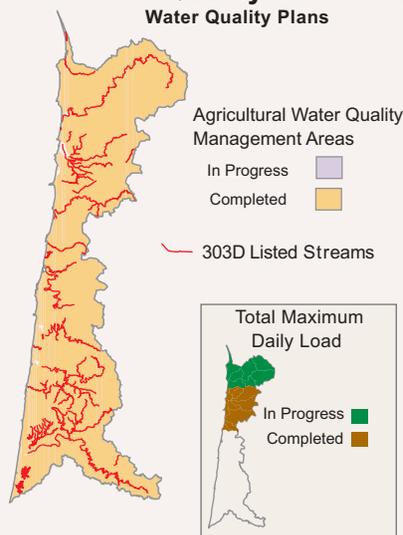
Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

## Stressors

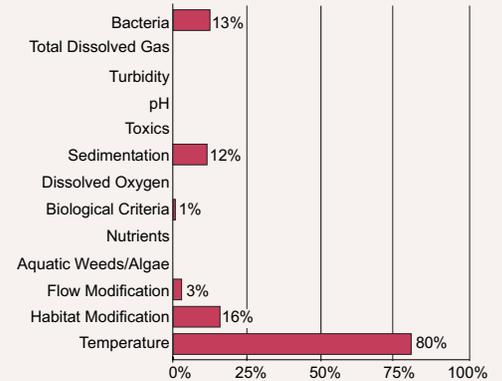


## Water Quality Concerns

### Water Quality Plans



## 303d Listed Streams by Standard



Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

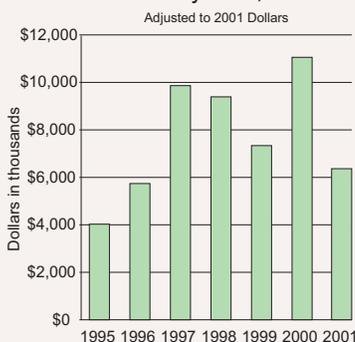
OWEB	\$2,164,143
NRCS	773,319
BPA	0
USFS	1,800,000
EPA/DEQ 319	527,903

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

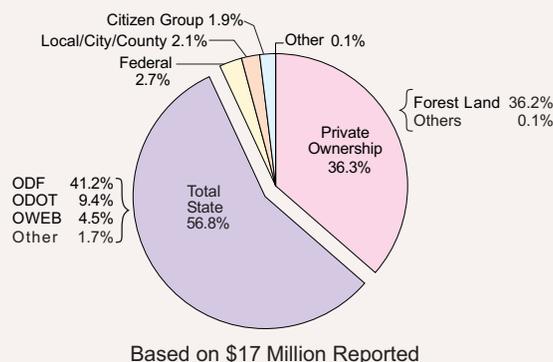


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995-2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



## Accomplishments

- 736 completed restoration projects were reported in 2000-01; 458 of these were on private lands
- 89 OWEB grants for \$4,749,504 remain open (work not reported)
- Watershed-based management established in Tillamook State Forest
- Extensive work on state and private forestland improving road conditions, instream habitat, and fish passage
- Comprehensive surveys of salmonid habitat and populations – production of maps to guide restoration work

## Challenges

- Restoring fish passage at some locations involves change from traditional management practices
- Restoration of diked tidal areas may affect multiple landowners
- Evaluating effectiveness of structure-based management on state forests will be a long-term effort
- Traditional development and management of lowland floodplains may limit restoration opportunities

# Umpqua Basin

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 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 from low numbers and are proposed for removal 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.

## Basin Facts

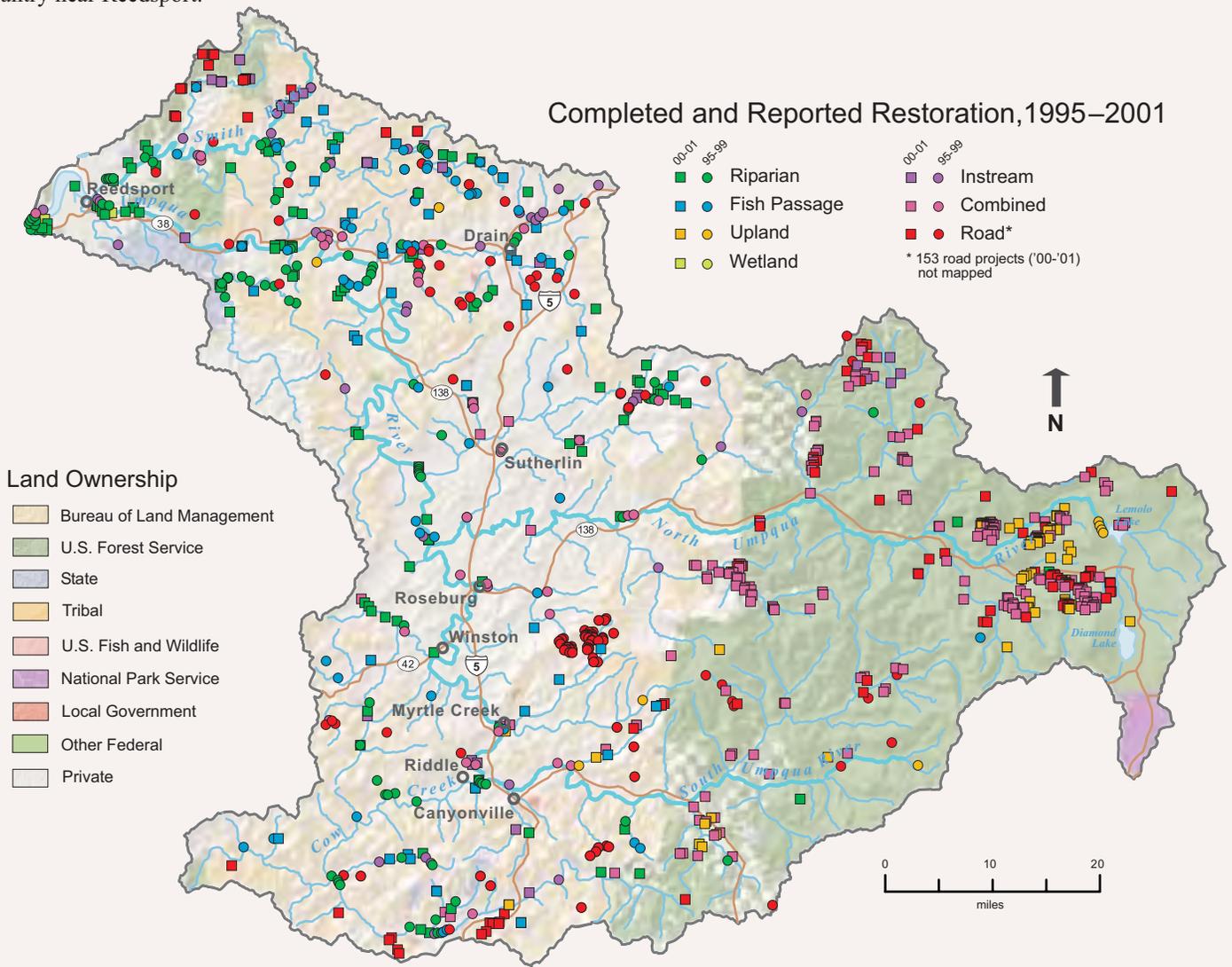
Population (2000) .....	99,525	Watershed Councils.....	3
Cities over 10,000 .....	1	SWCD's .....	2
Area (acres).....	3,000,653	<b>State or Federal Listed</b>	
		Plant Species .....	7
		Animal Species .....	5



## Restoration Issues

- Increase stream complexity and coho over-winter habitat
- Restore fish passage at culverts, dams, and dikes
- Improve access to spawning habitat
- Improve productivity of estuarine, diked, and lowland areas for salmonids

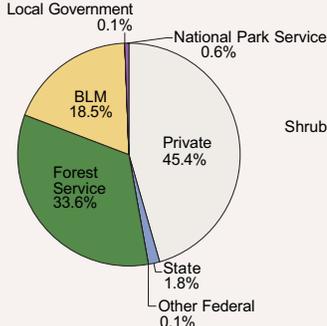
## Completed and Reported Restoration, 1995–2001



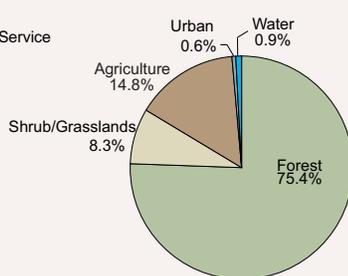
### Land Ownership

- Bureau of Land Management
- U.S. Forest Service
- State
- Tribal
- U.S. Fish and Wildlife
- National Park Service
- Local Government
- Other Federal
- Private

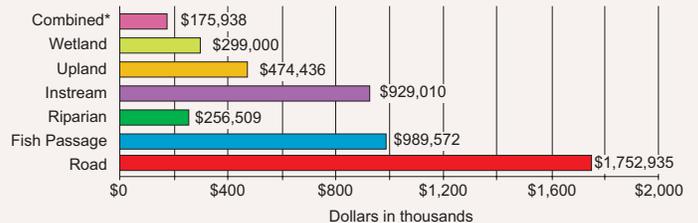
### Land Ownership



### Land Cover



### Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001

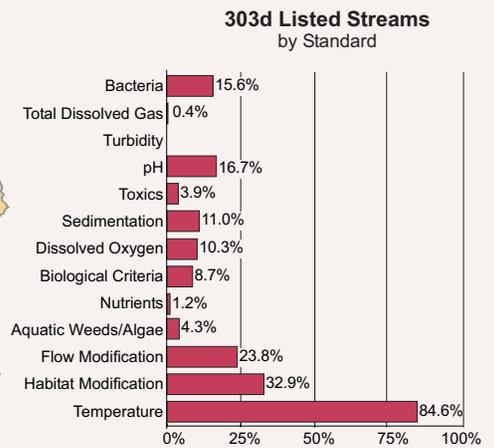
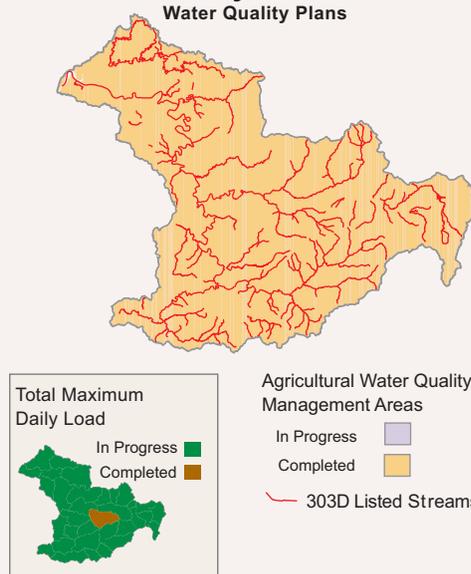


Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

## Stressors



## Water Quality Concerns



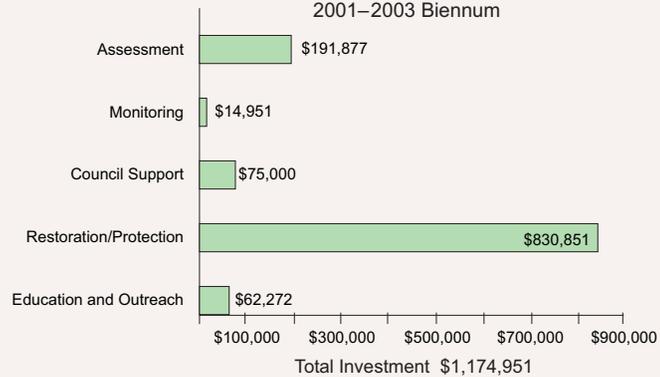
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

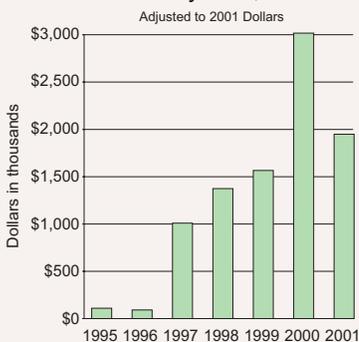
OWEB	\$1,174,951
NRCS	44,603
BPA	0
USFS	13,000,000
EPA/DEQ 319	327,800

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

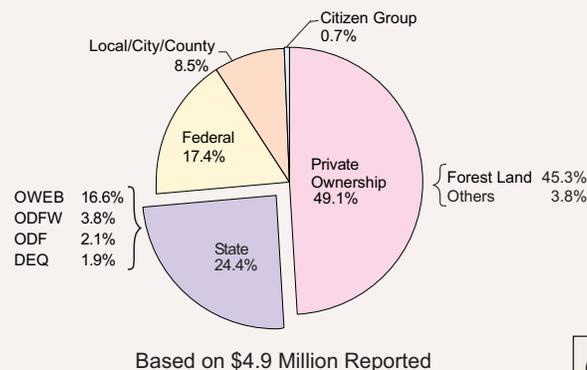


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995–2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



## Challenges

- The intricate mix of private and public land ownership in many parts of the basin complicates management and restoration
- Strife over development of Agricultural Water Management Plans has detracted from community appreciation of significant restoration work accomplished on private and public lands in basin
- Restoration of diked tidal areas may affect management practices of many landowners

## Accomplishments

- 430 completed restoration projects were reported in 2000-01; 275 of these were on private lands
- 33 OWEB grants for \$2,173,205 remain open (work not completed)
- Clover Creek fish passage and flood control project
- Cavitt Creek multi-stakeholder effort will address fish passage
- Smith River project initiated, will open 19 miles of prime coho habitat
- Initiated basin-wide fish passage survey

Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

# South Coast Basin

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 (the Floras, Sixes, Elk, Winchuck, Hunter Creek, Chetco, and Pistol rivers) headwater primarily in the Klamath Mountains. Forestry, ranching, agriculture, commercial and recreational fishing, and tourism are significant factors in the economy of communities in the basin. Significant portions of marine terraces in this basin have been converted to cranberry or lily production. The Coquille Valley is a cattle and dairy producing region. Several of the watersheds in the southern part of this basin were affected by wildfires during summer 2002.

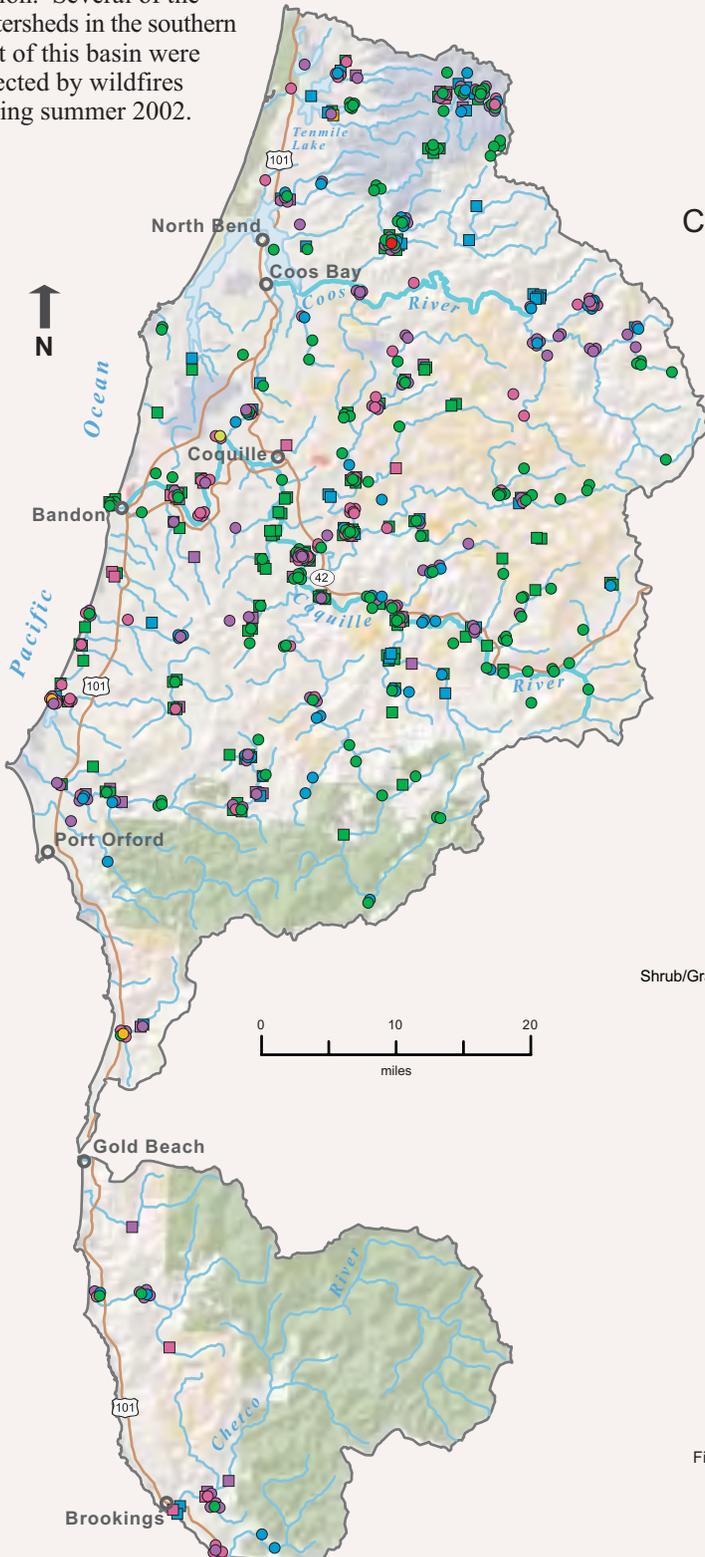
## Basin Facts

Population (2000) .....	83,402	Watershed Councils.....	10
Cities over 10,000 .....	1	SWCD's .....	2
Area (acres).....	1,901,048	<b>State or Federal Listed</b>	
		Plant Species .....	8
		Animal Species .....	7

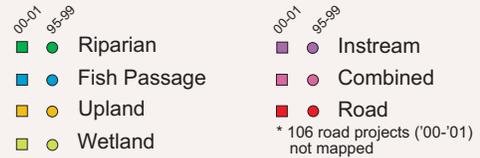


## Restoration Issues

- Vegetation management in riparian areas
- Increase stream complexity and coho over-winter habitat
- Improve productivity of estuarine, diked, lowland, and wetland areas for salmonids
- Restore fish passage at culverts, dams, and dikes
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotic species, and reduce sedimentation



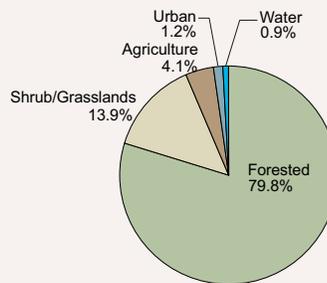
## Completed and Reported Restoration, 1995–2001



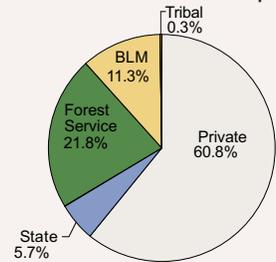
## Land Ownership



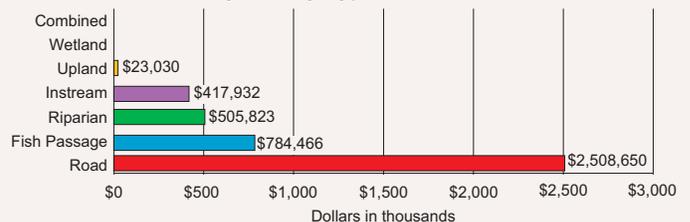
## Land Cover



## Land Ownership



## Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001

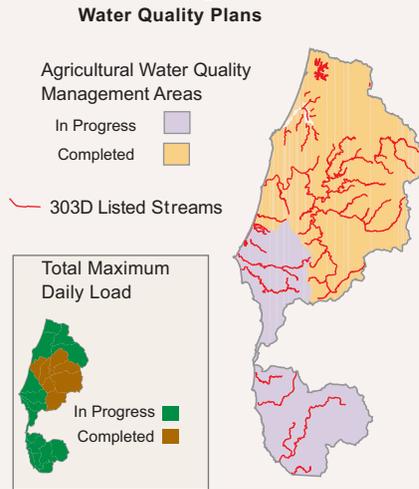


Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

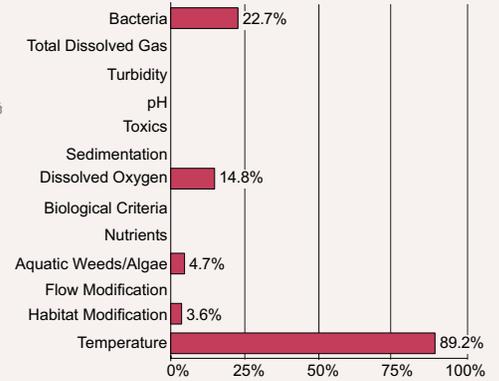
## Stressors



## Water Quality Concerns



## 303d Listed Streams by Standard



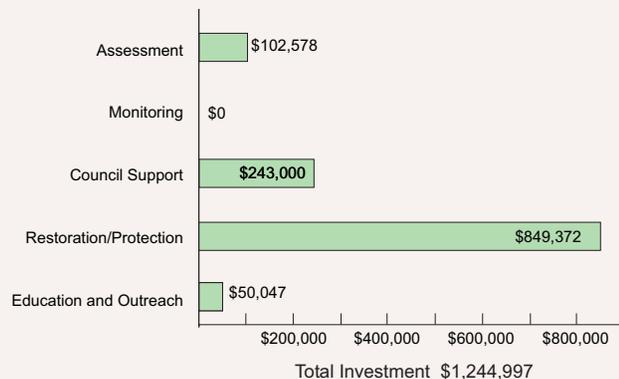
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

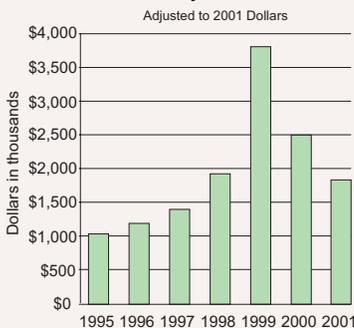
OWEB	\$1,244,997
NRCS	1,147,338
BPA	0
USFS	500,000
EPA/DEQ 319	868,725

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

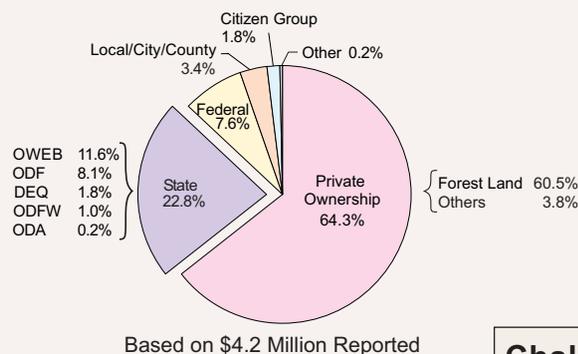


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995–2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



## Challenges

- Strife over development of Agricultural Water Quality Management Plans has detracted from community appreciation of significant restoration work accomplished on private and public lands in basin
- Restoration of diked tidal areas may affect management practices of many landowners
- Lack of community consensus regarding wetland restoration
- Management of exotics that compete with riparian plantings

## Accomplishments

- 686 completed restoration projects were reported in 2000-01; 225 of these were on private lands
- 38 OWEB grants for \$4,204,103 remain open (work not completed)
- Excellent landowner participation in developing local restoration strategies
- Restoration projects are well documented and evaluated

Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

# Rogue Basin

Headwaters of the Rogue River flow from the west slopes of Crater Lake and the southern Cascades to the Pacific Ocean. 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. Mining and forestry are also significant economic sectors in the basin. Fisheries for chinook salmon and steelhead in the Rogue are world famous. Coho salmon in the Rogue are listed as threatened under the federal Endangered Species Act. The 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.

## Basin Facts

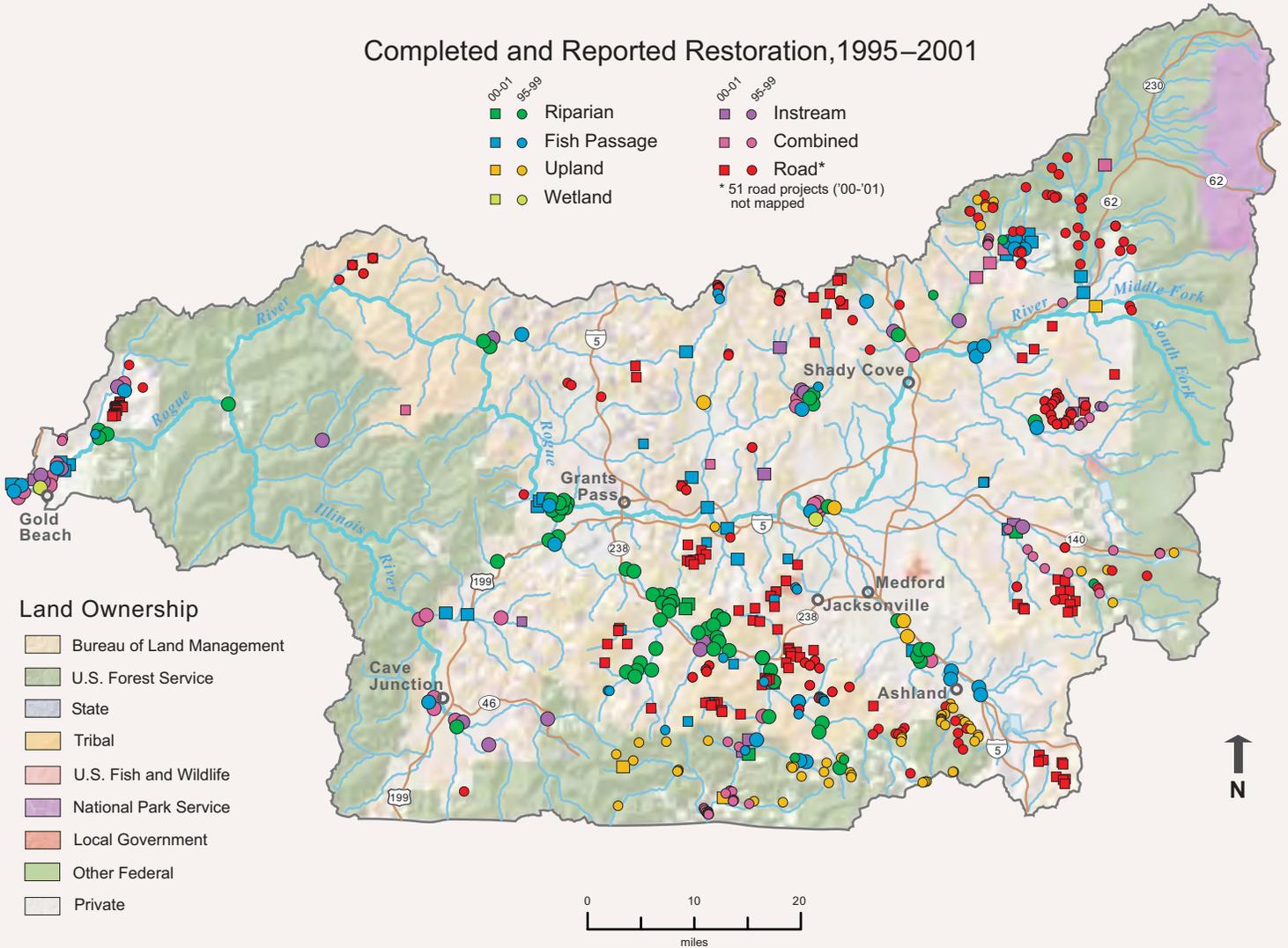
Population (2000) .....	257,914	Watershed Councils.....	9
Cities over 10,000 .....	4	SWCD's .....	4
Area (acres).....	3,210,948	<b>State or Federal Listed</b>	
		Plant Species .....	10
		Animal Species .....	13



## Restoration Issues

- Protect habitat in urbanizing areas
- Improve productivity of lowland areas for salmonids
- Restore fish passage at culverts & dams
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotic species, and reduce sedimentation

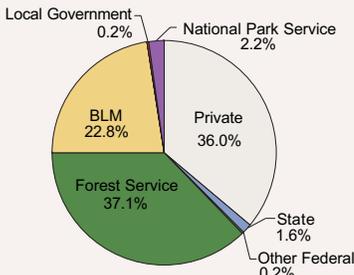
## Completed and Reported Restoration, 1995–2001



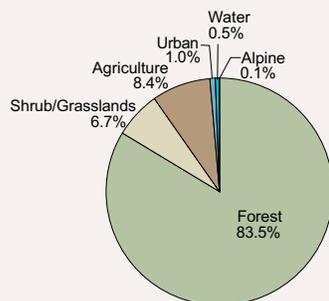
### Land Ownership

- Bureau of Land Management
- U.S. Forest Service
- State
- Tribal
- U.S. Fish and Wildlife
- National Park Service
- Local Government
- Other Federal
- Private

### Land Ownership



### Land Cover



### Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

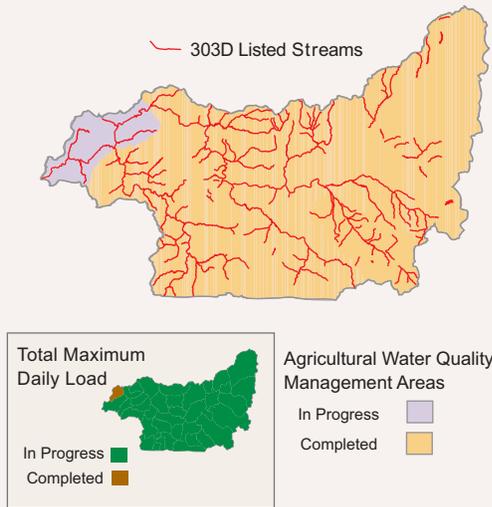
# Stressors

Federal Endangered Species Act Salmonid Listings

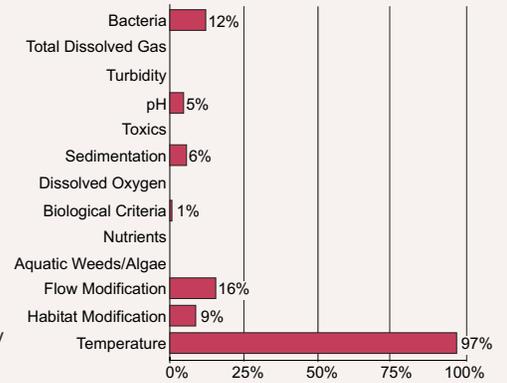


# Water Quality Concerns

Water Quality Plans



303d Listed Streams by Standard



Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

# Investments

Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

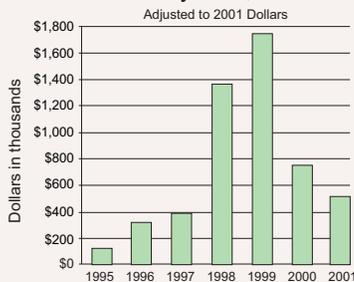
OWEB	\$3,420,281
NRCS	462,781
BPA	0
USFS	4,800,000
EPA/DEQ 319	435,664

OWEB Investment in Restoration and Capacity 2001–2003 Biennium

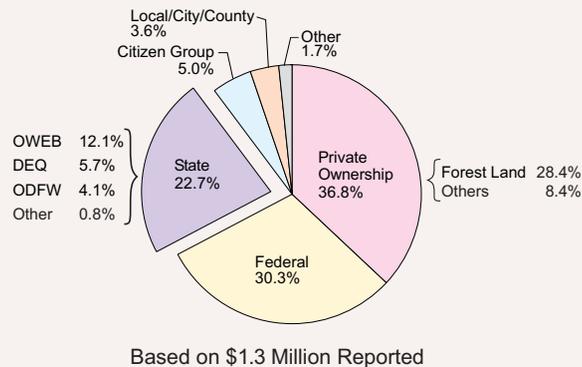


# Accomplishments

Funding for Completed and Reported Restoration by Year, 1995-2001



Source of Funding for Completed and Reported Restoration, 2000 and 2001



## Accomplishments

- 163 completed restoration projects were reported in 2000-01; 73 of these were on private lands
- 86 OWEB grants for \$6,660,603 remain open (work not completed)
- Plan to address private land management that integrates ESA & Clean Water Acts in Little Applegate
- Prioritized action plan to resolve passage problems at over 1,000 barriers
- OWEB grant to support consensus based plan to remove Savage Rapids dam and preserve water needs of irrigation district and community

## Challenges

- Impact of rapid urban development in lowland areas on rearing salmonids
- Implementation of stakeholder-sponsored fire management plan in Applegate; development of similar plans to reduce risk of catastrophic fire in remainder of basin
- Evaluation of traditional water distribution systems and identification of opportunities to help preserve water for salmonids in key stream reaches

Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

# Klamath Basin

The Klamath basin has been the focus of national attention following the drought of 2000. Flowing south from Crater Lake National Park, the streams and springs that form Upper and Lower Klamath Lake exit Oregon through 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, to a lesser extent, recreational tourism are key elements of the economy here.

## Basin Facts

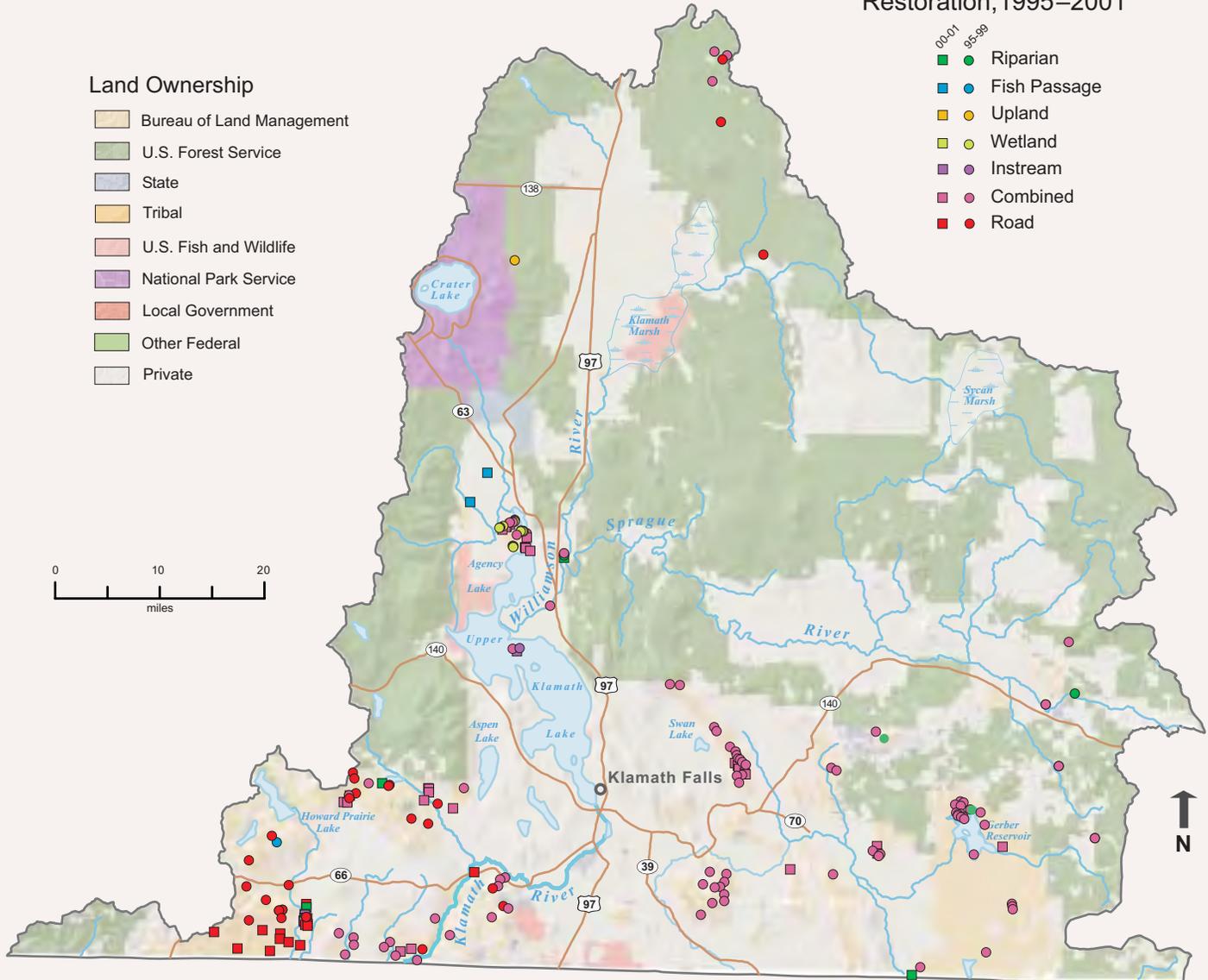
Population (2000) .....	61,712	Watershed Councils.....	6
Cities over 10,000 .....	1	SWCD's .....	1
Area (acres).....	3,627,446	<b>State or Federal Listed</b>	
		Plant Species .....	12
		Animal Species .....	4



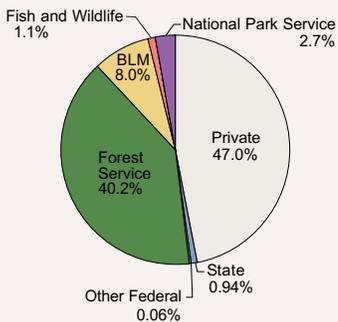
## Restoration Issues

- Wetland restoration in the upper basin
- Restore fish passage at culverts, dams, & diversions
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotic species, and reduce sedimentation
- Improve water management to enhance instream flows in key areas

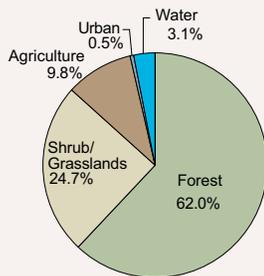
## Completed and Reported Restoration, 1995–2001



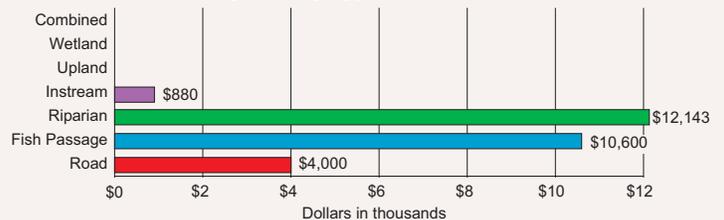
## Land Ownership



## Land Cover



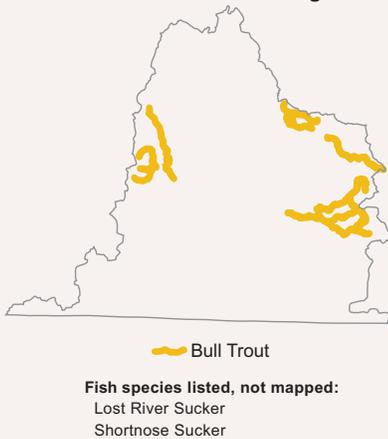
## Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

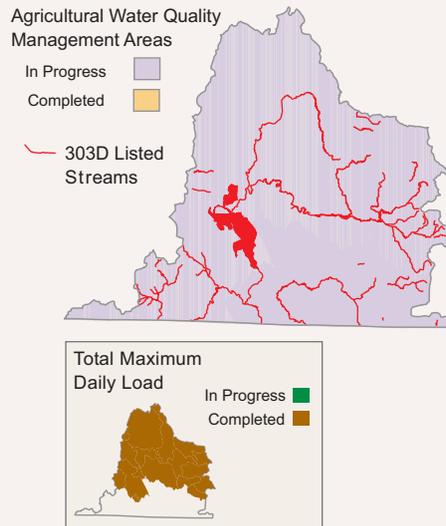
## Stressors

### Federal Endangered Species Act Salmonid Listings

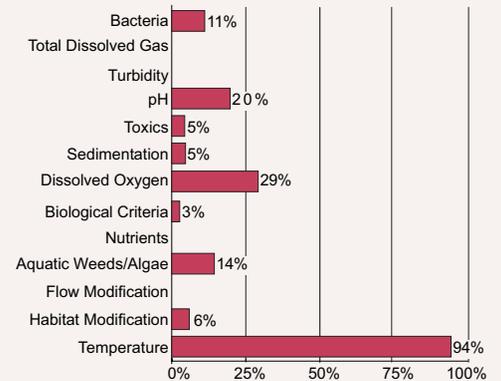


## Water Quality Concerns

### Water Quality Plans



### 303d Listed Streams by Standard



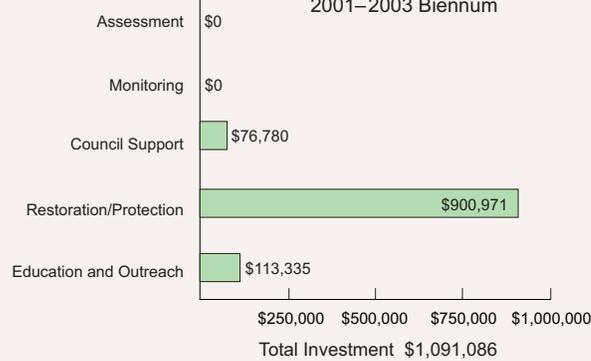
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

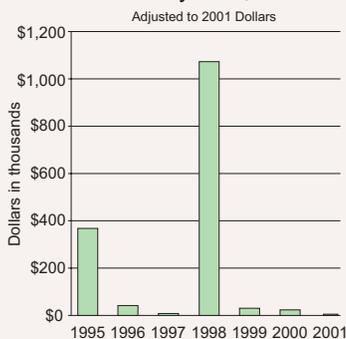
OWEB	\$1,091,086
NRCS	1,782,476
BPA	0
USFS	900,000
EPA/DEQ 319	12,000

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

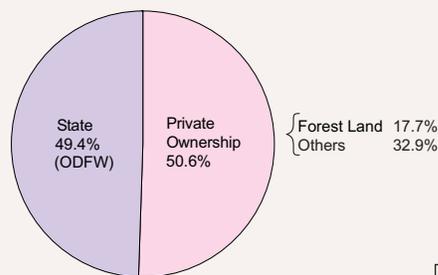


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995-2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



Based on \$27,623 Reported

## Challenges

- Unresolved water allocation and adjudication issues
- Intense controversy over water allocation has significantly limited landowner willingness to participate in restoration
- Coordinating basin management plans among multiple groups
- Conflict between management requirements of different ESA-listed fish species
- Lack of community consensus regarding voluntary wetland restoration for water quality improvement

## Accomplishments

- 20 completed restoration projects were reported in 2000-01; 6 were on private lands
- 19 OWEB project grants for \$1591,577 remain open in this basin (work not completed)
- OSU Extension Watershed Stewardship Program has been active and well received in community
- Projects completed include fish screens, riparian enhancement, reestablishment of stream complexity, and wetland restoration

Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

# Lakes Basin

Waters that flow in the desert country of Lake, southern Harney, and southwestern Malheur counties drain toward lakes like Warner, Malheur, Abert, Goose, Silver, and Summer. 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, 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 tribal lands are in this basin. Ranching and forest products principally support communities in this basin.

## Basin Facts

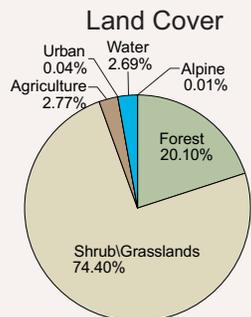
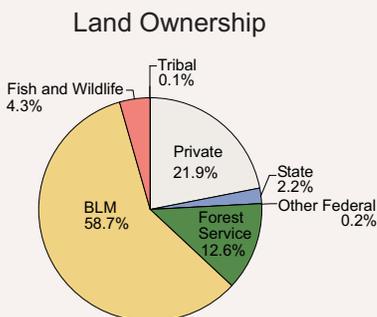
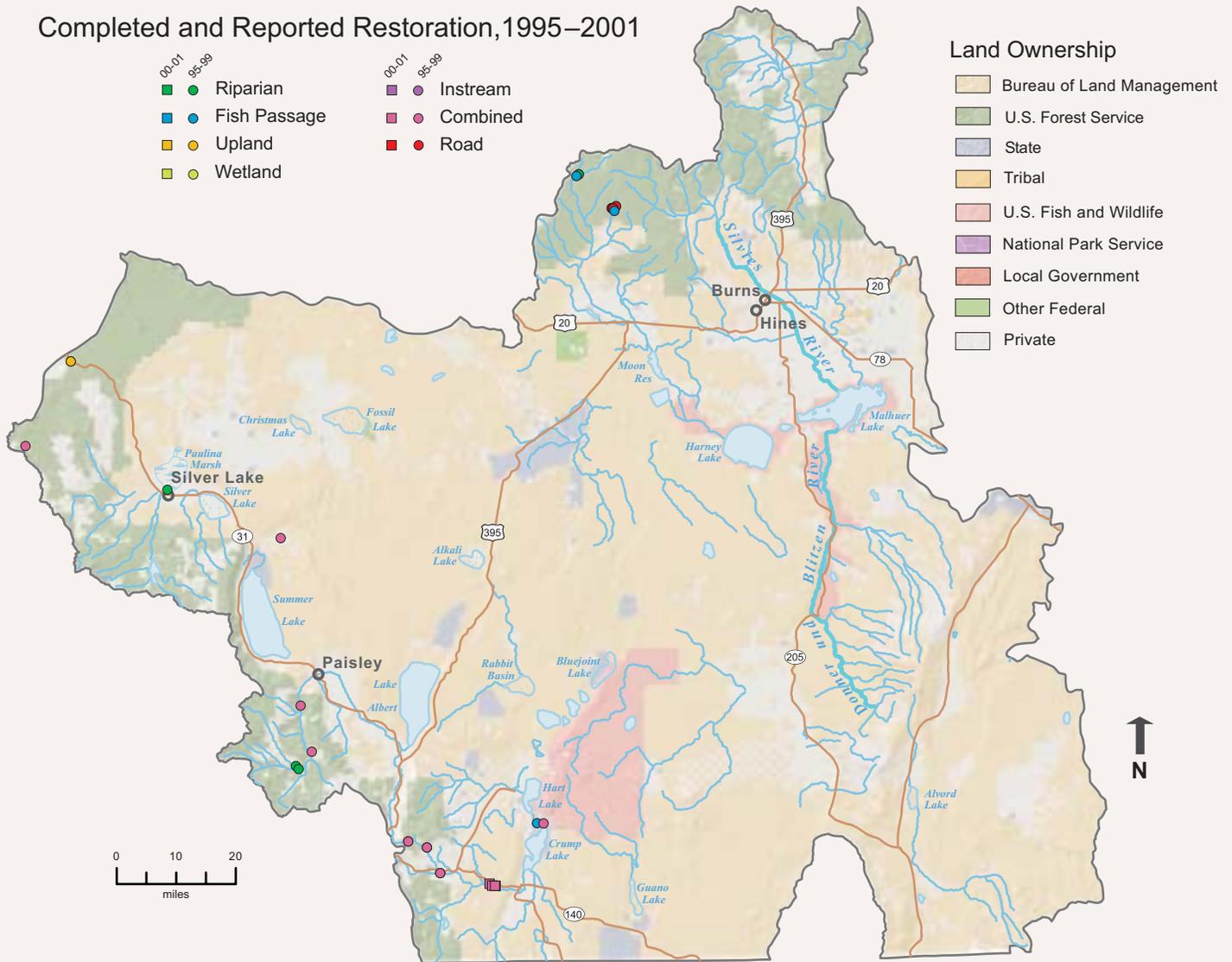
Population (2000) .....	10,098	Watershed Councils .....	5
Cities over 10,000 .....	0	SWCD's .....	3
Area (acres) .....	11,638,073	<b>State or Federal Listed</b>	
		Plant Species .....	12
		Animal Species .....	8



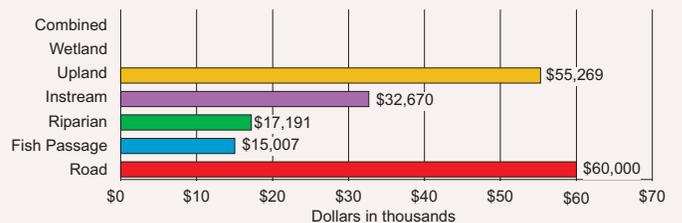
## Restoration Issues

- Relocating feedlots to reduce impacts on streams, riparian, and wetland habitat
- Wetland restoration/protection
- Restore fish passage at culverts, dams, and diversions
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotic species, and reduce sedimentation

## Completed and Reported Restoration, 1995–2001



## Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

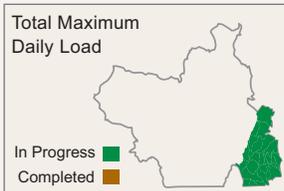
# Stressors

## Federal Endangered Species Act Listings



## Water Quality Concerns

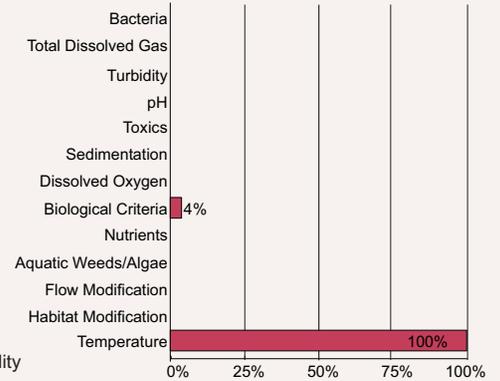
### Water Quality Plans



### Agricultural Water Quality Management Areas



## 303d Listed Streams by Standard



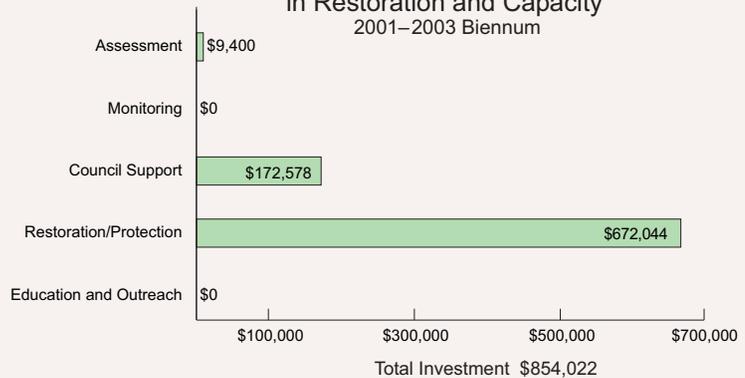
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

# Investments

## Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

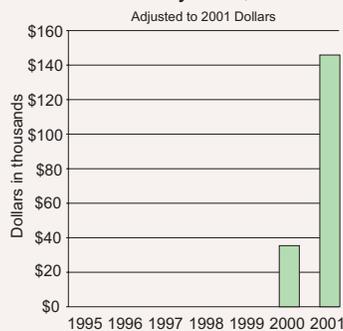
OWEB	\$854,022
NRCS	2,119,150
BPA	0
USFS	1,600,000
EPA/DEQ 319	69,867

## OWEB Investment in Restoration and Capacity 2001–2003 Biennium

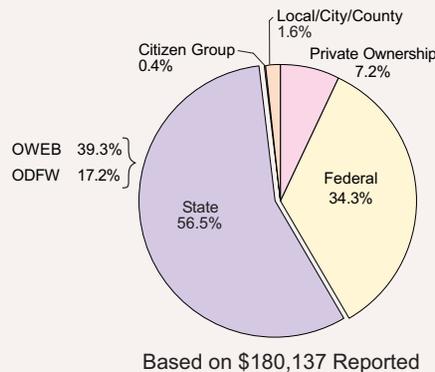


# Accomplishments

## Funding for Completed and Reported Restoration by Year, 1995-2001



## Source of Funding for Completed and Reported Restoration, 2000 and 2001



## Accomplishments

- 11 completed restoration projects were reported in 2000-01; 6 of these were on private lands
- 18 OWEB grants for \$967,204 remain open in this basin (work not completed)
- Steens Mountain Wilderness Act provided some certainty to landowners and consolidated management of lands with unique ecological values
- Comprehensive population assessment of Redband trout supported a no-list decision by USFWS

## Challenges

- Developing restoration plans appropriate to unique local conditions
- Restoring wetlands is particularly complicated by arid conditions and existing land use
- Conserving and restoring important Redband habitat

# Owyhee-Malheur Basin

The upper Owyhee and Malheur River drainage is a very lightly populated portion of the state. The lower Malheur Basin supports rich irrigated agriculture and is particularly known for production of onions. Cattle ranching is the dominant use of the upper basin that includes the stark beauty of Leslie Gulch and the Jordan Craters. The wild upper Owyhee River is one of the few undammed areas in Oregon. Bull trout in this basin are listed as threatened under the federal Endangered Species Act.

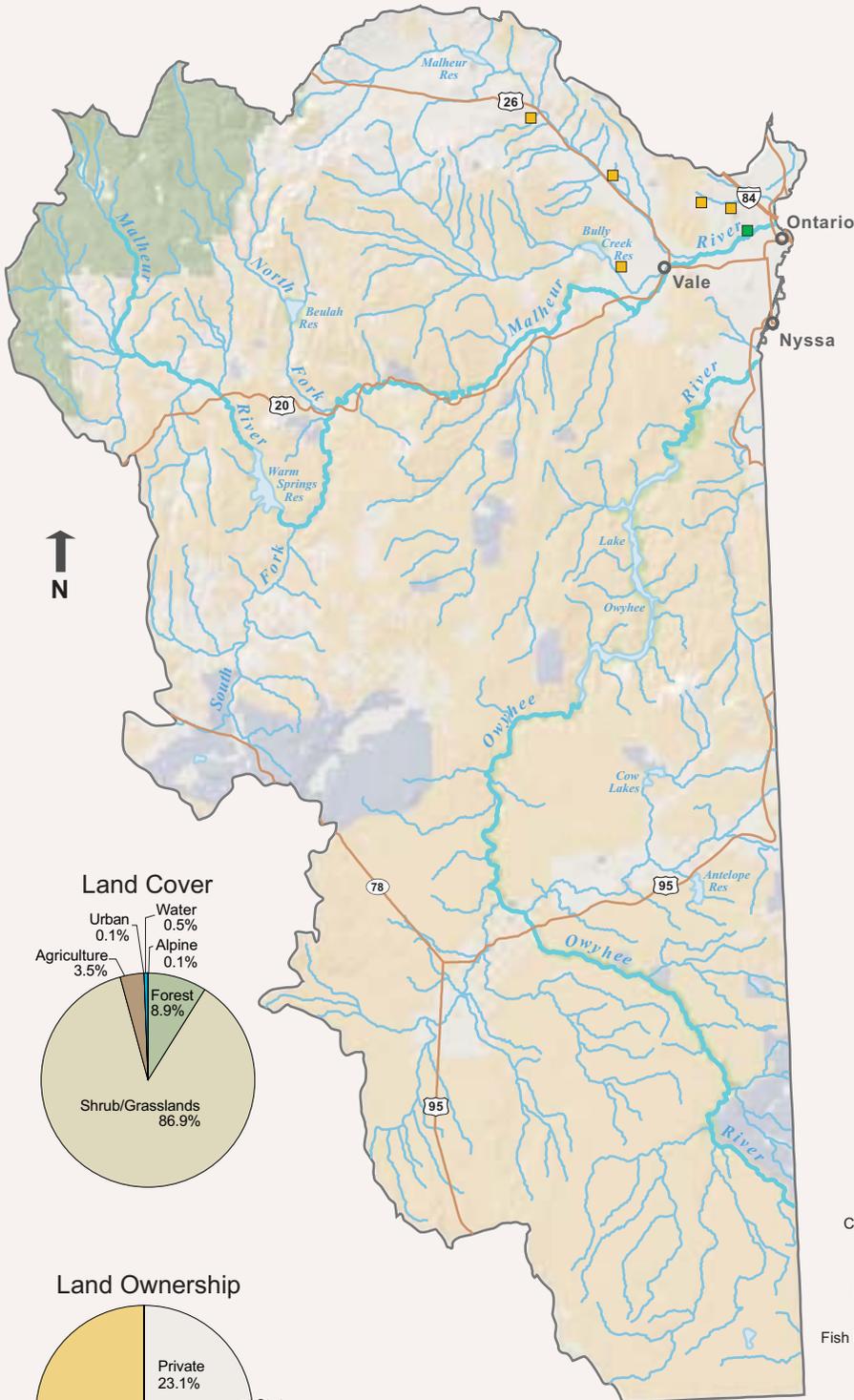
## Basin Facts

Population (2000) .....	31,397	Watershed Councils.....	3
Cities over 10,000 .....	1	SWCD's .....	1
Area (acres).....	6,746,140	<b>State or Federal Listed</b>	
		Plant Species .....	6
		Animal Species .....	13



## Restoration Issues

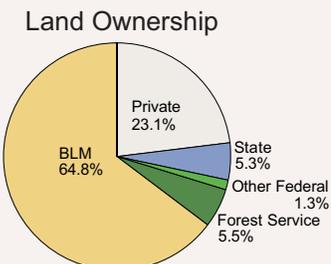
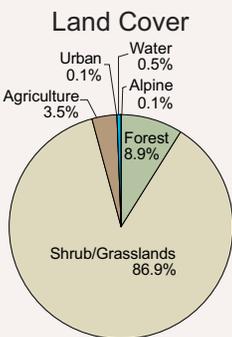
- Groundwater quality is sensitive to the potential impacts of intensive agricultural irrigation in Malheur
- Improve range health to enhance riparian condition, manage fuel loads and exotic species, and reduce sedimentation
- Bull trout passage at select locations



## Completed and Reported Restoration, 1995–2001



## Land Ownership



## Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001

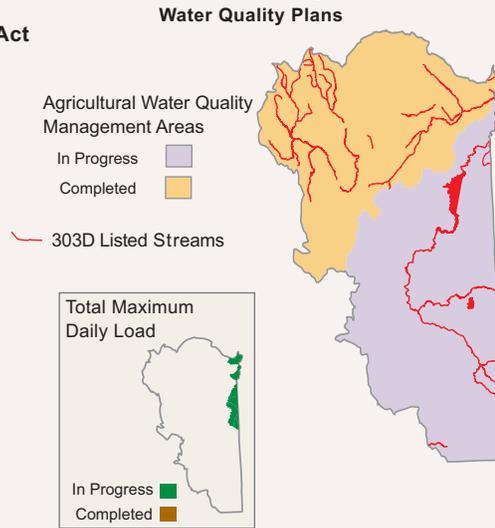


Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

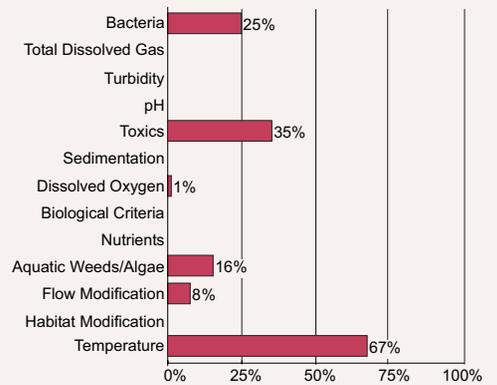
# Stressors



# Water Quality Concerns



**303d Listed Streams by Standard**



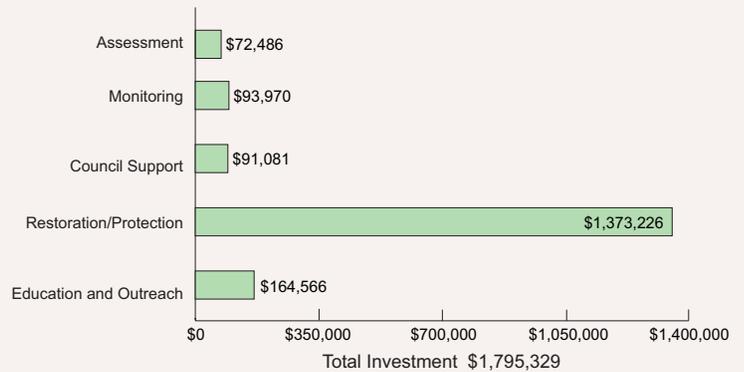
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

# Investments

**Public Investment in Restoration/Conservation**  
Projected State or Federal 2001–2003 Biennia

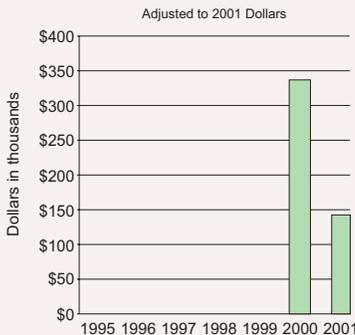
OWEB	\$1,795,329
NRCS	646,668
BPA	2,808,764
USFS	450,000
EPA/DEQ 319	177,420

**OWEB Investment in Restoration and Capacity**  
2001–2003 Biennium

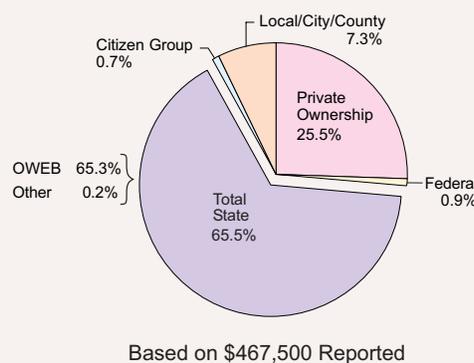


# Accomplishments

**Funding for Completed and Reported Restoration by Year, 1995-2001**



**Source of Funding for Completed and Reported Restoration, 2000 and 2001**



## Accomplishments

- 6 completed restoration projects were reported in 2000-01; all were on private lands
- 34 OWEB grants for \$2,095,168 remain open (work not completed)
- Established a vital and productive watershed council that worked effectively with the SWCD, landowners, and community
- Completion of Saddle Butte pipeline
- Completed fencing & water development along Owyhee River (50 miles); completed fencing N.F. Malheur
- Significant work replacing open ditches with irrigation pipes & conversion of 1,350 acres to sprinkler irrigation

## Challenges

- Conflict over the scientific basis of policy decisions
- Integrating riparian and range assessment across mixed land ownerships
- Assessments of watershed conditions for state land in basin are needed
- Strained relationships between landowners and federal land management agencies

# 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. The Baker Valley has been identified as a conservation opportunity area where riparian thickets and wetlands could be enhanced for native species.

## Basin Facts

Population (2000) .....	17,901	Watershed Councils.....	1
Cities over 10,000 .....	1	SWCD's .....	5
Area (acres).....	2,207,865	<b>State or Federal Listed</b>	
		Plant Species .....	6
		Animal Species .....	6

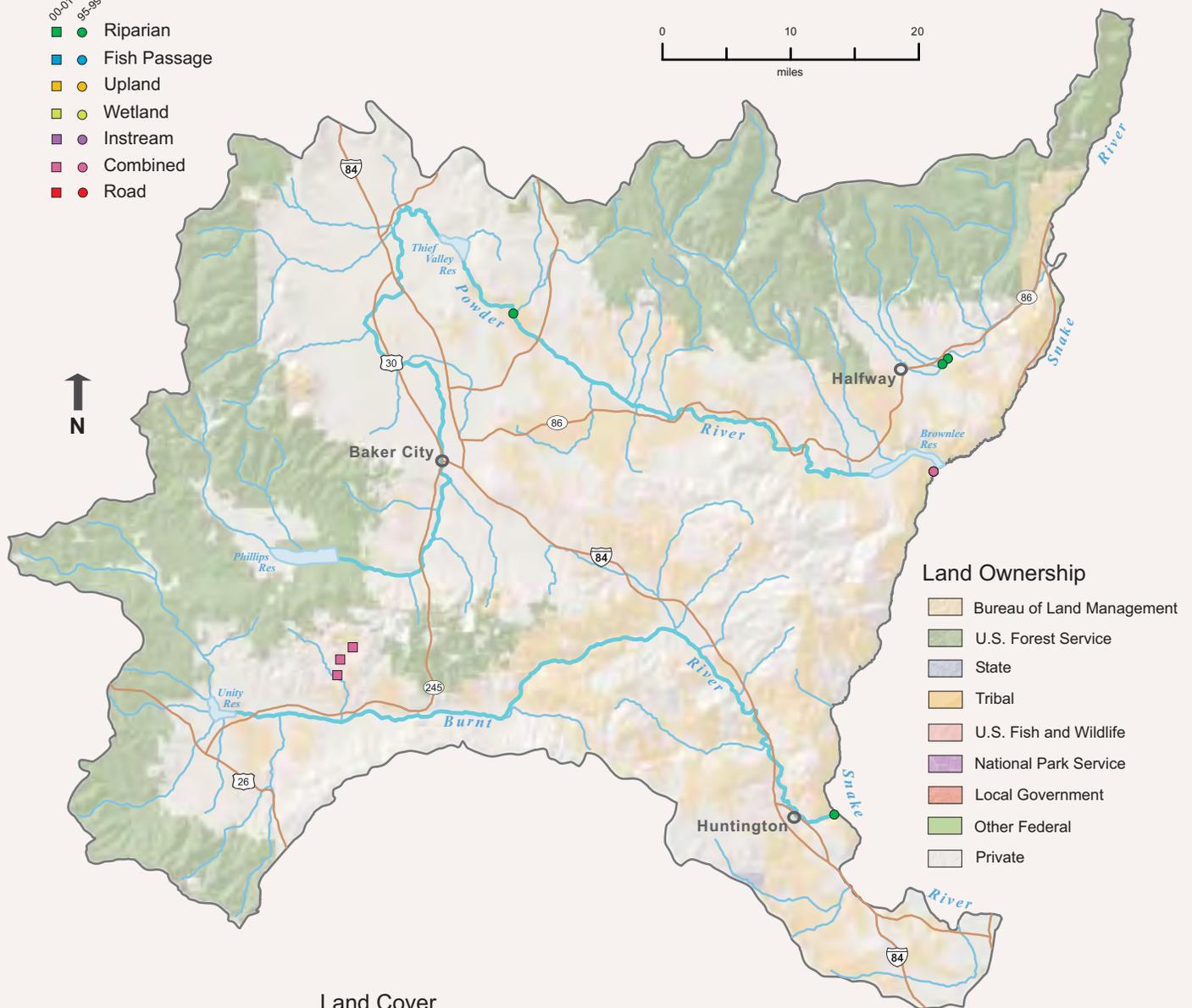
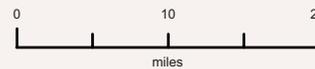


## Restoration Issues

- Issues related to Bull trout ESA recovery planning and implementation
- Restoration of cattle wintering areas adjacent to streams
- Fish passage at select locations
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotics, and reduce sedimentation

## Completed and Reported Restoration, 1995–2001

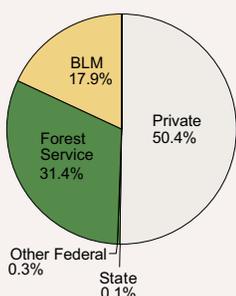
- 00-01 ● Riparian
- 95-99 ● Fish Passage
- Upland
- Wetland
- Instream
- Combined
- Road



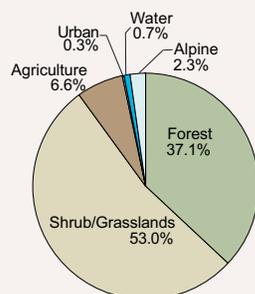
### Land Ownership

- Bureau of Land Management
- U.S. Forest Service
- State
- Tribal
- U.S. Fish and Wildlife
- National Park Service
- Local Government
- Other Federal
- Private

### Land Ownership



### Land Cover



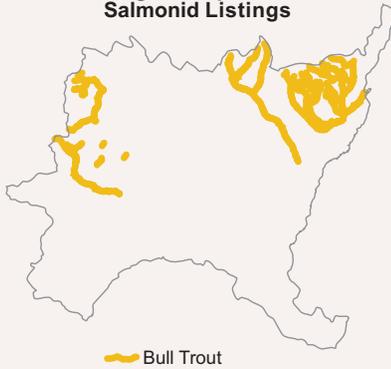
### Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

## Stressors

### Federal Endangered Species Act Salmonid Listings



## Water Quality Concerns

### Water Quality Plans

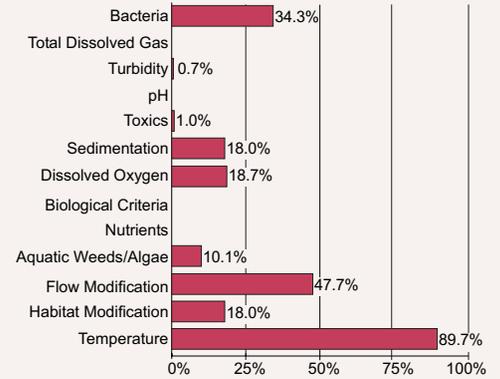


### Agricultural Water Quality Management Areas

In Progress  
Completed

303D Listed Streams

### 303d Listed Streams by Standard



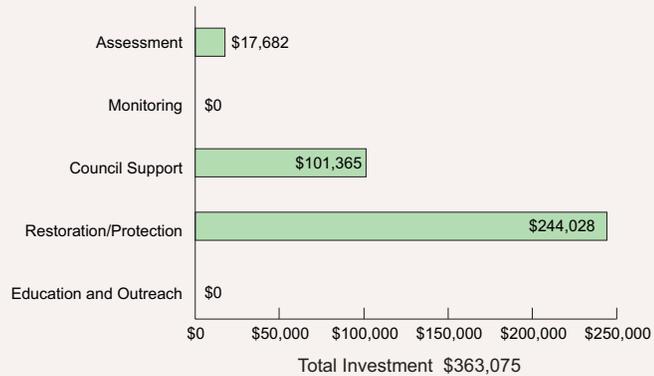
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

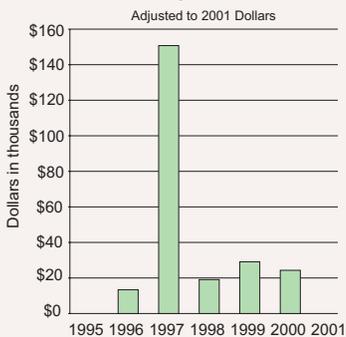
OWEB	\$363,075
NRCS	227,846
BPA	0
USFS	220,000
EPA/DEQ 319	0

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

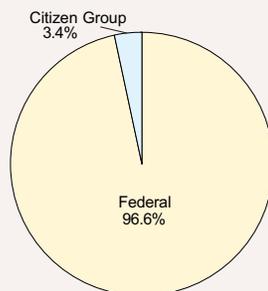


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995–2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



Based on \$23,213 Reported

### Accomplishments

- 1 completed restoration project was reported in 2000–01
- 17 OWEB grants for \$569,749 remain open (work not completed)
- Community-based watershed assessments have fostered collaborative relations
- Powder River instream enhancement project
- Off-stream watering, fencing, and wetland work to improve riparian conditions
- Fish screen project on Pine Creek
- Historic mine-site reclamation project was funded and is ongoing

### Challenges

- Significant disagreement on the existence and nature of watershed restoration issues
- Impacts from historic mining continue to impact water quality
- Funds for restoration may be limited because anadromous fish do not occur in basin

# Grande Ronde Basin

This basin includes the Wallowa, Grande Ronde, and Imnaha rivers, flowing from the majestic Wallowa Mountains to the Snake River. Ranching, agriculture, and forestry are key to the economy. The Wallowa Mountains frame the Grande Ronde Valley. This basin is the historic homeland of the Nez Perce Tribe. 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. Mountain headwaters in pine forests transition through deep canyons and meander through agricultural communities in the lowlands before flowing through deep canyons to join the Snake River.

## Basin Facts

Population (2000) .....	30,971	Watershed Councils.....	1
Cities over 10,000 .....	1	SWCD's .....	2
Area (acres).....	3,125,912	<b>State or Federal Listed</b>	
		Plant Species .....	9
		Animal Species .....	5



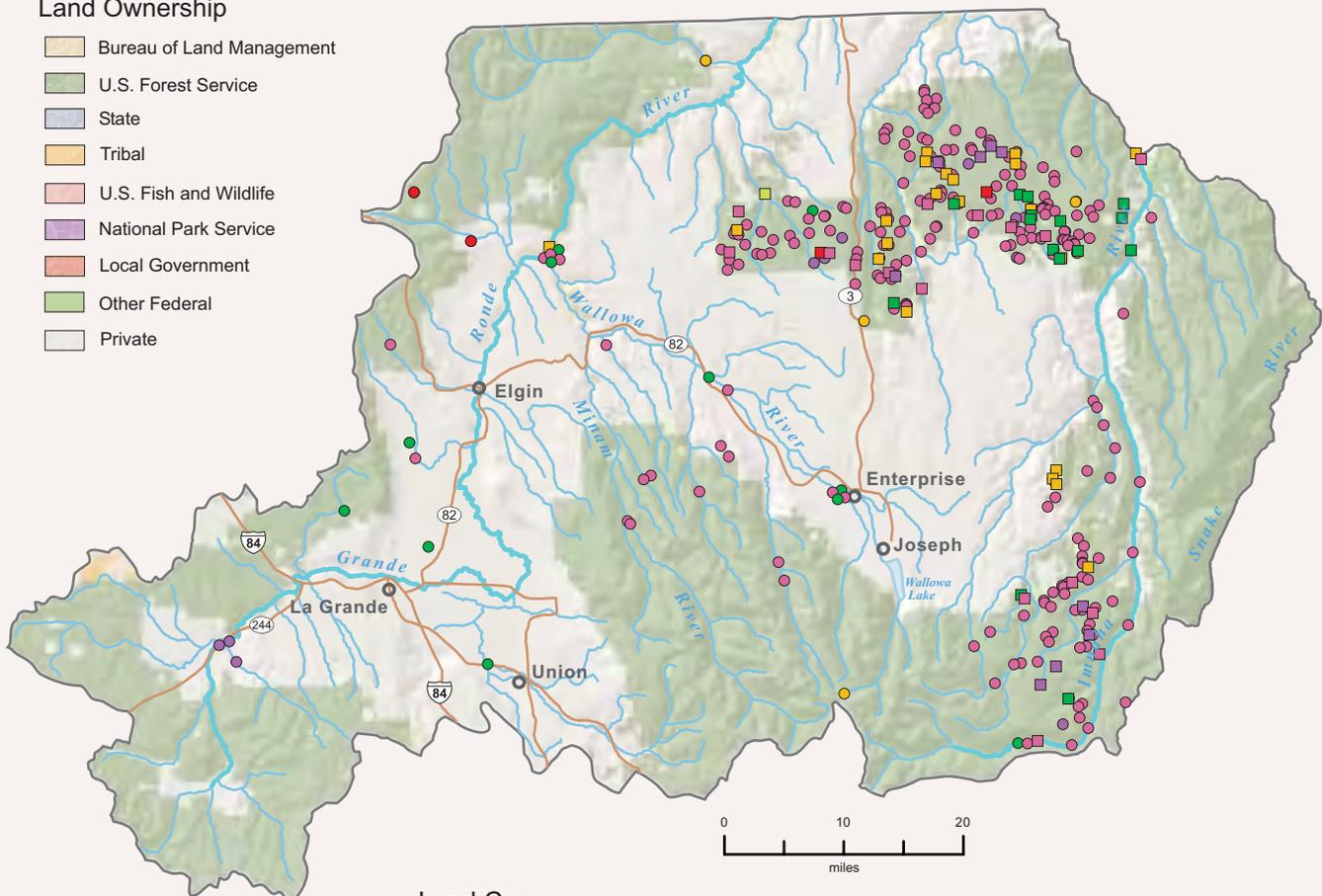
## Restoration Issues

- Restore wetlands, stream complexity and connections between river and floodplains in select areas
- Restore fish passage at culverts, dams, and diversions
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotics, and reduce sedimentation
- Improve water management to enhance instream flows in key areas

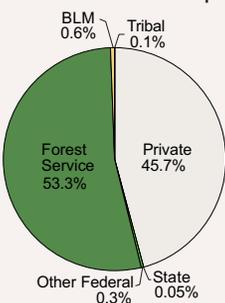
## Completed and Reported Restoration, 1995–2001



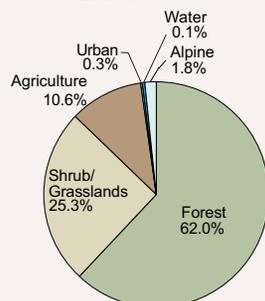
### Land Ownership



### Land Ownership



### Land Cover



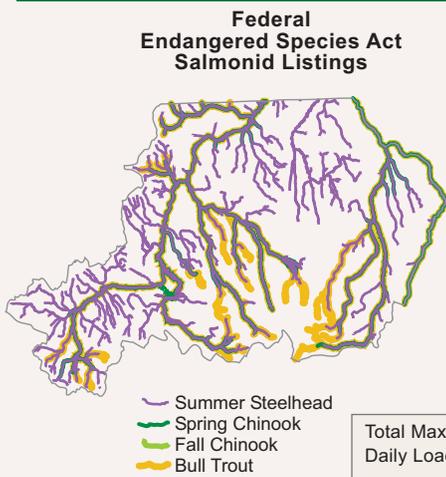
### Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



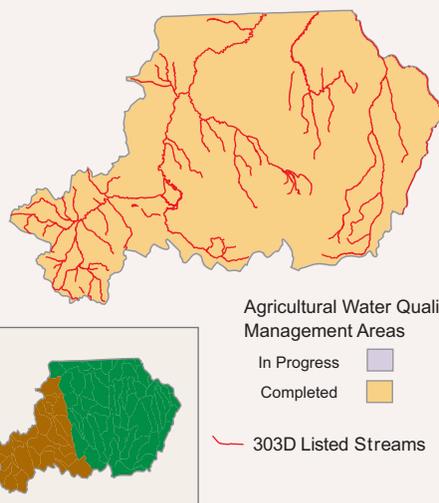
\*Funding by individual activity type not available, cost is reported as "combined".

Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

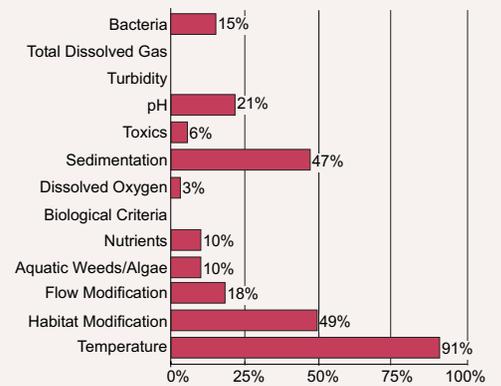
## Stressors



## Water Quality Concerns



## 303d Listed Streams by Standard



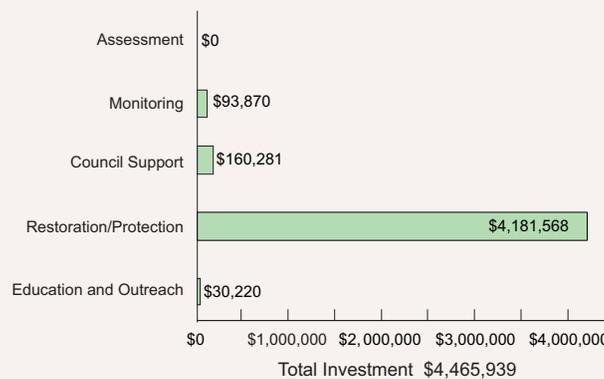
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

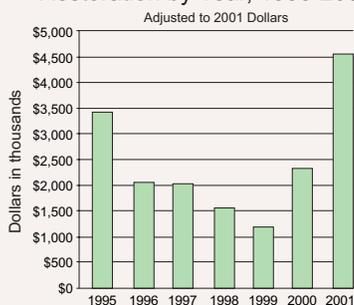
OWEB	\$4,465,939
NRCS	203,814
BPA	15,114,954
USFS	2,000,000
EPA/DEQ 319	116,000

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

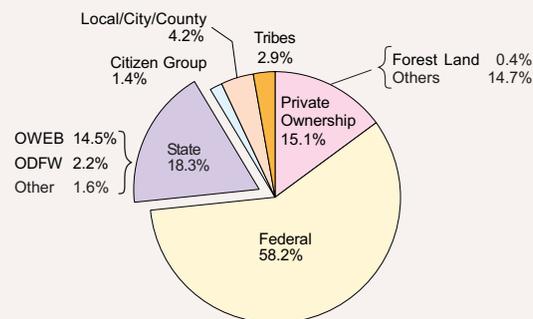


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995–2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



Based on \$7.0 Million Reported

## Accomplishments

- 141 completed restoration projects were reported in 2000-01; 54 of these were on private lands
- 73 OWEB project grants for \$5,797,163 remain open (work not completed)
- Several channel restoration projects (e.g., Milk Creek, McCoy Creek)
- Major fish passage projects (e.g., Catherine Creek)
- Riparian habitat enhancements included off-stream watering projects & CREP enrollment
- The Nez Perce tribe was a key participant and partner in restoration planning for upper basin

## Challenges

- The complex system of stream diversions makes streamflow restoration difficult
- Anadromous fish must pass 8 mainstem Columbia dams between this basin and the ocean
- Opposition to restoration efforts remains in some areas of the basin

# Umatilla Basin

This basin includes the Umatilla, Walla Walla and Willow Creek drainages. Ranching, forestry, wheat, other forms of agriculture, and Umatilla tribal lands dominate the economy. The Umatilla Basin is the site of successful reintroduction of spring chinook that were extirpated for more than 75 years. The Umatilla and Walla Walla Rivers spring from 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, and other irrigated agriculture.

## Basin Facts

Population (2000) .....	81,843
Cities over 10,000 .....	2
Area (acres).....	3,004,958

Watershed Councils.....	4
SWCD's .....	3
<b>State or Federal Listed</b>	
Plant Species .....	5
Animal Species .....	1



## Restoration Issues

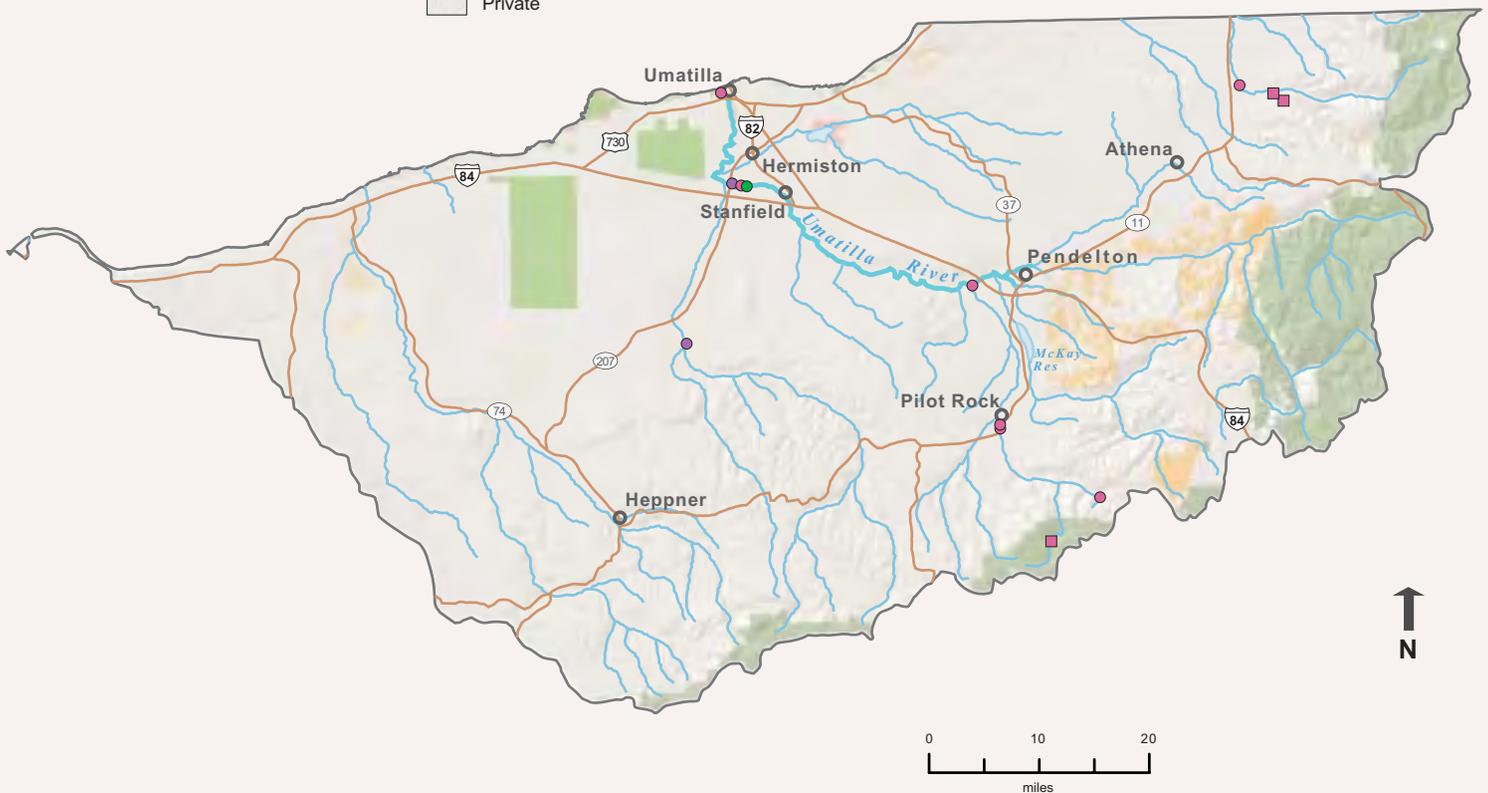
- Restore fish passage at culverts & dams, diversions
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotic species, and reduce sedimentation
- Completion of Subbasin Plan review

## Land Ownership

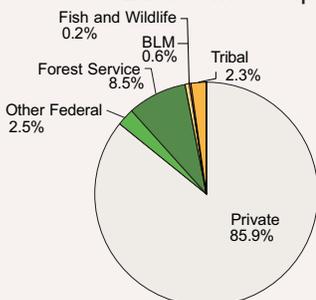
Bureau of Land Management	U.S. Fish and Wildlife
U.S. Forest Service	National Park Service
State	Local Government
Tribal	Other Federal
	Private

## Completed and Reported Restoration, 1995–2001

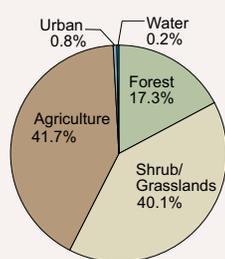
00-01 Riparian	00-01 Instream
95-99 Fish Passage	95-99 Combined
Upland	Road
Wetland	



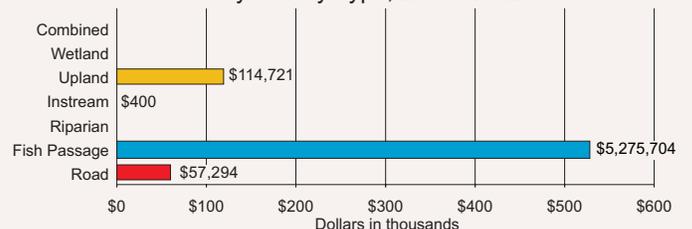
## Land Ownership



## Land Cover



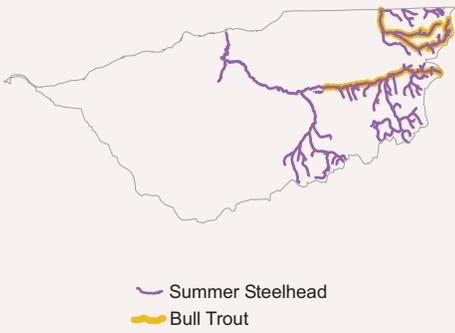
## Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

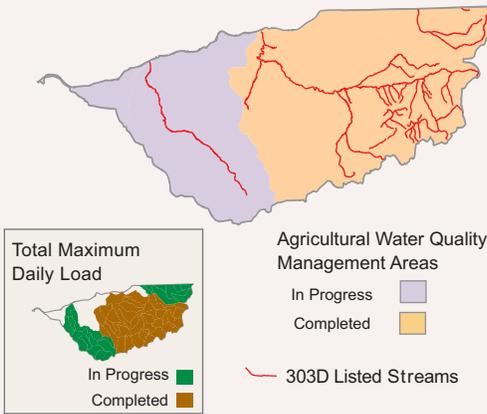
# Stressors

## Federal Endangered Species Act Salmonid Listings

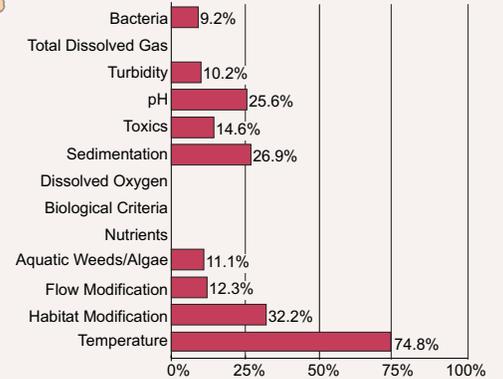


# Water Quality Concerns

## Water Quality Plans



## 303d Listed Streams by Standard



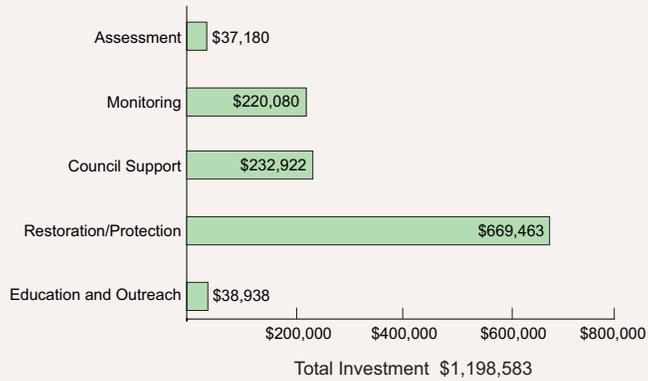
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

# Investments

## OWEB Investment in Restoration and Capacity 2001–2003 Biennium

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

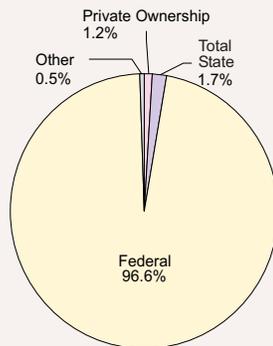
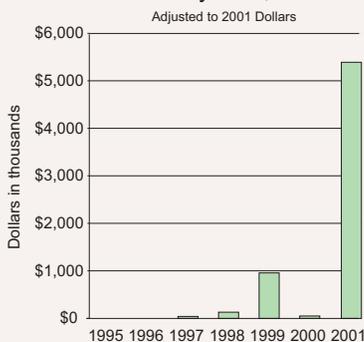
OWEB	\$1,198,583
NRCS	226,151
BPA	12,524,644
USFS	450,000
EPA/DEQ 319	102,300



# Accomplishments

## Source of Funding for Completed and Reported Restoration, 2000 and 2001

### Funding for Completed and Reported Restoration by Year, 1995-2001



Based on \$5.4 Million Reported

## Accomplishments

- 5 completed restoration projects were reported in 2000-01; 3 of these were on private lands
- 33 OWEB grants for \$1,909,622 remain open (work not completed)
- The Walla Walla river flowed all summer for first time in over 100 years
- Hatchery-reared spring chinook are spawning in reaches of the Umatilla that have been devoid of spawners for decades
- Effective restoration collaborations involve Umatilla Tribe, BPA, and local restoration groups

## Challenges

- Coordination between Oregon and Washington on instream flow restoration issues is needed but difficult to achieve
- The arid climate of this basin, coupled with intense traditional demand for water during low flow periods, limits opportunity to provide for instream flow needs of fish

# John Day Basin

This basin includes the Painted Hills, John Day Fossil Beds National Monument, and Strawberry Mountain Wilderness, and contains one of the most significant undammed stream systems in the West. The economy is dependent on natural resource industries: forestry, ranching, and mining. Summer steelhead and bull trout are listed under the federal Endangered Species Act. Nearly 40% of the basin is public land. Ponderosa pine 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 Spray flows through an incised canyon that bisects shrub-steppe and wheat ranches in the uplands before flowing into the Columbia River at the eastern end of its dramatic gorge.

## Basin Facts

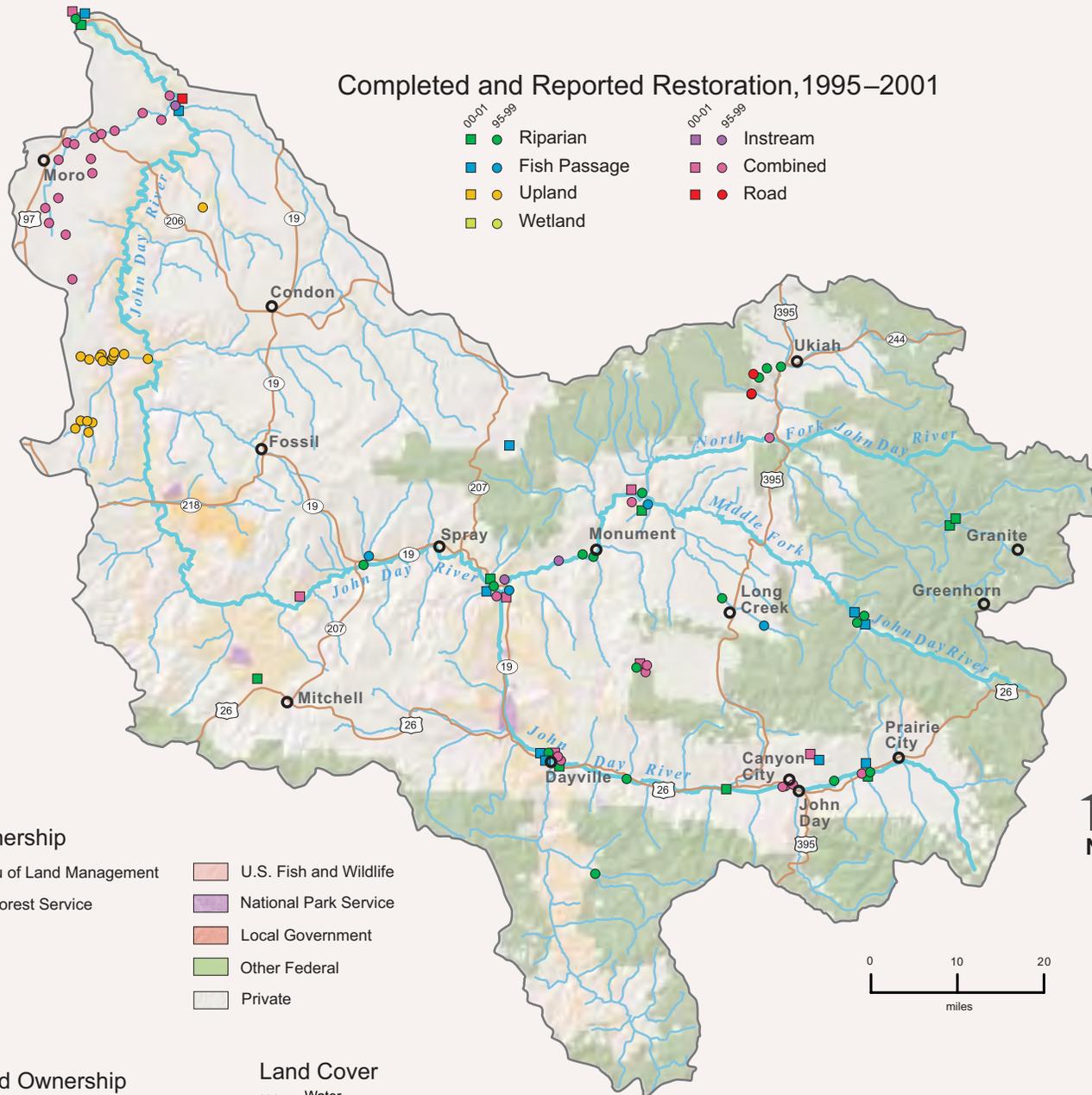
Population (2000) .....	11,690	Watershed Councils.....	6
Cities over 10,000 .....	0	SWCD's .....	5
Area (acres) .....	5,076,758	<b>State or Federal Listed</b>	
		Plant Species .....	6
		Animal Species .....	5



## Restoration Issues

- Restore fish passage at culverts, dams, and diversions
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotics, and reduce sedimentation

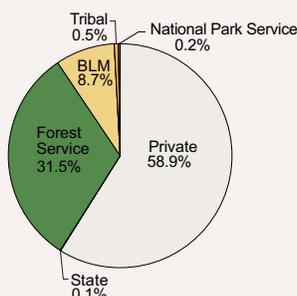
## Completed and Reported Restoration, 1995–2001



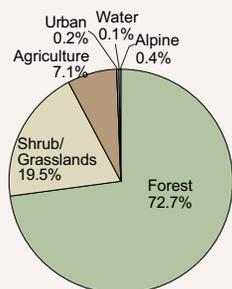
### Land Ownership

Bureau of Land Management	U.S. Fish and Wildlife
U.S. Forest Service	National Park Service
State	Local Government
Tribal	Other Federal
	Private

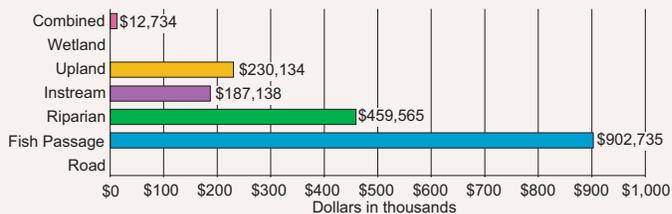
### Land Ownership



### Land Cover

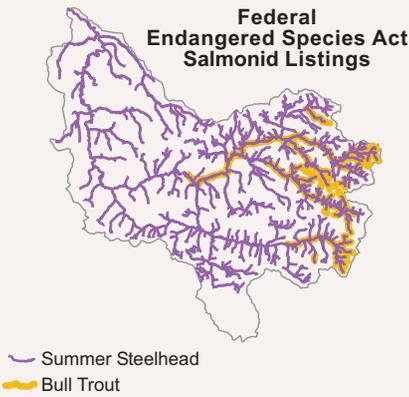


### Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001

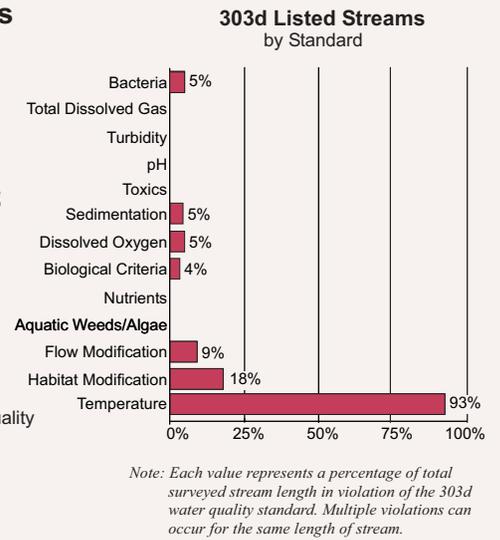
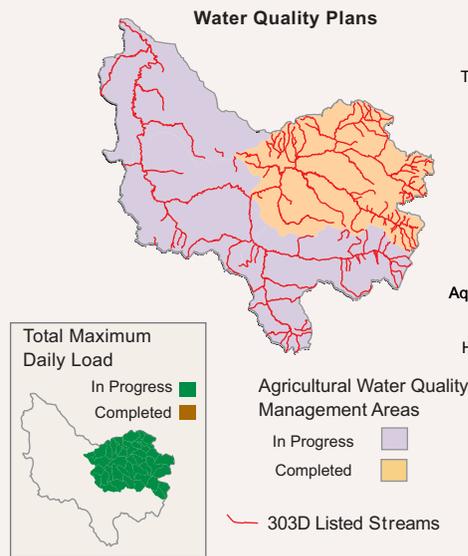


Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

## Stressors



## Water Quality Concerns

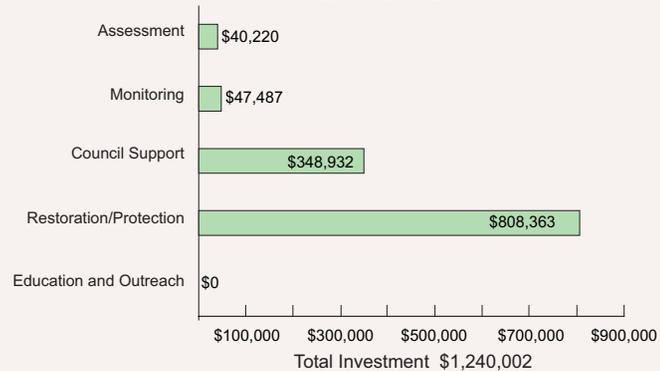


## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

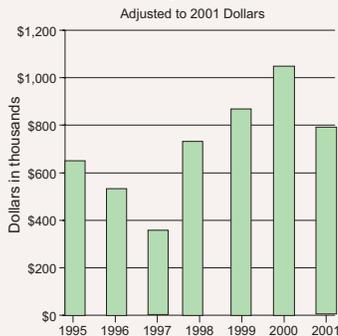
OWEB	\$1,240,002
NRCS	577,757
BPA	19,389,193
USFS	980,000
EPA/DEQ 319	168,000

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

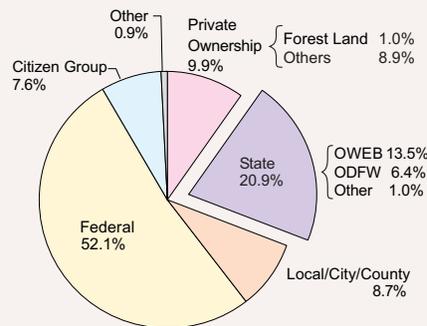


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995–2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



Based on \$1.8 Million Reported

## Accomplishments

- 49 completed restoration projects were reported in 2000-01; 37 of these were on private lands
- 46 OWEB project grants for \$1,733,825 remain open in this basin (work not completed)
- Fish passage was provided at over 20 pushup dams
- Grant County SWCD established as a leader in partnering on fish passage improvements

## Challenges

- Extensive, historic mining alterations to stream channels and riparian areas complicate restoration efforts
- Lack of technical assistance funds for project development has slowed fish passage barrier removal projects
- Opposition to restoration efforts remains in some areas of the basin

# Deschutes Basin

Bordered by the Cascade Range to the west, this basin includes the Lava Lands, high Cascade lakes, wild and scenic waterways, and a rapidly growing human population. Tourism, agriculture, forestry, ranching, and the high technology industry dominate the economy of the basin. The Deschutes River hosts world famous trout and steelhead fisheries. The Confederated Tribes of the Warm Springs Reservation operate Kah-Nee-Ta Lodge, a lumber mill and other tribal enterprises. Pelton, Round Butte, Ochoco, and Prineville dams generate electricity and block fish runs to the upper basin. Bull trout and steelhead are listed under the federal Endangered Species Act. Fed by snowfields of the Cascade and Ochoco Ranges, the basin's headwaters flow through high elevation wet meadows and lava plains before dropping through scenic canyons and shrub steppe. Irrigated agriculture, rangeland, and wheatlands lie along the Lower Deschutes.

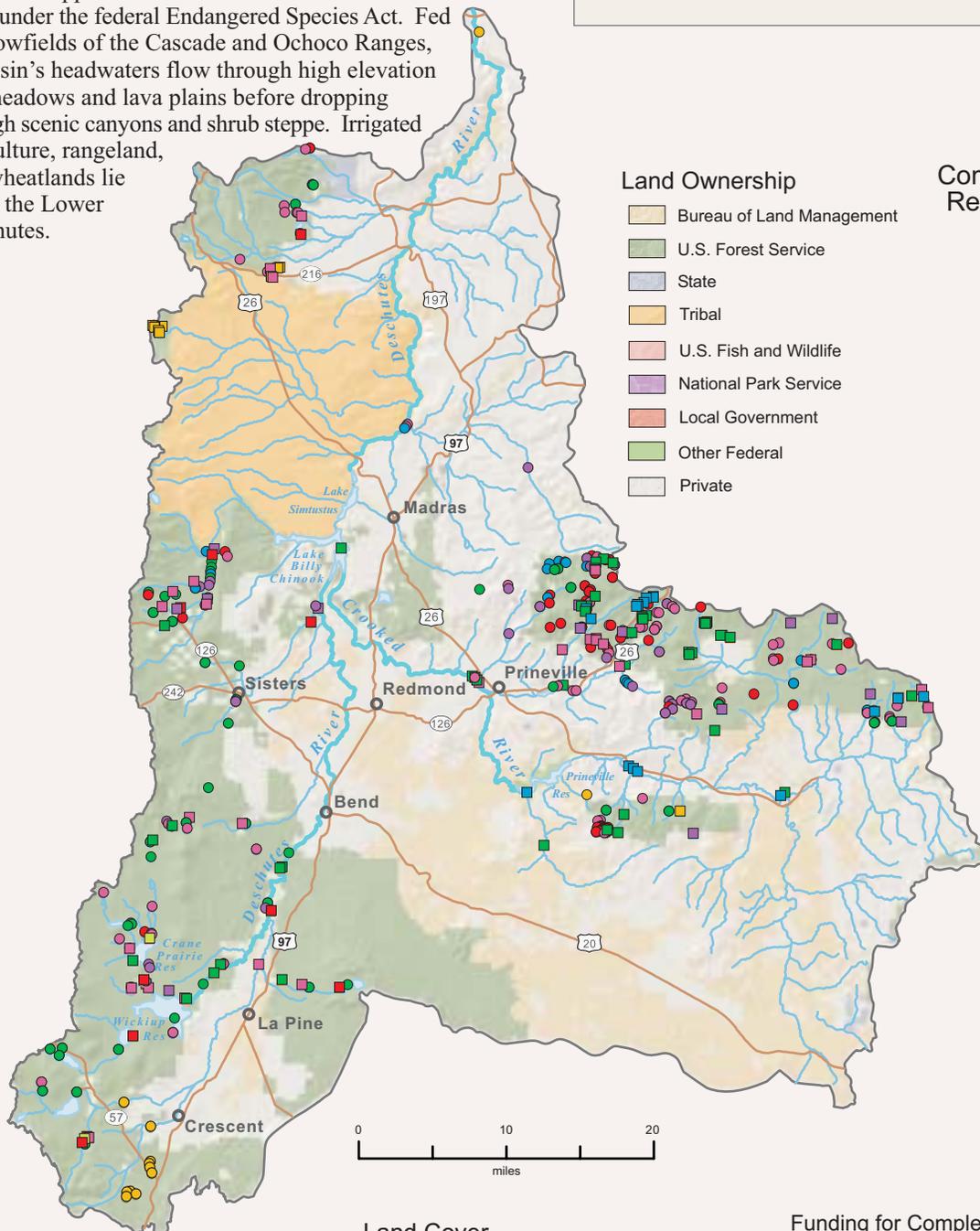
## Basin Facts

Population (2000) .....	159,047	Watershed Councils.....	7
Cities over 10,000 .....	2	SWCD's .....	8
Area (acres).....	6,886,142	<b>State or Federal Listed</b>	
		Plant Species .....	7
		Animal Species .....	3



## Restoration Issues

- Restore fish passage at culverts, dams, and diversions
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotic species, and reduce sedimentation
- Improve water management to enhance instream flows in key areas



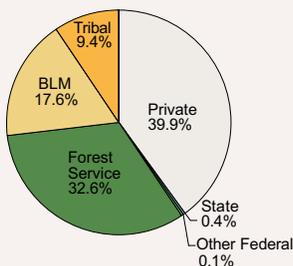
### Land Ownership

- Bureau of Land Management
- U.S. Forest Service
- State
- Tribal
- U.S. Fish and Wildlife
- National Park Service
- Local Government
- Other Federal
- Private

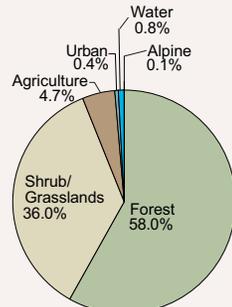
### Completed and Reported Restoration, 1995-2001

- 00-01 Riparian
- 85-99 Fish Passage
- Upland
- Wetland
- Instream
- Combined
- Road

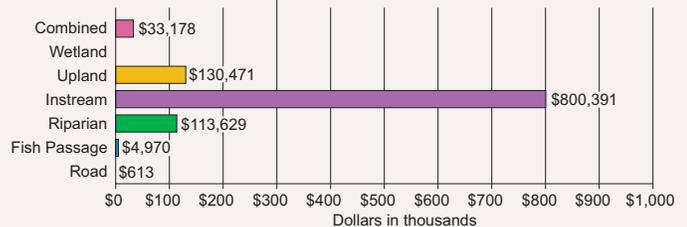
### Land Ownership



### Land Cover



### Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

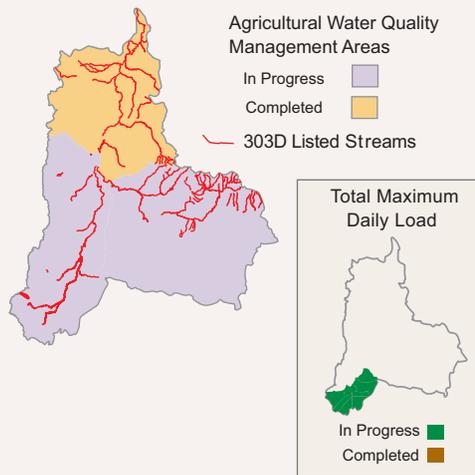
## Stressors

### Federal Endangered Species Act Salmonid Listings

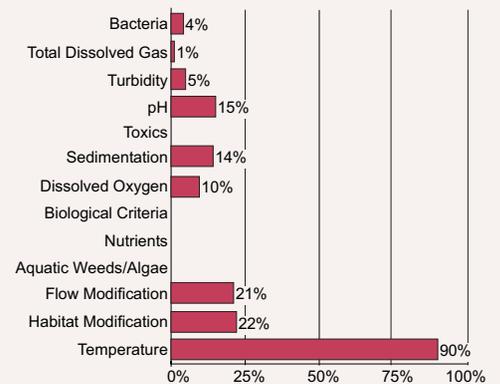


## Water Quality Concerns

### Water Quality Plans



### 303d Listed Streams by Standard



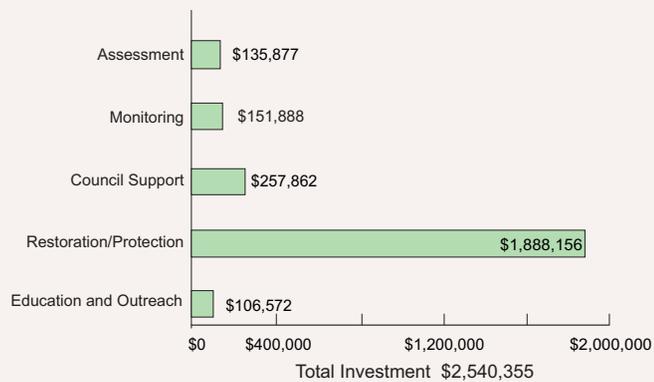
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

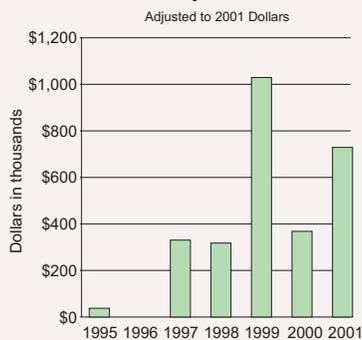
OWEB .....	\$2,540,355
NRCS .....	591,999
BPA .....	2,939,580
USFS .....	6,600,000
EPA/DEQ 319 .....	166,261

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

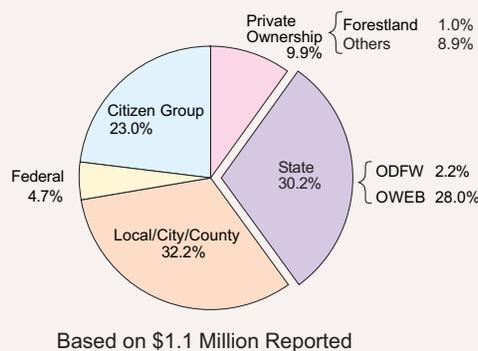


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995–2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



## Accomplishments

- 131 completed restoration projects were reported in 2000-01; 20 of these were on private lands
- 49 OWEB project grants for \$2,533,810 remain open (work not completed)
- Whole watershed scale restoration efforts (e.g., Buck Hollow Creek) are being implemented over many years and involve many landowners
- Basin-wide planning effort underway with many community partners
- The Warm Springs Tribe is re-introducing anadromous fish to the upper basin
- Significant instream flow enhancement projects in Tumalo & Squaw Creek

## Challenges

- Accommodating conflicting resource demands of growing population, tourism, traditional activities with watershed restoration and needs of listed fish stocks
- Funding for CREP enrollment is currently limited to the present-day distribution of anadromous fish
- Continued controversy surrounding instream flow enhancement efforts in some areas of the basin

# Hood Basin

Draining directly from Mt. Hood's glaciers, 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, while the Fifteenmile basin is the edge of wheat country and is a major cherry producing area. 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.

## Basin Facts

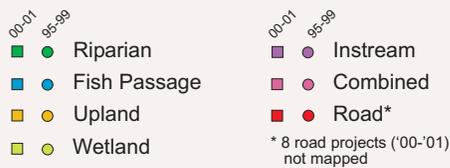
Population (2000) .....	42,240	Watershed Councils.....	5
Cities over 10,000 .....	1	SWCD's .....	3
Area (acres).....	745,844	<b>State or Federal Listed</b>	
		Plant Species .....	12
		Animal Species .....	2



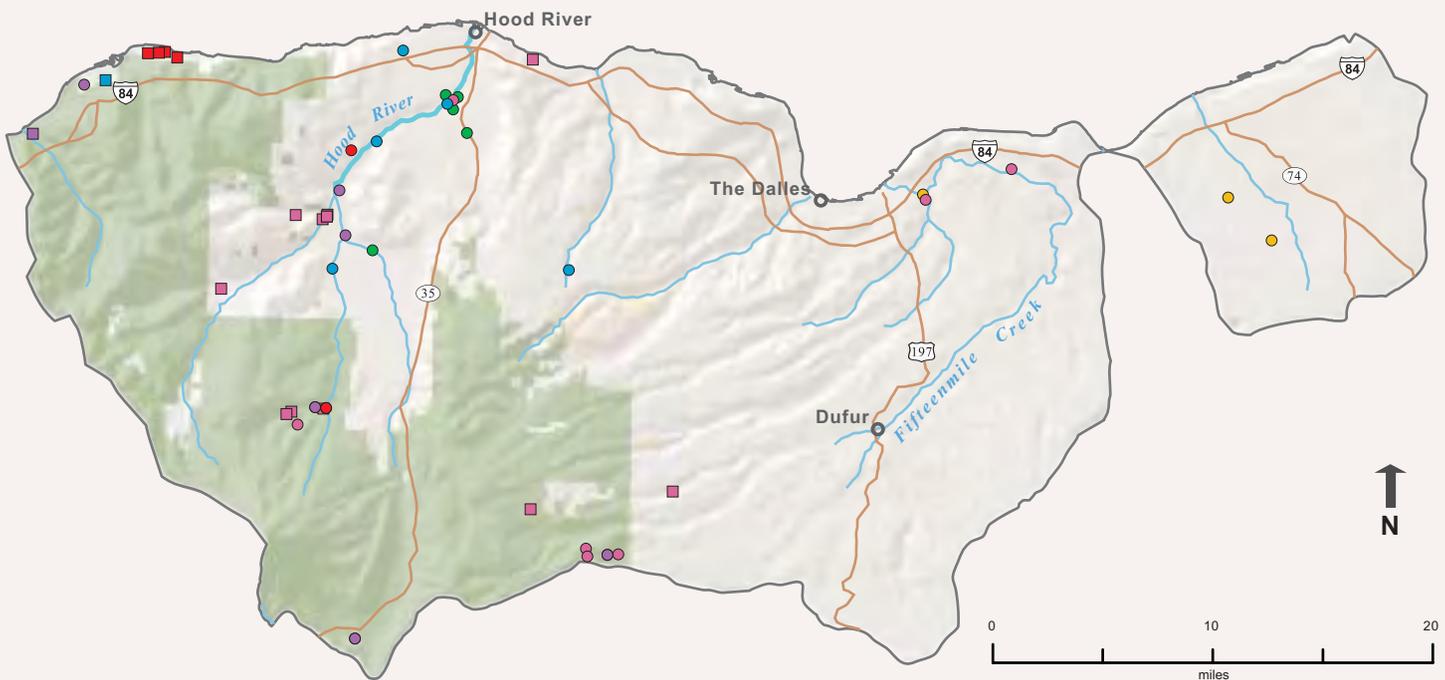
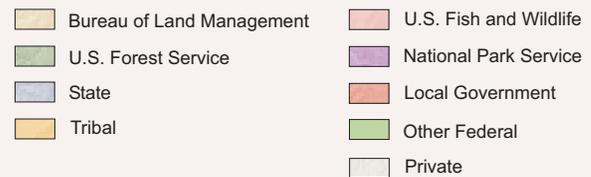
## Restoration Issues

- Restore fish passage at culverts & dams, diversions
- Improve range & forest health to enhance riparian condition, manage fuel loads and exotics, and reduce sedimentation
- Improve water management to increase instream flows in key areas

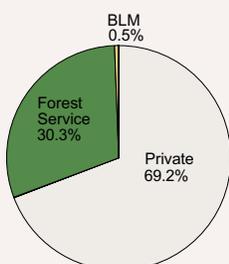
## Completed and Reported Restoration, 1995–2001



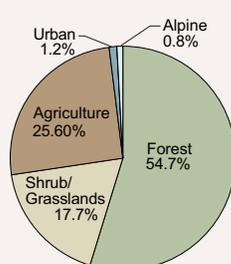
## Land Ownership



## Land Ownership



## Land Cover



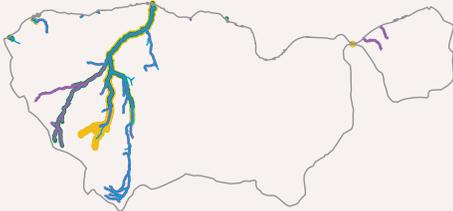
## Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

## Stressors

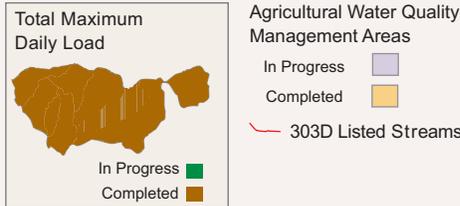
### Federal Endangered Species Act Salmonid Listings



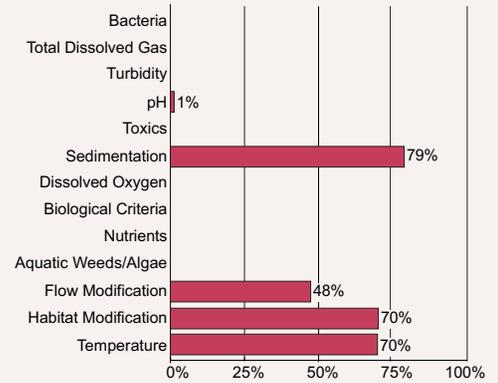
- Winter Steelhead
- Summer Steelhead
- Spring Chinook
- Fall Chinook
- Bull Trout

Fish species listed, not mapped:  
Chum Salmon

### Water Quality Concerns Water Quality Plans



### 303d Listed Streams by Standard



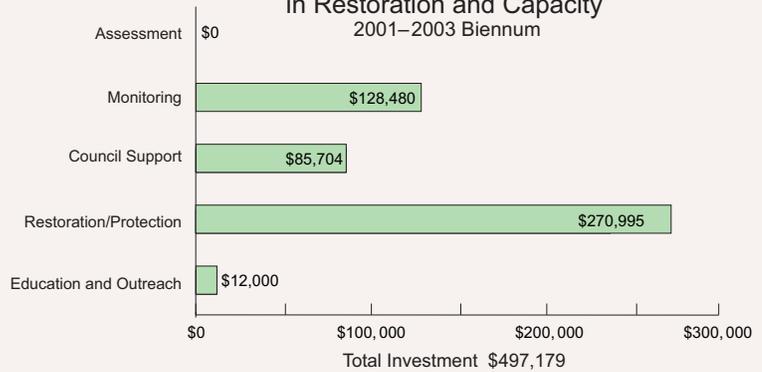
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

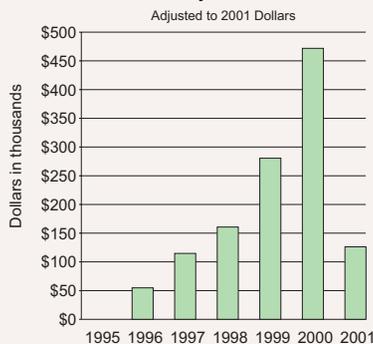
OWEB	\$497,179
NRCS	599,105
BPA	6,982,451
USFS	250,000
EPA/DEQ 319	220,645

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

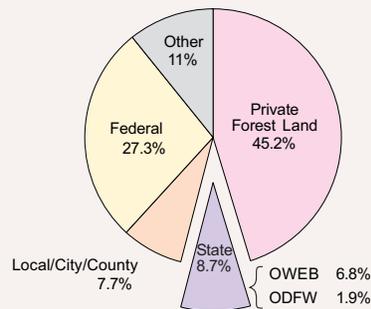


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995–2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



Based on \$586,000 Reported

### Accomplishments

- 17 completed restoration projects were reported in 2000-01; 9 of these were on private lands
- 11 OWEB grants for \$563,194 remain open (work not completed)
- Completed watershed assessment & detailed, prioritized action plan
- Very effective restoration partnerships between land management entities in basin have secured funding from diverse sources, resulting in more on-the-ground work

### Challenges

- Impacts of recreation development on watershed function
- Periodic glacial-melt floods threaten restoration investments
- Inadequate funds to screen many irrigation diversions
- Technical difficulties associated with implementing and evaluating alternate pesticide management methods

# Lower Columbia Basin

Lewis and Clark spent the winter of 1904-1905 in this basin. This region's relatively small streams drain onto floodplains and into the tidal reaches of the Columbia River. Waters flow either from the Coast Range (Skipanon, Young's, and Clatskanie rivers, Big and Gnat creeks), or from the west slope of the Cascades (the Sandy River). These streams generally have heavily forested hillsides in headwater areas and steep valleys. Nearly the entire Columbia River floodplain has been diked. Undiked areas of the floodplain support very high species diversity. Anadromous fish species listings under the federal Endangered Species Act include chum and chinook salmon, and steelhead. Maritime shipping, forestry, and wood processing are key elements of the economy in this basin. Extensive hybrid cottonwood plantations occupy much of the diked floodplain.

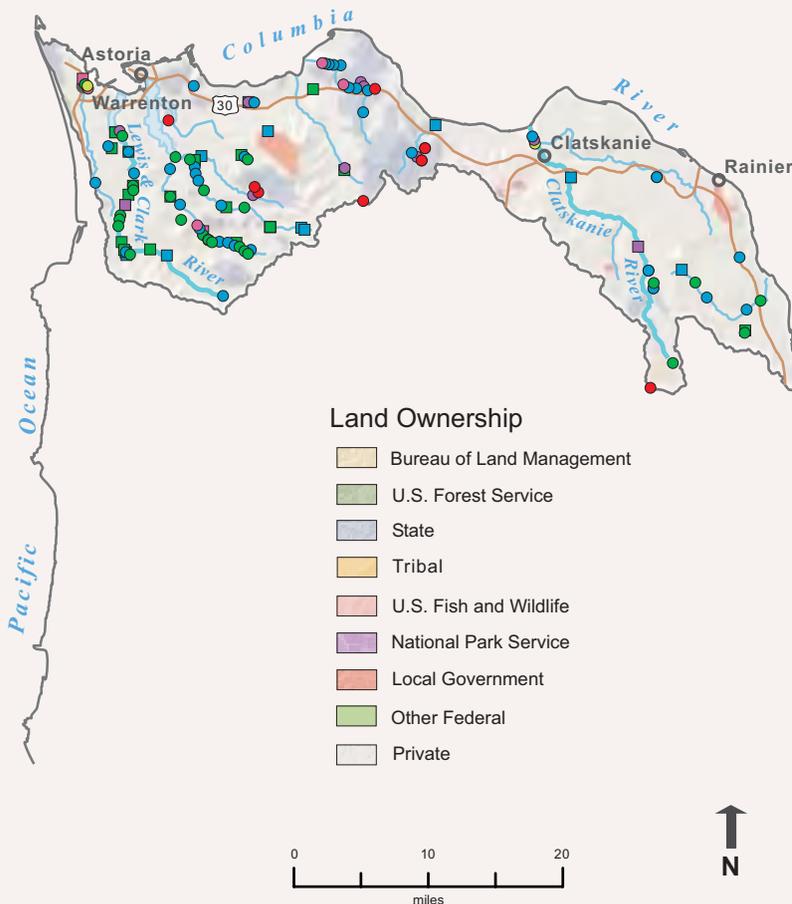
## Basin Facts

Population (2000) .....	97,783	Watershed Councils.....	5
Cities over 10,000 .....	1	SWCD's .....	4
Area (acres).....	771,803	<b>State or Federal Listed</b>	
		Plant Species .....	10
		Animal Species .....	3

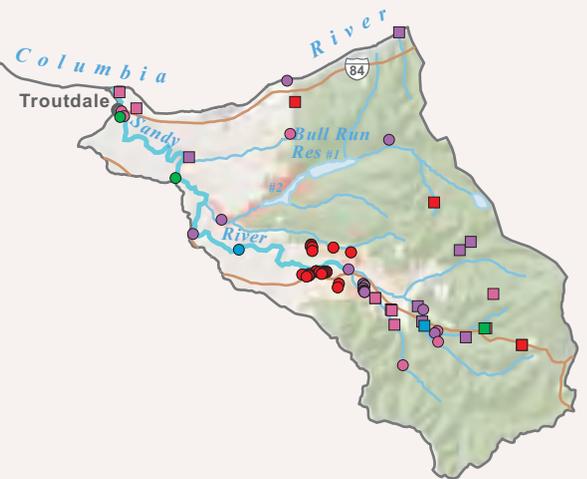


## Restoration Issues

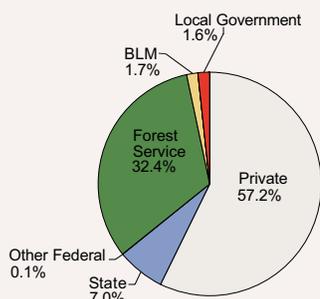
- Increase stream complexity and coho over-winter habitat
- Improve productivity of estuarine, diked, and lowland areas for salmonids
- Prevent or limit aquatic invasive species in estuaries & lower rivers
- Restore fish passage at culverts, dams, and dikes



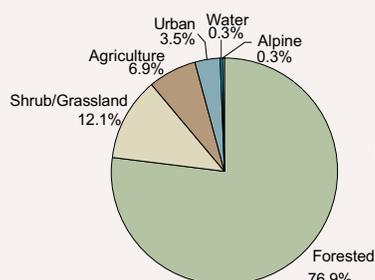
## Completed and Reported Restoration, 1995-2001



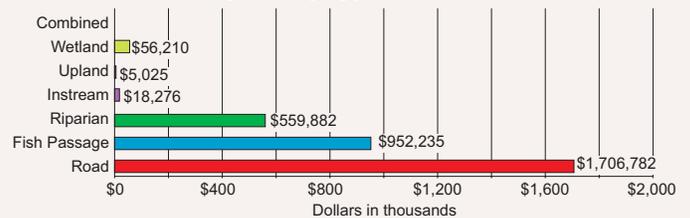
## Land Ownership



## Land Cover



## Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

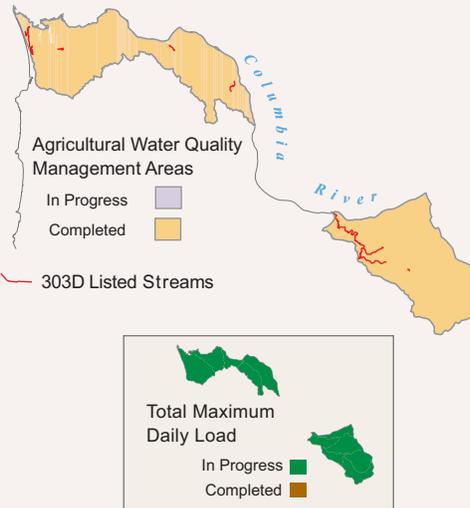
## Stressors

### Federal Endangered Species Act Salmonid Listings

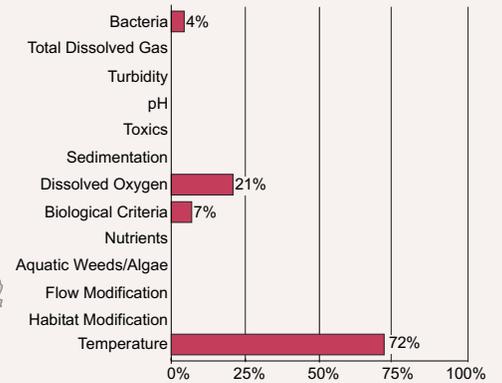


## Water Quality Concerns

### Water Quality Plans



### 303d Listed Streams by Standard



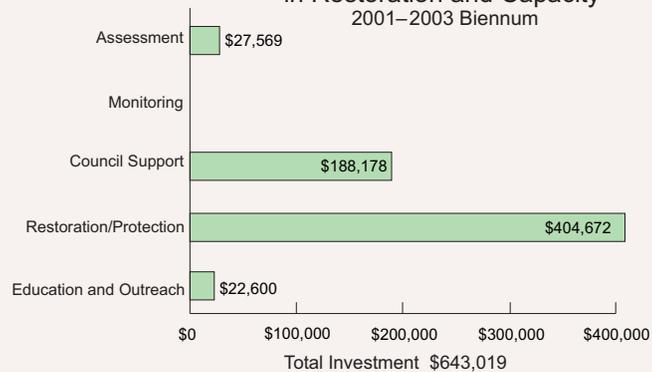
Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

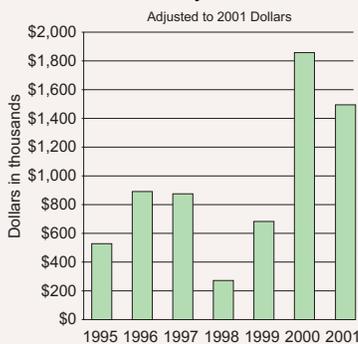
OWEB	\$643,019
NRCS	204,650
BPA	1,085,519
USFS	1,400,000
EPA/DEQ 319	155,803

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

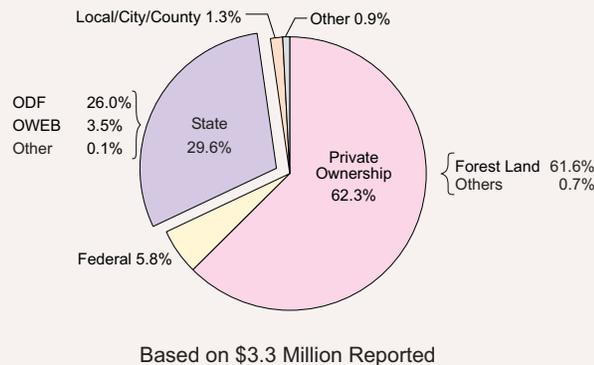


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995-2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



## Accomplishments

- 92 completed restoration projects reported in 2000-01; 63 of these were on private lands
- 14 OWEB grants for \$732,137 remain open in this basin (work not completed)
- Improved passage at Skipanon 8th Street dam
- Reconnection of Westport slough & Clatskanie River
- Completion of watershed assessments
- Development of Coho recovery plan for state-listed species

## Challenges

- Fish passage barriers at hatcheries
- Difficulty of re-establishing naturally produced coho populations close to intense hatchery production and harvest
- Restoration of diked tidal areas may affect management practices of many landowners
- Complex policy issues associated with Marmot Dam removal and Columbia River Channel deepening

Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

# Willamette Basin

The Willamette basin supports extensive high technology, agriculture, forestry, and wood products industries, along with roughly three quarters of Oregon's human population. Streams that flow from the Coast Range to the Willamette tend to be relatively small. Streams that drain from the Cascades are relatively large and support native cutthroat, rainbow, and bull trout, plus spring chinook salmon and winter steelhead. Large dams on most Cascade tributaries significantly alter stream flow regimes. The Willamette Valley was originally characterized by wet prairies and oak savannahs, but these have largely been replaced by urbanization and intensive agriculture.

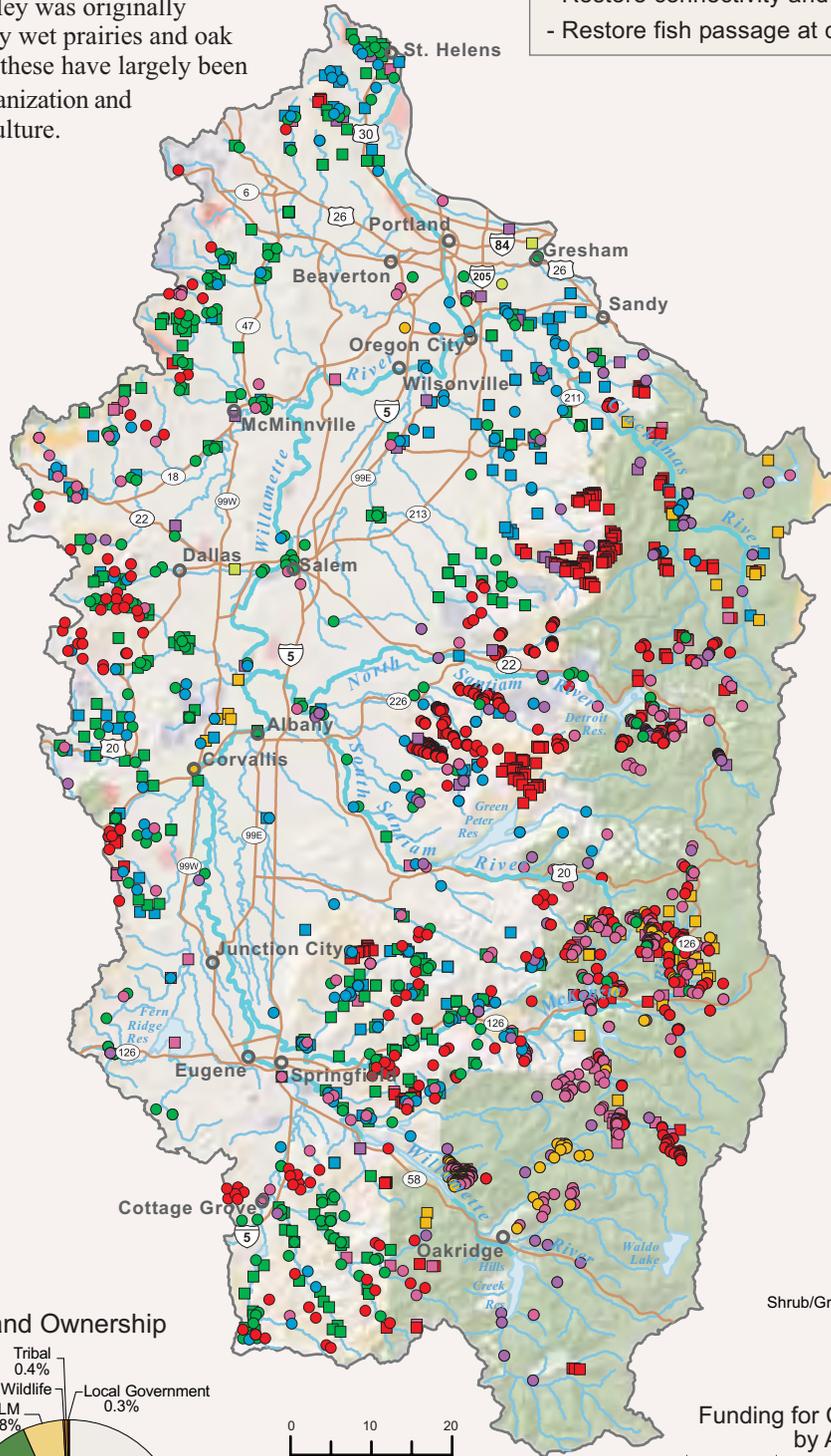
## Basin Facts

Population (2000) .....	2,327,548	Watershed Councils.....	26
Cities over 10,000 .....	27	SWCD's .....	11
Area (acres).....	7,337,000	<b>State or Federal Listed</b>	
		Plant Species .....	17
		Animal Species .....	11



## Restoration Issues

- Integration of urban development with watershed restoration, including identification of strategic investments
- Protection from agricultural runoff and erosion
- Restore connectivity and complexity of rivers and flood plains
- Restore fish passage at culverts & dams



## Completed and Reported Restoration, 1995-2001

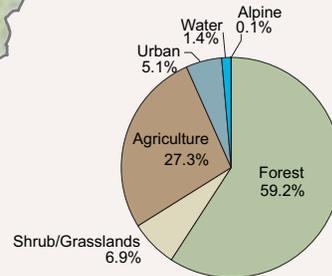


\* 419 road projects ('00-'01) not mapped

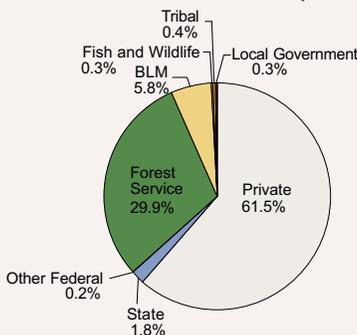
## Land Ownership



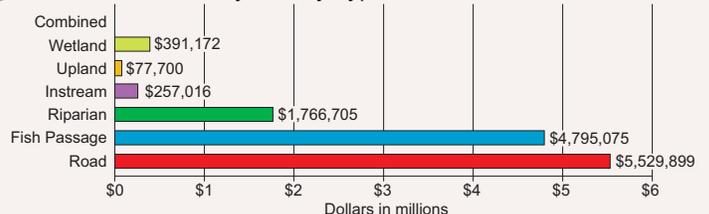
## Land Cover



## Land Ownership



## Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)

## Stressors

### Federal Endangered Species Act Salmonid Listings



— Winter Steelhead  
— Spring Chinook  
— Fall Chinook  
— Bull Trout

**Fish species listed, not mapped:**  
 Oregon Chub  
 Chum Salmon

## Water Quality Concerns

### Water Quality Plans

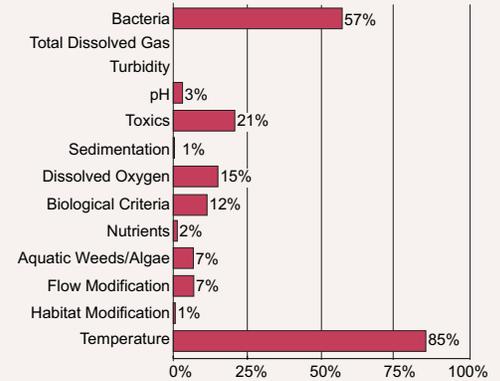


### Agricultural Water Quality Management Areas

— In Progress  
— Completed

— 303D Listed Streams

### 303d Listed Streams by Standard



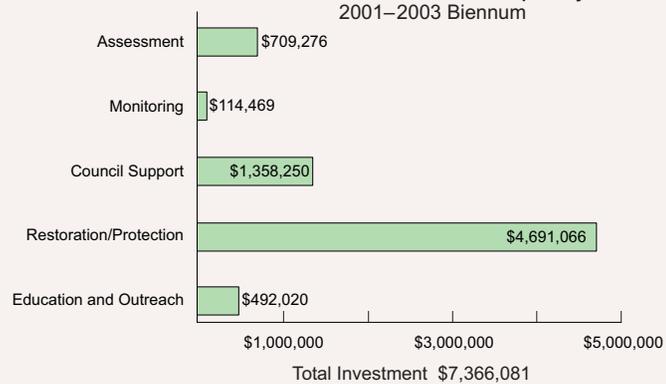
*Note: Each value represents a percentage of total surveyed stream length in violation of the 303d water quality standard. Multiple violations can occur for the same length of stream.*

## Investments

### Public Investment in Restoration/Conservation Projected State or Federal 2001–2003 Biennia

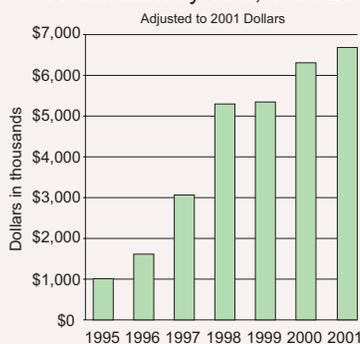
OWEB	\$7,366,081
NRCS	3,110,731
BPA	4,548,479
USFS	8,000,000
EPA/DEQ 319	909,554

### OWEB Investment in Restoration and Capacity 2001–2003 Biennium

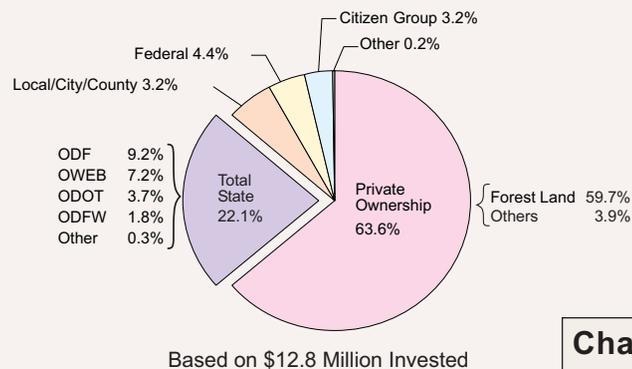


## Accomplishments

### Funding for Completed and Reported Restoration by Year, 1995-2001



### Source of Funding for Completed and Reported Restoration, 2000 and 2001



## Challenges

- Cumulative impact on water quality from intense urban, industrial, and agricultural development of basin
- Impacts of large dams on anadromous fish runs (fish passage & water temperature)
- Impact of exotic fish on native species
- Continuing loss of wetlands
- Historic river channel simplification and subsequent economic uses of the floodplain limit restoration opportunities
- Expense associated with urban watershed restoration

## Accomplishments

- 1001 completed restoration projects were reported in 2000-01; 736 of these were on private lands
- 135 OWEB grants for \$8,843,089 remain open (work not completed)
- Collaboration among diverse landowner interests was greatly improved
- Development of Willamette basin conservation strategy
- Willamette Planning Atlas identifies priorities

*Note: Spatial location of reported federal projects is mapped, however, fiscal values are not noted in basin sections (see federal and statewide summary sections)*

# Federal Projects

There are three types of federal investments reported on these pages: Bonneville Power Administration funding for fish and wildlife restoration in the Columbia Basin, Natural Resources Conservation Service funding of conservation actions on private lands, and restoration activities conducted on federally managed lands as reported by the federal Regional Ecosystem Office (REO). The REO's information is a compilation of projects implemented to support the Northwest Forest Plan, and includes restoration data reported by federal land management agencies and other federal partners.



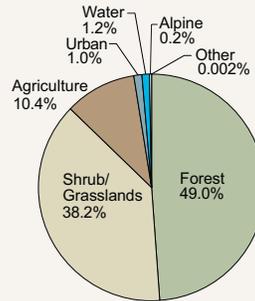
## Completed and Reported Restoration, 1995–2001



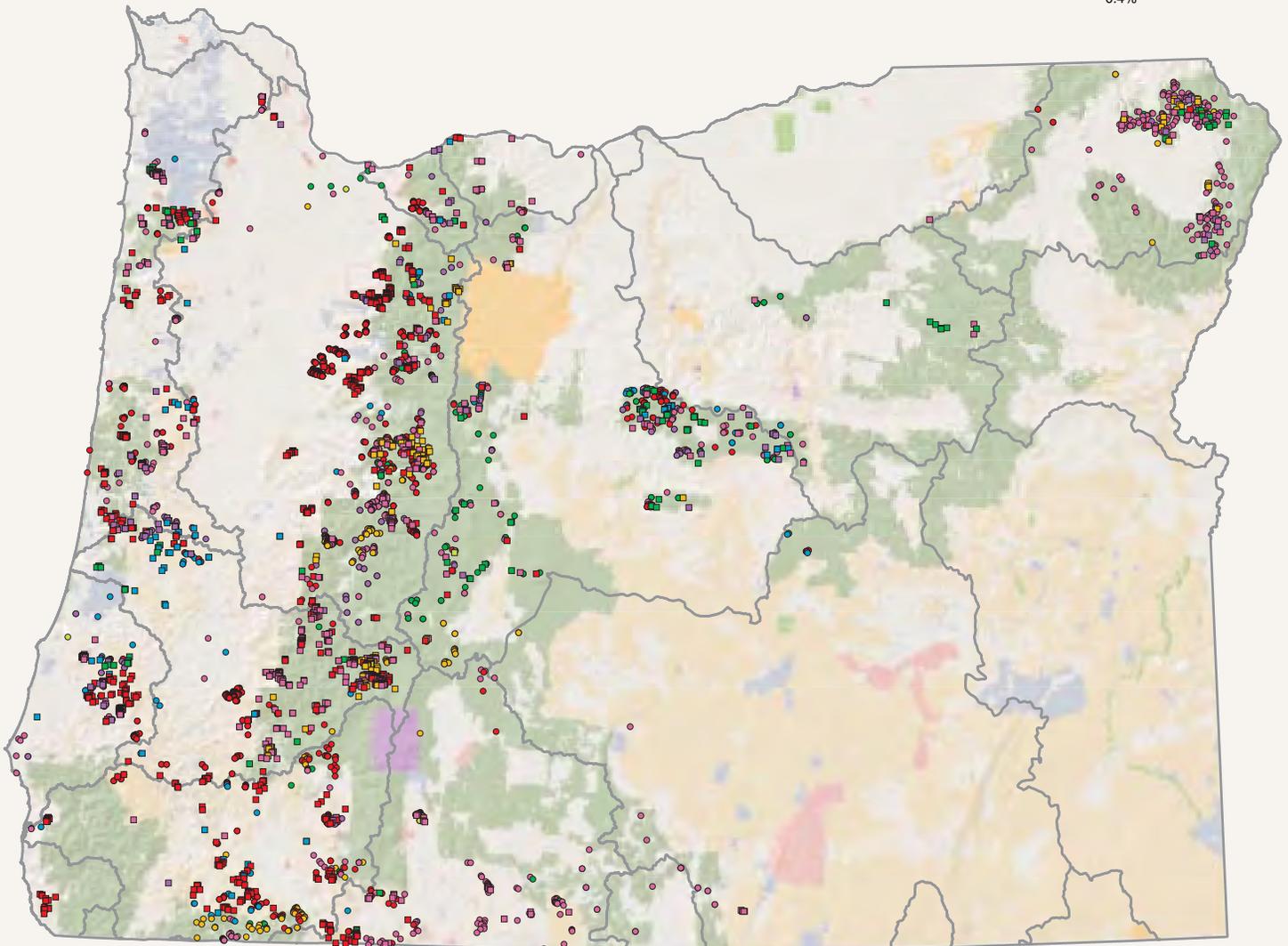
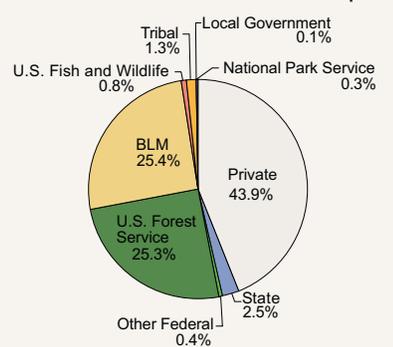
## Land Ownership



## Statewide Land Cover

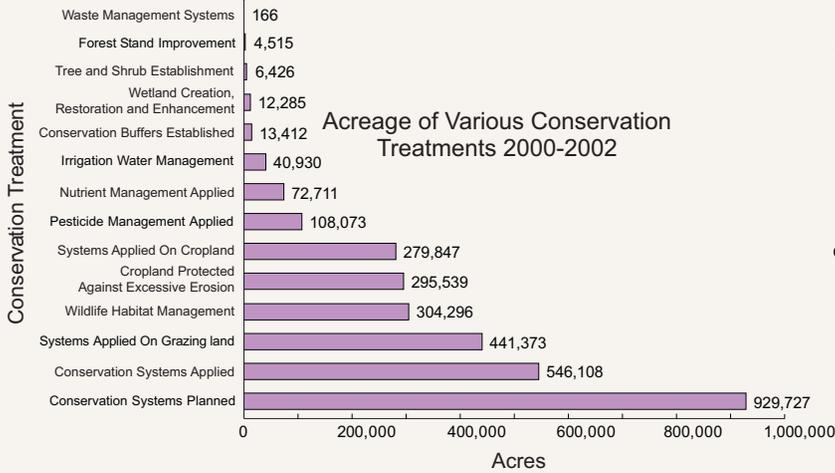


## Statewide Land Ownership

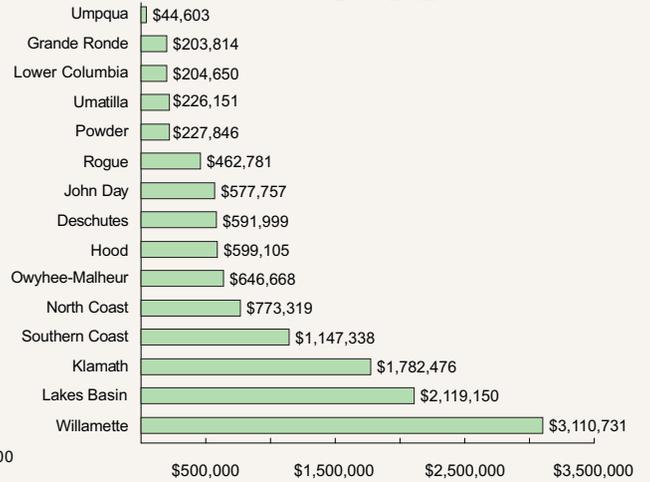


## Natural Resource Conservation Service Investments

Applied Conservation and Program Dollars from June 2000 Through June 2002

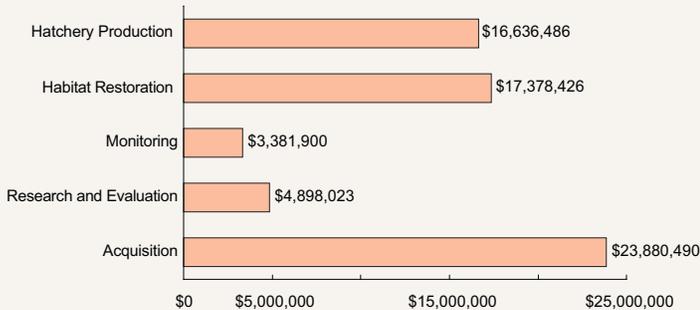


NRCS Funding By Basin 2000-2002



## Bonneville Power Administration Investments

Bonneville Power Administration Investment by Category 2001-2002

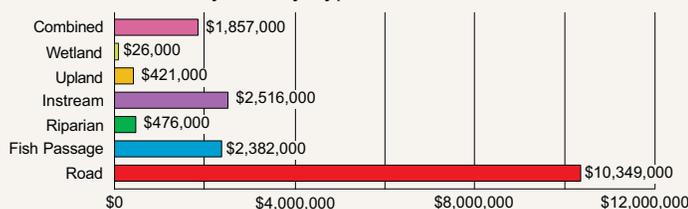


Bonneville Power Administration Investment by Basin 2001-2002

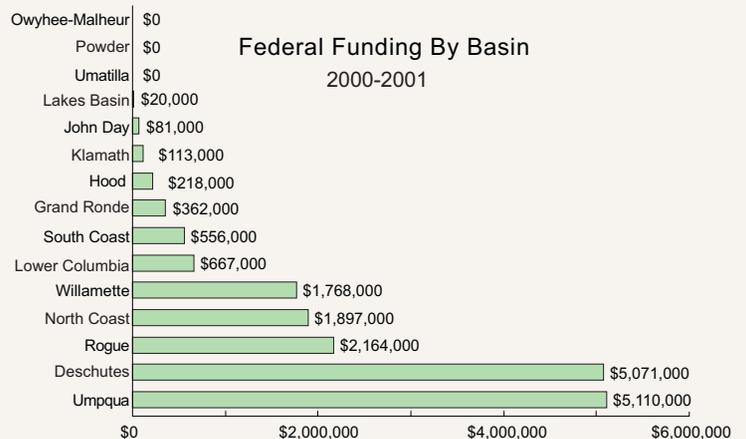


## Other Federal Investments Management Agencies Reporting to the Regional Ecosystem Office

Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Federal Funding By Basin 2000-2001



# Agency Actions

## Oregon Plan Teams

A network of interagency teams, comprised of volunteers from agencies and organizations, has been established to support local and state efforts.

The **Core Team** provides policy direction to the other state teams and coordinated direction for agency implementation efforts.

The **Implementation Team** provides a forum to identify and solve implementation issues for the Oregon Plan.

The **Outreach Team** coordinates public communication and develops outreach and educational tools to support the plan.

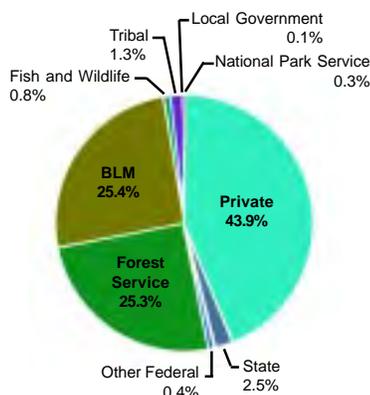
The **Monitoring Team** coordinates monitoring, data collection, and evaluation of changes in salmon populations and watershed health.

**A**gency actions that are both coordinated and integrated to better implement existing programs are a critical component of Oregon Plan success. When effectively implemented, state agency regulatory programs provide the foundation for addressing natural resources issues. Likewise, land management decisions of federal and state agencies have significant impacts on the health of Oregon watersheds, recovery of salmonids, and improvement of water quality.

## General Observations

- Compliance monitoring of Oregon's environmental protection regulations is weak.
- Fish screen installations increased, but it will still be decades before high priority diversions are all screened.
- Oregon has made tremendous progress developing agricultural water quality management plans and Total Maximum Daily Loads (TMDLs). The challenge of implementing and monitoring effectiveness remains.
- State and federal agency staff have grown accustomed to working together on a regular basis to problem solve and implement the Oregon Plan.
- Interviews with private landowners, watershed councils, and Soil and Water Conservation District (SWCD) staff across the state reveal four continuing hindrances to Oregon Plan implementation: 1) permits for restoration work can be difficult and time consuming to obtain; 2) technical assistance remains insufficient; 3) opportunities to better coordinate agency activities must be realized; and 4) landowner incentives are inadequate.
- The Conserved Water Program is an under utilized tool for restoring instream flows.
- The Conservation Reserve Enhancement Program is a largely untapped resource for riparian restoration.
- There is cautious optimism that the Northwest Power Planning Council's subbasin planning process will enhance the effectiveness of watershed restoration efforts in the Columbia Basin (information available at [www.subbasins.org](http://www.subbasins.org)).

## Statewide Land Ownership



Over half of Oregon is in public ownership and management programs for these lands are essential to recovery of listed species, improving watershed health, and sustaining local economies.

## Agency Roles and Responsibilities

The Oregon Plan rests on a framework of state laws, rules, and executive orders designed to enhance and protect watershed health, at risk species, and water quality by governing forest and agricultural practices, water diversions, wetlands, water quality, and fish and wildlife protection. This foundation of environmental laws is consistent with the federal Clean Water Act (CWA) and Endangered Species Act (ESA), giving Oregonians greater control over Oregon's natural resources while still meeting standards and obligations at the federal level. The pages that follow highlight the activities of some of the many agencies tasked to implement these authorities under the Oregon Plan.

## Accomplishments and Ongoing Efforts

### Regulatory Baseline Compliance Rates

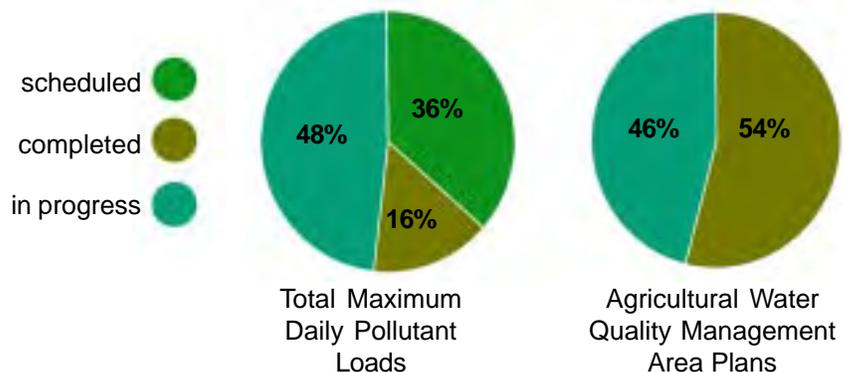
Executive Order 99-01 states, "agencies with regulatory programs will determine levels of compliance with regulatory standards and identify and act on opportunities to improve compliance levels."

- The Oregon Department of Forestry (ODF) evaluates Oregon Forest Practices Rules compliance and effectiveness. Statewide compliance in riparian areas is over 95 percent and 70 percent of new stream crossings on private lands pass fish. Monitoring led to recommendations for revision of rules on small streams, landslides, public safety, and roads.
- The Oregon Department of Agriculture (ODA) Confined Animal Feeding Operation inspection program intends to inspect every permitted operation at least once each year. In 2001, 72 percent (355/494) of the permitted sites were inspected, and 61 percent of these were in compliance with permit conditions.
- Meaningful measures of compliance rates for other state regulatory permit programs (e.g., water withdrawals, removal and fill permits, permitted pollutant discharges, effectiveness of fish screens at water diversions) are not fully developed or suffer from lack of funding for implementation.

### Water Quality Restoration

- Agricultural Water Quality Management Area Plans are complete in 21 of 39 planning units and the remaining 18 are expected to be completed by winter 2003-04.
- TMDL Water Quality Management Plans are complete in 14 of 91 subbasins, are underway in 44 subbasins, and are scheduled for 33. All TMDLs are scheduled for completion by 2007.

Status of Water Quality Plans



DEQ and ODA use a comprehensive approach to address water quality problems under Clean Water Act requirements. DEQ calculates pollution load limits for each subbasin in the state, called a TMDL. Working with local advisory committees, ODA develops plans to help agricultural landowners and operators identify issues and measures needed to improve water quality in their area to be incorporated as part of a TMDL.

Agency Actions

- Roads have been surveyed on all state forestlands and improvements prioritized. From 1995 – 2001 approximately 1,618 miles were surveyed (57 of those were surveyed in 2000-01).

**Water Quantity Restoration**

- Statewide priority areas for streamflow restoration were identified in 2002, and are used by watermasters, watershed councils, SWCDs, the Oregon Water Trust, OWEB, and others to identify key stream reaches where instream leases, conservation projects, and transfers would most benefit critical fish runs.
- Protected instream flows have increased by nearly 300 cubic feet per second since 1997. These increased flows are attributable to a combination of leases, transfers, and the conserved water program:

	1997	2002
<b>Leases</b>	92.8 CFS	217.5 CFS
<b>Transfers</b>	2.1 CFS	152.8 CFS
<b>Conserved Water Program</b>	0.1 CFS	0.6 CFS
<b>TOTAL</b>	95.0 CFS	370.9 CFS

**Fish Management and Passage**

- A Native Fish Conservation Policy was adopted in fall 2002 after statewide public review. This policy replaces Oregon’s former wild fish policy, and will result in formal guidance that matches the efforts already in place to ensure that hatchery policies and programs support wild fish recovery.
- Ocean harvest rates of coastal coho continue to be strictly managed in accordance with recovery needs.
- Fish passage surveys were completed on all state forest-land roads, and for all U.S. Forest Service (USFS) managed lands.
- Estimates of the number of water diversions in state waterways exceed 70,000. The state has identified 3,000 that need fish screens on an urgent basis, and is mapping these to aid in further prioritization, including information on ownership, water rights, location, diversion type, and operational status of any existing fish screens. Completion is targeted for 2005. In recent years accelerated funding provided greater technical support and materials for private landowners to install fish screens at 419 of these high priority water diversions.
- State and federal agencies have collaborated to develop basin-scale fish passage barrier prioritization guidance for use around the state.

Work is underway to identify and assess water diversions statewide. In recent years fish screens were installed at 419 diversions, but screens are still needed at about 3,000 high priority water diversions.



**Agency Support for Voluntary Restoration**

- The Division of State Lands (DSL) contracted for Local Wetland Inventories in 25 cities and urban areas.
- Many state and federal agency staff have been assigned to assist private landowners, SWCDs, and watershed councils to design and implement habitat restoration projects. A complete accounting of all time spent on these activities is unavailable. However, one example is available – ODFW habitat biologists devote roughly 6,000 hours per biennium helping private landowners with their projects.
- A statewide survey of potential for landowner enrollment in the Conservation Reserve Enhancement Program was conducted. The survey identifies both the scope of eligible enrollments as well as

technical assistance needs for each county. The report provides a foundation for significantly enhancing landowner enrollment.

- The federal Regional Ecosystem Office (REO) reported completion of about 1,200 restoration projects on federal lands (one third of total reported projects on all lands) with a value of over \$18 million in 2000 and 2001 by the U.S. Forest Service, the Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (USFWS). Contributions of restoration work on federal lands complement work on private lands to improve water quality and recover ESA-listed fish species. The statewide work reported by REO is included in summaries provided in the Voluntary Restoration Action section of this report. For more information about investments of individual federal agencies please see the Federal Restoration section at the end of the basin summaries in this report (pp. 36-37).
- Using Bonneville Power Administration (BPA) funding, the Northwest Power Planning Council (NWPPC) is making grants available for subbasin planning in all Oregon tributaries to the Columbia River. This is an opportunity to obtain financial support from the NWPPC for basin-wide planning that should have a significant role in integrating recovery work at federal, state, and local levels.

### Challenges Ahead

**Regulatory Baseline:** Systematic evaluation of regulatory compliance rates and effectiveness of regulatory programs needs to be expanded.

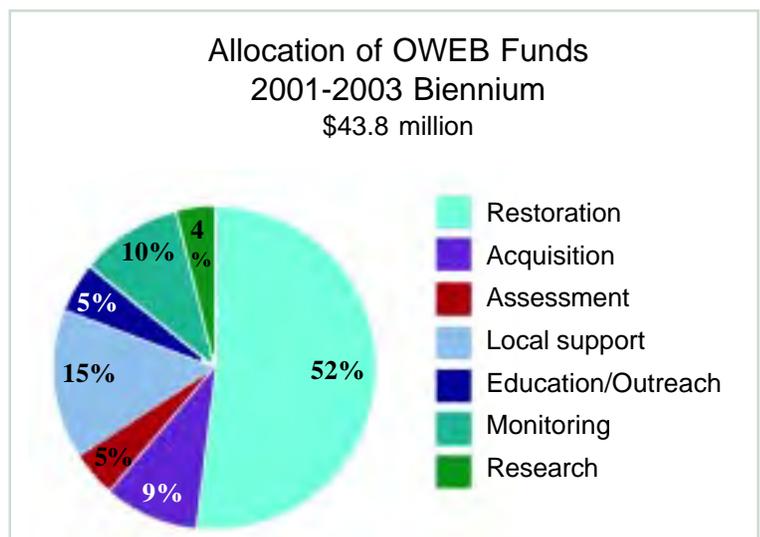
**Water Quality Plans:** Moving from planning to implementation of Total Maximum Daily Load and Agricultural Water Quality Management Area plans is the next step. A corresponding challenge will be devising methodologies that correlate restoration with implementation activities.

**Permitting:** Opportunities for permit streamlining need further examination in order to eliminate acknowledged barriers to restoration work.

**Technical Assistance:** In spite of recent progress, both government coordination and availability of technical assistance need further improvement. Recent surveys identified technical assistance and coordination as a significant limit to conservation/restoration action by landowners.

**Fish Management:** Implementation of the Native Fish Conservation Policy will require coordination with other agency programs and the participation of diverse interests in order for the program to be effective.

**Water Quantity:** Stabilizing or enhancing instream flows for fish is critical to success of the Oregon Plan in a large number of watersheds but returning water instream is a controversial issue for many.



# Voluntary Restoration Actions by Oregonians

**V**oluntary restoration actions on privately owned lands is the essence of the Oregon Plan. Private landowners – individuals and industries, rural and urban – are conducting essential restoration work with the support of citizen groups, businesses, and local government. Sustained investment and assistance from OWEB and other state and federal agencies is key to successful voluntary restoration.

## General Observations

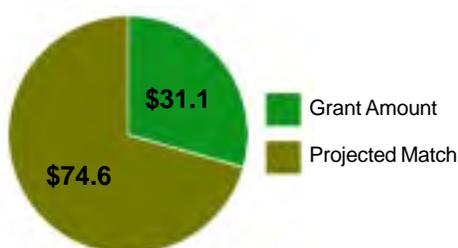
- For every dollar OWEB awards in grants to support conservation and restoration efforts, approximately \$2.40 is projected to be matched by other sources of funding.
- A study of OWEB grants from 1997-99 found that 80 percent of all grant funds remain in the county and 96 percent remain in the state, with every restoration dollar invested generating additional stimulus to the local economy.
- Watershed councils have completed watershed assessments in most basins of the state, helping to assure that restoration dollars are invested wisely.
- Industrial timberland-owners paid for nearly a quarter of all the completed restoration projects reported in 2000-01.
- Improved reporting by agricultural landowners is needed to document their contribution to restoration.
- Limits on the availability of technical assistance for project design, permitting, and implementation impede restoration efforts.
- More information is accessible and reportable in this biennial report than in previous years. However, the available information still falls far short of that needed to describe the overall scope of restoration work by agencies, tribes, local governments, individual conservation organizations, and the vast majority of non-industrial private landowners.

Every dollar OWEB awards in grants to support conservation and restoration efforts is matched by approximately \$2.40 from other sources (projected).

## Accomplishments and Ongoing Efforts

**2000-01 Completed and Reported Restoration Work:** The Oregon Watershed Restoration Inventory (OWRI) was established in 1995 to track restoration work as it is completed. Except for projects funded by OWEB, all reporting is voluntary. While participation continues to grow, there is a notable lack of data from some groups of restoration practitioners. This is particularly true for projects on agricultural lands. Restoration on federal lands is also underreported because each agency tracks different types of information for different purposes, making database coordination difficult, resulting in incomplete information for Oregon Plan purposes.

Projected Match for OWEB Grants  
2001-03 Biennium  
(in millions)

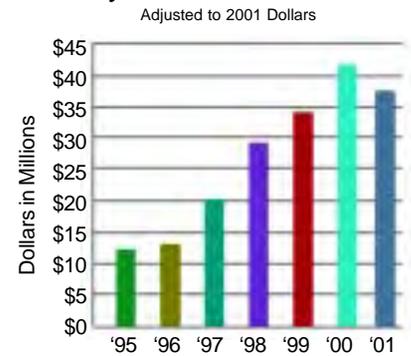


The information reported in this section includes data from OWRI, the Pacific Northwest Forest Plan's Regional Ecosystem Office (REO), and from the Grande Ronde Model Watershed Program (GRMWP).

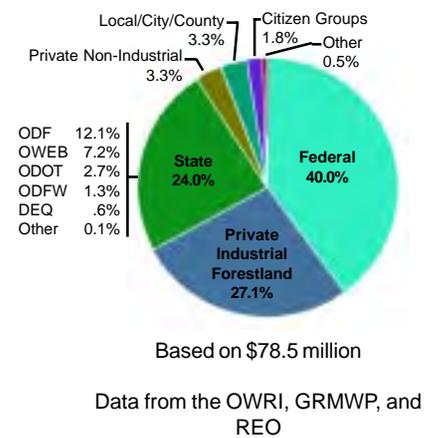
We have found:

- Private lands restoration was reported in every Oregon basin.
- Statewide, work was completed to improve 1,330 miles and decommission 578 miles of roads, reducing sediment in streams.
- Fish passage work included improving 520 road crossings and retiring 22 push-up dams.
- Road crossing work improved fish access to 631 stream miles.
- Other completed projects included work to improve the riparian condition of 728 stream miles, plus instream and upland habitat improvement work.
- Of the roughly 2,300 restoration projects reported, 86 percent were on private lands.
- More than 6,000 acres of riparian land (nearly 250 stream miles) are enrolled under the Conservation Reserve Enhancement Program.
- Basinwide efforts to inventory and develop priorities for removing fish passage barriers have been completed for the Rogue, Hood, and Scappoose Bay watersheds and have been initiated in the Siuslaw and Umpqua basins.
- From 1995 to 2001, approximately 15,941 miles of road were surveyed on private industrial forestlands (1,918 of those miles were surveyed in 2000-01).

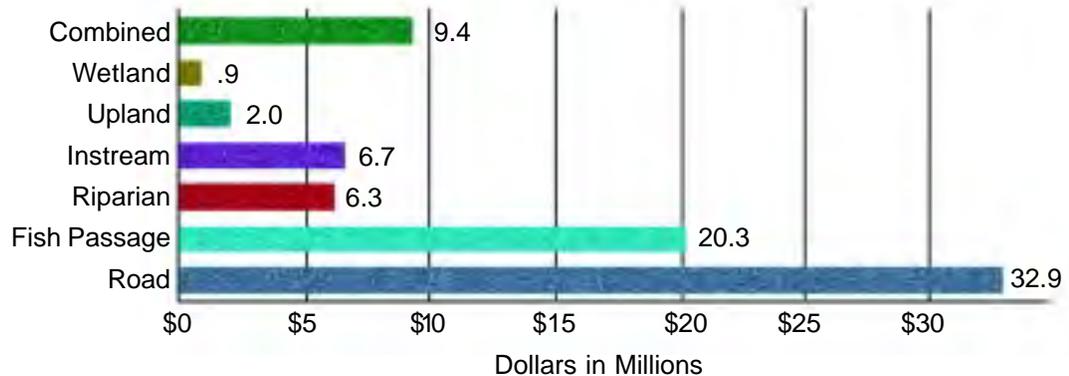
### Funding for Completed and Reported Restoration by Year, 1995-2001



### Sources of Funding for Completed and Reported Restoration 2000 and 2001



### Funding for Completed and Reported Restoration by Activity Type, 2000 and 2001



Data from the OWRI, GRMWP, and REO

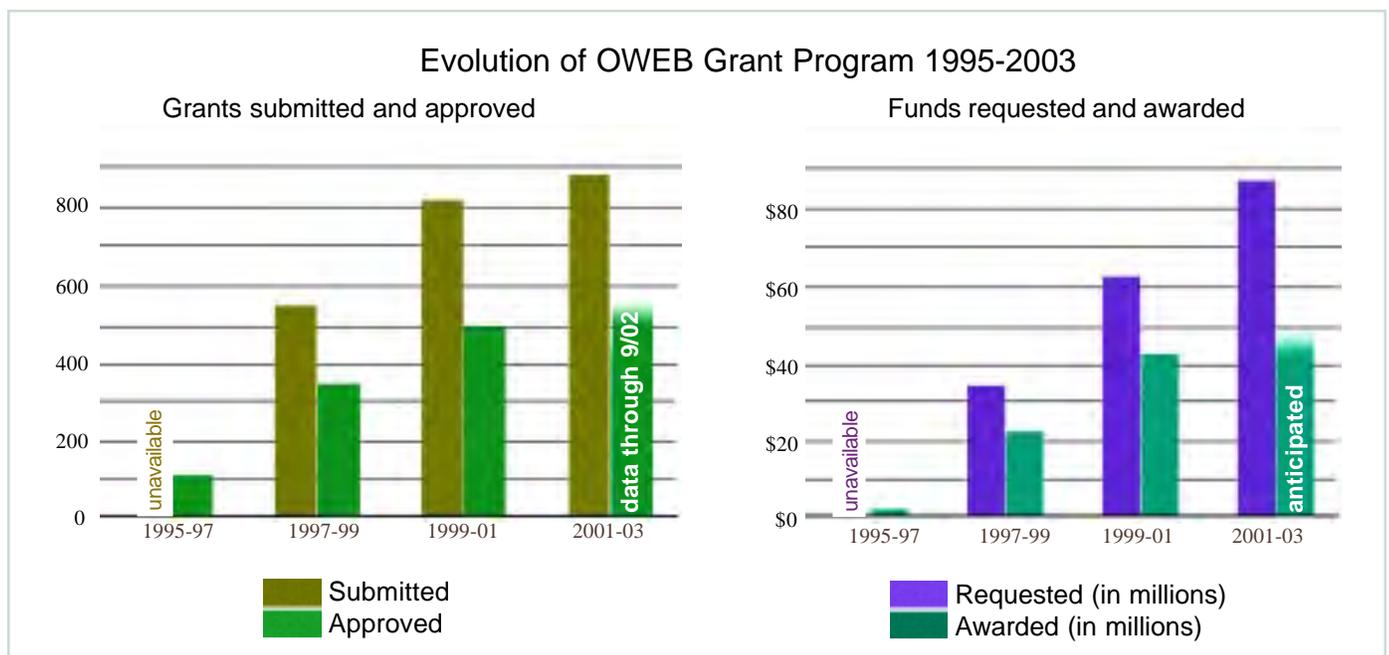
Voluntary Restoration Actions by Oregonians

**Ongoing Voluntary Restoration Work**

The reporting of completed restoration work always lags behind investments initiating the work. However, grant awards are tracked by location, amount, and activity type allowing us to document the scope of work in progress. Currently there are over 744 open OWEB grants, totaling over \$64 million in funds committed. These dollars represent OWEB’s contribution to work in progress but not yet complete. It is not yet possible to report the total value of work that will be generated from matching sources by these grants. However, approved grant applications from the current biennium predict a match of \$2.40 for every dollar OWEB invested. Data from completed restoration projects in 2000-01 that received OWEB funds reported a match of \$1.54.

Basin	Open Grants	Dollars*
Deschutes	49	\$2,533,811
Grande Ronde	73	5,797,164
Hood	11	563,194
John Day	46	1,733,825
Klamath	19	1,591,557
Lakes	18	967,204
Lower Columbia	14	732,138
North Coast	89	4,749,504
Owyhee/Malheur	34	2,095,169
Powder	17	569,750
Rogue	86	6,660,604
South Coast	38	4,204,103
Umatilla	33	1,909,622
Umpqua	33	2,173,205
Willamette	135	8,843,090
Statewide	49	19,030,077
<b>TOTAL</b>	<b>744</b>	<b>\$64,154,017</b>

\*Represents public dollars from OWEB only.



**Examples of Public Investment in  
Oregon Plan Restoration/Conservation  
2001-2003  
(in millions)**

BPA	\$66.2
USFS	\$54.1
OWEB	\$43.9
NRCS	\$12.7

**Cumulative Accomplishments**

Despite the considerable uncertainty cast by the inconsistent reporting and information sharing described earlier, it is clear that the amount of restoration work completed has increased over time. While some fraction is likely attributable to more diligent reporting, it appears that the majority of the documented increase reflects higher project numbers resulting from greater investments by landowners and agencies.

*This table includes information on complete and reported OWEB grants and, when available, any work voluntarily reported to the OWRI and data from the Grande Ronde Model Watershed and the Regional Ecosystem Office. Availability of data, except for OWEB funded projects, varied from year to year rendering this a partial depiction of actual work completed.*

Restoration Treatments	1995	1996	1997	1998	1999	2000	2001	Total
Riparian miles treated	153	154	386	339	315	413	315	2075
Road: miles of road closures and decommissionings	234	45	137	282	372	269	309	1648
miles of road improvements	322	306	565	769	798	762	568	4089
Fish passage: stream crossings improved	45	83	169	320	289	240	280	1426
miles made accessible due to stream crossing improvements	25	52	187	507	439	325	306	1841
push-up dams retired	9	6	6	14	8	7	15	65

**Challenges Ahead**

**Shared Priorities:** Questions concerning how and where to invest valuable time, money, and effort in restoration work still linger in many basins. Greater transparency of priorities by funders and arriving at agreed upon priorities among basin stakeholders will be critical to effective implementation of the Oregon Plan.

**Documentation of Restoration Activities:** Documenting restoration work in order to consistently and accurately characterize progress is essential. Needed improvements include: enhanced reporting from the agricultural landowner community and improved means of coordination between reporting databases of state and federal agencies.

**Engaging Urban/Suburban Areas:** Urban and suburban areas have a great impact on their watersheds, yet engaging urban and suburban residents to become more aware of their connection to the watershed where they live and work remains a significant challenge.

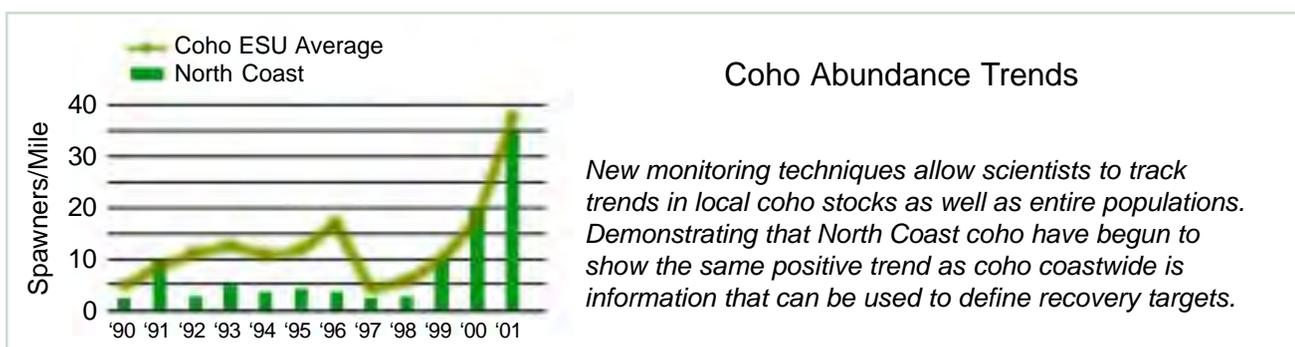
**Landowner Incentives:** Cost-share and other incentive funds are crucial to private restoration work as they are frequently the deciding factor for many private landowners who are considering participation in voluntary watershed restoration and fish recovery.

# Monitoring

**M**onitoring under the Oregon Plan includes documenting the current condition of watershed health, evaluating changes over time, and determining the effectiveness of actions and programs. OWEB is charged by statute to coordinate Oregon Plan Monitoring Program activities among natural resource agencies to answer a variety of questions related to watershed health, water quality, and salmon recovery. This requires an interdisciplinary approach to tracking trends of key indicators over time so that implementation efforts can be adapted to maintain progress towards watershed protection and restoration goals.

## General Observations

- A comprehensive strategy to guide an integrated Oregon Plan monitoring effort has been completed and adopted by OWEB with support of state natural resource agencies, NOAA Fisheries, other federal agencies, and the state's Independent Multidisciplinary Science Team.
- As the monitoring strategy is being implemented, it is imperative that consensus be achieved on the specific policy and science questions that Oregon's long-term monitoring efforts will be designed to answer over time.
- Where Oregon has adequately invested in monitoring, data have been very useful, even resulting in a decision by NOAA Fisheries to not list Klamath Mountain Province steelhead under the federal Endangered Species Act.
- Local monitoring is essential to understanding watershed health and to setting restoration priorities. When properly designed, local efforts also provide data critical to statewide programs.
- Oregon Plan monitoring implementation has been strongest on the "westside" (those basins west of the Cascades). Implementation must now be expanded statewide.
- Emphasis on status and trends monitoring yields considerable data, but further analysis, synthesis, and effectiveness monitoring is needed before we can correlate recovery efforts to long-term trends in salmon and watershed health.
- Research has focused on wadeable fish-bearing streams, leaving gaps in understanding about larger waterbodies such as estuaries, large rivers, and oceans.



**Oregon Plan Monitoring Strategy:** The Oregon Plan Monitoring Team, chaired by OWEB, consulted with the state’s Independent Multidisciplinary Science Team (IMST) to develop a strategic framework to guide monitoring under the Oregon Plan. The Monitoring Strategy is designed to integrate existing monitoring efforts, identify gaps in current programs, and direct future assessments of the Oregon Plan. It describes the scope of monitoring and is intended to guide Oregon Plan partners in an integrated effort to evaluate the effectiveness of Oregon Plan restoration projects and programs. See page 49 of this report for an overview of the Monitoring Framework and [www.oweb.state.or.us](http://www.oweb.state.or.us) for a copy of the entire Monitoring Strategy.

## **Accomplishments and Ongoing Efforts**

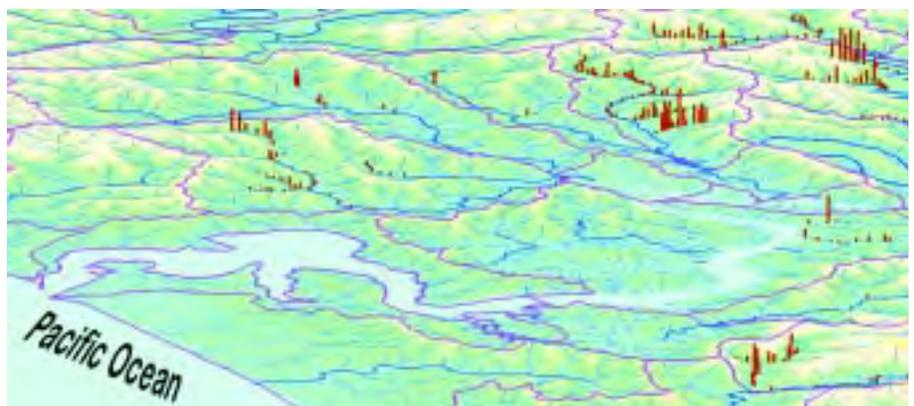
**Oregon Plan Monitoring Program:** New monitoring and enhancements to existing programs have been achieved by better coordination among state agencies. These improvements are also designed to complement federal agency programs and support local monitoring projects.

**Improved Methods/Better Data:** A new sampling framework used by the Oregon Department of Fish and Wildlife (ODFW) and the state Department of Environmental Quality (DEQ) to monitor salmon populations, water quality, and habitat increased the accuracy of status and trend monitoring by 30-40 percent. Better quality information like this will be key to developing realistic and measurable recovery goals.

**Support for Policy Decisions:** Oregon’s investments in monitoring provide critical data to federal Endangered Species Act decision making. Most recently, Klamath Mountain Province steelhead were not listed as “threatened” under the ESA based on the use of Oregon Plan monitoring data that showed steelhead abundance and distribution did not warrant a listing. Continued monitoring will determine if steelhead continue to do well following the 2002 fire season. Without such information, the listing process is likely to be reopened.

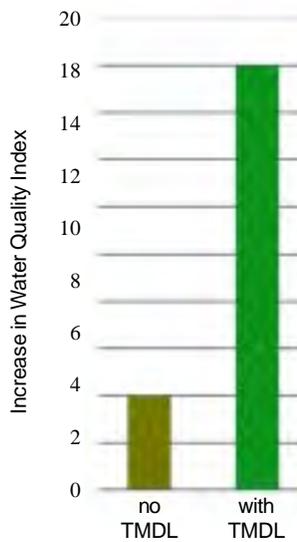
**Comprehensive Coastal Monitoring:** Monitoring in coastal watersheds provides accurate annual assessments of coho populations, stream and riparian habitat, water quality, and biotic condition. Based on statistical sampling design, 100 coho spawning surveys, 50 juvenile surveys, 50 habitat surveys, and biotic assessments are completed annually in each of five coastal coho monitoring areas. While efforts need not be as comprehensive in every basin across the state, an integrated strategy must be implemented beyond coastal basins.

*The MidCoast Watershed Council has mapped juvenile coho abundance in many of their streams. Comparing patterns of fish abundance (bars represent juvenile coho density/pool in Yaquina Bay basin) with habitat and water quality assessments, helps the Council identify and prioritize restoration opportunities.*



Monitoring

Water Quality Improvement



DEQ evaluates water quality conditions statewide. Sites within established TMDL management areas show greater improvement than other sites, indicating positive program effectiveness.

**Monitoring of Management Activities:** Public agencies conduct monitoring to assess the implementation, compliance, and effectiveness of their policies and programs. For example, ODF systematically monitors the Forest Practices Act. The ODA and DEQ are working to evaluate the effectiveness of Agricultural Water Quality Management Area Plans and the TMDL Program. The ODFW, the Oregon Department of Transportation (ODOT), and Oregon State University (OSU) are conducting cooperative monitoring of fish passage improvements.

**Local Monitoring:** Watershed councils and other local groups also conduct assessments and monitoring. In addition to OWEB grants for monitoring projects, DEQ and others provide training and equipment to local groups, and have agreed on several standardized protocols to improve data sharing opportunities. Local monitoring activities can provide localized assessments of water quality and help identify and prioritize restoration projects.

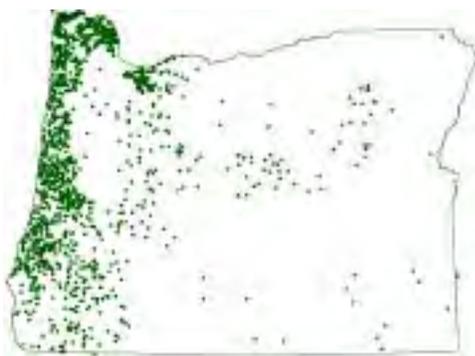
**Challenges Ahead**

**Stable Financial Support:** Continued investments are necessary to maintain current monitoring efforts. Greater support will be required to initiate new or build upon existing monitoring. Monitoring activities require stable long-term support spanning multiple budget cycles to yield useful information on resource trends and effectiveness of ongoing program efforts.

**Interagency Coordination:** Despite impressive improvements in cooperation among agencies in the monitoring of water quality, watershed health, listed fish species, and more, there is still room for improvement.

**Turning Data into Information:** Only recently has monitoring data been used to analyze trends. Monitoring results need to be analyzed, synthesized, and integrated to provide useful information to those making decisions on statewide policies or on-the-ground projects.

**Linking Action to Outcomes:** Linking program implementation efforts to specific outcomes in our watersheds is a significant, long-term challenge facing the Oregon Plan Monitoring Program.



EMAP Sampling Locations

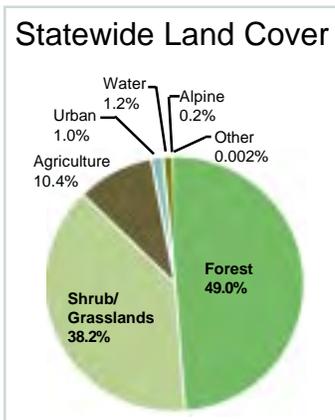
Since 1997 ODFW and DEQ have monitored fish and fish habitat using the tools developed in EPA's Environmental Monitoring and Assessment Program (EMAP). EMAP methodology has improved data accuracy by 30 to 40%. Although work has focused on the west side, plans are underway to expand EMAP sampling to interior basins such as the John Day.

# Oregon Plan Monitoring Strategy

*an overview*

Desired Outcomes	Framework Questions	Implementation Strategies
<p><b>OUTCOME ONE</b></p> <p>Assessment of watershed conditions and salmon populations</p>	<p>What is the condition and capacity of aquatic habitat and watershed systems?</p>	<ol style="list-style-type: none"> <li>1. Assess status and trends of watershed conditions and salmon populations regionally.</li> <li>2. Monitor habitat, water quality, biotic health, and salmon in select watersheds.</li> <li>3. Analyze habitat, water quality, and population trends at the landscape scale.</li> </ol>
<p><b>OUTCOME TWO</b></p> <p>Evaluation of Oregon Plan restoration actions, conservation measures, and management practices</p>	<p>What is the benefit of Oregon Plan restoration projects, management practices, and conservation programs relative to adverse impacts and to natural ecosystem variability?</p>	<ol style="list-style-type: none"> <li>4. Document conservation and restoration projects, activities, and programs.</li> <li>5. Evaluate effectiveness of restoration and management efforts locally.</li> <li>6. Evaluate the combined effectiveness of restoration and conservation efforts in select watersheds.</li> </ol>
<p><b>OUTCOME THREE</b></p> <p>Application of monitoring results for use by policymakers, agencies, and the public</p>	<p>Does the Monitoring Program provide information and analysis for adaptive review of restoration actions, management practices, and Oregon Plan policies?</p>	<ol style="list-style-type: none"> <li>7. Standardize monitoring collection, management, and analysis efforts.</li> <li>8. Coordinate and support public-private monitoring and partnerships.</li> <li>9. Integrate information and produce data products and reports.</li> </ol>

# Science Oversight



**S**cience oversight includes independent analysis and evaluation of Oregon Plan activities as well as a commitment to support needed research. This element of the Plan requires a strong team of independent scientists and investments in targeted research. Objective evaluation and ongoing research are critical to ensuring the best available science is incorporated into decision making and actions.

## General Observations

- The most important finding of Oregon’s Independent Multidisciplinary Science Team is the need to incorporate the landscape perspective into implementation of the Oregon Plan. The functioning of whole watersheds and salmon populations can only be understood if one looks at the condition of all land ownerships over a long enough time period to discern human impact against background fluctuations in climate and ocean conditions, and natural disturbance regimes.
- Broad recognition and acceptance of a common set of science research priorities by agencies and funders – plus a willingness to coordinate decisions – is essential to Oregon Plan implementation and evaluation.

## Accomplishments and Ongoing Efforts

### *Independent Multidisciplinary Science Team*

A central component of the Oregon Plan is an impartial scientific peer review panel charged with advising the State on matters of science related to fish recovery, water quality improvements, and enhancing watershed health. The Independent Multidisciplinary Science Team (IMST) was established by statute in 1997 as a seven-member team with “recognized expertise in fisheries, artificial propagation, stream ecology, forestry, range, watershed, and agricultural management.”

### **IMST Members**

- **John Buckhouse, Ph.D.**, Rangeland Resources Dept., OSU
- **Wayne Elmore**, Bureau of Land Management, US Dept. of Interior, Prineville, Oregon
- **Stanley Gregory, Ph.D.**, Fisheries and Wildlife Dept., OSU
- **Kathleen Kavanagh, Ph.D.**, Forest Resources Dept., University of Idaho, Moscow, Idaho
- **William Percy, Ph.D.**, College of Oceanic and Atmospheric Sciences, OSU, (Team Chair)
- **Carl Schreck, Ph.D.**, Biological Resources Division, USDI USGS, Corvallis, Oregon
- **Vacant Position**, pending appointment

The IMST fulfills its duties by providing technical review and by pursuing independent research. Agency activities and programs are brought to the IMST for scientific evaluation in order to become more effective over time. IMST evaluation of the scientific basis for programs provides the public, the Governor, and the Oregon Legislature with a frame of reference when struggling with policy decisions affecting Oregon Plan implementation.

The accomplishments of the IMST in 2001-03 include the following documents:

- Technical Report 2002-1. Recovery of Salmonids in Western Oregon Lowlands.
- Letter Report. Instream Aggregate (Sand And Gravel) Mining Regulated by the Division of State Lands.
- Letter Report. Evaluation of the 1999 and 2000 Oregon Plan Monitoring Program Workshop: *Measurable Salmonid Recovery Criteria* (held with the Joint Salmon Recovery Task Force and National Marine Fisheries Service).
- Technical Review. Native Fish Conservation Policy and Guidelines.
- Technical Review. Hatchery Management Policy and Guidelines.
- Technical Review. Oregon Plan Monitoring Program Strategy Document.
- Technical Review. Lower Columbia River Coho Management Plan.
- Technical Review. Draft Hinkle Creek Research and Demonstration Area Proposal.
- Technical Review. Conservation Hatchery Improvement Program.
- Technical Review. Statewide Riparian Policy.
- Technical Review. Research Proposals submitted to OWEB.
- Technical Review. Metro's Draft Scientific Literature Review for DLCD's Statewide Planning Goal 5.

These documents are available on the IMST website at [www.fsl.orst.edu/imst/index.htm](http://www.fsl.orst.edu/imst/index.htm).

The ongoing work of the IMST includes:

- Review of Water Temperature Standards.
- Impact of Urban and Residential Land Uses on Watershed Function
- Review of the USFWS and National Marine Fisheries Service (NMFS) Biological Opinions concerning management of the Klamath Project and Related Reports.
- Eastern Oregon Resources Management.
- Evaluation of the 2001 Oregon Plan Monitoring Program.

Future projects of the IMST are slated to include an examination of ecological interactions among salmonids and co-occurring species in fresh-water and the ocean, and the effectiveness of restoration and conservation activities in the recovery of salmonids.

#### LINKING LOCAL AND STATEWIDE OVERSIGHT

*The **Healthy Streams Partnership (HSP)** is a nongovernmental group of concerned citizens seeking to improve local implementation of the Oregon Plan for Salmon and Watersheds.*

*The HSP serves a unique and important role in the Oregon Plan as a citizen advisory group to the Joint Legislative Committee on Stream Restoration and Species Recovery. The HSP provides this legislative oversight committee with information from a local and regional perspective, and recommends needed changes to facilitate more efficient implementation of stream improvement programs at the local level.*

*At its core, the HSP acts as a conduit between local stakeholders and the Legislature for the exchange of ideas and information integral to the Oregon Plan. In the 2001-03 biennium, the HSP conducted a statewide survey of technical assistance needs to implement the Oregon Plan. The report will be presented to the 2003 Legislative Assembly.*

### Oregon Plan Research Priorities

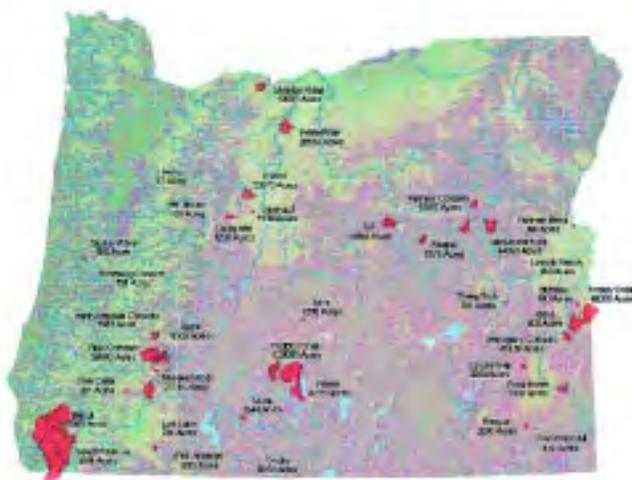
The need for sustained investments in research was recognized when the Oregon Plan was codified in statute in 1999. OWEB worked closely with the IMST and stakeholders across Oregon in considering research priorities for the Oregon Plan. As a result of this work, the OWEB Board adopted a set of priorities (see box below) intended to guide future investments from a research fund comprised of interest accrued on Measure 66 lottery dollars. The Institute for Natural Resources at Oregon State University will propose specific alternatives for investments of OWEB research funds to optimize OWEB’s contribution to the spectrum of research being conducted in the Pacific Northwest.

#### Highest

- Assess the status of anadromous salmonid stocks (coho, chinook, chum, sea-run cutthroat trout, and steelhead), and the risk for their extinction by integrating dynamic ocean conditions, habitat availability and quality, and human activities.

#### High

- Determine how changes in plant communities, including riparian and upland vegetation, can affect salmonid habitat quality.
- Determine relationships between habitat quality and population trends of salmonids in estuaries, lowland streams, and urban/suburban and agricultural settings.
- Determine the effects of wild-hatchery fish interactions and the impacts of hatchery management programs on wild stocks.
- Test the assumptions about survival differences between hatchery and wild fish.
- Determine the origin and the temporal and spatial distribution of wild ocean-caught fish.
- Determine the spawning escapement rate of steelhead.
- Determine the genetic basis of various life history strategies in salmonids.



Major Fires of 2002

*The 2002 fire season brought the role of wildfire to the public’s attention; reminding us that wildfire is a natural process that should be considered in watershed and fish restoration work. In the aftermath of the 2002 fires OWEB provided emergency funds for erosion control and restoration.*

In the 2001-03 biennium, the OWEB Board considered and approved requests to fund three research grants. Each was consistent with priorities established by the OWEB Board and received strong favorable scientific peer review. The funded projects are:

- 1) Willamette Toxics and Fish Deformities. This work represents a first step toward discovering the causes of fish deformities observed in certain stretches of the Willamette River.
- 2) Hinkle Creek Paired Watershed Study. This work, funded by several partners including the forest industry, represents a modest effort to evaluate the impact of current forest practices rules on fish and water quality.
- 3) Coastal Hatchery Improvement Project. OWEB funding to date is only the minimum needed to support a spartan beginning of research needed to explore establishment of conservation hatcheries. Considerable additional funding will be required to continue this work beyond July 2003.

## Challenges Ahead

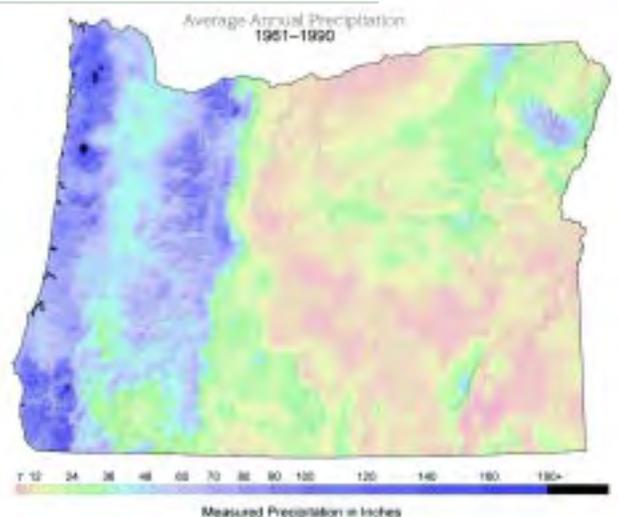
**Landscape Perspective:** Modern resource science considers urban, agricultural, and forested landscapes as connected and treats water quality, water quantity, and fish populations as interrelated factors that must be managed through integrated, coordinated actions. The improved coordination of agencies under the Oregon Plan has not been able to overcome the barriers to effective integrated action inherent in the present segregated administrative structure of natural resource management agencies.

**Restoration and Program Effectiveness:** Scientifically correlating the effectiveness of restoration activities to changes in the physical environment and trends in the recovery of salmonids poses a tremendous challenge. Just as important, and even more challenging, is developing credible projections of the anticipated impacts of Oregon Plan restoration efforts.

**Freshwater and Ocean Survival:** Recent favorable ocean conditions have produced large returns of salmonids, mainly hatchery fish, in the Pacific Northwest. This is no guarantee, however, of long-term viability. Documenting relative effects of freshwater and ocean environments requires monitoring like the life-cycle monitoring sites established in some coastal watersheds. Improvement of freshwater conditions is crucial to sustaining viable stocks during the next downturn in ocean or climatic conditions.

**Scientific Uncertainty:** A major challenge for the IMST and the Oregon Plan is the need to make decisions when the technical information for these decisions is not as robust as desired.

*Precipitation has a profound influence on watershed conditions, fish habitat, and our ability to distinguish the effectiveness of restoration activities. Oregon experiences significant interannual variability and is characterized by very distinct regional patterns of precipitation. Effective management policies, programs, and restoration must take both spatial and temporal precipitation variability into consideration.*



## Observations of the OWEB Board

OWEB Board members and staff worked with many people around the state as part of conducting Board meetings and preparing this biennial report. Naturally, a wide variety of opinions have been expressed about challenges and opportunities for implementation. Many of these ideas are reported in the individual basin summaries of this report. Several observations about watershed restoration and Oregon Plan implementation are common to many basins and therefore merit special note.

### **Observations regarding the physical status of watersheds**

- Portions of streams in every basin in Oregon continue to suffer from water quality problems, often from multiple types of land use activities.
- Insufficient streamflows pose significant limitations to listed fish stocks in all basins.
- Inadequate riparian habitat and stream complexity limiting fish production and recovery efforts occur in portions of nearly all basins.
- Significant progress is being made addressing fish passage barriers in most basins on both private and public lands; however, much work still remains to be done.
- Management of estuaries and uplands has a profound effect on water quality, quantity, and recovery of listed fish runs. Oregon Plan implementation efforts often lack adequate emphasis on these landscape issues.
- Watershed assessments completed by local citizens have significantly helped to identify key limiting factors present in individual watersheds and guide local restoration activities.

### **Observations regarding people and government**

- Long-term success of the Oregon Plan will require persistent and strong leadership from the Governor, the Legislature, and local citizens.
- The relationship between the health of local economies and watersheds is inextricably linked, and Oregon Plan implementation efforts are most successful where this is openly recognized and discussed.
- Whether real or perceived, many Oregonian's believe that the process for obtaining permits for restoration work is complicated, time consuming, or both, thereby impeding implementation and willingness for landowners to participate in voluntary restoration projects.
- Successful implementation of the Oregon Plan is unavoidably dependant on sustained funding:
  - *For agencies* – Stable budgets supporting regulatory programs and initiatives providing technical assistance and support for voluntary restoration work are critical.
  - *For watershed councils and Soil and Water Conservation Districts* – Base funding to support the capacity of these local entities to work with citizens and landowners is essential if they are to remain effective at supporting Plan implementation.
  - *For private landowners* - An aggregated source of grant funds administered competitively to help fund projects that assist landowners willing to undertake restoration projects provides a powerful economic incentive to fulfill the goals of the Oregon Plan.

# Recommendations of the OWEB Board

Senate Bill 945 (ORS 541.405) directs the OWEB Board to make “...recommendations for enhancing the effectiveness of the Oregon Plan.”

The following are areas requiring attention and concerted effort by Oregon Plan partners over the next two years. OWEB alone cannot implement action to address all the recommendations but will work to facilitate progress.

***Secure Federal Recognition of the Oregon Plan:***

All promising options for securing formal federal agency recognition of the Oregon Plan as a vehicle to meet requirements of the Endangered Species and Clean Water Acts should be examined and pursued. Formal recognition and linkage to these federal environmental programs would provide measurable benefits to Oregon’s natural resources, private landowners, and local economies. The substantial effort required to achieve federal acceptance must be weighed carefully by all Oregon Plan partners before proceeding.

***Develop and Implement Basin Restoration and***

***Program Priorities:*** Establishing clear priorities at a basin or other meaningful scale is needed to guide and focus restoration investments and Oregon Plan program initiatives into the future. Local, state, and federal participants in the Plan continue to accomplish meaningful progress improving key habitat, water quality, and watershed conditions in every part of the state. Sustaining effective implementation over time, however, will require these efforts to be more strategically targeted and tailored to meet the most critical resource and community needs of each basin.

***Tracking Restoration and Recovery Trends:*** Sustained program support and investment from different Oregon Plan partners is needed to maintain and expand Oregon’s ability to monitor, quantify, and report progress of ongoing restoration and recovery efforts. Agreement on a small, defined set of indicators designed to help Oregonians assess watershed health over time could significantly enhance ongoing monitoring efforts by focusing and coordinating investments in data collection and reporting activities. Assessing the effectiveness of the Plan in the future depends on our work and commitment to implementing monitoring and reporting efforts now.

***Improve Accessibility of Information:*** A lack of consistent sharing and coordination of key information and data by Oregon Plan partners continues to inhibit and fragment restoration planning, implementation, and reporting. In the next biennium, it will be a priority for OWEB to obtain commitments for improving the accessibility of data and information for a variety of uses.

***Enhance Citizen Understanding of the Oregon Plan:*** Successful implementation of the Oregon Plan over the long term will depend on informed backing by Oregon’s citizens. Enhanced outreach efforts to diverse constituencies across the state are needed to develop a common understanding of the Oregon Plan among all Oregonians. We must communicate, using more effective messages and channels, that Oregon Plan actions to enhance fish habitat, improve water quality, and restore watersheds are working to support local values and economies.

# Data Sources and Credits

## Cartography and GIS

University of Oregon InfoGraphics Lab, Department of Geography

**Project Manager:** Kenneth S. Kato

**Project Director:** James E. Meacham

**Researchers:** Nicholas P. Kohler, Mike Engelmann

**Student Cartographers:** Erin Aigner, Craig Greene, Kevin Mock, Eric A. Sproles, Erik R. Strandhagen

## Data Sources

**AWQMAP Information:** ODA

**Coho abundance:** ODFW

**Elevation:** USGS (10 meter DEM)

**EMAP Sampling:** ODFW

**ESA data:** ODFW, Oregon Natural Heritage Program, NOAA Fisheries, USFWS, StreamNet

**Fish passage:** ODFW

**Land Cover:** Oregon Natural Heritage Program (GAP Analysis)

**Land Ownership:** BLM

**Oregon Plan Basins:** OGDC (5th field watersheds), OWEB

**OWEB Grant Information:** OWEB

**Populated Places:** USGS (GNIS)

**Population:** PSU, Population Research Center

**Projected Agency Investments:** respective agencies

**Precipitation:** *Atlas of Oregon 2001*, University of Oregon Press

**Oregon Watershed Restoration Inventory:** Completed projects partially or entirely funded by OWEB and private landowner projects voluntarily reported.

**Grande Ronde Model Watershed:** Cecilia Noyes. The GRMWP is composed of local representatives, landowners, tribes and agency personnel involved with the multiple uses of natural resources within the Grande Ronde River Basin.

[www.fs.fed.us/pnw/modelwatershed/](http://www.fs.fed.us/pnw/modelwatershed/).

**Regional Ecosystem Office (REO):** Dale Gunther. The REO is an interagency staff supporting the Northwest Forest Plan.

[www.reo.gov](http://www.reo.gov).

**Natural Resources Conservation Service (NRCS):** Danny Burgette

**Roads:** ODOT

**Streams:** EPA, StreamNet, USGS

**TMDL/303(d) Information:** DEQ

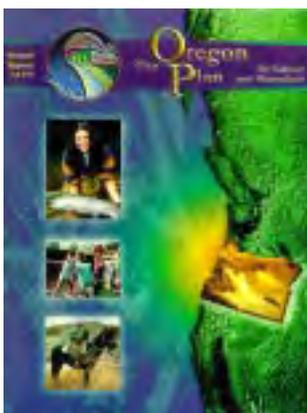
**Yaquina coho abundance:** Justin Mills, MidCoast Watershed Council

**Production Team:** Jay Nicholas, Cathy Pearson, Ken Bierly, John Ledges. Great effort has been made to review this report for errors. Undoubtedly, some errors remain—we hope that these provide an opportunity for learning and a smile.

**Front cover photo of salmon:** © Richard Grost, [www.richardgrost.com](http://www.richardgrost.com)

**Cover theme:** Monitoring frames effective investment in restoration and recovery of listed species.

**Back cover:** Aerial view of Whalen Island



1999



2000



2001



The Oregon Plan for  
Salmon and Watersheds  
Biennial Report  
2001-2003

Oregon Plan Annual Reports

## OWEB Board Members 2001 - 2002

**Mark Reeve** (Board Co Chair) serves as representative from the Environmental Quality Commission. He is an attorney and lives in Portland.

**Mark Suwyn** (Board Co Chair) is chairman of the Board and CEO for Louisiana Pacific Corporation Portland Division. He serves as a public member of OWEB, and resides in Portland.

**George Brown** is Dean emeritus of the Oregon State University College of Forestry in Corvallis, Oregon. He retired in August 1999 after 33 years of service to OSU including the past 10 years as Dean. He serves as a public member of OWEB, and resides in Corvallis.

**Bobby Brunoe** is Head of the Natural Resources Division for the Confederated Tribes of the Warm Springs Indian Reservation. He serves as the tribal representative on the OWEB Board, and lives in Bend.

**Ron Nelson** is Secretary–Manager of the Central Oregon Irrigation District, in Redmond Oregon. He serves as a public member of OWEB.

**Jane O’Keeffe** is a Lake County Commissioner and serves on the Southeastern Oregon Resource Advisory Council for BLM. She serves as a public member of OWEB, and lives in Adel.

**Jack Shipley** serves as chair of the North Applegate Watershed Protection Association and is a board member of the Applegate Partnership. He is a private landowner in Medford, and serves as a public member of OWEB.

**Zane Smith** serves as representative from the Fish and Wildlife Commission. He is currently a forester and international natural resource policy consultant in Springfield, where he lives.

**Dan Thorndike** is General Counsel for Medford Fabrication. He serves as the representative from the Water Resources Commission, and lives in Medford.

**Brad Witt** is secretary-treasurer of the Oregon AFL-CIO. He serves as the representative from the Oregon Board of Forestry, and lives in Clatskanie, Oregon.

**Pat Wortman** serves as the representative from the Board of Agriculture. He runs a cattle ranch near Enterprise, Oregon. He is also a former Willamette County Commissioner.

**Hugh Barrett\*** is the Rangeland Management Specialist for the Oregon/Washington State Office of the BLM, and serves as the representative of the U.S. Bureau Land Management.

**Peter Bloome\*** is Associate Director of the Oregon State University Extension Service in Corvallis, Oregon. He serves as representative of OSU Extension Administration.

**Alan Christensen\*** is the Regional Environmental Coordinator at the Forest Service Regional Office in Portland, Oregon, and serves as representative of the U.S. Forest Service.

**Gayle Norman\*** is the Partnership Liaison with the U.S. Department of Agriculture Natural Resource Conservation Service in Portland Oregon, and represents them on the OWEB Board.

**Dave Powers\*** is a Senior Policy Advisor for Natural Resources at the U.S. EPA in Portland, Oregon, and represents them on the OWEB Board.

**Michael Tehan\*** is the Oregon State Branch Chief for the Habitat Conservation Division of the National Oceanic and Atmospheric Administration, and represents them on the OWEB Board.

\* non-voting members