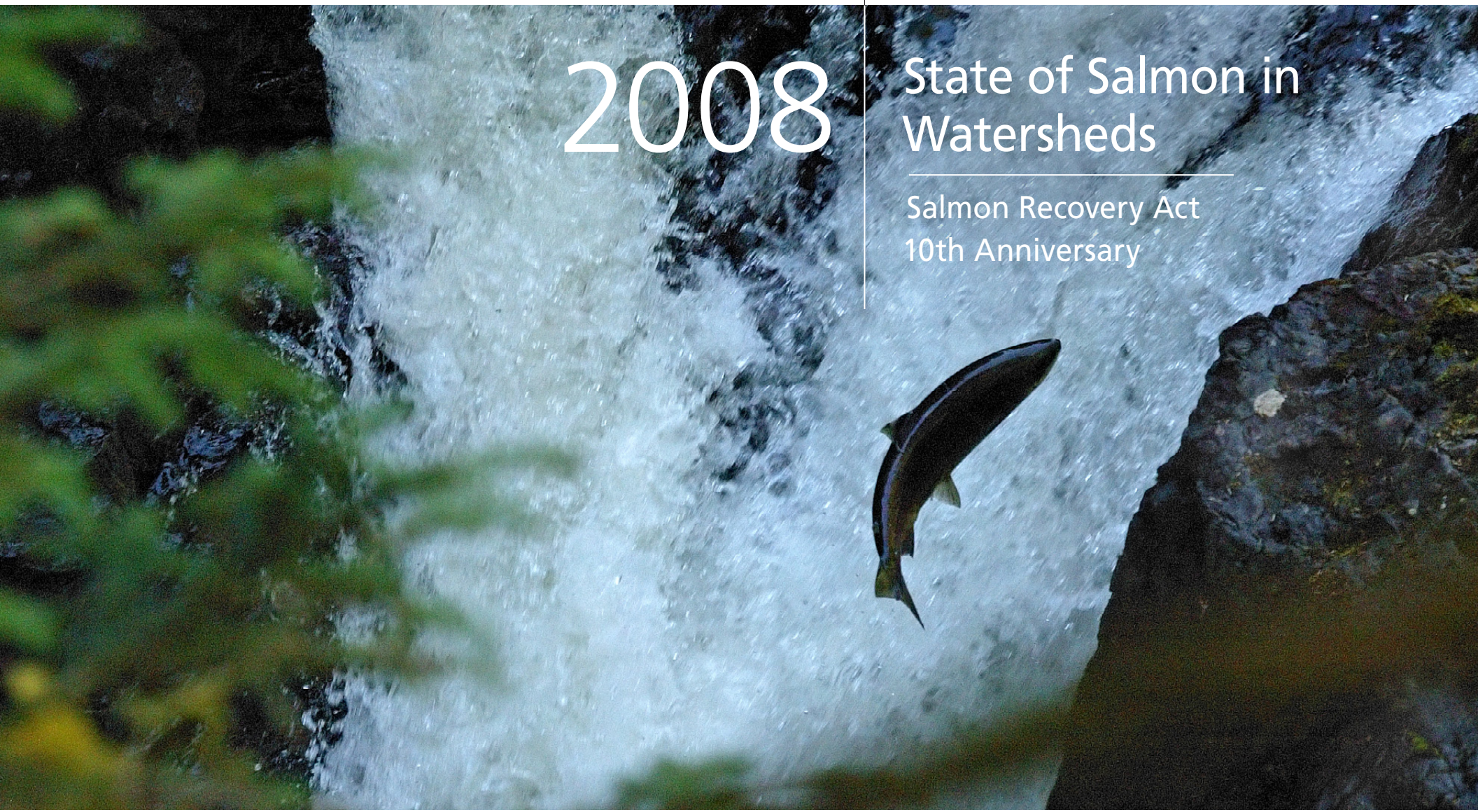
State of Washington
Governor's
Salmon Recovery
Office



2008 State of Salmon in Watersheds

Salmon Recovery Act 10th Anniversary

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Governor's Salmon Recovery Office
PO Box 43135
Olympia, WA 98504-3135
www.governor.wa.gov/gsro

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EDITOR

Chris Drivdahl
Governor's Salmon Recovery Team

ASSOCIATE EDITOR

Steve Leider
Governor's Salmon Recovery Team

PRODUCTION TEAM

Doug Rushton
Washington Department of Ecology

Carol Smith
Washington Conservation Commission

Erik Neatherlin
Washington Department of Fish and Wildlife

Dave Price
Washington Department of Fish and Wildlife

Ken Dzinbal
Recreation and Conservation Office

Luis Prado
Graphic Design

PROJECT PHOTOS

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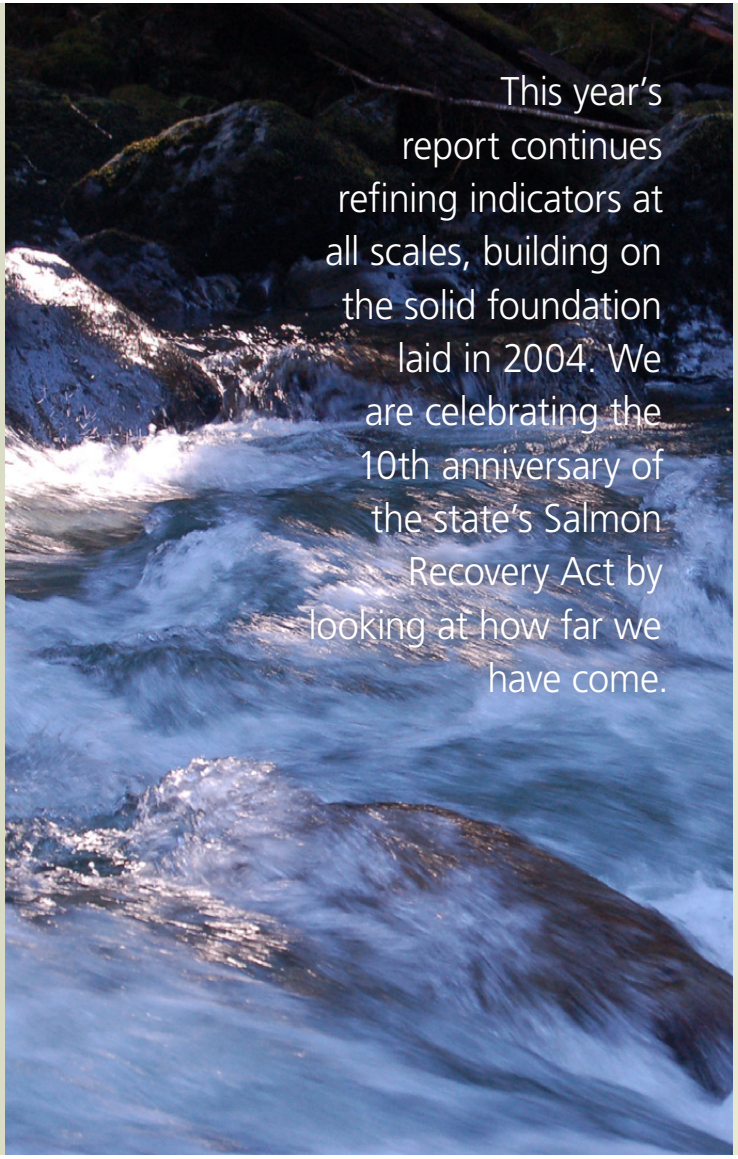
COVER PHOTO
Matthew Hull

CHRIS DRIVDAHL

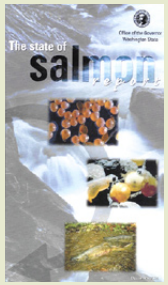
Salmon Recovery
the Washington Way

Preface

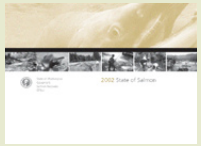
2008 marks the 10th anniversary of Washington's Salmon Recovery Act.
All across the state, Washingtonians have accomplished some pretty remarkable things during this time. The State of Salmon Report has worked hard to provide reliable documentation of our progress during these years. Here's a look back on what the reports have shown:



CHRIS DRIVDAHL



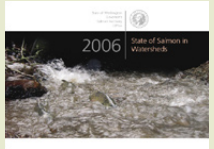
The first State of Salmon Report was on newspaper, written in 2000. Folks had only been working on the salmon problem for about a year when the Governor's Salmon Recovery Office started production on the document, so data were pretty scarce. The report attempted to be an educational tool, talking about the problems we all faced—the ones that had caused listings in Washington—and about the challenges we all had before us in solving these issues.



2002 saw a three-volume Report introduced. It emphasized accountability of state agencies to make changes for salmon. Volume One was a very high level summary of major achievements by these agencies, and made 17 recommendations for improving processes and actions (13 have been completed, 1 is not, and 3 are still in progress). This was also the year that the state introduced the concept of a salmon recovery scorecard—predecessor to the Dozen Dials' high-level indicators now in use.

▶ We are celebrating the 10th anniversary of the state's Salmon Recovery Act by looking at how far we have come.

From the view of telling the whole story of salmon recovery in Washington, **2004's Report** was a major leap forward. We began to organize information around the high level indicators, looked at hard data on salmon abundance and freshwater production, and mapped some indicators at regional scales for the first time. With regional salmon recovery organizations in most areas, we had access to local groups who were developing plans and actual goals that we could measure progress against. Importantly, the focus was moving from state agency actions to local, on-the-ground activities and planning.



2006's State of Salmon in Watersheds Report had recovery plans, developed by local recovery organizations, that could be used to report progress against adopted goals for fish. We were now able to emphasize three levels of actions—statewide, regional, and watershed scale—and, focused by key policy questions defined by the state's monitoring strategy, we turned our inspections to a watershed in each region and asked, "How are they doing?" We also began to look at nearshore ecosystems and introduced a dial for the fourth H (hydropower).

This year's edition of the State of Salmon in Watersheds Report continues refining indicators at all scales, building on the solid foundation laid in 2004. We are celebrating the 10th anniversary of the state's Salmon Recovery Act by looking at how far we have come. Some exciting developments have happened in the last two years—creation of a new state agency to lead recovery of Puget Sound by 2020, for example. As the law notes, however,"... the legislature understands that successful recovery efforts may not be realized for many years..."

While we still have a long way to go, local watershed groups are engaged and enthusiastically working on all aspects of recovery. The Governor's Salmon Recovery Office has made a commitment to work with organizations from Oregon, Idaho, and Montana to identify common high-level indicators currently in use across the Pacific Northwest, with a goal of achieving a consistently defined, minimum core set we all will use to communicate salmon status and ecosystem health to Congress, legislatures, governors, and the public. All parties are committed to working on ways to better share data that support reporting our progress accurately. Such efforts, while vital in our ability to track steps along the road to recovery, will still fall far short if we don't have the basic data to answer our questions. The next few years will need much attention on this most fundamental foundation if the 2010 State of Salmon in Watersheds Report is to more accurately reflect how we are doing.

Governor Gregoire discusses Washington's environment with students on Earth Day.

GOVERNOR'S OFFICE

A Letter from the Governor

Dear Reader:

In 2008 we celebrate the 10th anniversary of Washington's Salmon Recovery Act. We have accomplished a lot. Washingtonians are hard at work creating a better environment for fish. Those working on the front lines of salmon recovery are committed to finding solutions that work for everyone. When you have people invested in their communities in this way, great things happen. Clearly, our efforts are paying off and the prospects for our fish are much better now than when we started. For this, we have every reason to be proud.

Wherever I go, people tell me our work is not just about salmon. They understand that salmon recovery also benefits the health of our watersheds. As we respond to new environmental challenges, such as global climate change and restoration of Puget Sound, we should remember that salmon recovery is often integral to these efforts. Solutions for one will help the others as well.

Good programs do not solve problems. People do. The vision in 1998 was that if we invested in people who live and work in the communities impacted by salmon listings, we would find a way to restore salmon. Farmers, landowners, environmentalists, tribes, business owners, and agency personnel came together and agreed on what should and could be done.

Today, people all across the state are more aware and taking action. They have embraced salmon and watershed recovery and this bodes well for the future of salmon and our future. As we often say, salmon are icons of the Pacific Northwest. Looking forward, our vision for Washington must include healthy and sustainable salmon populations.

Together, over the last ten years we have established a solid foundation from which to move ahead. Talk is certainly no substitute for action, but talking and listening to each other is an essential foundation and the key to our success. I believe the Washington Way—working together from the ground up, developing relationships and trust—is the only way salmon recovery will happen. For all of your work and commitment, I want to express here my deepest appreciation.

Sincerely,

CHRISTINE O. GREGOIRE
WASHINGTON STATE GOVERNOR
DECEMBER 2008

Salmon Recovery Milestones 1990–2008

6,000,000 years ago First salmon present in Pacific Northwest

10,000 years ago Native American people arrive, relying on salmon for food and culture

1805 Lewis and Clark expedition notes abundance of salmon

1829 Columbia River salmon trading established

1866 Salmon canning industry born on Columbia River; Puget Sound soon follows

1875 US Fisheries Commissioner identifies the three primary threats to salmon as overfishing, dams, and habitat degradation

1877 First Columbia River fish hatchery built

1879 Fish wheels (ferris wheel-like devices, powered by currents, that scoop fish out of the water) first used on Columbia River. A single wheel could take as much as 70,000 lbs of fish a day

1890 Washington Department of Fisheries created to regulate fishing

1880 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998

1990 Ocean and Puget Sound marine coho and chinook fishing restrictions are underway to address coho population declines coast-wide.

Regional Fisheries Enhancement Groups are created by the Legislature.

1991 Federal government lists Snake River sockeye salmon as endangered.

1992 Federal government lists Snake River summer and fall chinook salmon as threatened.

1993 Wild Stock Restoration Initiative and Wild Salmonid Policy adopted by Department of Fish and Wildlife.

The Columbia River hydropower biological opinion (BiOp) is issued by federal agencies.

1994 The federal government adopts the **Northwest Forest Plan**.

A federal court rejects the 1993 BiOp.

1995 The federal government initiates overhaul of the way the federal power system is to be operated on the Columbia River.

1996 Department of Natural Resources adopts a **Habitat Conservation Plan** for 1.4 million acres of state-owned forestland.

1997 Governor Locke brings together the state agencies that most affect salmon management in a forum called the **Joint Natural Resources Cabinet**.

The **federal government** lists Snake River steelhead as threatened and Upper Columbia steelhead as endangered.

1998 Governor Locke and Canadian Fisheries and Ocean Minister Anderson reach agreement to reduce fisheries.

The Legislature establishes the **Governor's Salmon Recovery Office**.

The **Independent Science Panel** is appointed by the Governor from recommendations by the American Fisheries Society.

Watershed Planning Units are created by the Legislature.

Lead Entities are also established by the Legislature.

The **Forests and Fish Agreement** is signed.

Lower Columbia Fish Recovery Board is established by the Legislature in Clark, Cowlitz, Lewis, Skamania, and Wahkiakum counties.

Federal government lists Lower Columbia River steelhead, and Upper Columbia, Northeast Washington, Lower Columbia, and Snake River bull trout as threatened.

1999 Locke/Anderson re-negotiate the landmark **Pacific Salmon Treaty**, providing a federal fund from which salmon restoration activities are to be paid.

The **Forests and Fish Agreement** becomes state law.

The **Salmon Recovery Funding Board** is established by the Legislature.

The **Statewide Strategy to Recover Salmon: Extinction is Not an Option** is completed.

Washington, Oregon, four Columbia River Treaty Tribes, and the federal government sign the **Columbia River Accord**.

Federal government lists Puget Sound Chinook, Hood Canal summer chum, Washington Coastal Lake Ozette sockeye, Lower Columbia River Chinook, Lower Columbia River chum, and Middle Columbia River steelhead as threatened. In addition, Upper Columbia spring Chinook is listed as endangered.

ESA listings of Chinook, coho, chum, and steelhead stocks in Washington now cover over 75% of the state.

2000 Congress creates a federal hatchery reform initiative and establishes an independent **Hatchery Scientific Review Group**.

National Marine Fisheries Service and US Fish and Wildlife Service re-issue Biological Opinions for Federal Columbia River Power System operations.

The first **State Agency Action Plan**, a biennial implementation plan for the Statewide Strategy, is published.

The state's performance management system—**Salmon Recovery Scorecard**—is published.

The first **State of Salmon Report** is published.

2001 The Legislature mandates development of a **Comprehensive Monitoring Strategy** and action plan for watershed health with a focus on salmon recovery.

2002 Recovery Plan Model is published.

2002 State of Salmon Report, the 2001-2003 State Agency Action Plan, and the 1999-2001 Action Plan Accomplishments are released.

The **Comprehensive Monitoring Strategy** is developed for consideration by the Governor and Legislature.

2003 Regional Salmon Recovery Organizations receive funding from the Salmon Recovery Funding Board to develop salmon recovery plans for listed salmon. These groups, working closely with local citizens, are the only organizations developing recovery plans for the purposes of the Endangered Species Act.

A federal judge hands back the **2000 Biological Opinion on operation of the Federal Columbia River Power System** for salmon and steelhead to NOAA Fisheries. The federal agency was told to resolve several deficiencies, including reliance on federal mitigation actions that have not undergone

SALMON IN WASHINGTON'S HISTORY

1894 US Commissioner of Fisheries' report on decreases of salmon in the Columbia River

1896 First Puget Sound fish hatchery built

1917 Purse seines (a non-selective net) fisheries prohibited

1933 First Columbia River dam built at Rock Island

1934 Washington legislature bans fish wheels

1935 First year Washington keeps records on fisheries

1974 Boldt decision gives treaty tribes and non-Native Americans equal share of fish

Late 1980 to early 1990 Washington fish hatcheries producing over 120 million fish annually

1990 — 2008

Salmon Recovery Milestones

1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008

section 7 consultation under the Endangered Species Act, and reliance on range-wide off-site non-federal mitigation actions that are not reasonably certain to occur.

The Governor's Salmon Recovery Office produces the **2003-2005 State Agency Action Plan**, the third biennial implementation plan for the Statewide Strategy to Recover Salmon.

2004 The Governor signs Executive Order 04-03, creating the **Governor's Forum on Monitoring**. This Order establishes a coordinating body for monitoring salmon recovery and watershed health.

All Washington sub-basins submit their draft **Fish and Wildlife Sub-basin Plans** to the Northwest Power and Conservation Council on time. Collectively, the plans represent the largest compilation of data on fish, wildlife and environmental conditions ever in the Columbia River Basin.

The **federal government** issues a **Draft Hatchery Policy**, indicating how hatchery fish will be considered in salmon recovery, and revises its Status Reviews for listed fish in Washington. They propose to down list Upper Columbia steelhead from endangered to threatened, and list Lower Columbia coho for the first time as threatened. All other listings in Washington are proposed to remain as previously listed.

The Federal Energy Regulatory Commission approves a 50-year **Mid-Columbia Habitat Conservation Plan** as part of the relicensing process for three mid-Columbia dams.

The Lower Columbia Fish Recovery Board completes the **first regional salmon recovery plan** in Washington.

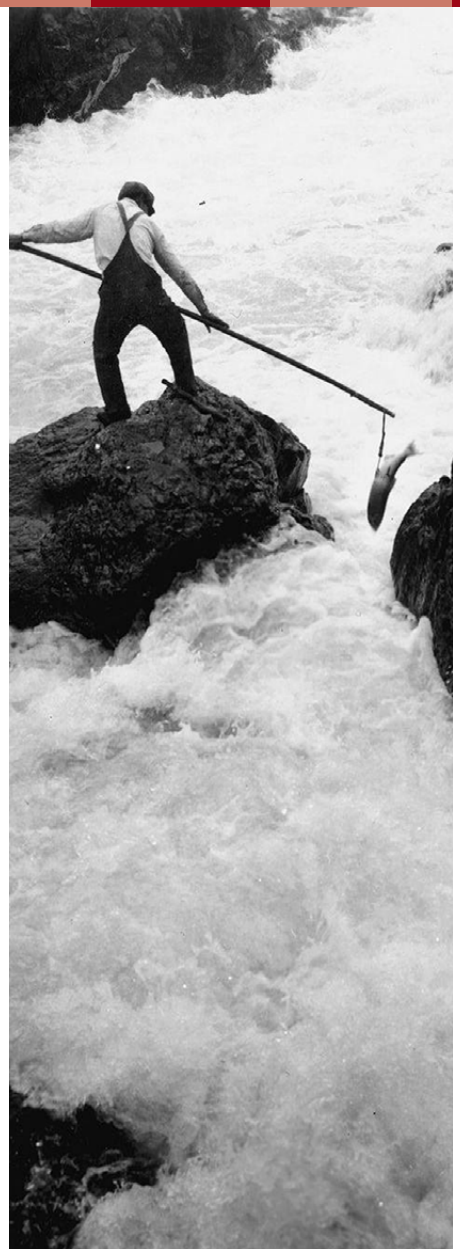
The Governor's Salmon Recovery Office publishes the **2004 State of Salmon in Watersheds Report**.

2005 Draft recovery plans are completed and delivered to NOAA-Fisheries for Puget Sound, Hood Canal, Middle Columbia, Upper Columbia, and Snake River Regions.

NOAA-Fisheries lists Lower Columbia coho as a threatened species, and down-lists Upper Columbia steelhead from endangered to threatened.

2006 NOAA-Fisheries adopts the Lower Columbia recovery plan, stating they were "...committing to implement the actions in the Interim Plan and supplement...work cooperatively on implementation...and encourage other Federal agencies to implement actions..."

NOAA-Fisheries places notices in the federal register of **intent to adopt interim recovery plans from all Washington salmon recovery regional organizations**.



A Habitat Conservation Plan for 1.6 million acres of forested state trust lands —mostly in Western Washington—in the range of the northern spotted owl is adopted by the federal government. This 70-year management plan is an agreement between DNR and federal agencies under the Endangered Species Act to guarantee that habitat commitments are met, while not penalizing the occasional incidental "take" of a federally listed animal or its habitat.

2007 NOAA-Fisheries lists Puget Sound Steelhead as threatened. Highly dependent on the quality of their habitat, this is just another indication that actions are needed to improve the freshwater and estuarine habitat in the Sound.

Governor Gregoire signs into law a measure she requested that will protect and restore Puget Sound. The bill creates the **Puget Sound Partnership to oversee clean up and restoration by 2020**.

NOAA-Fisheries adopts the final Upper Columbia Salmon Recovery Plan for Chinook and steelhead.

2008 New Pacific Coast-wide agreement on fishing arrangements under the **Pacific Salmon Treaty will result in increased returns of Chinook salmon to Washington waters**. The 10-year agreement guides fishery management plans for Chinook, coho, chum, and some pink and sockeye populations from 2009-2018 in Canada, Washington, Oregon, and Alaska.

NOAA-Fisheries issues a biological opinion for operation of the Federal Columbia River Power System. Although subject to legal challenge, the opinion includes significant commitments to increase survival at the federal dams and to improve tributary and estuary habitats.

Washington Coast Sustainable Salmon Partnership is formed to help address salmon recovery and preservation in the Washington Coast Region.

A proposed recovery plan for Middle Columbia River steelhead is released by NOAA-Fisheries. This plan incorporates the recovery plan—with significant updates—already adopted by the federal agency and the state of Washington for steelhead within Washington.

PHOTO: WASHINGTON STATE HISTORICAL SOCIETY

Our Vision

To restore salmon, steelhead, and trout to healthy harvestable levels and improve habitats on which fish rely.

CHRIS DRIVDAHL

Our Goals and Strategies

Wild salmon populations will be productive and diverse

- Sustain salmon productivity by providing wild spawner escapement, conserving genetic diversity, and meeting basic needs of salmon for spawning, rearing and migration in watersheds and ecosystems. Stewardship of salmon will be the first priority in managing the resource.
- Meet the goal of the Endangered Species Act to return endangered and threatened species to the point where salmon no longer need the statute's protection.

We will have coordinated, science-based salmon recovery efforts

- Achieve cost-effective salmon recovery and use government resources efficiently.
- Use the best available science and integrate monitoring and research with planning and implementation.
- Ensure that citizens, salmon recovery partners and state employees have timely access to information, technical assistance and funding they need to be successful.

Our habitat, harvest, hatchery, and hydropower activities will benefit wild salmon

- Freshwater and estuarine habitats are healthy and accessible.
- Rivers and streams have flows to support salmon.
- Water is clean and cool enough for salmon.
- Hatchery practices meet wild salmon recovery needs.
- Harvest management actions protect wild salmon.
- Compliance with resource protection laws is enhanced.

Citizens and salmon recovery partners are engaged

- Create partnerships among governments and citizens. Provide leadership, coordination and technical assistance to create agreements on salmon recovery decision-making frameworks and recovery plans. Integrate scientific data with local knowledge and build in local flexibility and control.
- Inform, build support, involve and mobilize citizens to assist in restoration, conservation and enhancement of salmon habitat.

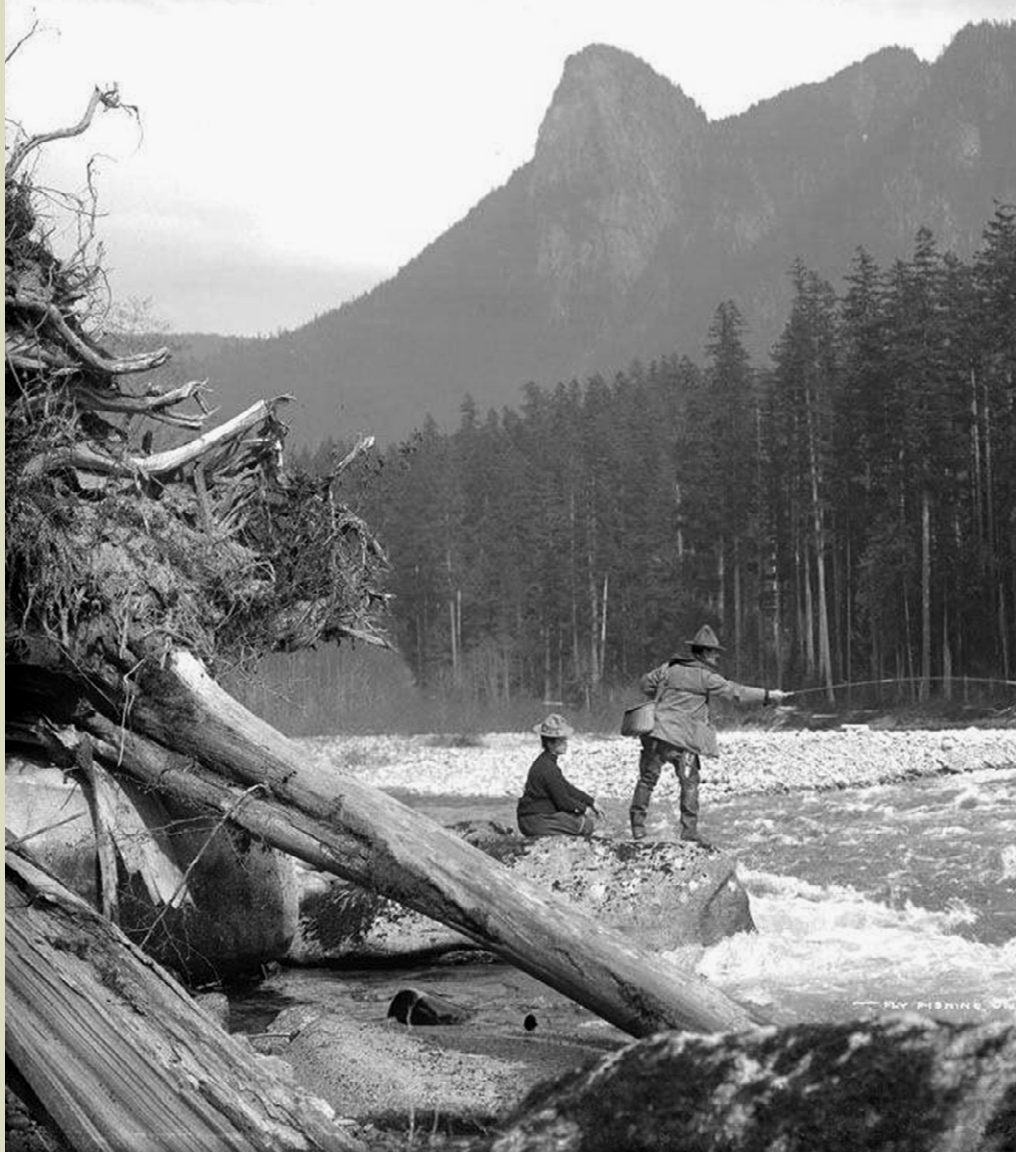
We will meet Endangered Species Act and Clean Water Act requirements

- Strengthen land, water, and fishery management policies, programs, and activities to avoid, minimize, and mitigate human impacts on salmon populations and their habitat.
- Seek Endangered Species Act compliance for state guidelines, regulations, and plans; permitting activities; funding of projects/activities; and state lands, facilities, and infrastructure.

Salmon Recovery on the 10th Anniversary

2008 is the 10th anniversary of our state's most important law for salmon recovery: on June 11, 1998 the Salmon Recovery Act went into effect, setting our policy and approach to recovering one of our most cherished natural and cultural resources.

Federal Endangered Species Act listings of salmon and steelhead were coming in over three-quarters of the state, and the legislature told us it was in our interest for the state to "retain primary responsibility for managing the natural resources of the state, rather than abdicate those responsibilities to the federal government." This Salmon Recovery Act set in motion one of the most comprehensive, complicated, and challenging recovery planning efforts ever accomplished in the United States.



ASAHEL CURTIS. WASHINGTON STATE HISTORICAL SOCIETY. FISHERMAN ON NEXT PAGE: CHRIS DRIVDAHL

We know where we want to go,
we know what we need to do, and we want to do it.

Over the following years, communities across Washington built species-specific plans, and in the process built community support for actions to restore these fish and prevent further losses.

Washingtonians are putting those plans to work now. It will take a long time—and a lot of money—to do everything they said needs to be done. Some things may not work, and others may be beyond our financial ability to undertake in the near future. But, we know where we want to go, we know what we need to do, and we want to do it. That is a winning combination to foster and build on in the coming years.

In the following section, we present some snapshots of the "four Hs" of recovery in a "Then and Now" perspective. Each H—habitat, harvest, hatcheries, and hydropower—has a story to tell of threats, of progress, and of contributions to our goals. For every H, reform had already been taking shape by 1998—hatcheries had begun to implement practices more sensitive to wild fish, harvest regulations were taking notice of impacts on wild fish, and re-licensing negotiations with the Federal Energy Regulatory Commission on hydroelectric projects licensed by the federal agency were recognizing increasing influence of state authority to protect fish. But, the Salmon Recovery Act brought local citizens into the picture, and through recovery planning gave everyone the opportunity to look at salmon together and increase the rate at which change could occur.

H

Hatcheries
Harvest
Hydropower
Habitat

Hatcheries | Then

UNIVERSITY OF WASHINGTON

Chambers Creek Hatchery and Superintendent's residency. South Tacoma, Pierce County. 1917

- Hatcheries are operated as factories geared to produce fish
- Fish managers often don't distinguish hatchery fish from wild fish when making decisions—"a fish is a fish"
- No independent, systematic, science-based evaluation exists to guide fish production
- Hatchery facilities often are not in compliance with environmental regulations
- Hatchery managers ask, "How many fish do we want?" and "How big a factory do we need to deliver that number?"

Taking fish for spawning at the Chehalis Salmon Hatchery

FRESHWATER AND MARINE IMAGE BANK, UNIVERSITY OF WASHINGTON

Hatcheries | Now

▼ Salmon hatcheries help educate the public about salmon recovery

This wetland filters hatchery wastewater before it returns to the river

- Hatcheries are designed and increasingly operated according to protocols that protect wild fish and complement ecosystem goals
- Fish managers distinguish wild fish from hatchery fish when making management decisions
- Congress creates Hatchery Scientific Review Group to evaluate hatchery operations and recommend sound practices
- State hatcheries have a multi-year plan to invest money necessary to ensure hatchery facilities comply with environmental regulations
- Hatchery managers ask, "How can we improve hatchery fish and protect wild fish?" "How should our facility be run to achieve ecosystem goals?"

PHOTOS: WASHINGTON DEPARTMENT OF FISH & WILDLIFE

Harvest | Then

ASAHEL CURTIS, WALTER P. MILLER

Fishermen in the hold of a fishing boat, 1913

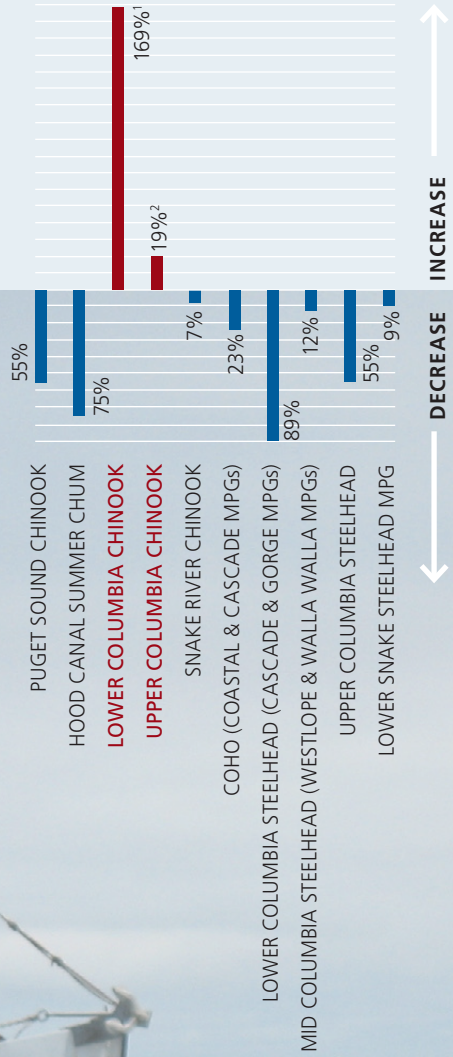
- Most hatchery fish are not fin-clipped before release, so fishers cannot distinguish them from wild fish
- Fishing is regulated by time, location, and gear restrictions to limit impacts on wild fish while providing fishing opportunities
- Limited biological basis for how much impact from fishing is allowed on wild fish
- Hatchery and wild fish spawning in streams are counted as equal
- ESA listed wild salmon and steelhead comprise a small percentage of fish on spawning grounds

ASAHEL CURTIS, WASHINGTON STATE HISTORICAL SOCIETY

Harvest | Now

- Most hatchery fish are fin-clipped before release, so fishers can distinguish them from wild fish
- Fish managers are able to further limit impacts to wild fish while providing fishing opportunities because fishers can distinguish wild fish from hatchery
- Productivity of wild fish is a major driver for how much impact from fishing is allowed
- Assessments of spawning fish independently track hatchery and wild adults
- More ESA listed wild salmon and steelhead make it to the spawning grounds

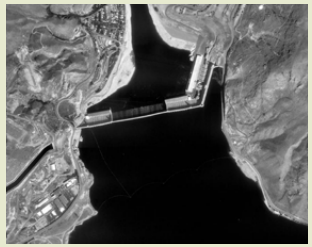
▶ Harvest rates have changed in response to ESA listings in 1998



PHOTOS: WASHINGTON DEPARTMENT OF FISH & WILDLIFE

Hydropower | Then

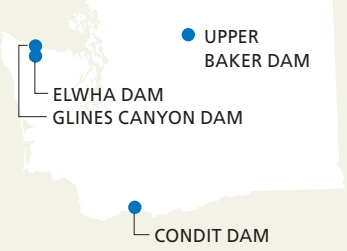
US GEOLOGICAL SURVEY



Grand Coulee Dam, built in 1941

- Congress establishes no fish passage requirement when authorizing federal dams at Chief Joseph and Grand Coulee Dams
- FERC licenses rarely include minimum flows for fish
- Columbia River dams primarily rely on spill for downstream migrants, resulting in lower survival rates
- Hatchery production only tool used to compensate for unavoidable mortalities at dams
- Few tools to manage temperature and dissolved gas, particularly on Snake River

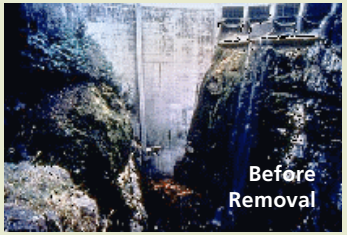
STREAM CORRIDOR RESTORATION: PRINCIPLES, PROCESSES, AND PRACTICES, 10/98, BY THE FEDERAL INTERAGENCY STREAM RESTORATION WORKING GROUP (FISRWG)



Hydropower | Now

- Three major dams with no fish passage (Condit, Elwha, and Glines) will be removed from Washington waters
- All of Washington's mainstem Columbia and Snake River dams downstream of Chief Joseph have explicit juvenile and adult fish survival goals and specific implementation provisions for reaching the goals
- FERC licenses explicitly include operations for fish protection
- Habitat Conservation Plans for operation of Wells, Rocky Reach, and Rock Island dams include "no net impact" obligation for survival
- Significant progress has been made in making 14 (out of 22) dams more "fish friendly" in their operations, including flows, upstream passage for adults, turbine-related mortalities for juveniles
- Habitat enhancement in tributaries added as another tool to compensate for unavoidable mortalities at dams

PUGET SOUND ENERGY

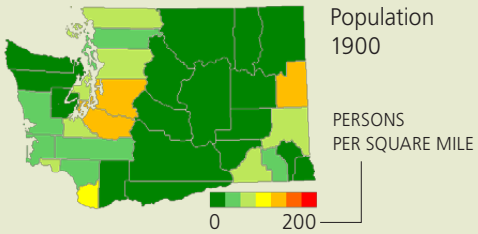


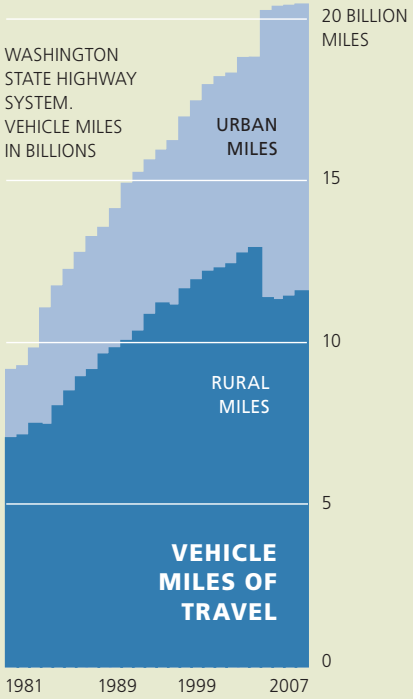
GLINES CANYON DAM REMOVAL

Glines Canyon Dam, built in 1910, will be the largest dam removal project in US history

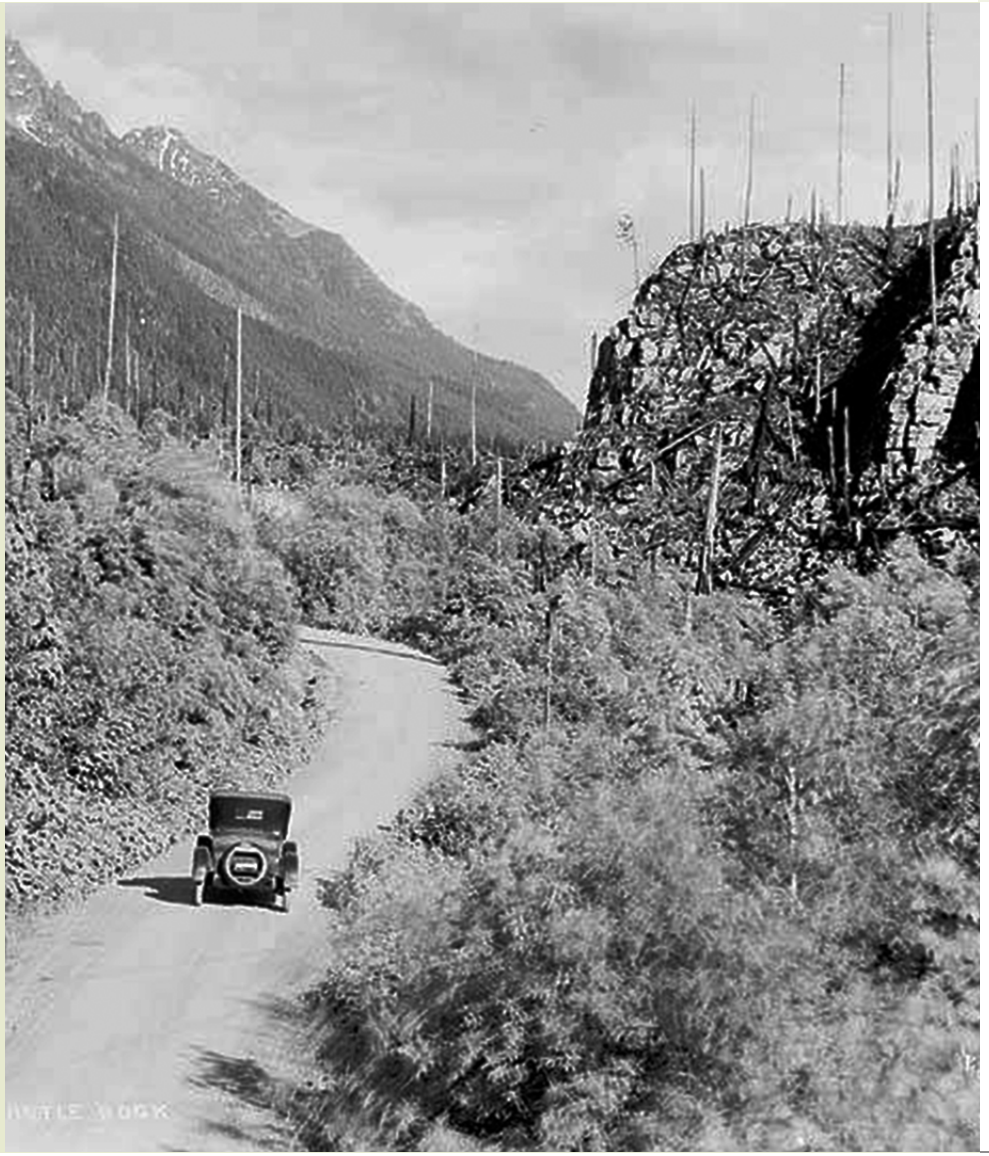
TOP IMAGES:
STREAM CORRIDOR RESTORATION: PRINCIPLES, PROCESSES, AND PRACTICES, 10/98, BY THE FEDERAL INTERAGENCY STREAM RESTORATION WORKING GROUP (FISRWG)

Habitat | Then





DATA: OFFICE OF FINANCIAL MANAGEMENT

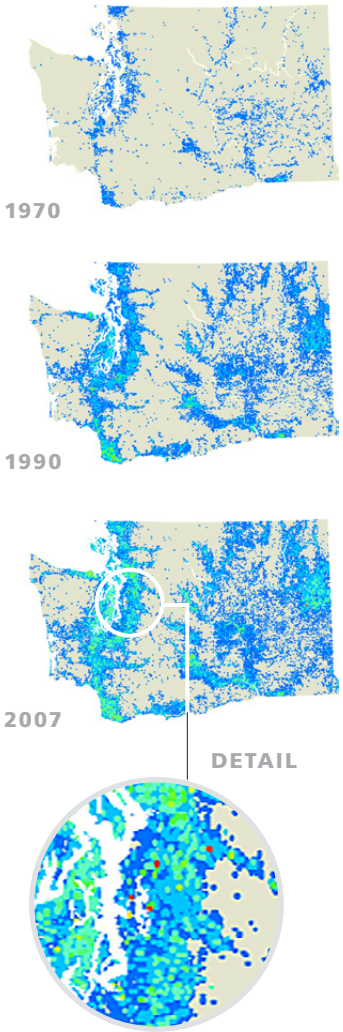


LEE PICKETT PHOTOGRAPH, UNIVERSITY OF WASHINGTON DIGITAL COLLECTIONS

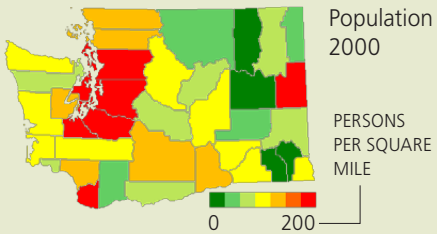
WELLS IN WASHINGTON STATE 1970-2007

1 WATER WELLS PER 40 ACRES 77

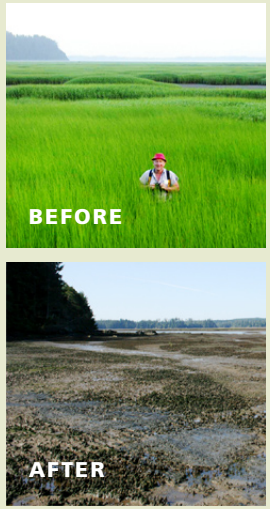
DATA: WASHINGTON DEPARTMENT OF ECOLOGY



Habitat | Now

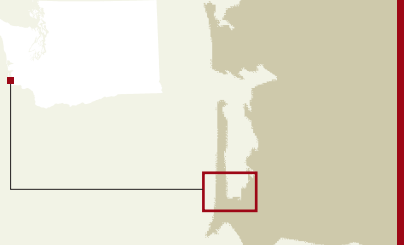


- Increased urban land use changes from 1984-2001 in four Puget Sound basins resulted in a 75% decline of coho salmon using the basins[3]
- Listed fish have locally-created and federally-adopted recovery plans with explicit road maps of needed projects and actions
- More than 37,000 acres of important salmon habitat are protected, 3,600 barriers to fish are removed, and 3,500 miles of streams are opened since 1999



WASHINGTON DEPARTMENT OF NATURAL RESOURCES

▲ Spartina is an invasive plant first introduced into Washington waters more than a century ago. In Willapa Bay, one of the spartina-infested areas in the state, the plant spread from about 300 acres in 1984 to more than 8,500 acres by 2003. The Washington departments of Natural Resources, Agriculture and Fish and Wildlife have worked together on a major control program in the bay. By the end of the 2008 treatment season, fewer than 200 acres remained to be treated.



SPARTINA
IN WILLAPA BAY

Tracking Our Progress

There are many people involved in salmon recovery, from scientists, to government officials, to the general public. Each has a need for different kinds of information, or sometimes the same information but displayed differently. But we all want answers to some pretty basic questions:

- Are fish numbers increasing?
- Is habitat improving?
- Did we do what we said we'd do?
- Is implementation of recovery plans effectively meeting local objectives?

Many people have been collecting data to answer these questions, and while there still are a lot of gaps, we are putting together a picture that will help us know if salmon are recovering in Washington. Ultimately, these data will be the basis for federal agencies to determine when requirements of the Endangered Species Act have been met and the process of de-listing species can begin.

CHELAN COUNTY LEAD ENTITY

Then | Now

We should work together to track how habitat conditions are changing over time to better understand if our collective actions are working and if we are achieving a net gain.

10 YEARS AGO	TODAY
Fish monitoring primarily supports harvest management	Fish monitoring increasingly accounts for recovery needs as well as harvest management
Coordination of monitoring efforts among agencies and others is rare	New coordination efforts to foster sharing and improve efficiency include Forum on Monitoring, Northwest Environmental Information Sharing, and Pacific Northwest Aquatic Monitoring Partnership
Effectiveness of projects is unknown	SRFB has implemented statewide program to monitor effectiveness of salmon habitat restoration and protection projects
Relationship of projects to fish production is unknown	State-led effort has developed experimental watershed monitoring network to determine how well recovery actions lead to new fish production
Systematic integration of fish status and habitat does not exist	Forum on Monitoring has produced statewide framework to integrate fish status and trends with habitat changes. The habitat component of this is being first implemented in Puget Sound and the coast
Often unable to relate adult and juvenile fish abundance in a single watershed	Forum on Monitoring framework calls for monitoring adults and juveniles for at least one primary population in each major population group
No independent scientific review groups focus on salmon recovery or monitoring	Statewide and regional Independent science teams provide advice on planning and implementation of salmon recovery and monitoring plans

CHELAN COUNTY LEAD ENTITY

Data Collection Challenges

Because monitoring is expensive and difficult, there have been many changes in the last decade that have improved our collective ability coordinate and share data that track progress in salmon recovery. For example, information collected to meet needs at a watershed scale may be rolled-up to help meet the needs of the larger regional scale; likewise, information collected for one purpose is compiled to meet another.

All of us need to keep improving our monitoring activities

We should continue to coordinate recovery plan monitoring, improve ways to access and share data, and work together to track how habitat conditions are changing over time to better understand if our collective actions are working and if we are achieving a net gain.

We expect to keep making progress. We expect to continue working with others to share and refine our basic high level indicators or "Baker's Dozen Dials" in ways that support reporting across the entire Pacific Northwest. We expect the Forum on Monitoring and other partnerships will continue to facilitate and coordinate among regional organizations, watershed groups, agencies and tribes across the state in collecting and sharing the most important information. And, we expect people everywhere will continue to seek answers to this most basic question of all: is what we are doing making the difference we all want?

2008 Salmon Recovery | High Level Indicators

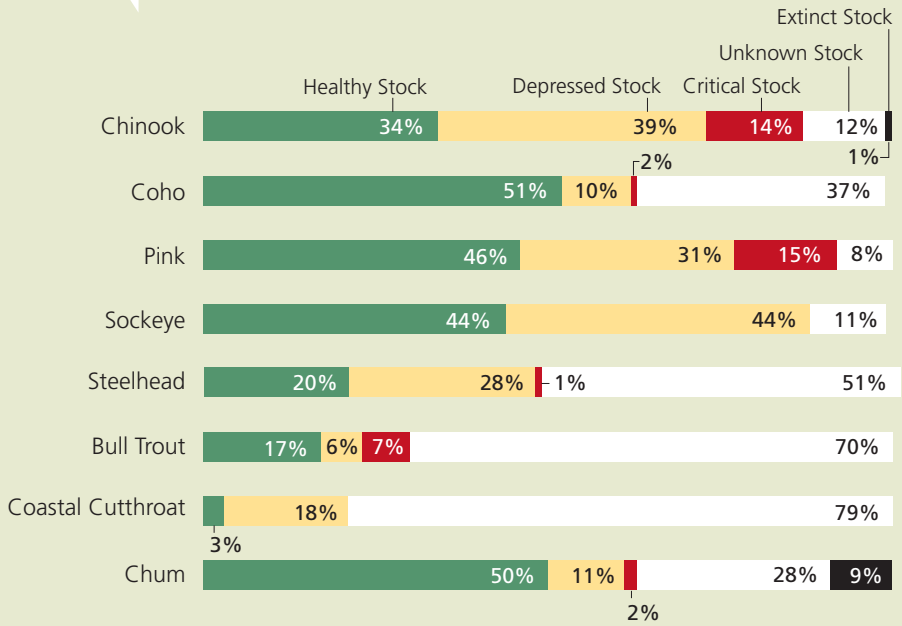
CHELAN COUNTY LEAD ENTITY

One of the very first aspects of salmon recovery reporting that we began working on in 1998 has been how to tell our story in meaningful but simple ways. Fundamental to this is development of high-level indicators—dials on the dashboard for those driving the vehicles of statewide recovery. The need for high-level indicators to communicate salmon status and ecosystem health is common across the United States. Groups are working on finding a common language, sharing data, and reporting to Congress, legislatures, governors, and the public. In the Pacific Northwest, we are working with organizations from Oregon, Idaho, and Montana to identify common indicators we all use, and to find ways that will make it easier to share our data.

Our "Baker's Dozen Dials" relate to statewide questions of interest and provide a quick snapshot that gives readers an at-a-glance idea of how we are doing. They represent a very general, large-scale view, and because of this much of the fine detail available in smaller scales is masked. Over the past ten years, we have fine-tuned our recovery dials, adding new ones and eliminating those where we have met our goals. As always, the information that lies beneath these indicators can be accessed through Washington's natural resource data portal at **www.swim.wa.gov**

▶ In the Pacific Northwest, we are working with organizations from Oregon, Idaho, and Montana to identify common indicators we all use, and to find ways that will make it easier to share our data.

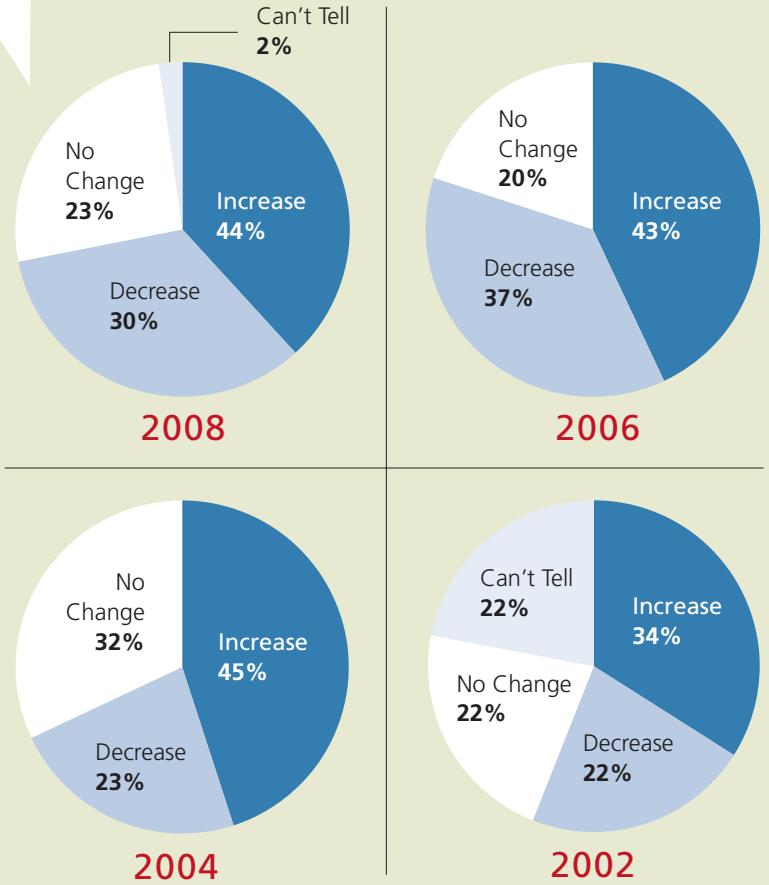
Fish Status Summary



- Status ratings are determined by the Washington Department of Fish and Wildlife and tribes.
- Summary is for 2008.

DATA SOURCE: WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

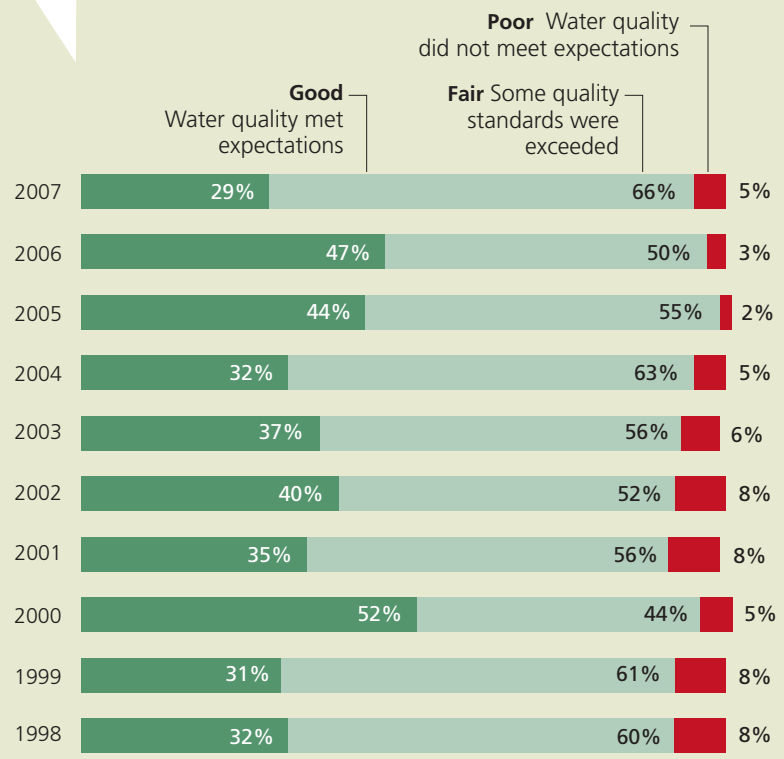
Trends in Wild Juvenile Salmon Production



- 2008 pie charts represents 43 sampled stocks of all species statewide whose trends were increasing, decreasing, not changing, or unknown.

DATA SOURCE: WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

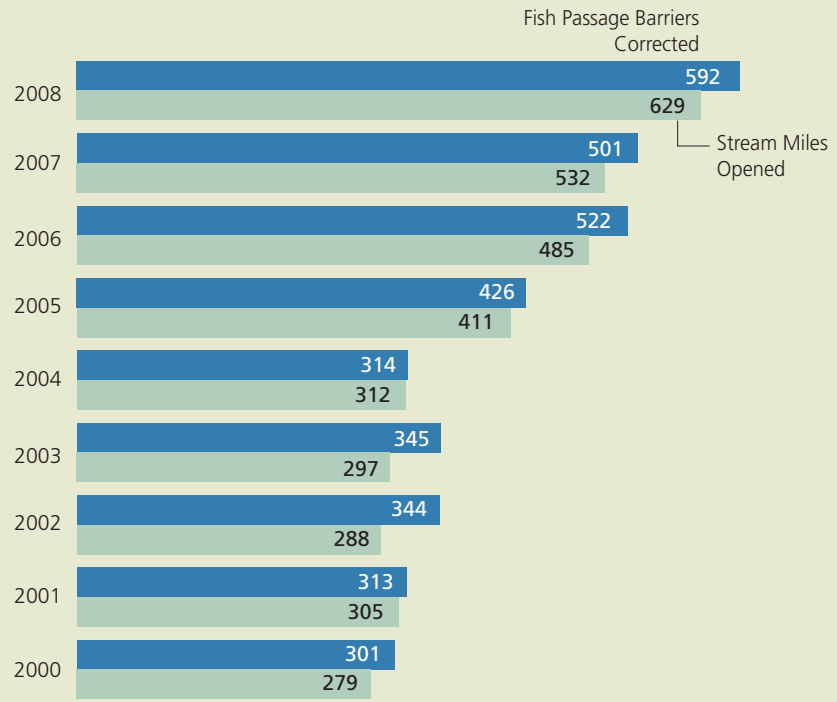
Water Quality in Watersheds



- Water quality is measured by **Water Quality Index (WQI)**. This is a number that aggregates water quality data at a monitoring station for temperature, pH, fecal coliform bacteria, dissolved oxygen, expected nutrients, and sediments over a 12 month period.
- 62 sampling stations are monitored statewide in 39 watersheds.
- A water year runs from October 1 until September 30.

DATA SOURCE: WASHINGTON DEPARTMENT OF ECOLOGY

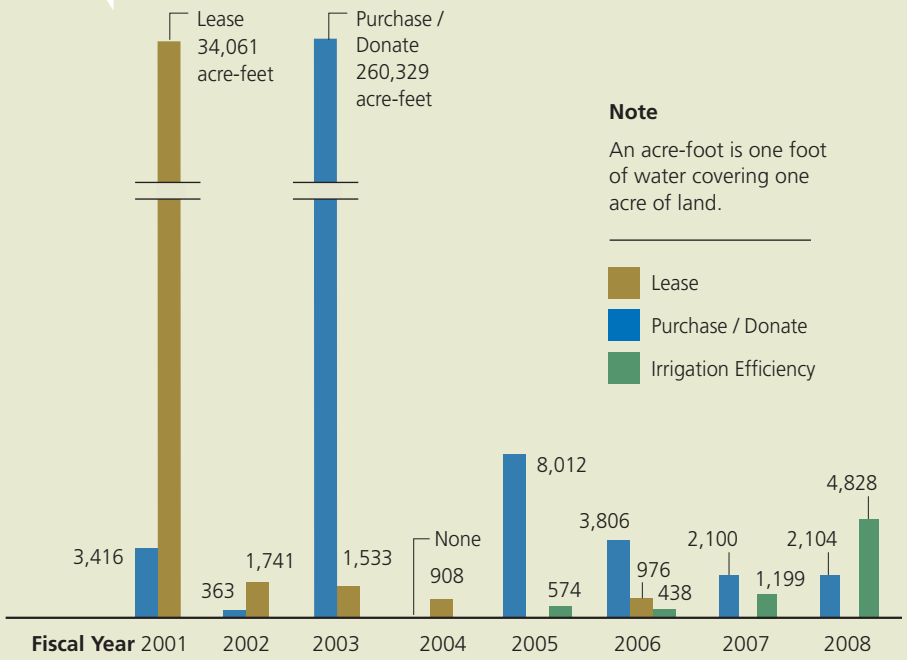
Fish Passage Barriers Corrected and Stream Miles Opened



- Number reflects the estimated number of barriers corrected statewide in a given year. Because of incomplete reporting, these numbers are expected to be lower than actual values.
- Miles reflect the number of miles that are estimated to be opened as a result of barrier correction by year.

DATA SOURCES: WASHINGTON DEPARTMENT OF FISH AND WILDLIFE, WASHINGTON DEPARTMENT OF NATURAL RESOURCES, WASHINGTON DEPARTMENT OF TRANSPORTATION, SALMON RECOVERY FUNDING BOARD, FORESTS AND FISH, TRIBES AND LOCAL GOVERNMENTS. US FOREST SERVICE DATA AND BUREAU OF LAND MANAGEMENT INCLUDED AFTER 2002

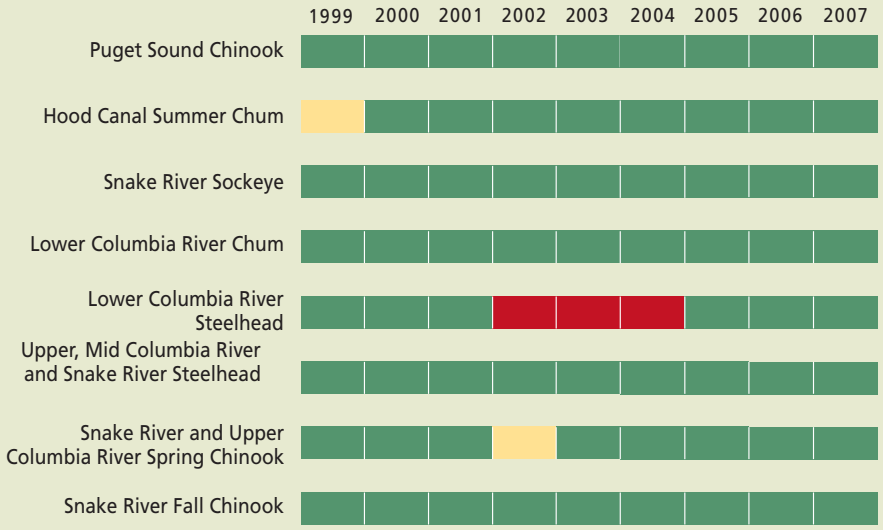
Acre-Feet of Water Restored to Streams



- **Restored water** includes water from purchases, donations, or leases. The focus is on summer low flow periods and instream reaches where water availibility is a limiting factor for fish.
- Irrigation efficiencies restored to streams not tracked prior to 2005.
- FY2003 represents a major commitment of federal funds to the Yakima River Enhancement Project.
- 300,000 acre-feet is almost 100,000 billion gallons—enough water to support the population Washington for almost 4 years.
- Historic partnership agreements with Confederated Tribes of the Colville Indian Reservation and Spokane Tribe permanently set aside 27,000 AF of water from Lake Roosevelt in support of stream flows.

DATA SOURCE: WASHINGTON DEPARTMENT OF ECOLOGY

Endangered Species Act Compliant Harvest Goals



- Data are for non-tribal fisheries.
- NOAA-Fisheries has determined that established harvest protection goals do not negatively impact stocks or the ability to recover them.
- Harvest goals are the maximum allowable catch approved by NOAA-Fisheries.

Fisheries met ESA harvest goals approved by NOAA-Fisheries

Fisheries exceeded ESA harvest goals approved by NOAA-Fisheries by up to 15%

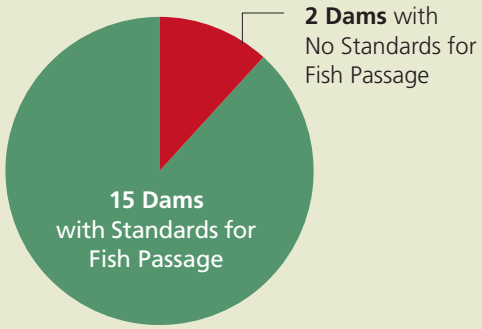
Harvests exceed compliance with NOAA-Fisheries goals by less than 5%

DATA SOURCE: WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

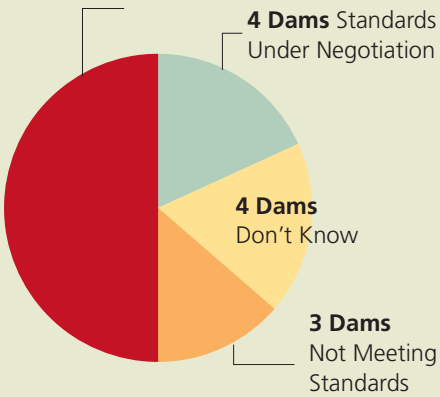
Salmon Friendliness of Hydroelectric Projects

- Performance standards for passage vary by dam and may be set by the Federal Columbia River Power System Biological Opinion, a Federal Energy Regulatory System license, Corps of Engineers 401 water quality certification, or a Habitat Conservation Program. 5 dams outside of the Columbia River are not federally authorized.
- Studies are underway on some dams to determine if passage standards are being met.
- Grand Coulee Dam on the Columbia blocked anadromous fish passage in 1941. Subsequently, 9 smaller dams have been built on rivers upstream, each with no requirement for fish passage; these are not included in this tally.
- 26 dams are operating in non-anadromous fish zones and also are not included in this tally.

MAINSTEM COLUMBIA RIVER

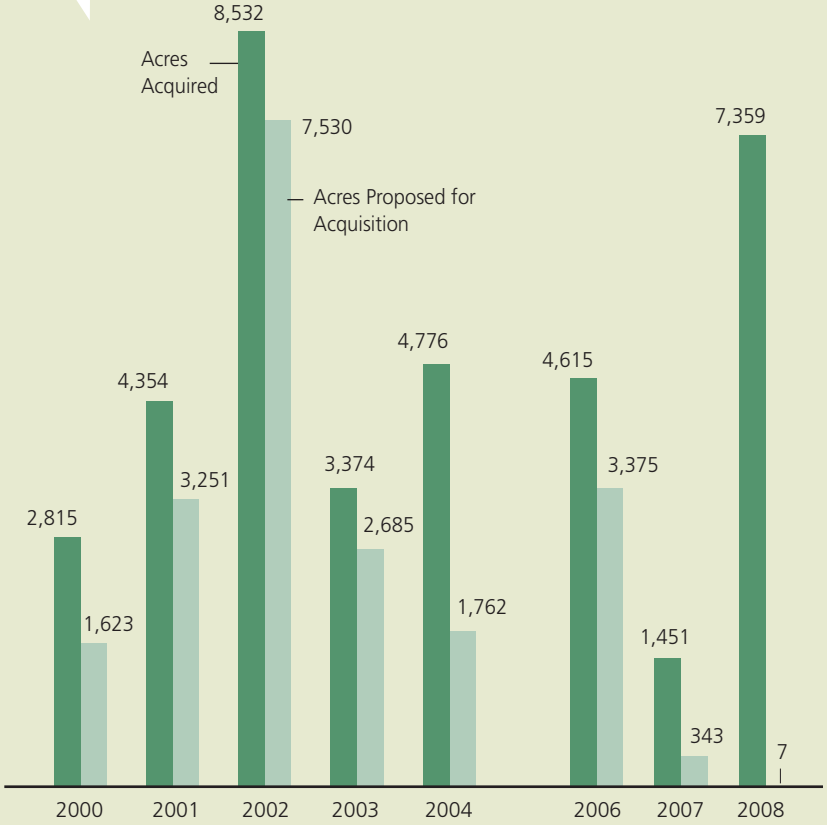


OTHER WASHINGTON RIVERS



DATA SOURCE: WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

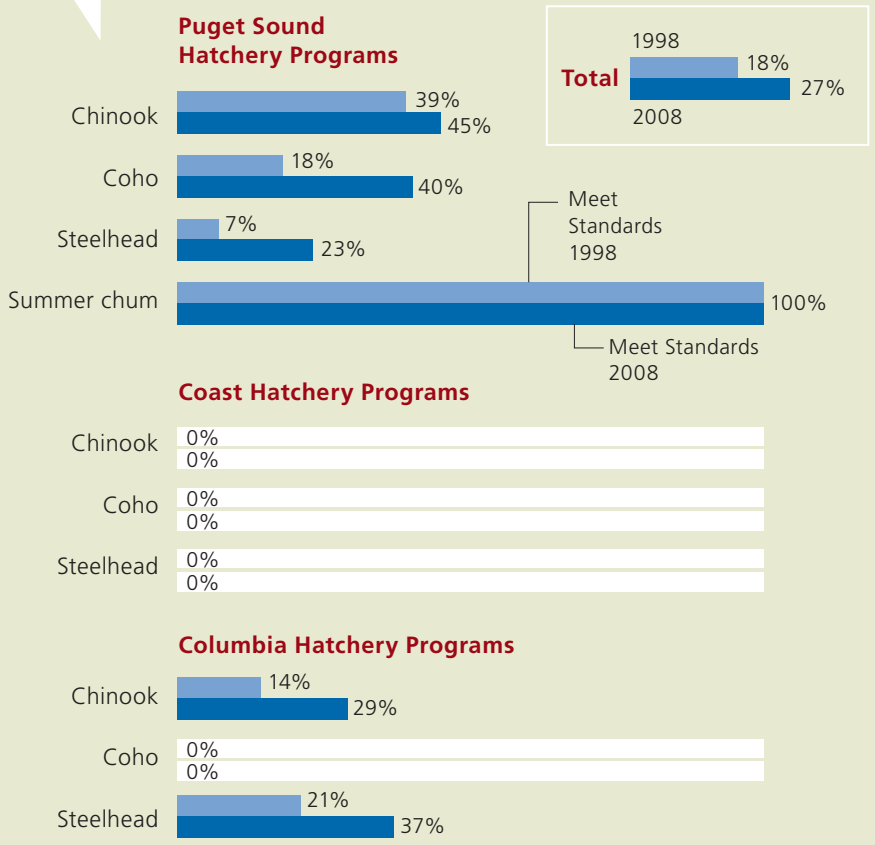
Acres Acquired for Salmon Restoration (Proposed)



- Funding by Salmon Recovery Funding Board.
- Acres have been approved for purchase but actual acquisitions may be less.
- Grants for the 2005 cycle were awarded in January 2006.

DATA SOURCE: RECREATION AND CONSERVATION OFFICE

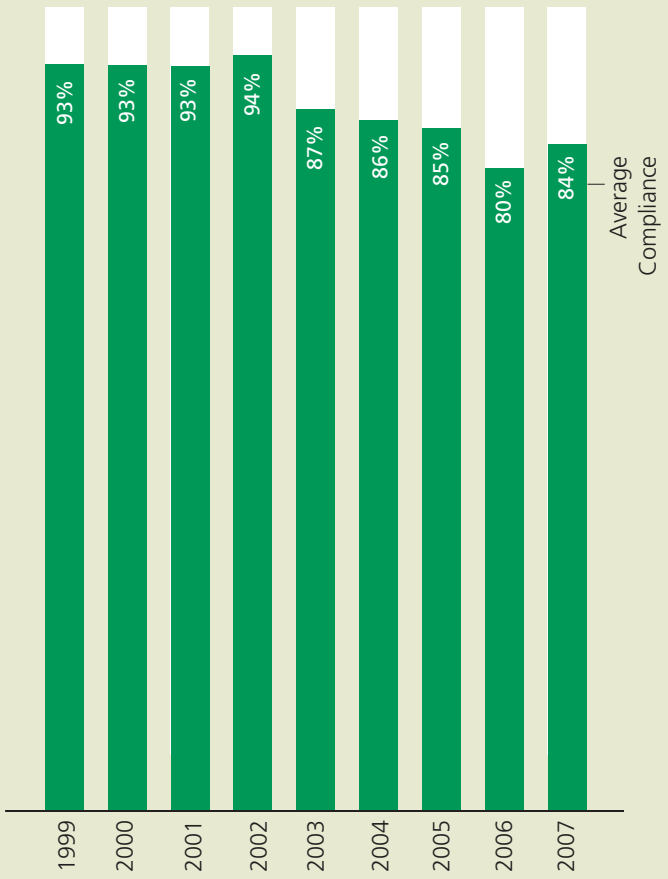
Hatchery Programs Meeting Scientific Standards[4]



◗ Standards are recommendations from Hatchery Scientific Review Group, an independent scientific panel established and funded by Congress to assemble, organize, and apply the best available scientific information for hatchery reform.

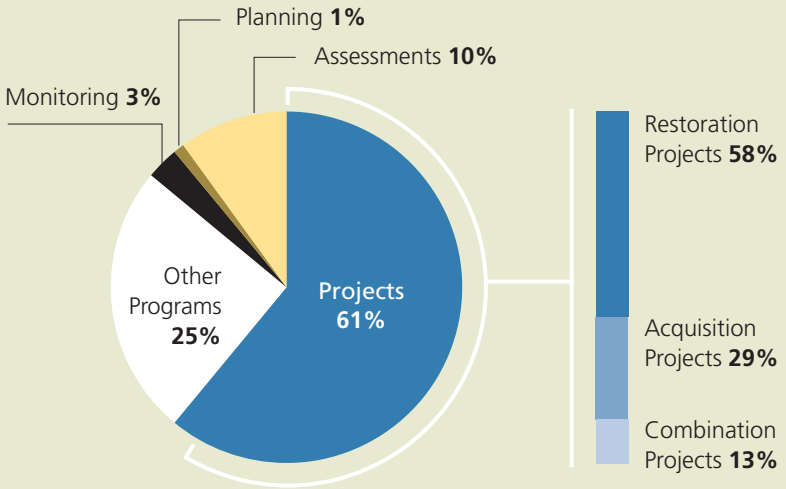
DATA SOURCE: WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

Average Compliance Rate for Salmon and Steelhead Fishers



DATA SOURCE: WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

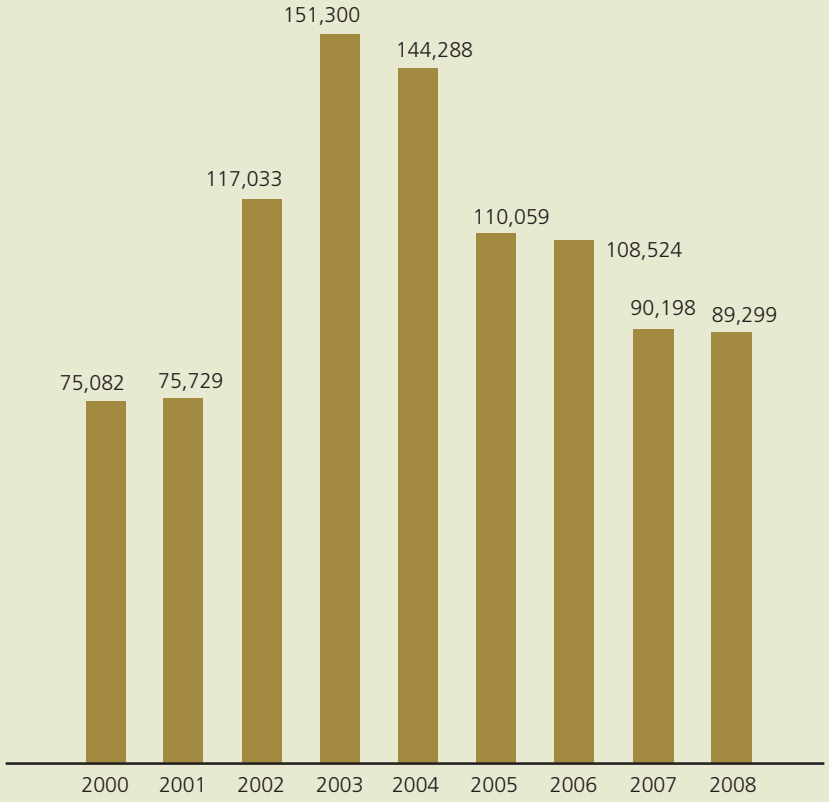
Salmon Recovery Grants



- Includes Salmon Recovery Funding Board grants (2000-2008) and Interagency Review Team (1999).
- Combination projects include both acquisition and restoration work.
- Other programs include those required or recommended by Congress, the Legislature, and NOAA-Fisheries, including Forests and Fish implementation, fish marking, lead entity support and other agency programs.
- FY1999-FY2008
- Sponsor matches are nearly $155 million.
- 1,269 projects funded.

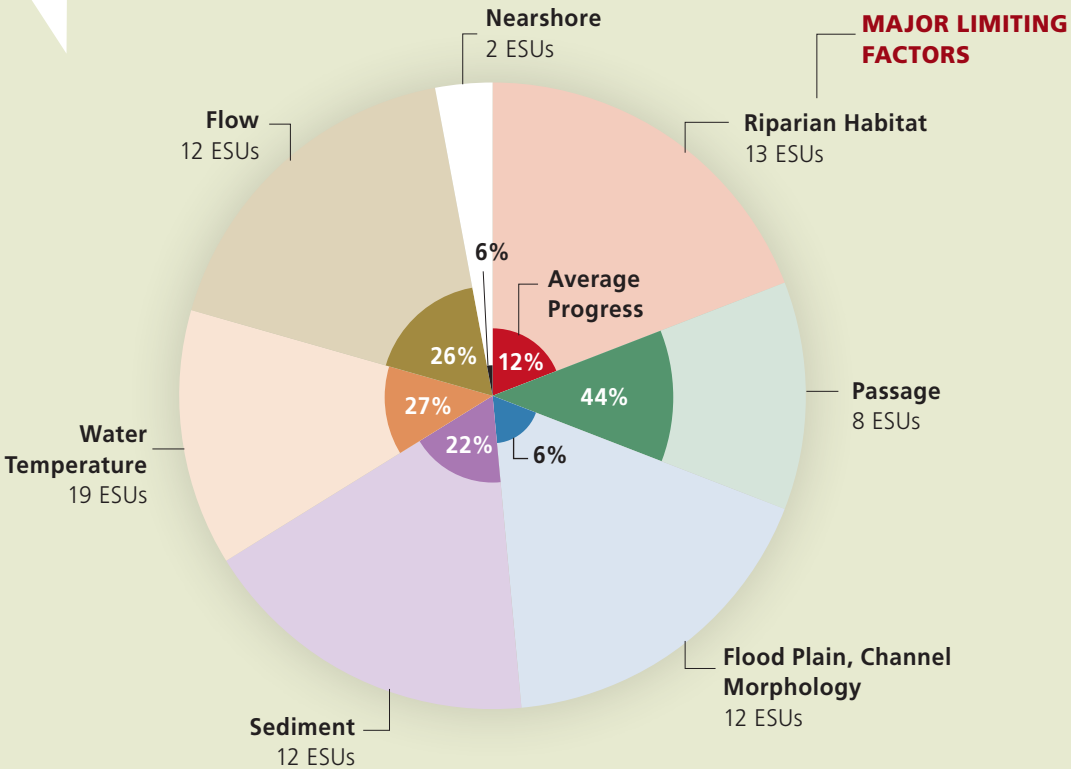
DATA SOURCE: RECREATION AND CONSERVATION OFFICE

Volunteer Hours in Watershed and Salmon Recovery Activities



DATA SOURCES INCLUDE WASHINGTON DEPARTMENT OF FISH AND WILDLIFE, REGIONAL FISHERIES ENHANCEMENT GROUPS, WASHINGTON DEPARTMENT OF ECOLOGY, PLANNING UNITS, REGIONAL PLANNING ORGANIZATIONS, AND CONSERVATION COMMISSION.

Recovery Plan Implementation Progress



- As defined by NOAA-Fisheries in listings determinations, major limiting factors are the main attributes that must be addressed in recovery.

- Only ESUs with recovery plans are addressed in this figure.
- Estimates of progress based on best professional judgement.
- Recovery plan implementation is relatively recent—from 2 to 4 years.

- This is estimated progress statewide in implementing actions expected to correct causes of fish listings, averaged across the ESUs and do not reflect biological response of fish.

DATA SOURCE: REGIONAL SALMON RECOVERY ORGANIZATIONS

> "These "Baker's Dozen Dials" represent a very general, large-scale view, and because of this much of the fine detail available in smaller scales is masked."

Regional Views: Mapping Our Progress[5]

In the following sections of this report, we explore seven basic questions regarding salmon recovery. Each question uses one or more indicators to help us decide if we are making progress. Data for the indicators are compiled from many sources—federal, state, local, and tribal—and at three scales—watershed, salmon recovery region, and statewide.

Obviously, there are many gaps in the data we need to answer all our questions. And, over the past ten years, we have modified some of the indicators we are using, or even changed them entirely as new information became available to better address our questions. What has not changed, however, is the basic approach to reporting this information. It is fundamental to the State of Salmon in Watersheds Report that we use the most accurate, most up-to-date information available and that we attempt to show results in honest, plain talk.

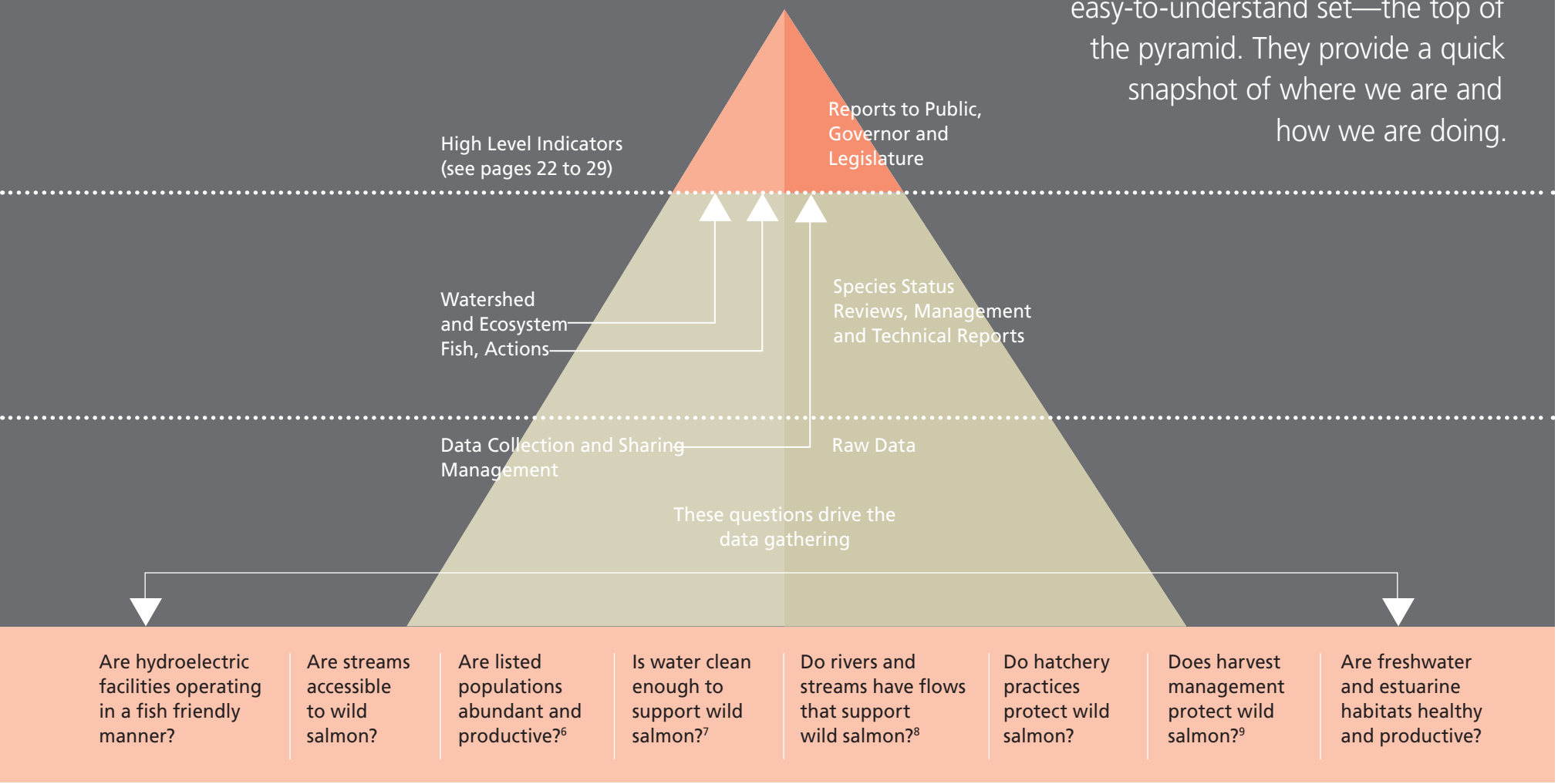
CHRIS DRIVDAHL

Data for the indicators are compiled from many sources—federal, state, local, and tribal—and at three scales—watershed, salmon recovery region, and statewide.

▶ All parties are committed to working on ways to better share data that support reporting our progress accurately. Such efforts, while vital in our ability to track steps along the road to recovery, will still fall far short if we don't have the basic data to answer our questions.

HIGH LEVEL INDICATORS

A short and easy-to-understand set—the top of the pyramid. They provide a quick snapshot of where we are and how we are doing.



Puget Sound Salmon Recovery Region

CHRIS DRIVDAHL

At 16,000 square miles the Puget Sound Basin, between the Cascade and Olympic mountains in Northwest Washington, is the second largest estuary in the United States. Twenty percent of the area is land, with a diversity of farms, forests, parks, small towns, and busy cities. The remainder is freshwater, estuarine, and marine waters; over 20 major river systems and their tributary creeks drain mountain elevations of 7,000 feet or more and drop to sea level within 50 to 70 miles. Puget Sound is home to two-thirds of the state's people. In early 2007 the Puget Sound Partnership became a state agency responsible for recovery of salmon and restoration of the Puget Sound ecosystem.

PLAN TIMEFRAME
50 years

ESTIMATED COST
$1.42 billion for first 10 years

RECOVERY PLAN IMPLEMENTATION
Three-year implementation schedule identifies $240 million in habitat project needs

STATUS
Chinook recovery plan adopted by NOAA Fisheries Service 2006. Steelhead plan discussions underway. Federal draft bull trout recovery plan; status review underway

Key Facts

LISTED FISH

Chinook (threatened) 1999
Steelhead (threatened) 2007
Bull trout (threatened) 1999

MAJOR FACTORS LIMITING RECOVERY

- Degraded floodplain and channel structure
- Degraded nearshore/marine and estuarine conditions
- Riparian degradation and loss of in-river woody material
- Degraded water quality and temperature
- Impaired instream flows
- Barriers to fish passage

REGIONAL RECOVERY ORGANIZATION

Puget Sound Partnership

FEDERALLY RECOGNIZED TRIBES

Lummi Nation, Nooksack, Stillaguamish, Jamestown S'Klallam, Muckleshoot, Nisqually, Port Gamble S'Klallam, Lower Elwha S'Klallam, Puyallup, Samish, Sauk-Suiattle, Skokomish, Squaxin Island, Stillaquamish, Suquamish, Swinomish, Tulalip, Upper Skagit, Snoqualmie

COUNTIES

All or parts of Whatcom, Skagit, Island, San Juan, Snohomish, King, Pierce, Thurston, Mason, Kitsap, Jefferson, and Clallam

WATER RESOURCE INVENTORY AREAS (WRIAs)

1 Nooksack
2 San Juan
3 Lower Skagit
4 Upper Skagit
5 Stillaguamish
6 Island
7 Snohomish
8 Cedar / Sammish
9 Green / Duwamish
10 Puyallup / White
11 Nisqually
12 Chambers / Clover
13 Deschutes
14 Kennedy / Goldsborough
15 Kitsap
16 Skokomish / Dosewallips
17 Quilcene / Snow
18 Elwha / Dungeness
19 Hoko / Lyre

PUGET SOUND SALMON RECOVERY REGION

Fish and Habitat Projects

- 2006 to Present
- Pre 2006

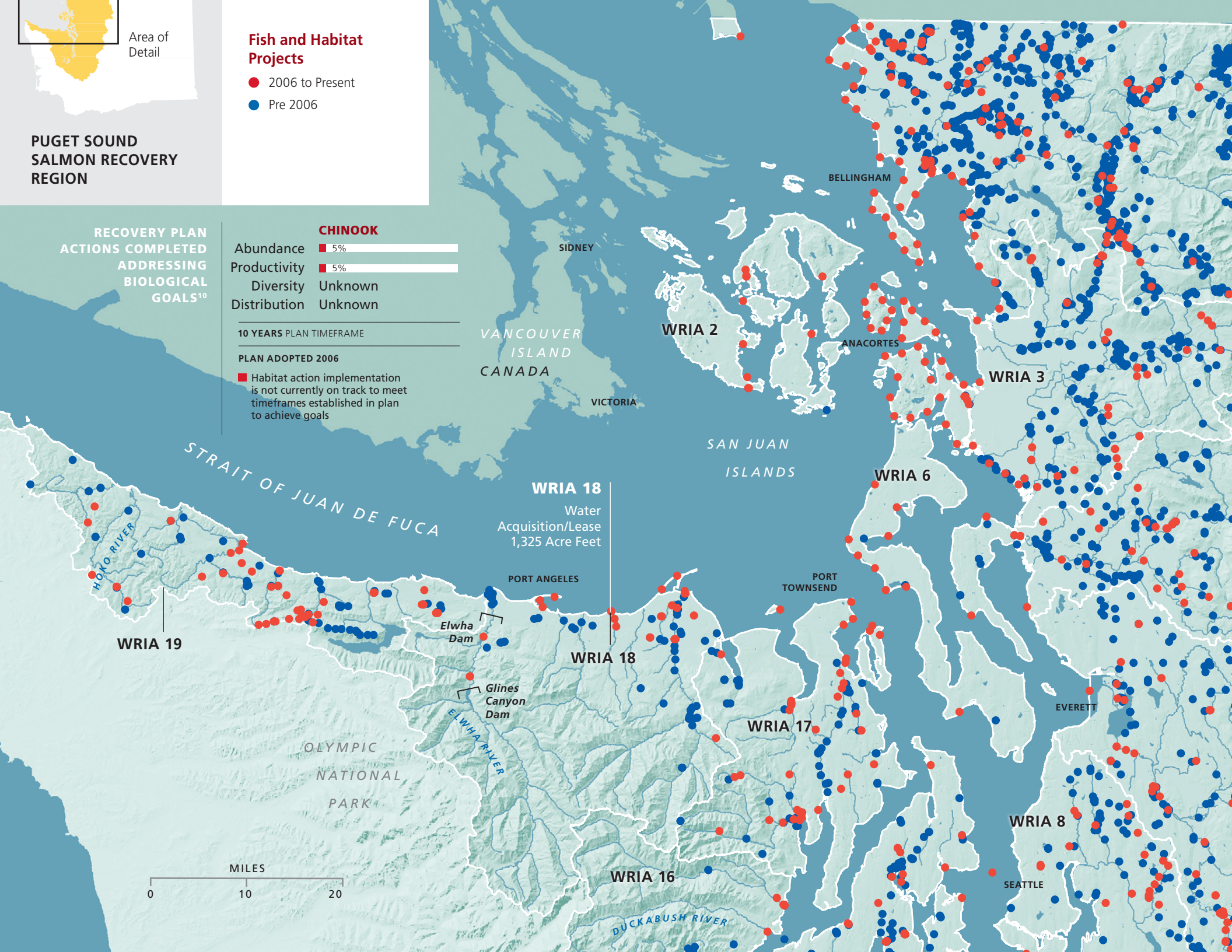
RECOVERY PLAN ACTIONS COMPLETED ADDRESSING BIOLOGICAL GOALS[10]

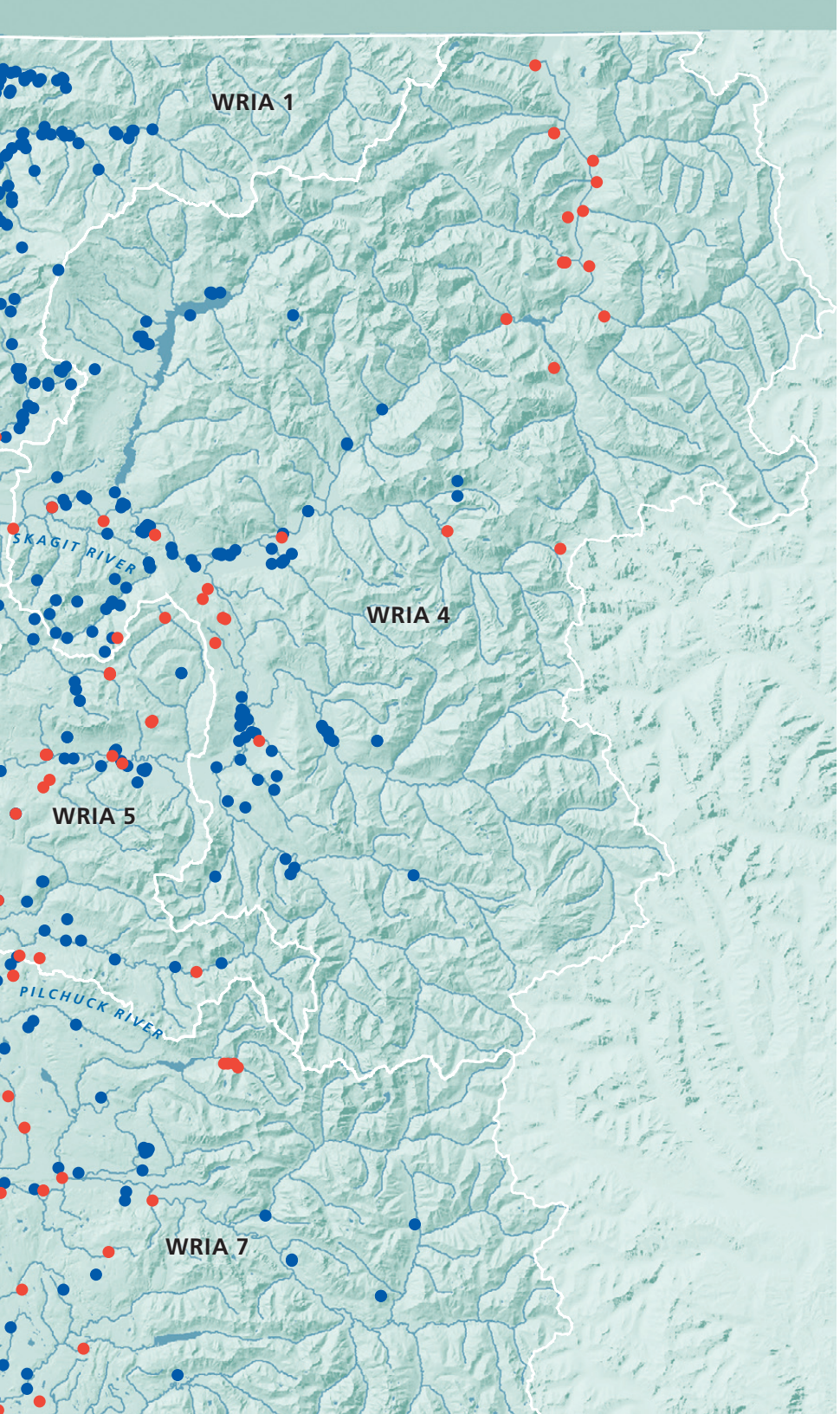
	CHINOOK
Abundance	5%
Productivity	5%
Diversity	Unknown
Distribution	Unknown

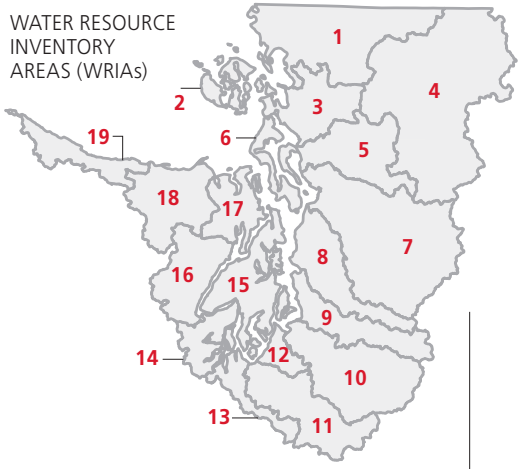
10 YEARS PLAN TIMEFRAME

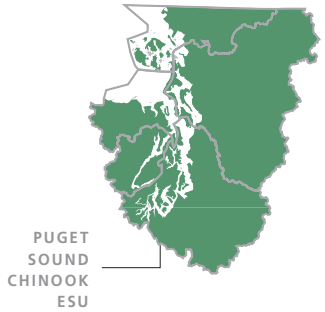
PLAN ADOPTED 2006

- Habitat action implementation is not currently on track to meet timeframes established in plan to achieve goals

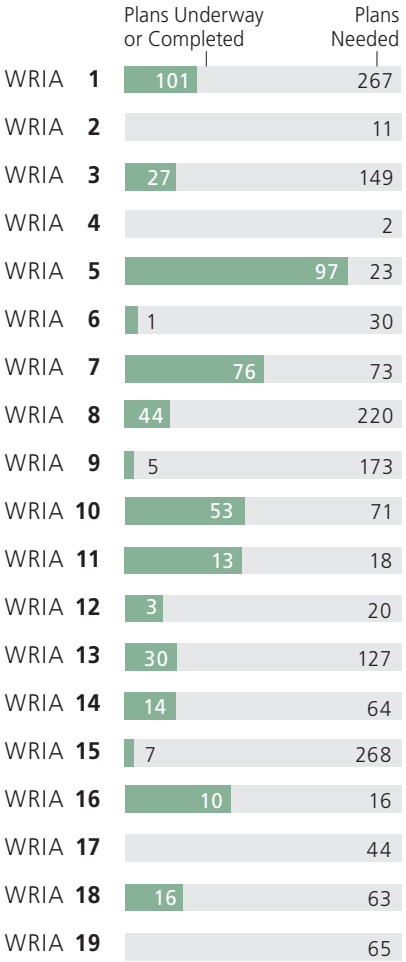






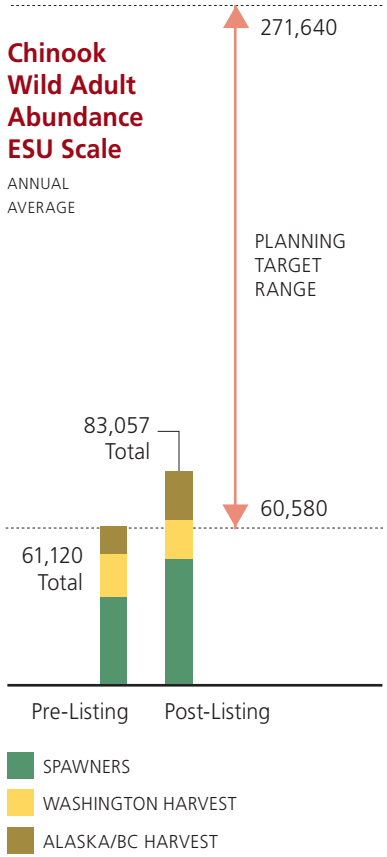


Watershed Cleanup Plans

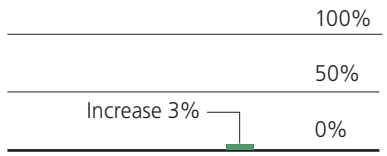


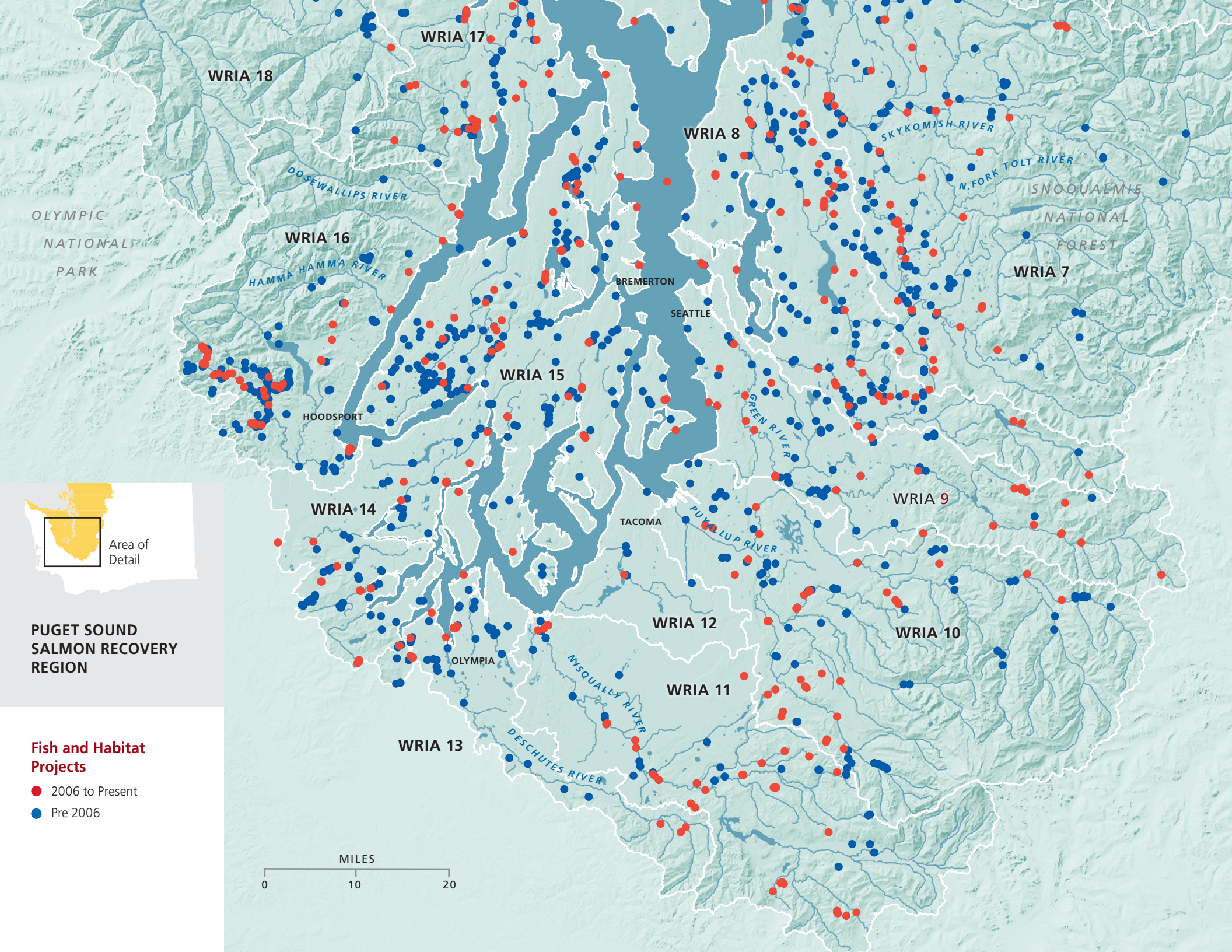
Chinook Wild Adult Abundance ESU Scale

ANNUAL AVERAGE

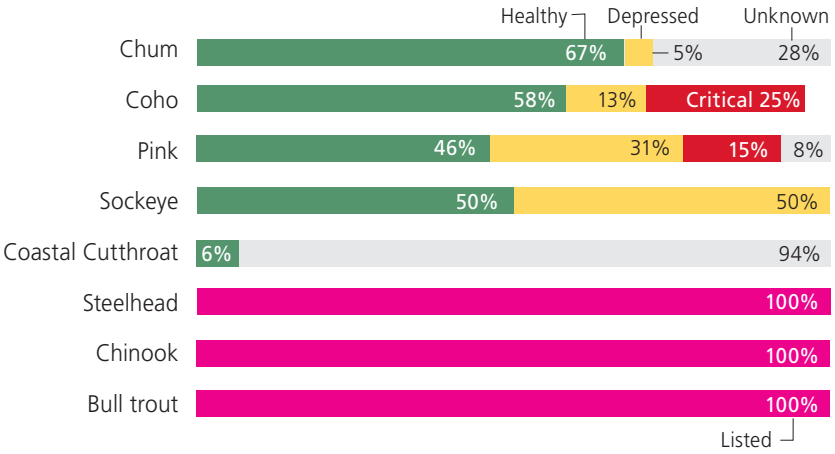


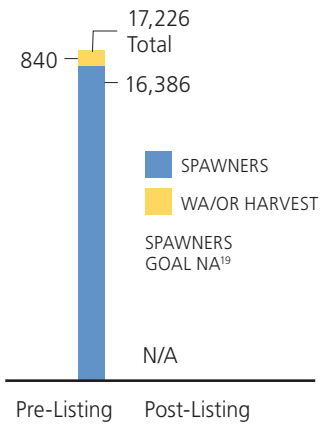
Wild Chinook Juvenile Production Since Listing[11]

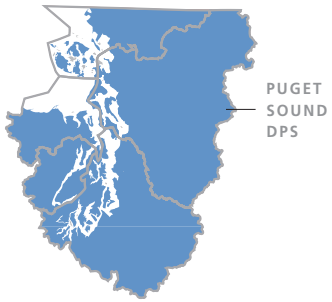



WRIA 17
WRIA 18
WRIA 8
SKYKOMISH RIVER
N. FORK TOLT RIVER
SNOQUALMIE NATIONAL FOREST
DOSEWALLIPS RIVER
OLYMPIC NATIONAL PARK
WRIA 16
HAMMA HAMMA RIVER
BREMERTON
SEATTLE
WRIA 7
WRIA 15
HOODSPORT
GREEN RIVER
WRIA 9
WRIA 14
TACOMA
PUYALLUP RIVER
WRIA 12
WRIA 10
OLYMPIA
NISQUALLY RIVER
WRIA 11
WRIA 13
DESCHUTES RIVER
Area of Detail
PUGET SOUND SALMON RECOVERY REGION
Fish and Habitat Projects
2006 to Present
Pre 2006
MILES
0
10
20

Fish Status

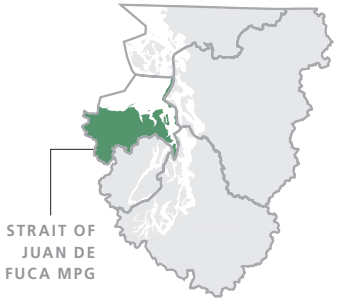






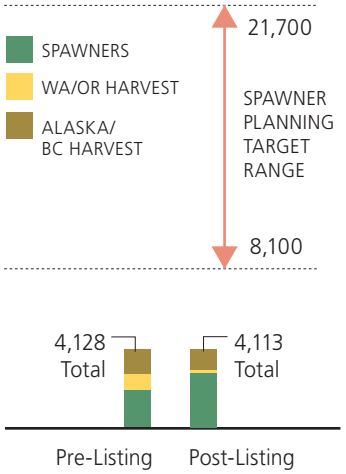
Steelhead Wild Adult Abundance DPS Scale[12]

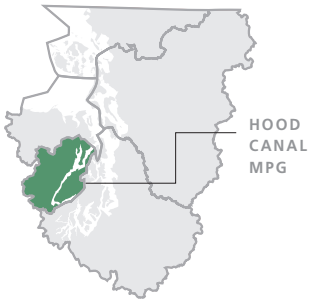
ANNUAL AVERAGE



Chinook Wild Adult Abundance Strait of Juan de Fuca MPG

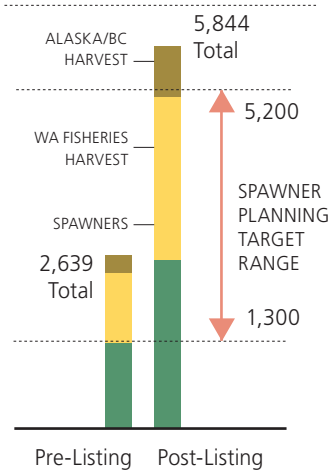
ANNUAL AVERAGE

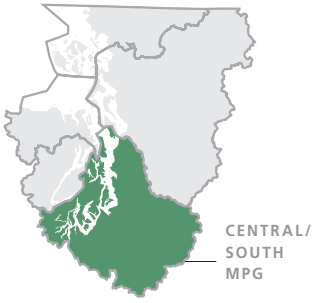




Chinook Wild Adult Abundance Hood Canal MPG

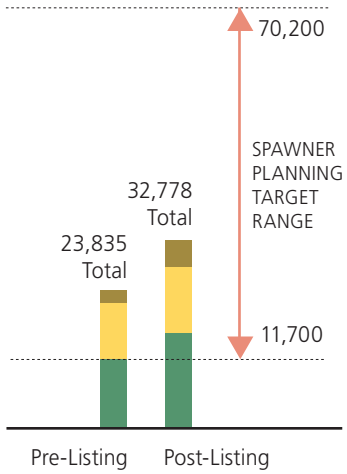
ANNUAL AVERAGE





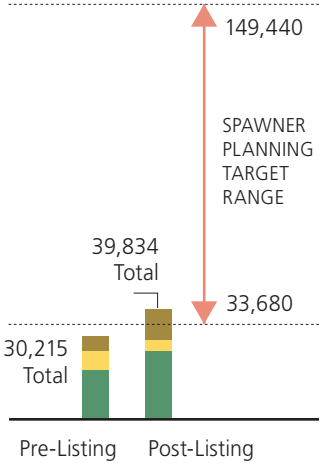
Chinook Wild Adult Abundance Central/South MPG

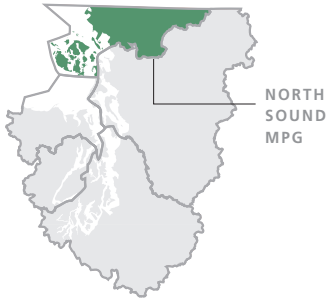
ANNUAL AVERAGE



Chinook Wild Adult Abundance Whidbey Basin MPG

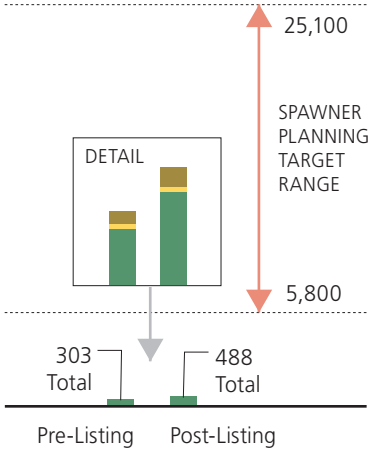
ANNUAL AVERAGE

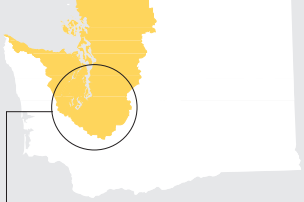




Chinook Wild Adult Abundance North Sound MPG

ANNUAL AVERAGE





PUGET SOUND SALMON RECOVERY REGION

NISQUALLY WATERSHED WRIA 11

WASHINGTON STATE ARCHIVES

OLYMPIA

DUPONT

NISQUALLY INDIAN RESERVATION

LACAMAS CREEK

NISQUALLY RIVER

YELM

WRIA 11

LAKE KAPOWSIN

NISQUALLY WATERSHED

MT. RAINIER NATIONAL PARK

EATONVILLE

La Grande Dam

Alder Dam

ALDER LAKE

ELBE

NISQUALLY RIVER

WRIA 11 Boundary

GIFFORD PINCHOT NATIONAL FOREST

MILES

0 5 10

The 720 square mile Nisqually Watershed has been home to the Nisqually Indian Tribe for thousands of years prior to the earliest European settlement at Ft. Nisqually in 1833. Elevations range from 14,410 feet at the summit of Mt. Rainier to sea level. The watershed is unusual in the Puget Sound area because its environment has remained relatively intact and healthy despite its early settlement and proximity to Olympia and Tacoma. A significant portion of the watershed lies within the Nisqually Indian Reservation, Ft. Lewis Military Reservation, Mt. Rainier National Park, and the Nisqually National Wildlife Refuge. The oldest river council in Washington, the Nisqually River Council, is active in the watershed educating landowners and river users, and integrating history, culture, environment and economy in their message.

SALMON RECOVERY FUNDING BOARD. PHOTO ON RIGHT: CHRIS DRIVDAHL

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous

In Their Own Words

Jim Wilcox, chairman of Wilcox Organic, lives in the Nisqually Valley on the farm his family began in 1909. Asked what had changed in the last 10 years since salmon recovery got a bigger spotlight, he replies, "There is awareness now of what is important, and what makes a difference. Ten years ago, 'save the salmon' meant less fishing. One of the thrilling things is going to Horn Creek and seeing salmon again. My granddad told stories of crowded fish, but they disappeared. **I think more has happened in the last 10 years for salmon than in the previous 90 years. There is a stronger commitment to the land."** Tom Smallwood, mayor of Eatonville and another long-time resident, agrees. "I remember when the river was different—you could sit under the bridge and watch the fish jump; but it stopped. I'm a conservative: I've got to see what something can be, then get back to that. **Things are so much better now than 10 years ago. But, I honestly don't think we have done enough yet. We all have to give up something to gain in the end. We've got to enable people to do the right thing."**

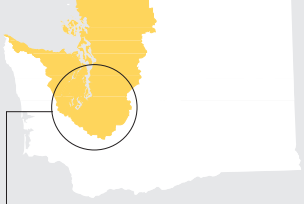
Both men give a great deal of credit to the Nisqually Tribe in their role as coordinators for many of the recovery efforts. As Wilcox says, "We have formed a warm and rewarding partnership with the Nisqually Tribe. We're improving stream habitat, but more important, we have formed personal bonds with the people who live in the valley." Smallwood says, "I have a trust in the Tribe that if they put something in that doesn't work, they'll fix it."

These men are keenly aware of the contribution they make to the bigger picture. Wilcox notes, "What we are doing is not just about fish. It is about a healthy system, about sustainability. Fish populations are variable, but the collateral benefits to the land add value." The family has recently made a decision to go from a commodity producer to become certified organic and sustainable. "We have become very invested to ensure our farm is doing its part to contribute to fish. We did lots of soul searching—is this the right thing to do? As a family, we said, 'Yes.' The conservation themes in our marketing are not just words—we have lived up to our commitments of stewardship." Smallwood offers, **"We're not as far as we need to go. We want to make the whole town of Eatonville 'salmon safe.'** We're changing from a logging town to looking at things differently. Any town can't handle all the mandates we get, but the money for salmon projects is hugely important. We got a grant from the EPA for a low impact development (pervious concrete experiment) —it works! We're now looking at long-term development and sustainable practices.

Mayor Smallwood and Lead Entity Coordinator Jeanette Dorner

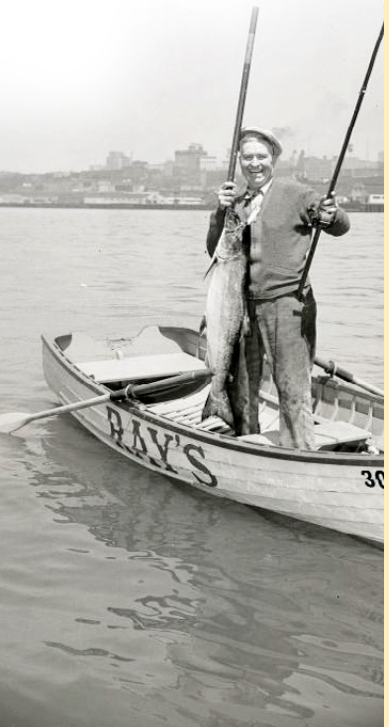
> "What we are doing is not just about fish. It is about a healthy system, about sustainability."
>
> JIM WILCOX

We need to enable people to do the right thing. Our town—all towns—needs to think about how what it is doing impacts everything else. **The people of Eatonville can't fix Puget Sound, but we can fix what we're doing here. You've got to fund us—you gotta help us. Everybody's gotta do their part."**



PUGET SOUND SALMON RECOVERY REGION

NISQUALLY WATERSHED WRIA 11



WASHINGTON STATE ARCHIVES

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
FERC Licensed Facility Yelm Project within anadromous zone	No standards for passage in license. Has upstream ladders and untested downstream facility

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete blockages: 10 Partial blockages: 29
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results		
Wild run size achieved, 5 year average pre- and post listing.	**Chinook**	Pre-listing	3,163
		Post-listing	5,559
	Steelhead[13]	Pre-listing	476
		Post-listing	N/A
Juvenile abundance, post listing mean	**Chinook**	Data not available	
	Steelhead	Data not available	

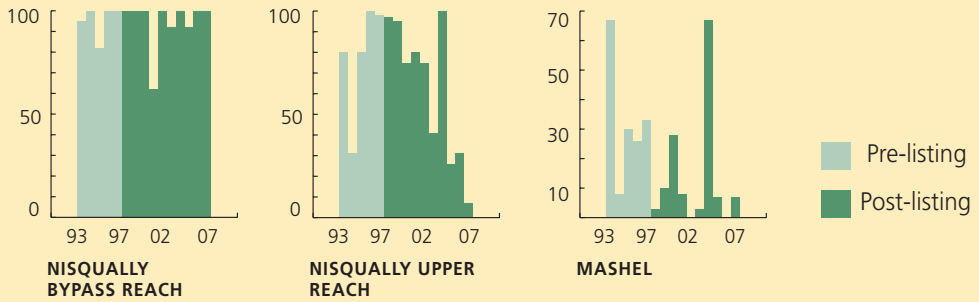
Is water clean enough to support wild salmon?

Indicator		Measured Results: Stream segments meeting standard	Stream segments not meeting standard
Water quality index parameters	Fecal coliform	4	13
	Dissolved oxygen	1	4
	pH	2	
	Temperature	9	11

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Instream flow set	Instream flow rule filed 1981

Percent of time flow met during fish critical period **August 1 to September 30**



Does harvest management protect wild salmon?

Indicator	Measured Results
Wild spawners 5 year average pre- and post listing	**Steelhead**[13] Pre-listing 463; Post-listing N/A; RECOVERY PLAN SPAWNER GOAL N/A **Chinook**[14] Pre-listing 620; Post-listing 1,252; RECOVERY PLAN SPAWNER PLANNING TARGET RANGE 3,400 (high productivity) – 13,000 (low productivity)
Percent of wild salmon run that is harvested, 5 year average pre- and post listing	**Steelhead**[13] Pre-listing 3%; Post-listing N/A **Chinook**[14] Pre-listing 80%; Post-listing 77%

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does the level of hatchery influence on populations meet Hatchery Scientific Group standards?	**Fish populations meeting standard** **Chinook**.....No[14] **Coho**.....No **Steelhead**.....Yes[15] **Chum**.....Unknown

Hood Canal Salmon Recovery Region

PHOTOS: CHRIS DRIVDAHL

The Hood Canal/Eastern Strait of Juan de Fuca summer chum salmon recovery area includes portions of Jefferson, Mason, Clallam, and Kitsap Counties. Hood Canal, a natural, glacier-carved fjord more than 60 miles long, forms the westernmost waterway and margin of the Puget Sound Basin. Estuaries and lower river habitats are primary considerations in recovery of salmon in this region.

PLAN TIMEFRAME
Initial focus is 12 years

ESTIMATED COST
$136.1 million

RECOVERY PLAN IMPLEMENTATION
Three-year implementation schedule identifies $32 million in habitat project needs

STATUS
Summer chum recovery plan adopted by NOAA Fisheries Service 2007. Chinook and steelhead plans covered by Puget Sound Partnership. Federal draft bull trout recovery plan; status review underway

Key Facts

LISTED FISH

Hood Canal summer chum (threatened) 1999
Bull trout (threatened) 1999
Chinook (threatened) 1999
Steelhead (threatened) 2007

MAJOR FACTORS LIMITING RECOVERY

- Degraded floodplain and channel structure
- Degraded nearshore/marine and estuarine conditions
- Riparian degradation and loss of in-river woody material
- Degraded water quality and temperature
- Excessive sediment
- Impaired stream flows

REGIONAL RECOVERY ORGANIZATION

Hood Canal Coordinating Council (summer chum)

FEDERALLY RECOGNIZED TRIBES

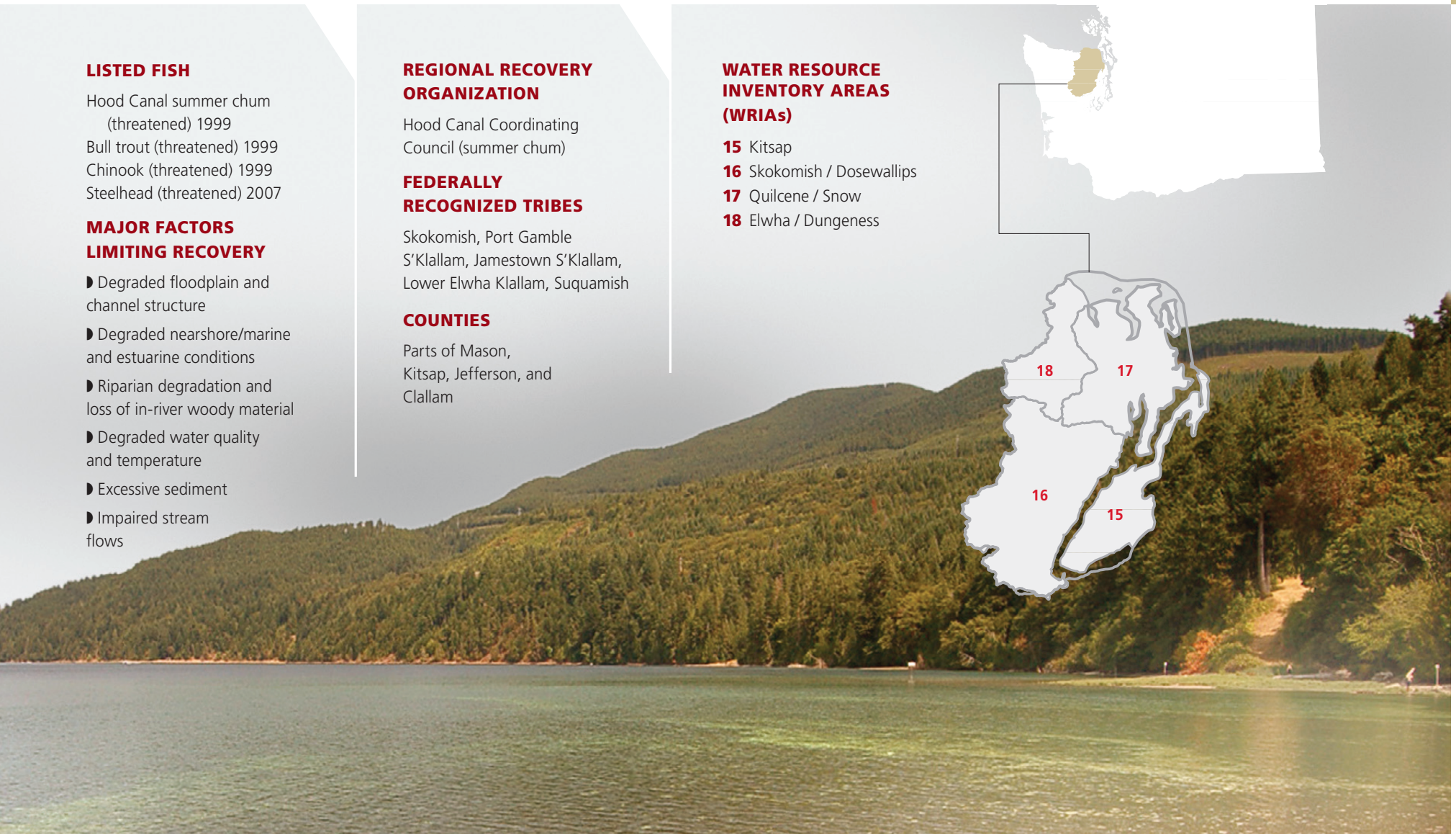
Skokomish, Port Gamble S'Klallam, Jamestown S'Klallam, Lower Elwha Klallam, Suquamish

COUNTIES

Parts of Mason, Kitsap, Jefferson, and Clallam

WATER RESOURCE INVENTORY AREAS (WRIAs)

15 Kitsap
16 Skokomish / Dosewallips
17 Quilcene / Snow
18 Elwha / Dungeness



HOOD CANAL SALMON RECOVERY REGION

RECOVERY PLAN ACTIONS COMPLETED ADDRESSING BIOLOGICAL GOALS

PLAN ADOPTED 2006

- Habitat action implementation is on track to meet timeframes established in plan to achieve goals

SUMMER CHUM

Abundance	15%
Productivity	Unknown
Diversity	25%
Distribution	10%

10 YEARS PLAN TIMEFRAME

MILES 0 5 10

STRAIT OF JUAN DE FUCA

PORT ANGELES

SEQUIM

BLYN

DISCOVERY BAY

PORT TOWNSEND

WHIDBEY ISLAND

PORT LUDLOW

WRIA 17

LITTLE QUILCENE RIVER

WRIA 18

QUILCENE

PORT GAMBLE

PUGET SOUND

OLYMPIC NATIONAL PARK

DOSEWALLIPS RIVER

BRINNON

DABOB BAY

POULSBO

WRIA 16

BAINBRIDGE ISLAND

SEATTLE

BREMERTON

HOOD CANAL

WRIA 15

HAMMA HAMMA RIVER

PORT ORCHARD

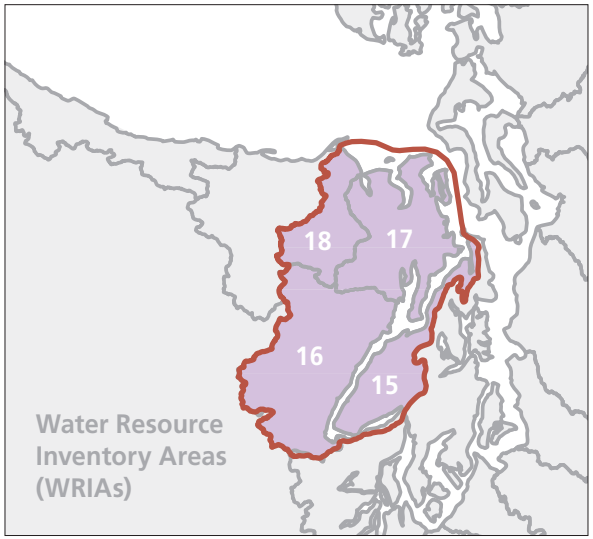
BELFAIR

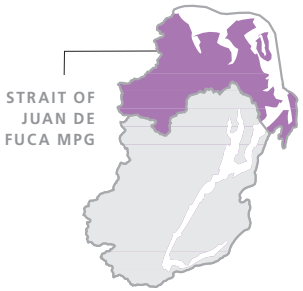
HOODSPORT

Fish Status

Note:
Coho, Chinook, pink, sockeye, steelhead, coastal cutthroat, and bull trout charts can be found on Puget Sound Salmon Recovery Region pages 33 to 37.

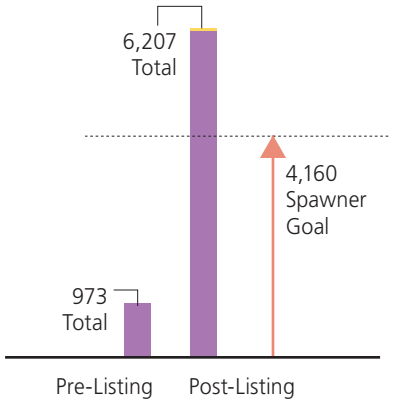
Juvenile production not available.

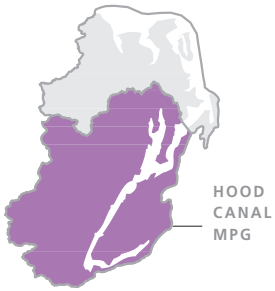




Hood Canal Summer Chum Adult Abundance Strait of Juan de Fuca MPG

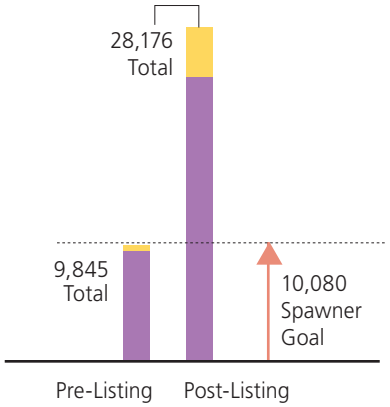
ANNUAL AVERAGE

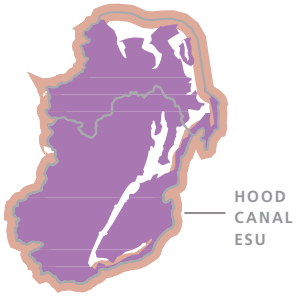




Hood Canal Summer Chum Adult Abundance Hood Canal MPG

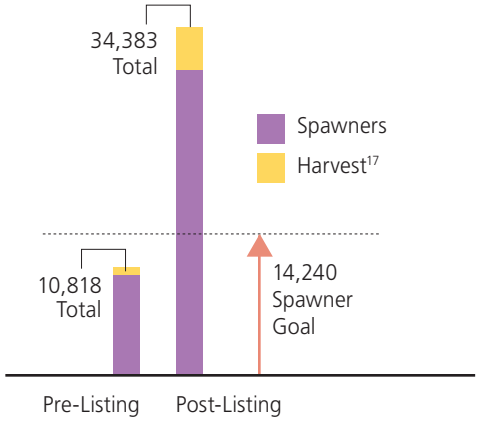
ANNUAL AVERAGE

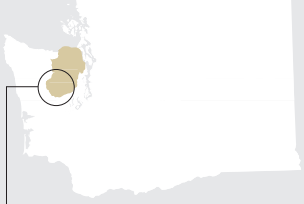




Hood Canal Summer Chum Adult Abundance[16] ESU Scale

ANNUAL AVERAGE





HOOD CANAL SALMON RECOVERY REGION

SKOKOMISH BASIN SKOKOMISH-DOSEWALLIPS WATERSHED WRIA 16

MASON COUNTY HISTORICAL SOCIETY

MILES
0 5

WRIA 16 Boundary

DOSEWALLIPS RIVER

BRINNON

HAMMA HAMMA RIVER

ELDON

LAKE CUSHMAN

Cushman Dam

HOODSPORT

HOOD CANAL

TAHUYA

OLYMPIC NATIONAL PARK

POTLACH

SKOKOMISH RIVER

UNION

WRIA 16 Boundary

SKOKOMISH BASIN

The Skokomish Basin covers approximately 240 square miles from the easternslopes of Olympic National Park at 6,200 feet, to an estuary and delta that are the largest in the Hood Canal basin. Twana people have lived at the mouths of salmon streams and along Hood Canal shorelines for thousands of years. In the middle 1800 European settlers arrived and began homesteading and farming. About the same time, most of the watershed came under timber management by private companies and the federal government. The largest sawmill in the world at the time was located in Seabeck in current Kitsap County. Cushman Hydroelectric Project was constructed on the north fork of the Skokomish River in the 1920, consisting of two blocking dams and power-houses, further contributing to changes in the river's character. Today the river is widely recognized as the most frequently flooded river in the state.

Skokomish Levee Removal

Skokomish River Estuary, Nalley Island, Restoration

SALMON RECOVERY FUNDING BOARD. PHOTOS ON RIGHT: NORTHWEST INDIAN FISHERIES COMMISSION

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous

In Their Own Words

The Skokomish River is the largest single source of fresh water for Hood Canal, and is a crucial link for the recovery of Hood Canal as a whole. But today, it is a river in trouble. Throughout the Valley, homes, farms, and tribal buildings are frequently damaged or lost from flooding. Alex Gouley, Tribal member and habitat manager for the Tribe remarks, **"Degradation to the watershed, salmon, stream flows, wetlands, and water quality has reduced or outright eliminated important cultural, economic, and subsistence opportunities for members of the Tribe."**

Landowners in the Skokomish Valley are frustrated with what they see as a slow pace for fixing flooding problems that are forcing long-time residents to move away from generations of farming. Jason Ragan, a landowner along the river, notes, **"Things have gotten worse in the last 10 years. The river is very sick and has reached the point that I think it is an emergency."** Jayni Kamin, landowner and former Mason County Commissioner, agrees. "Flooding is more frequent, and there is more of it. Residents along the middle section of the Valley have given up." Both say what they need is action.

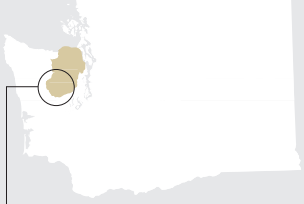
To remedy this, multiple partnerships have sprung up to take action. A General Investigation study of the watershed, sponsored by Mason County and the Skokomish Tribe, is engaging local stakeholders to create a comprehensive plan for ecosystem restoration and flood damage reduction. Another broad-based group—the Skokomish Watershed Action Team—has been implementing upper watershed projects that will stabilize roads and improve forest stewardship. Estuary restoration through a joint agreement by the Tribe, Tacoma, and state and federal agencies is occurring, and Chinook recovery planning is also underway.

Mike Anderson, Skokomish coordinator for the Wilderness Society, understands the frustrations of Valley residents, but sees huge progress possible. "Our troubled watershed was once so productive in farming and salmon and forestry, and now we are in crisis. Farmers can't farm, tribes can't fish. **But, we have a potential to turn this around. So, it is an inspirational place to try to make a difference."**

With an eye toward the future, Gouley comments, "The framework of community partnership restoration helps provide the technical and expert assistance that creates an adaptive approach for decision making, monitoring and evaluation of results of restoration efforts, and maintains a long-term perspective for success."

Skokomish Tribal Chairman David Herrera pushes the button that opens Cushman Dam, allowing increased flows into the North Fork Skokomish River.

> "The framework of community partnership restoration … maintains a long-term perspective for success."
>
> ALEX GOULEY



HOOD CANAL SALMON RECOVERY REGION

SKOKOMISH BASIN SKOKOMISH-DOSEWALLIPS WATERSHED WRIA 16

MASON COUNTY HISTORICAL SOCIETY

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
FERC Licensed Facility Cushman Dam	Currently does not pass fish but is in relicense process. Passage standards and monitoring expected in new license after 2009.
FERC Licensed Facility Kokanee Dam	Currently does not pass fish but is in relicense process. Passage standards and monitoring expected in new license after 2009.

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete blockages: 8; Partial blockages: 14
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results
Run size achieved, 5 year average pre- and post listing. Wild component of Hood Canal Major Population Group.	**Summer Chum** Pre-listing: 9,845; Post-listing: 28,176
Juvenile abundance, post listing mean	Data not available

Is water clean enough to support wild salmon?

Indicator	Measured Results		
Water quality index parameters	Fecal coliform	9	10
	Dissolved oxygen		7
	pH	5	
	Temperature	16	9

Stream segments meeting standard

Stream segments not meeting standard

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Instream flow set	No instream flow rule
Percent of time flow met during fish critical period **August 1 to September 30**	N/A

Does harvest management protect wild salmon?

Indicator	Measured Results
Wild spawners 5 year average pre- and post listing (Hood Canal MPG scale)	**Summer Chum** Pre-listing 9,409; Post listing 23,890; RECOVERY PLAN ESCAPEMENT GOAL 10,080
Percent of wild salmon run that is harvested, 5 year average pre- and post listing (Hood Canal MPG scale)	**Summer Chum** Pre-listing 4%; Post listing 15%

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does the level of hatchery influence on populations meet Hatchery Scientific Review Group standards?	**Fish populations meeting standard** **Chinook**..... No **Coho**..... Yes **Steelhead**..... Yes **Chum**..... No

Washington Coastal Salmon Recovery Region

PHOTOS: CHRIS DRIVDAHL

The Washington Coastal Salmon Recovery Region includes all Washington river basins flowing directly into the Pacific Ocean from Cape Flattery to Cape Disappointment. Watersheds in the region are heavily forested, lightly populated except for parts of the Chehalis River Basin, and have economies that rely upon timber, agriculture and recreational activities. A new regional organization —Washington Coast Sustainable Salmon Partnership—has formed to provide a coordinated and broad based approach for addressing salmon protection and recovery.

PLAN TIMEFRAME
10-12 years for Lake Ozette sockeye

ESTIMATED COST
$46 million

RECOVERY PLAN IMPLEMENTATION
$19.26 million in habitat project needs have been identified by lead entities

STATUS
Lake Ozette sockeye draft recovery plan issued by NOAA Fisheries Service 2008. Federal draft bull trout recovery plan; status review underway

Key Facts

LISTED FISH

Bull trout (threatened) 1999
Lake Ozette Sockeye (threatened) 1999

REGIONAL RECOVERY ORGANIZATION

Washington Coast Sustainable Salmon Partnership

FEDERALLY RECOGNIZED TRIBES

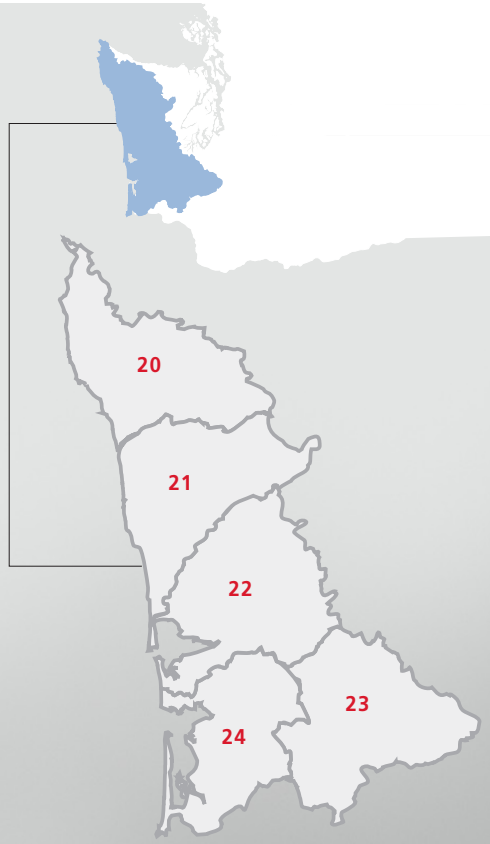
Makah, Hoh, Quileute, Quinault, Chehalis, Shoalwater Bay

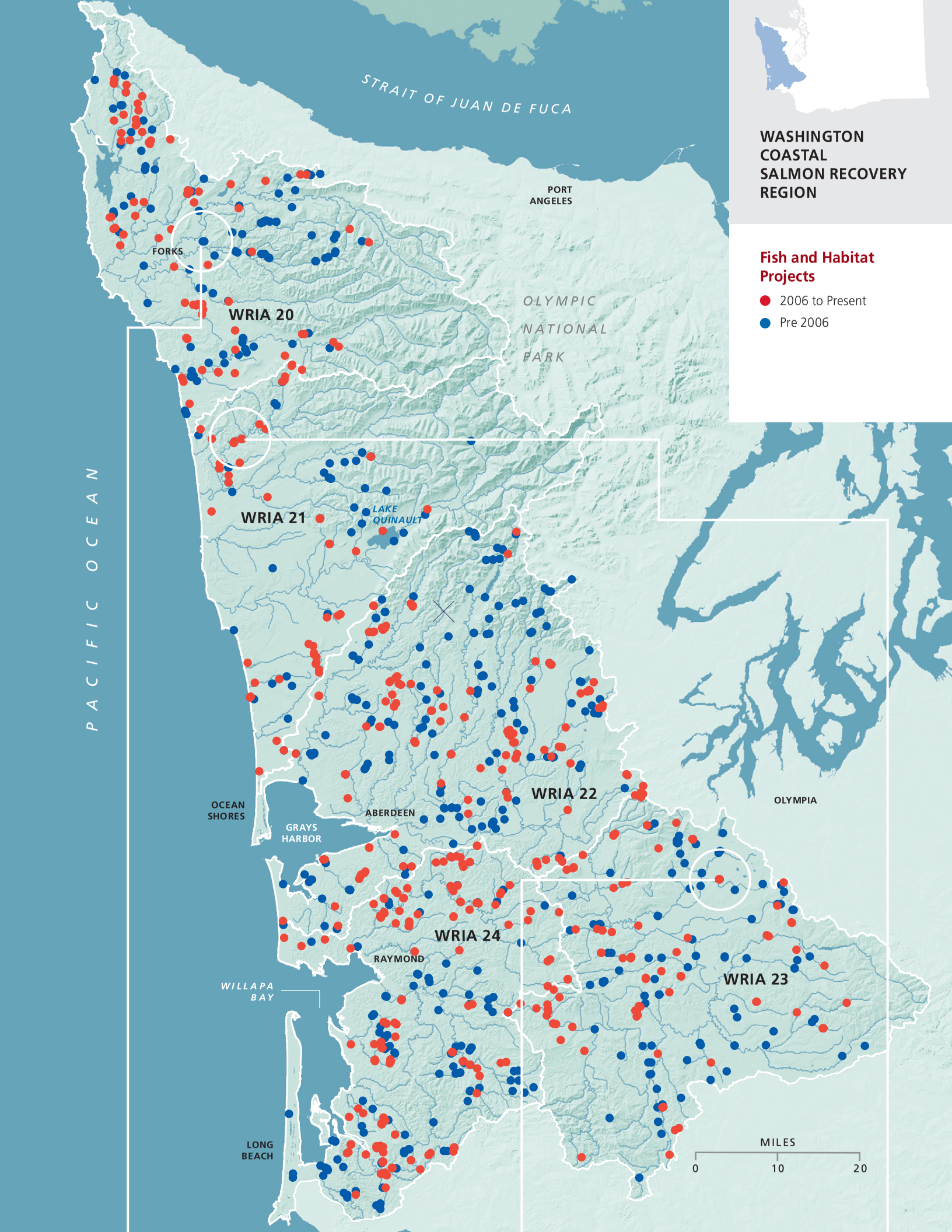
COUNTIES

Grays Harbor, and portions of Clallam, Jefferson, Lewis, Mason, Pacific, and Thurston

WATER RESOURCE INVENTORY AREAS (WRIAs)

20 Soleduc
21 Queets / Quinault
22 Lower Chehalis
23 Upper Chehalis
24 Willapa



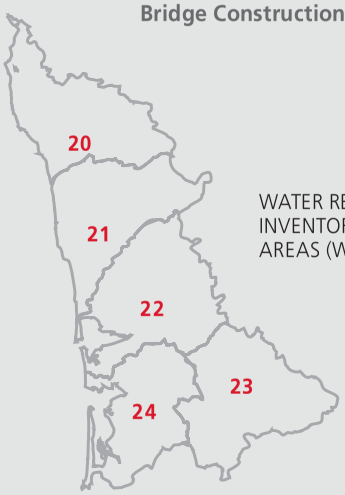

WASHINGTON COASTAL SALMON RECOVERY REGION
Fish and Habitat Projects
2006 to Present
Pre 2006
STRAIT OF JUAN DE FUCA
PORT ANGELES
FORKS
WRIA 20
OLYMPIC NATIONAL PARK
WRIA 21
LAKE QUINAULT
PACIFIC OCEAN
WRIA 22
OLYMPIA
OCEAN SHORES
ABERDEEN
GRAYS HARBOR
WRIA 24
RAYMOND
WILLAPA BAY
WRIA 23
LONG BEACH
MILES
0
10
20

Tassel Creek
Bridge Construction

Vance Creek
Riparian Planting

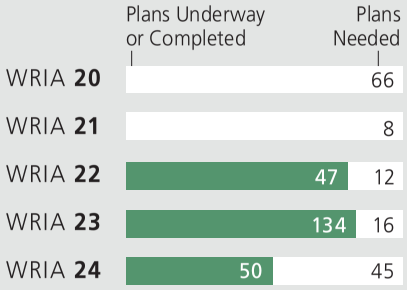
Shale Creek Fish
Passage Restoration

COAST PHOTO: CHRIS DRIVDAHL. PROJECTS PHOTOS: SALMON RECOVERY FUNDING BOARD

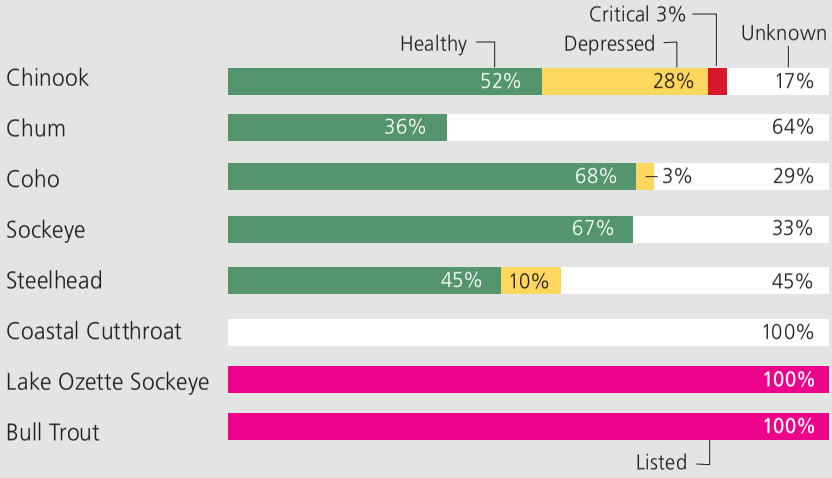


WATER RESOURCE INVENTORY AREAS (WRIAs)

Watershed Cleanup Plans



Fish Status



Lower Columbia Salmon Recovery Region

PHOTOS: CHRIS DRIVDAHL

The Lower Columbia Salmon Recovery region extends from the coast to the Columbia Gorge, and is mainly forest and rural in nature. Human population centers are mainly along the Interstate-5 corridor and its intersection with the Columbia River. The region encompasses 5,700 square miles. It includes the entire Washington portion of the mainstem and estuary of the lower Columbia River, as well as 18 major and a number of lesser tributary watersheds (the White Salmon basin was omitted at the request of Klickitat County). In all, the tributaries total more than 1,700 river miles.

PLAN TIMEFRAME
25 years

ESTIMATED COST
$545 million

RECOVERY PLAN IMPLEMENTATION
Six-year implementation schedule identifies $19.14 million in habitat project needs

STATUS
Washington portions of chum, Chinook, and steelhead adopted as interim recovery plan by NOAA Fisheries Service 2006. Washington portions of coho adopted as interim recovery plan by NOAA Fisheries Service 2007. Federal draft bull trout recovery plan; status review underway

Key Facts

LISTED FISH

Chinook (threatened) 1999
Chum (threatened) 1999
Coho (threatened) 2005
Steelhead (threatened) 1998
Bull trout (threatened) 1998

MAJOR FACTORS LIMITING RECOVERY

- Degraded floodplain and channel structure
- Degraded nearshore/marine and estuarine conditions
- Riparian degradation and loss of in-river woody material
- Degraded water quality and temperature
- Impaired instream flows
- Barriers to fish passage
- Sediment
- Hatchery impacts
- Harvest impacts
- Predator harassment of spawning fish

REGIONAL RECOVERY ORGANIZATION

Lower Columbia Fish Recovery Board

FEDERALLY RECOGNIZED TRIBES

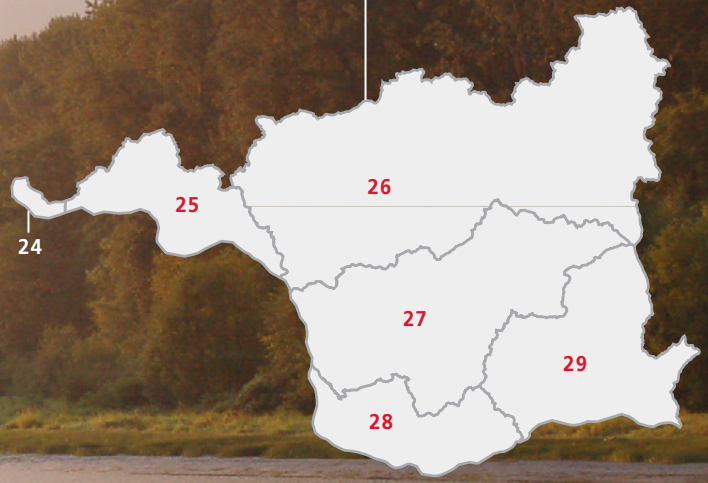
Cowlitz Tribe

COUNTIES

Clark, Cowlitz, Lewis, Skamania, and Wahkiakum, and portions of Pacific and Klickitat

WATER RESOURCE INVENTORY AREAS (WRIAs)

24 Willapa (Chinook and Wallicut rivers)
25 Grays / Elokoman
26 Cowlitz
27 Lewis
28 Salmon-Washougal
29 Wind / White Salmon

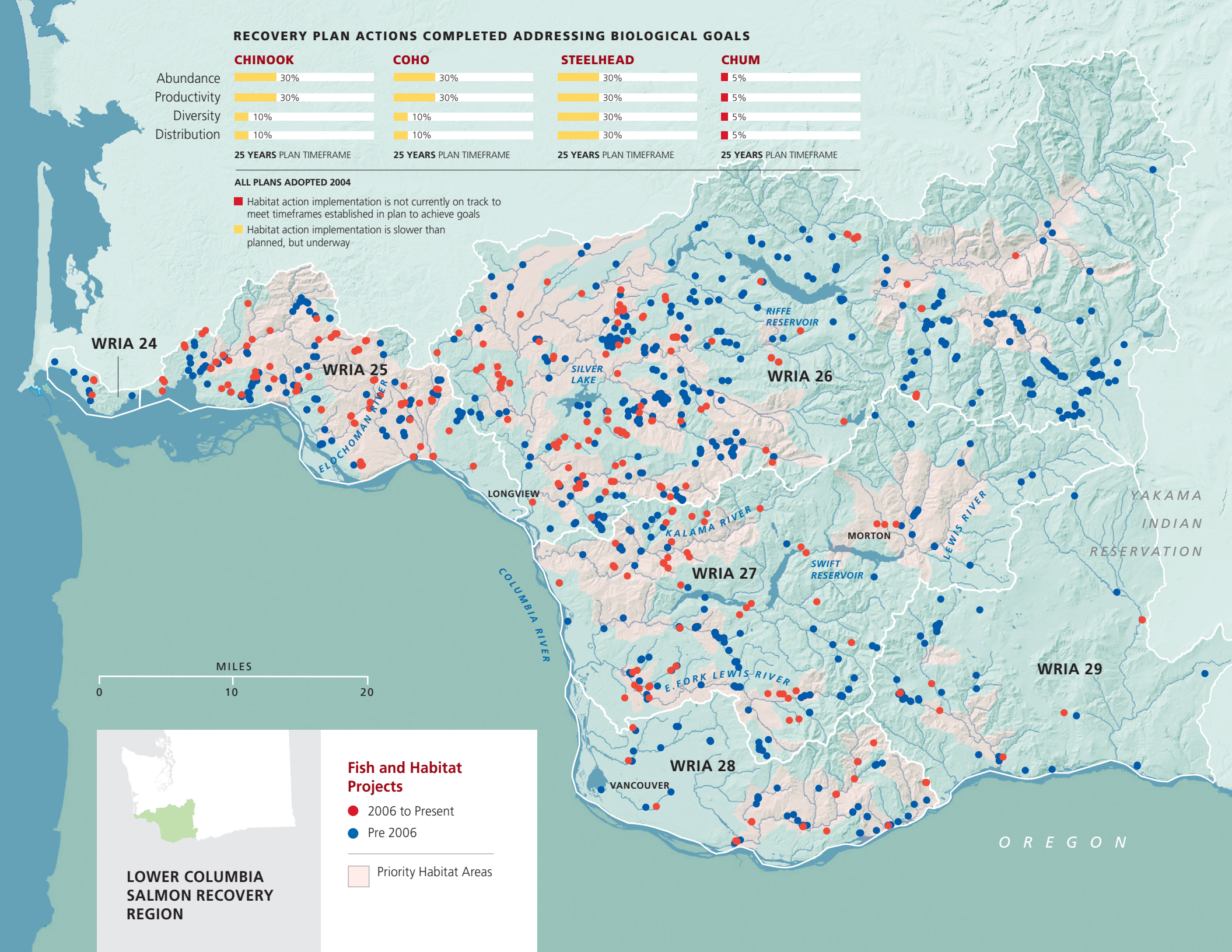


RECOVERY PLAN ACTIONS COMPLETED ADDRESSING BIOLOGICAL GOALS

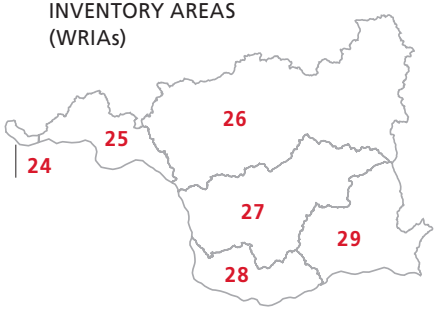
	CHINOOK	COHO	STEELHEAD	CHUM
Abundance	30%	30%	30%	5%
Productivity	30%	30%	30%	5%
Diversity	10%	10%	30%	5%
Distribution	10%	10%	30%	5%
	25 YEARS PLAN TIMEFRAME	**25 YEARS** PLAN TIMEFRAME	**25 YEARS** PLAN TIMEFRAME	**25 YEARS** PLAN TIMEFRAME

ALL PLANS ADOPTED 2004

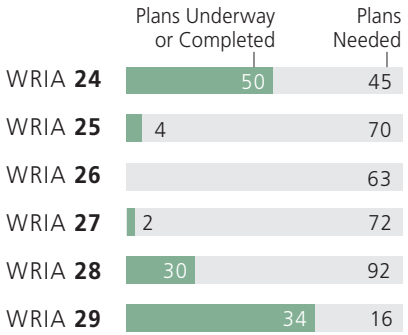
- Habitat action implementation is not currently on track to meet timeframes established in plan to achieve goals
- Habitat action implementation is slower than planned, but underway



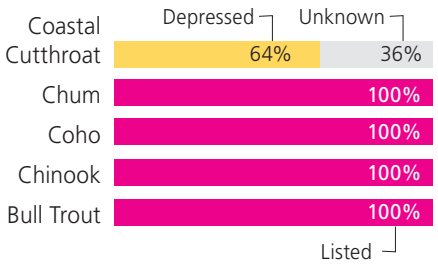
WATER RESOURCE INVENTORY AREAS (WRIAs)

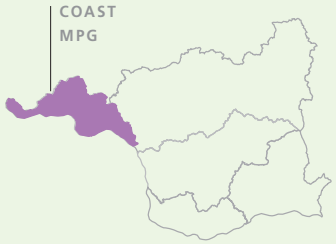


Watershed Cleanup Plans



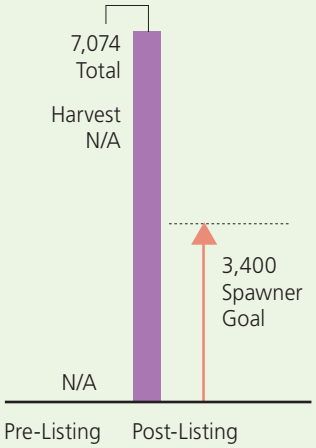
Fish Status

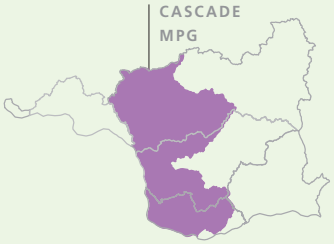




Chum Wild Adult Abundance Coast MPG

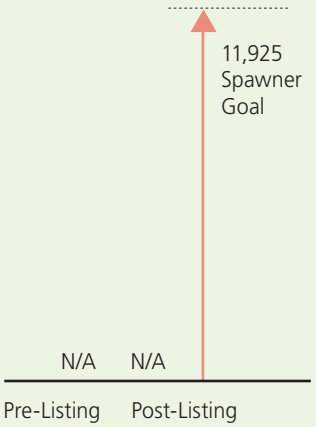
ANNUAL AVERAGE 04-07

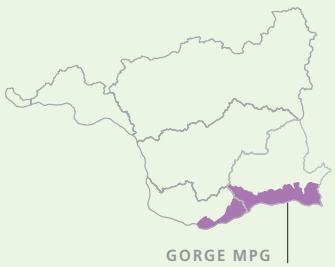




Chum Wild Adult Abundance Cascade MPG

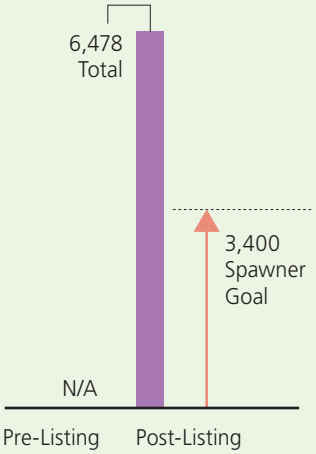
ANNUAL AVERAGE 04-07

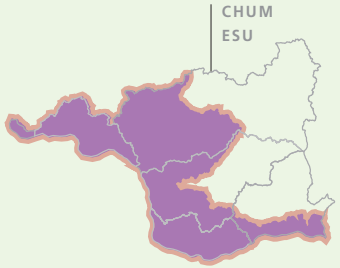




Chum Wild Adult Abundance Gorge MPG

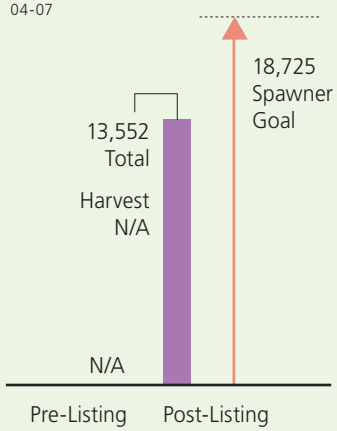
ANNUAL AVERAGE 02-07





Chum Wild Adult Abundance[20] ESU Scale

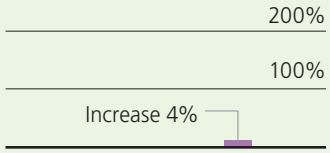
ANNUAL AVERAGE 04-07

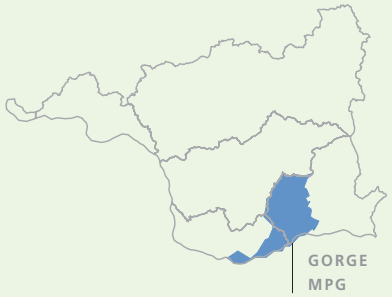


Spawners[18]

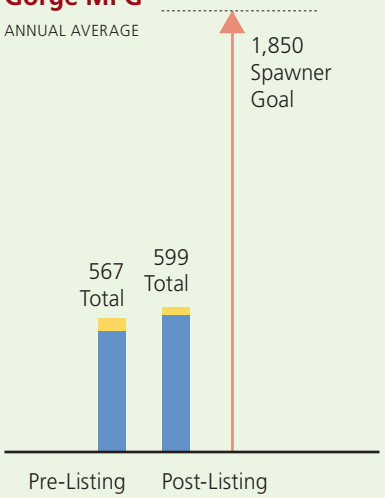
WA/OR Harvest[19]

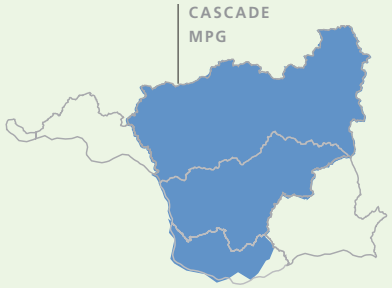
Chum Wild Juvenile Production[21] Since Listing



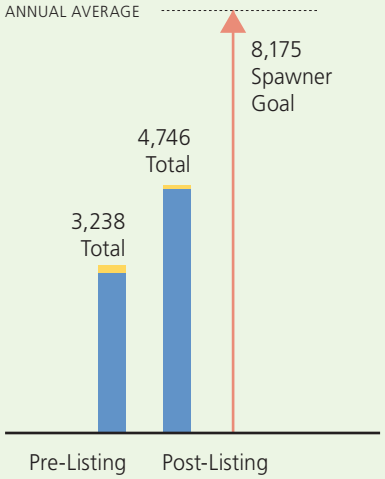


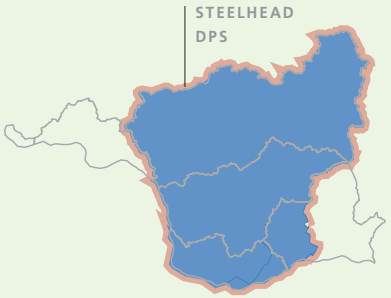
Steelhead Adult Abundance Gorge MPG



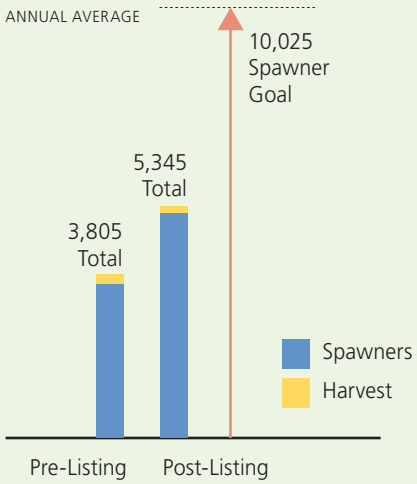


Steelhead Adult Abundance Cascade MPG

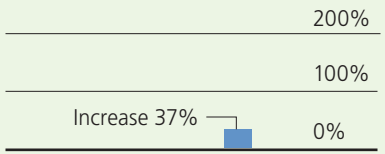




Steelhead Adult Abundance DPS Scale



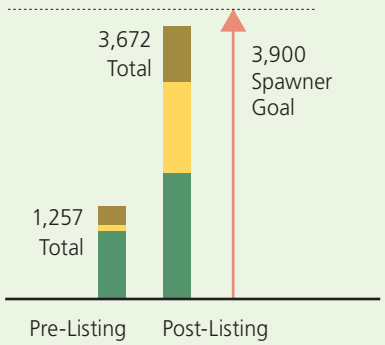
Steelhead Juvenile Production[22] Since Listing

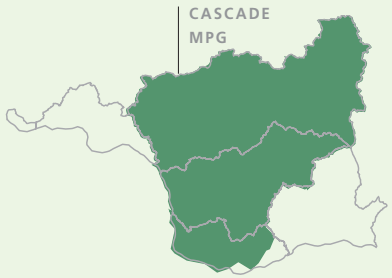


CHRIS DRIVDAHL

Chinook
Wild Adult Abundance
Coast MPG

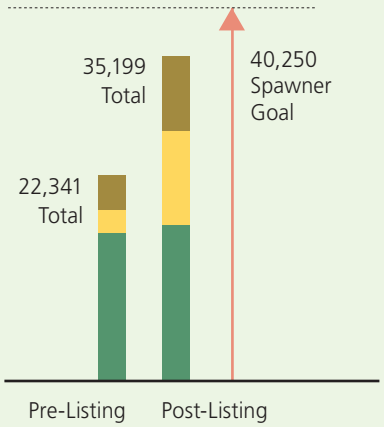
ANNUAL AVERAGE

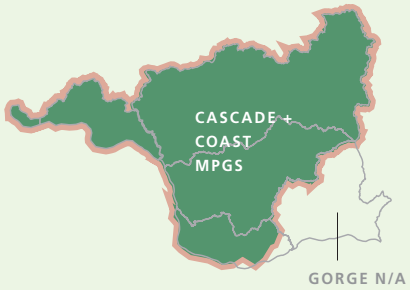




Chinook
Wild Adult Abundance
Cascade MPG

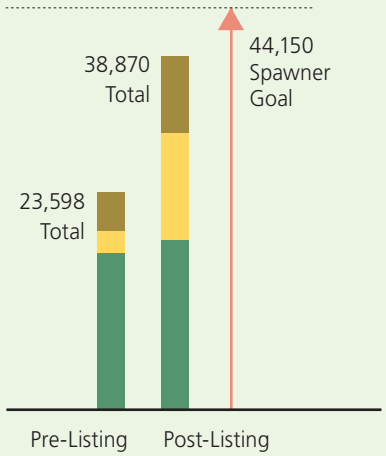
ANNUAL AVERAGE





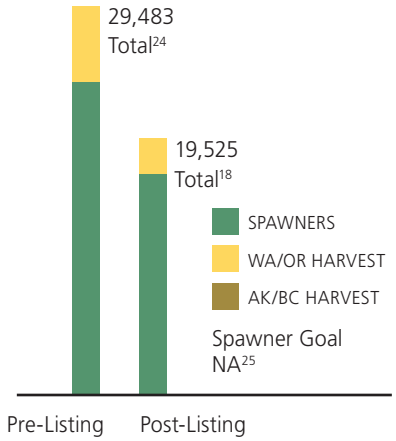
Chinook
Wild Adult Abundance
Cascade + Coast MPGs

ANNUAL AVERAGE



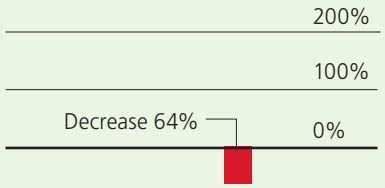
Coho
Wild Adult Abundance
Coast + Cascade MPGs

ANNUAL AVERAGE



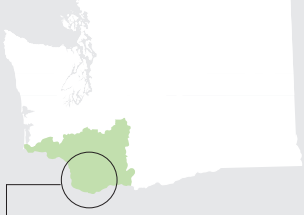
SPAWNERS
WA/OR HARVEST
AK/BC HARVEST

Chinook
Wild Juvenile Production
Since Listing[23]

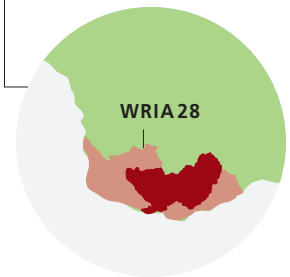


Coho
Wild Juvenile Production
Since Listing

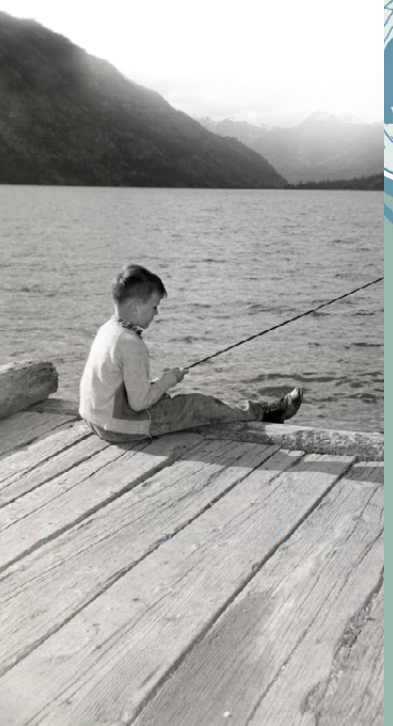
Data not available



LOWER COLUMBIA SALMON RECOVERY REGION



WASHOUGAL BASIN SALMON-WASHOUGAL WATERSHED WRIA 28



The Washougal River is the largest and most productive river basin in Water Resource Inventory Area 28, an area covering about 494 square miles in southwest Washington; the Washougal portion is roughly 240 square miles. Elevations range from 3,200 feet in the Cascade foothills of Skamania County to 20 feet at the city of Camas on the Columbia River. Although there is a mixture of ownerships in the basin, private holdings account for the highest percentage. The area has been called the "Cradle of Pacific Northwest History" because of its strategic location and locale for important events: in early times, Chinook Indians plied the waters fishing and trading; Lewis and Clark explored in 1805-6; the British Hudson Bay Company established Ft. Vancouver in 1825; and Clark County became the first political subdivision of the new Washington Territory in 1853. The region soon developed agriculture, lumber, fishing, shipbuilding, and aluminum as its main industries.

GIFFORD PINCHOT NATIONAL FOREST

WRIA 28 Boundary

TRAPPER CREEK WILDERNESS

WRIA 28 Boundary

BATTLE GROUND

E. FORK LEWIS RIVER

WASHOUGAL BASIN

WRIA 28

VANCOUVER

WASHOUGAL RIVER

CAMAS

WASHOUGAL

COLUMBIA RIVER

REED ISLAND

COLUMBIA RIVER

OREGON

MILES

0 5

WASHINGTON STATE ARCHIVES

Stauffer Dairy Restoration

Ostenson Engineered Log Jam

Lower Washougal River, Camas Park

SALMON RECOVERY FUNDING BOARD. RIGHT: CHRIS DRIVDAHL

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous

In Their Own Words

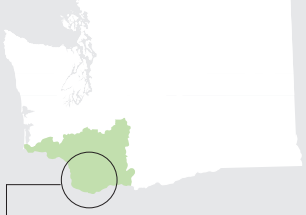
The residents of the Washougal River valley see first hand benefits to working with local recovery groups, such as the local Regional Fisheries Enhancement Group. Monte Brachmann, Public Works Director for the city of Camas, comments, "We've had a lot of help from the RFEG and the Lower Columbia Fish Recovery Board. **It helps to not have these folks part of government because they can work to get through the bureaucracy. They help facilitate different approaches and have a "can do" attitude rather than a "can't do."** They really help us work on landowner partnerships." James Hodges, a public works project manager for the city agrees. **"We are paying closer attention to fish because of these groups.** An example is that we often build bridges now. They cost more, but they are better for fish. But if you stay out of the water, they don't require a Corps of Engineers' permit, and that saves us time and money."

With the help of these groups, landowners are opening their properties to new ideas and actively experimenting with approaches that might have made them uncomfortable in earlier times. Dr. Gary Ostenson, a local dentist, remembers "Thirty years ago, I asked myself, 'How am I going to get fish into these places again? I've long wanted to do something, and now (through the work of the Lower Columbia Board and the RFEG) I have the money and the folks to help do it. For too long, we had ideas and no money." Gary Stauffer, owner of a dairy, says, **"When we first started talking about this project (an innovative log stabilization project on a creek running through his dairy), I wanted to move the river. Tony (Meyer, of the RFEG) didn't like that. I was concerned that his plan wouldn't stay put. But, we had a big flood and it's still here and fish are using it."**

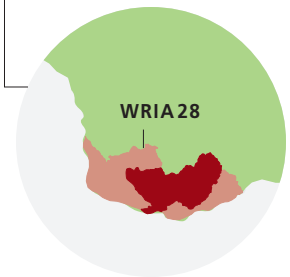
Harry Barber, member of the local RFEG and citizen representative to the Salmon Recovery Funding Board, isn't a bit surprised by what folks in his area are saying. **"The people working on salmon recovery are passionate, innovative, creative, knowledgeable. They just go out and get the job done."** He worries that we haven't made as much progress on protecting some fish populations from over harvest, though. "If we don't take a more aggressive stand on harvest of fish, then we have an uphill battle. If we fix that, it will accelerate the return on our investments from the habitat work."

Yet, they all agree that excellent work is being done, and that the work could never have happened without their partnerships. Brachman lauds the additive effects of their efforts: "We couldn't have done any of this without partnerships. The river is key for our citizens, and what we are doing provides broad public opportunities for education and recreation." Hodges enthusiastically nods. "It's not just water going through gravel. There are benefits for everyone. And **I'm not a tree hugger, but we need to be good stewards of what we have."**

> "I've long wanted to do something, and now through the work of the Lower Columbia Board and the RFEG I have the money and the folks to help do it."
>
> **DR. GARY OSTENSON**



LOWER COLUMBIA SALMON RECOVERY REGION



WASHOUGAL BASIN SALMON-WASHOUGAL WATERSHED WRIA 28

JOHN FLETCHER FORD. UNIVERSITY OF WASHINGTON DIGITAL COLLECTION

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
No FERC Licensed Projects	N/A

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete blockages: 12; Partial blockages: 21
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results		
Run size achieved, 5 year average pre- and post listing. Wild component of Cascade Major Population Group.	**Chinook**	Pre-listing	22,341
		Post-listing	35,199
	Steelhead	Pre-listing	3,238
		Post-listing	4,746
	Coho (Coast and Cascade MPGs)	Pre-listing	29,483
		Post-listing	19,524
	Chum	Data not available	
Juvenile abundance, post listing mean	**Chinook:** Data not available **Steelhead:** Data not available	**Coho:** Data not available **Chum:** Data not available	

Is water clean enough to support wild salmon?

Indicator	Measured Results		
Water quality index parameters	Fecal coliform	35	
	Dissolved oxygen	27	
	pH	5	9
	Temperature	3	29

Stream segments meeting standard

Stream segments not meeting standard

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Instream flow set	No instream stream flow rule established
Percent of time flow met during fish critical period **August 1 to September 30**	N/A

Does harvest management protect wild salmon?

Indicator	Measured Results
Wild spawners 5 year average pre- and post listing average (Cascade MPG scale)	**Steelhead** Pre-listing 3,078; Post-listing 4,657; 8,175 RECOVERY PLAN SPAWNER ESCAPEMENT GOAL **Chinook** Pre-listing 16,031; Post-listing 16,846; 40,250 RECOVERY PLAN SPAWNER ESCAPEMENT GOAL **Coho** (Coast and Cascade MPGs) Pre-listing 23,790; Post-listing 16,605; RECOVERY PLAN SPAWNER GOAL N/A **Chum** Data not available
Percent of wild salmon run that is harvested, 5 year average pre- and post listing (Cascade MPG scale)	**Steelhead** Pre-listing 5%; Post listing 2% **Chinook** Pre-listing 28%; Post listing 52% **Coho** (Coast and Cascade MPGs) Pre-listing 19%; Post listing 15% **Chum** Data not available

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does the level of hatchery influence on populations meet Hatchery Scientific Review Group standards?	**Fish populations meeting standard** **Chinook**..... No **Coho**..... No **Steelhead**.. Yes **Chum**..... Yes

Lower Columbia Estuary

All salmon and steelhead populations throughout the Columbia Basin are dependent upon how well the estuary functions. All use the estuary to migrate to and from their home rivers to feed, grow, and avoid predators along the way.

To achieve success, Washington's salmon and steelhead recovery efforts in the entire Columbia Basin have a stake in the health of the estuary. As a result, there are a number of important estuary protection and restoration efforts underway. In watersheds in the estuary area, implementation of the Lower Columbia Fish Recovery Board's plan directly benefits the estuary. More recently, the proposed NOAA Fisheries' Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead, the estuary-related components of the Biological Opinion for the Federal Columbia River Power System, and the estuary components of the Northwest Power and Conservation Council's Fish and Wildlife Program will all help improve estuary conditions.

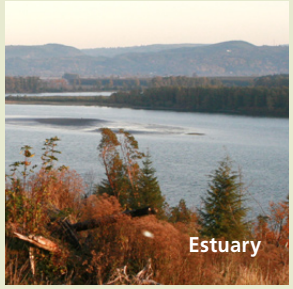
Finally, the Lower Columbia River Estuary Partnership (LCREP) is actively implementing a comprehensive plan. LCREP integrates estuary work of Oregon and Washington, aiming at making on-the-ground improvements that increase habitat and its functions by restoring wetlands, improving land use practices to protect ecosystems by reducing runoff of toxic and other pollutants, providing informational and volunteer programs to all citizens, and supporting monitoring.

THE ESTUARY IS VERY IMPORTANT TO COLUMBIA RIVER SALMON AND STEELHEAD

- More than 150 salmon and steelhead populations in 13 ESUs use and pass through the estuary to complete their life cycles
- In 2006, about 168 million juvenile salmon entered the estuary on their way to the ocean
- In recent years, about 1.7 million adults pass through the estuary on their upstream spawning migrations annually
- Juvenile and adult salmon and steelhead undergo dramatic physiological changes in the estuary as they transition to and from saltwater
- Approximately 2.5 million people live in the vicinity of the estuary
- The estuary extends 146 miles from the mouth to Bonneville Dam
- Saltwater intrudes about 23 miles up from the mouth
- The total acreage of the estuary is 20% smaller than it was when Lewis and Clark camped along the shores, due primarily to dike and filling practices used to convert floodplain areas to other uses for people

To achieve success, Washington's salmon and steelhead recovery efforts in the entire Columbia Basin have a stake in the health of the estuary.

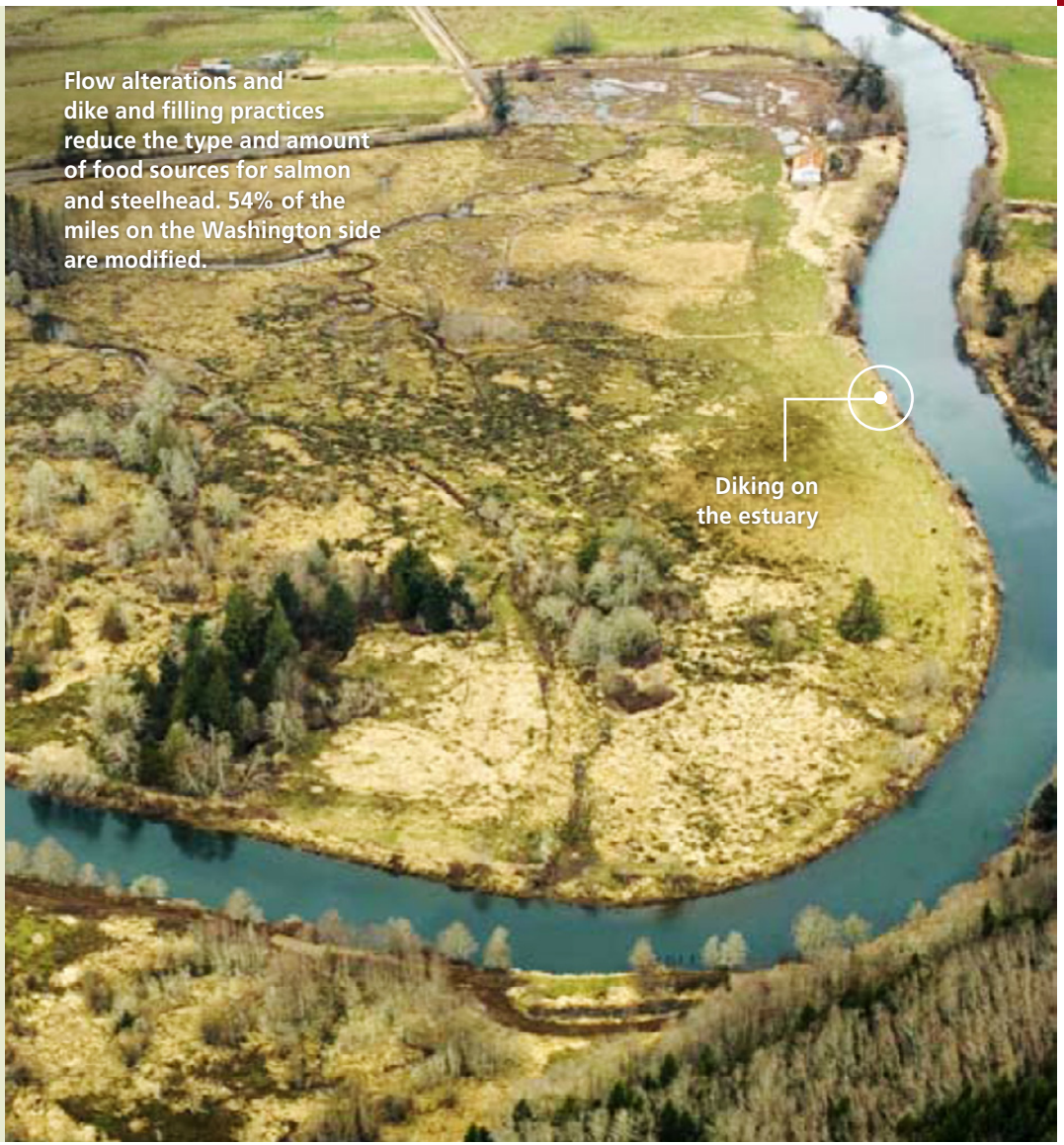
DATA SOURCE: LOWER COLUMBIA ESTUARY PARTNERSHIP



PHIL TRASK

WA. DEPT. OF FISH AND WILDLIFE

▲ The mix of species in the estuary's ecosystem has changed dramatically. Many species are now present that were not there historically. These include exotic species of invertebrates and plants like Eurasian milfoil, exotic fish like shad, and increased numbers of native species that feed on salmon like Caspian terns (above), cormorants, seals, and sea lions.



WA. DEPT. OF ECOLOGY

Middle Columbia Salmon Recovery Region

PHOTOS: CHRIS DRIVDAHL

The Middle Columbia Salmon Recovery Region is located in central Washington along the east slope of the Cascade Mountains. Forests and farms dominate the diverse terrain and dry, shrub-steppe hills that cover most of the region. It includes the Columbia River and its tributaries entering from the west and north from the Yakima River to the Big White Salmon River.

PLAN TIMEFRAME
15 years

ESTIMATED COST
$211 million

RECOVERY PLAN IMPLEMENTATION
Five-year implementation schedule identifies $21.5 million in habitat project needs

STATUS
Steelhead approved by NOAA Fisheries Service as interim plan 2006. Draft Middle Columbia River steelhead (DPS scale) recovery plan issued by NOAA Fisheries Service 2008. federal draft bull trout recovery plan; status review underway

Key Facts

LISTED FISH

Steelhead (threatened) 1999
Bull trout (threatened) 1998

MAJOR FACTORS LIMITING RECOVERY

- Degraded floodplain and channel structure
- Riparian degradation
- Degraded water quality and temperature
- Impaired stream flows in tributaries
- Barriers to fish passage in tributaries
- Excessive sediment
- Hydropower system mortality on Columbia River

REGIONAL RECOVERY ORGANIZATION

Yakima Basin Fish and Wildlife Recovery Board

FEDERALLY RECOGNIZED TRIBES

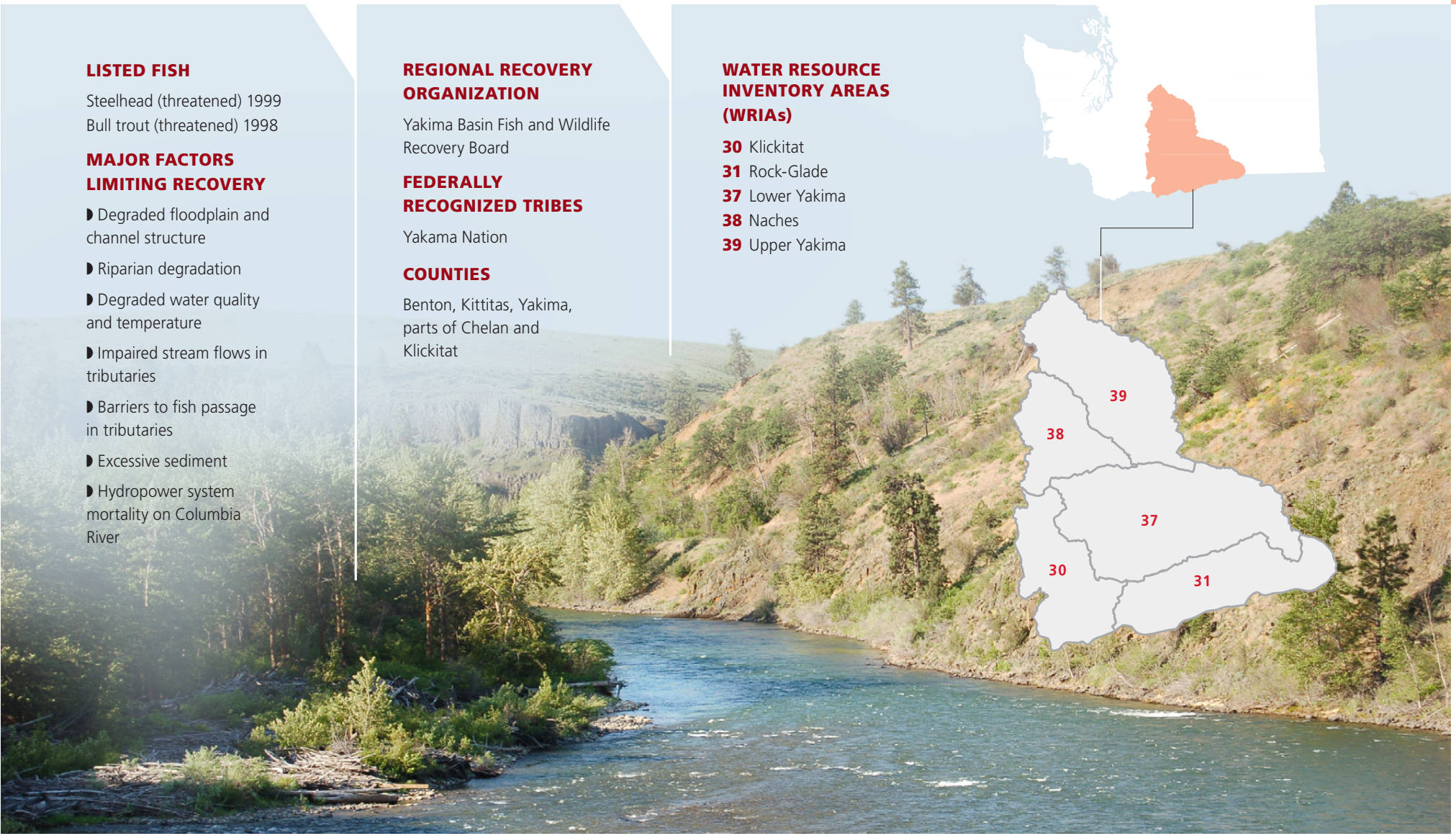
Yakama Nation

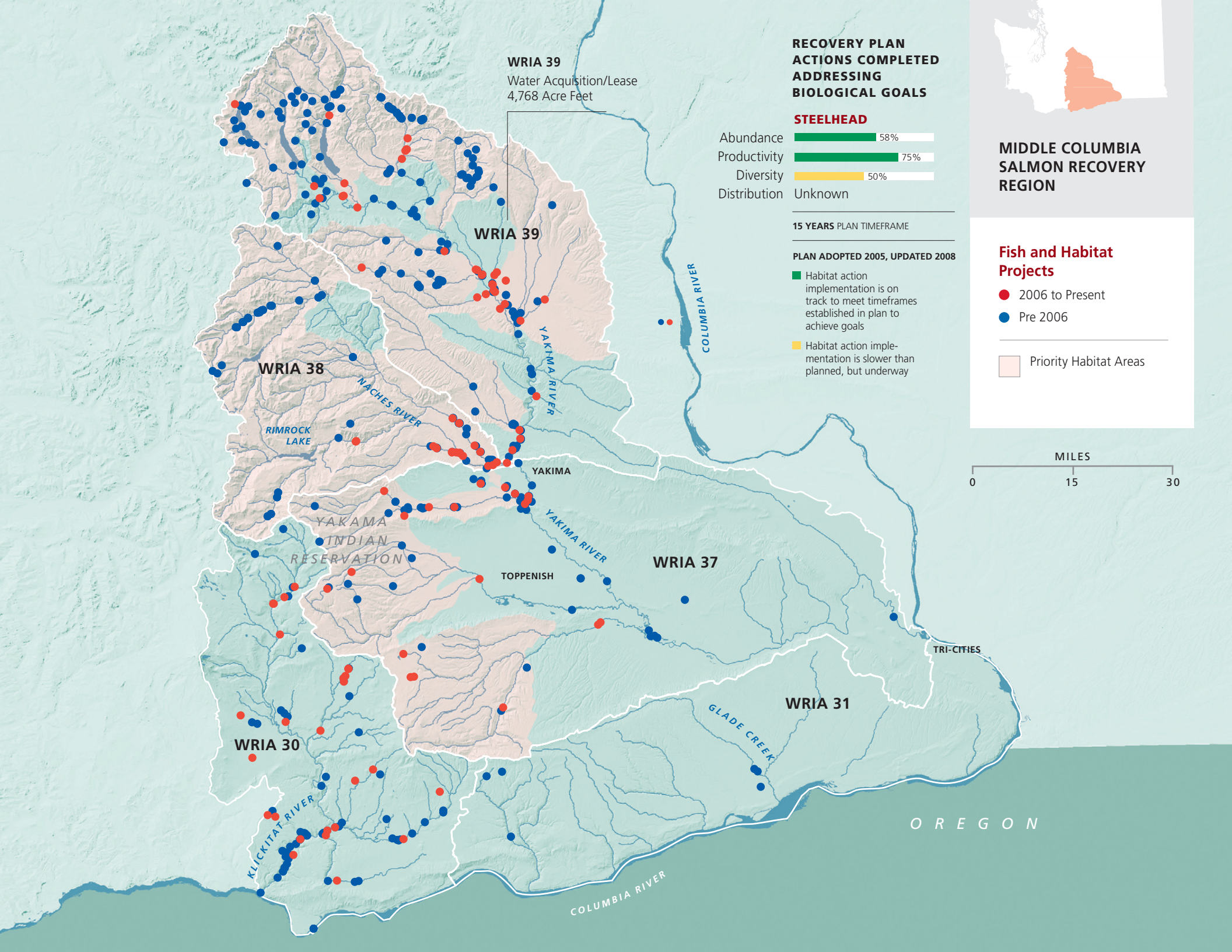
COUNTIES

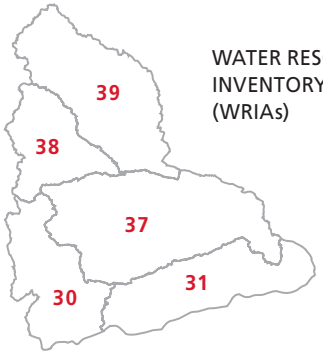
Benton, Kittitas, Yakima, parts of Chelan and Klickitat

WATER RESOURCE INVENTORY AREAS (WRIAs)

30 Klickitat
31 Rock-Glade
37 Lower Yakima
38 Naches
39 Upper Yakima

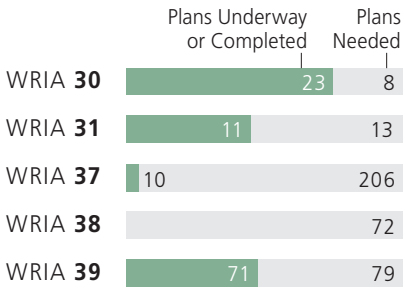



WRIA 39
Water Acquisition/Lease
4,768 Acre Feet
RECOVERY PLAN ACTIONS COMPLETED ADDRESSING BIOLOGICAL GOALS
STEELHEAD
Abundance 58%
Productivity 75%
Diversity 50%
Distribution Unknown
15 YEARS PLAN TIMEFRAME
PLAN ADOPTED 2005, UPDATED 2008
Habitat action implementation is on track to meet timeframes established in plan to achieve goals
Habitat action implementation is slower than planned, but underway
MIDDLE COLUMBIA SALMON RECOVERY REGION
Fish and Habitat Projects
2006 to Present
Pre 2006
Priority Habitat Areas
MILES
0
15
30
WRIA 39
WRIA 38
WRIA 37
WRIA 31
WRIA 30
YAKIMA RIVER
NACHES RIVER
RIMROCK LAKE
YAKIMA
YAKAMA INDIAN RESERVATION
TOPPENISH
TRI-CITIES
COLUMBIA RIVER
GLADE CREEK
KLICKITAT RIVER
OREGON

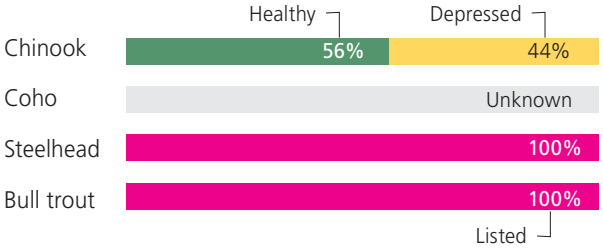


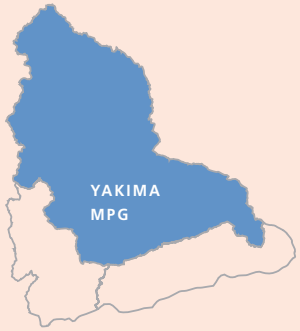
WATER RESOURCE INVENTORY AREAS (WRIAs)

Watershed Cleanup Plans

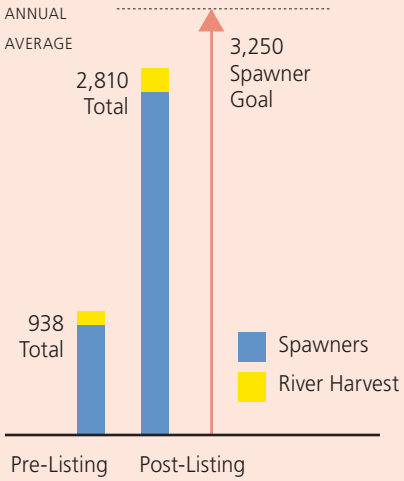


Fish Status

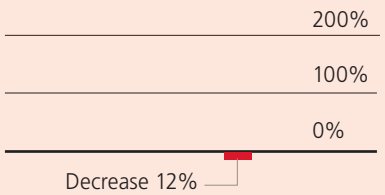


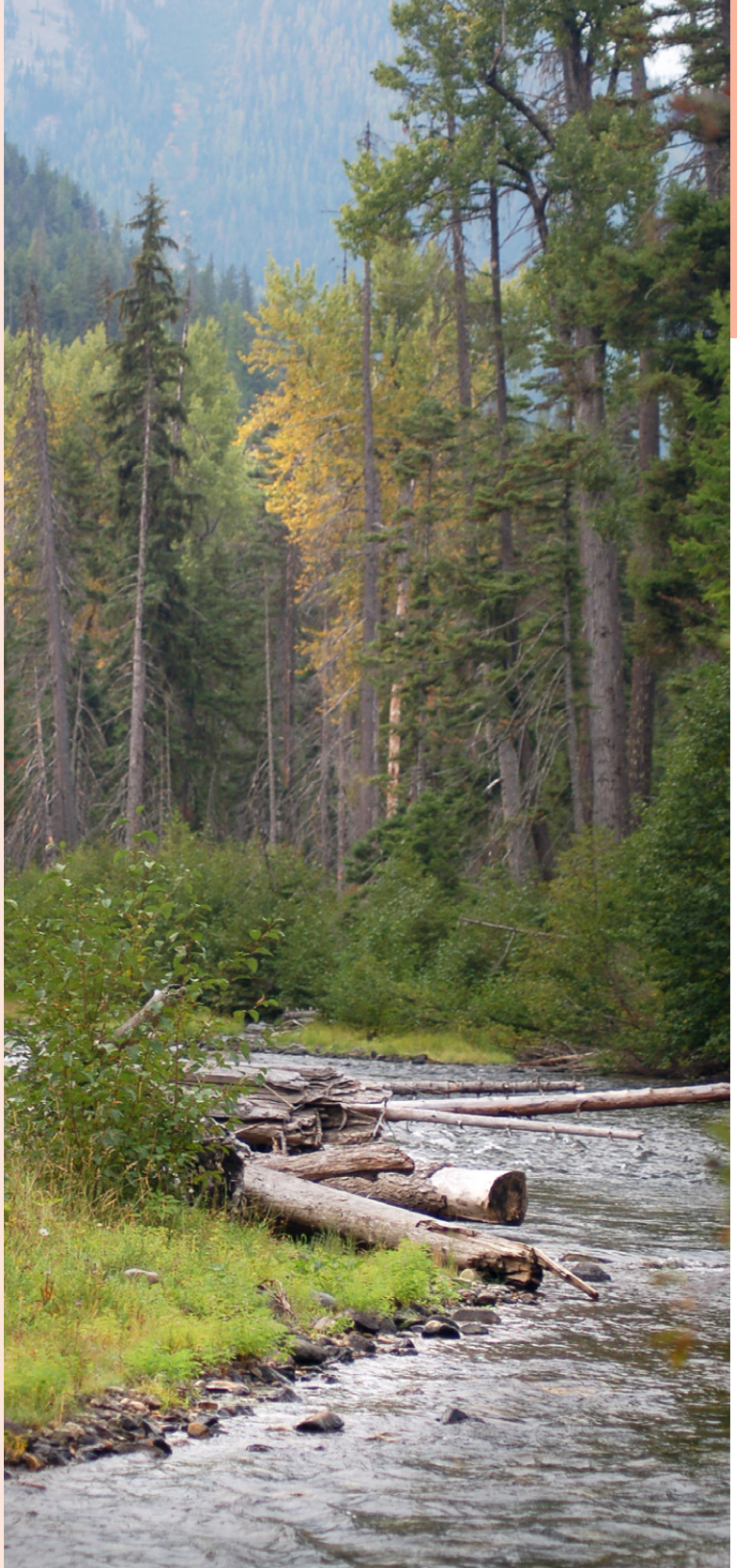


Steelhead Wild Adult Abundance[26] Yakima MPG



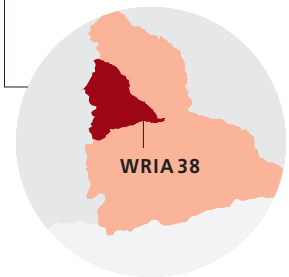
Steelhead Wild Juvenile Production[27] Since Listing





CHRIS DRIVDAHL

MIDDLE COLUMBIA SALMON RECOVERY REGION



COWICHE BASIN
NACHES WATERSHED
WRIA 38

ANDERS B. WILSE. UNIVERSITY OF WASHINGTON DIGITAL COLLECTION

WRIA 38 Boundary

NACHES RIVER

AMERICAN RIVER

CLIFFDELL

NACHES RIVER

GOOSE PRAIRIE

BUMPING LAKE

Bumping Lake Dam

WRIA 38

WILLIAM DOUGLAS WILDERNESS

RATTLESNAKE CREEK

WRIA 38 Boundary

TIETON

COWICHE

TIETON RIVER

Tieton Dam

RIMROCK LAKE

WHITE PASS 4,500

TIETON RIVER

S. FORK COWICHE CREEK

MILES

0 5 10

COWICHE BASIN

YAKAMA INDIAN RESERVATION

The Naches River drains some of the highest and wettest landscapes in the Yakima area. The 1,105 square mile watershed runs from the high elevations of the Cascade Mountains to the dry sage steppe and irrigated farms of the Yakima Valley. The earliest inhabitants, semi-nomadic bands and tribes of the Yakama Indian Nation, were followed in the 1840s by European missionaries who dug the area's first irrigation ditches, and later by European soldiers and settlers who began arriving in the 1850s.

The Yakima Valley has been a productive agricultural area since the first wine grapes, hops, and commercial fruit orchards were planted the late 1860 through 1880. The Yakima Project, authorized in 1905 under the Federal Reclamation Act, was one of the first and largest efforts of the Federal Bureau of Reclamation, and has irrigated the Yakima Valley since 1910. The government purchased many of the earlier canals and incorporated them into the Yakima Project.

Cowiche Creek Barrier Removal Before

Cowiche Creek Barrier Removal After

Snow Mt. Barrier Removal

SALMON RECOVERY FUNDING BOARD. RIGHT: HISTORYLINK.ORG

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous

In Their Own Words

It's an inland area, and salmon are not the local icon that they often are on the westside, with exception of the Yakama Nation, for whom salmon continue to be a central part of their culture. But, that doesn't mean locals aren't committed to recovering the fish. Says Bill Gillespie, a North Yakima Conservation District Board member, "I used to catch 25-30 pound Chinook in the Naches River. I want to see that again, not for myself but for future generations. **We can't just have salmon for salmon's sake—we want to utilize them."** This notion of connecting salmon recovery to the future of the area is echoed by others as well. "We are all part of something that creates a legacy. We only see our own little piece. **We need to get everyone to see the bigger picture because it is more motivating,"** remarks Barbara Gilbert of the Cowiche Canyon Conservancy.

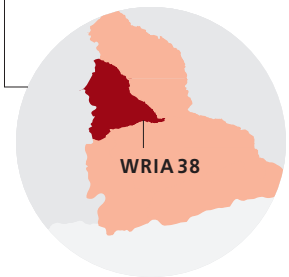
Richard Visser, biologist with the Department of Fish and Wildlife, believes that area residents are coming to understand why salmon are important and how fixing the salmon problem can also generate real benefits for farmers and local communities. "Landowners want to do something, but we haven't found the right combination in all cases to get them on board; **we're working on balancing private and public interests. But, we wouldn't even be having these discussions without the salmon recovery goals."** Mike Tobin, staff for the North Yakima Conservation District, sums it by saying, **"Yes! Landowners are starting to understand so much more about their actions.** With landowners screening diversions and, putting water into trusts, we're doing the right things because we are looking at how elements of recovery actually benefit landowners."

People are eager to move beyond developing plans, roll up their sleeves, and just fix the problems. Great progress has been made in areas like Cowiche Creek, where fish passage has been provided past a series of small irrigation dams for the first time in over 100 years – opening up 35 miles of steelhead habitat. But despite the emphasis on getting things done on the ground, the group noted that the last few years' planning efforts have helped people understand the issues and identify locally-appropriate solutions, and helped agencies learn how to work with effectively with local communities. Tom Coleman, Cowiche Canyon Conservancy, knows the work is just beginning: **"We've got huge challenges and a long road to go. We've made the watershed better, but what does the future hold?** We've got to maintain momentum." Visser agrees. "Yes, we now have partnerships that you can't even place a value on. We can't afford salmon funding fatigue because the momentum of partnerships alone won't carry us." Tobin nods. "These partnerships are springboards to address all other kinds of issues. **Salmon recovery benefits everything else—it is an opportunity to protect a farmer's land, or a county's bridge, or our water quality and quantity."**

Naches River, 1910s

> "We are all part of something that creates a legacy."
>
> **BARBARA GILBERT**

MIDDLE COLUMBIA SALMON RECOVERY REGION



COWICHE BASIN
NACHES WATERSHED
WRIA 38

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
FERC Licensed Facility Tieton Dam	No passage; blocks access to historic habitat.

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete blockages: 8 Partial blockages: 24
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results		
Run size achieved, 5 year average pre- and post listing. Wild component of Yakima Major Population Group.	**Steelhead**	Pre-listing	938
		Post-listing	2,810
Juvenile abundance, post listing mean	**Steelhead** Data not available		

Is water clean enough to support wild salmon?

Indicator	Measured Results		
Water quality index parameters	Fecal coliform	9	
	Dissolved oxygen	2	
	pH	3	
	Temperature	8	55

Stream segments meeting standard
Stream segments not meeting standard

NACHES RIVER. WASHINGTON STATE ARCHIVES

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Instream flows set	No state instream flows set
Percent of time flow met during fish critical period **August 1 to September 30**	N/A

Does harvest management protect wild salmon?

Indicator	Measured Results
Steelhead Wild spawners 5 year average pre- and post listing (Yakima MPG scale)	Pre-listing 840 Post-listing 2,607 RECOVERY PLAN ESCAPEMENT GOAL 3,250
Steelhead Percent of wild salmon run that is harvested, 5 year average pre- and post listing (Yakima MPG scale)	Pre-listing 9% Post listing 7%

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does the level of hatchery influence on populations meet Hatchery Scientific Review Group standards?	**Fish populations meeting standard**[28] **Chinook**..... Yes **Coho**..... Yes **Steelhead**.. Yes **Chum**..... N/A

Upper Columbia Salmon Recovery Region

PHOTOS: CHRIS DRIVDAHL

The Upper Columbia River Salmon Recovery Region in north central Washington includes the Columbia River and its tributaries upstream of the confluence of the Yakima River to the base of Chief Joseph Dam. The geography is varied and the climate includes extremes in temperatures and precipitation, with most precipitation falling in the mountains as snow. Melting snowpack, groundwater, and runoff maintain stream flows.

A large portion of the Upper Columbia Basin is in public ownership. The recovery plan was completed in June 2005 and adopted by NOAA Fisheries Service in October 2007.

PLAN TIMEFRAME
10-30 years

ESTIMATED COST
$526 million

RECOVERY PLAN IMPLEMENTATION
Three-year implementation schedule identifies $50 million in habitat project needs

STATUS
Steelhead recovery plan adopted by NOAA Fisheries Service 2007. Chinook recovery plan adopted by NOAA Fisheries Service 2007. Federal draft bull trout recovery plan; status review underway

Key Facts

LISTED FISH

Steelhead (endangered) 1997
Spring Chinook (endangered) 1999
Bull trout (threatened) 1998

MAJOR FACTORS LIMITING RECOVERY

- Degraded floodplain and channel structure
- Riparian degradation
- Degraded water quality and temperature
- Impaired stream flows in tributaries
- Excessive sediment
- Barriers to fish passage in tributaries
- Harvest impacts
- Hydropower system mortality on Columbia River

REGIONAL RECOVERY ORGANIZATION

Upper Columbia Salmon Recovery Board

FEDERALLY RECOGNIZED TRIBES

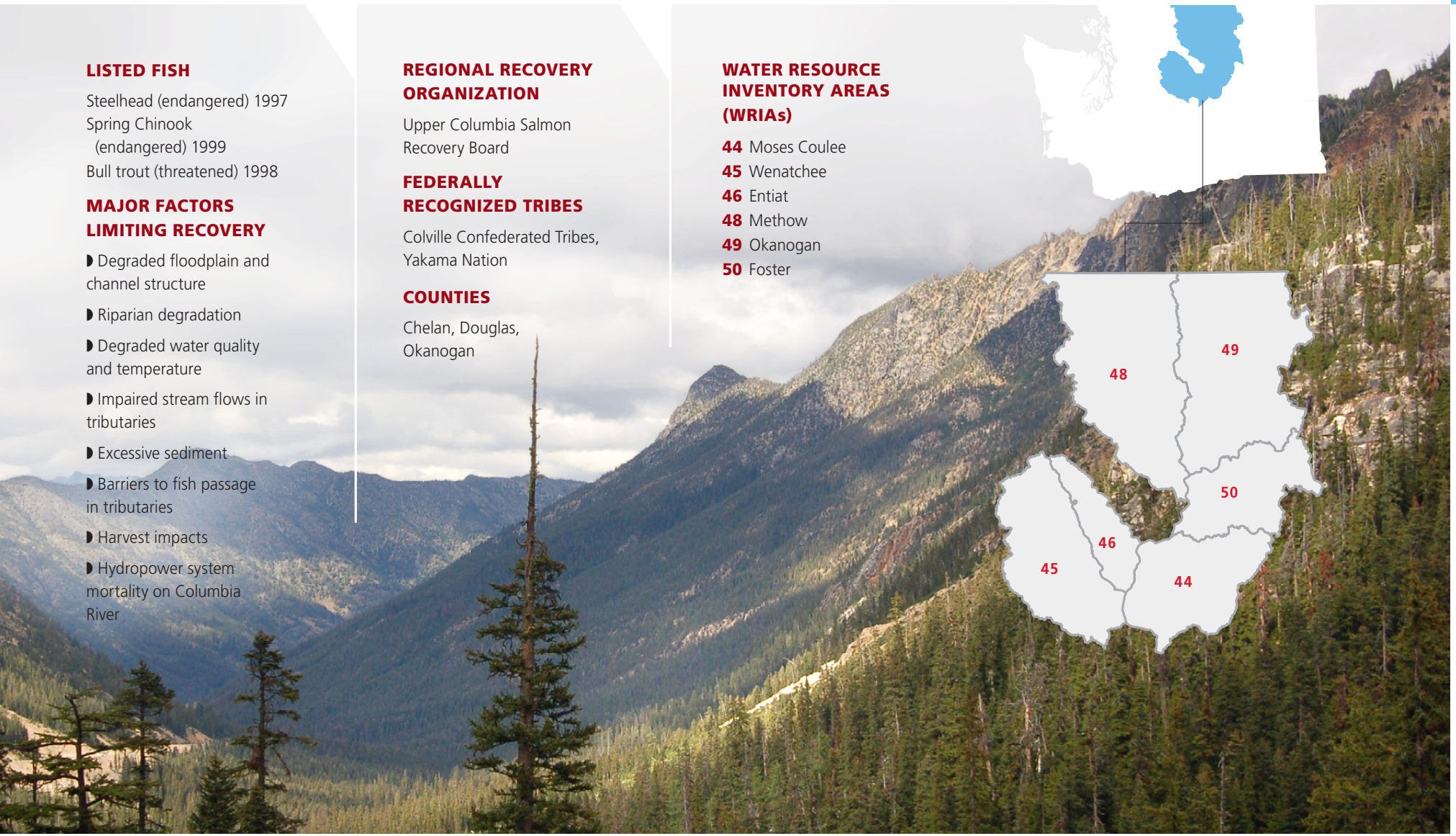
Colville Confederated Tribes, Yakama Nation

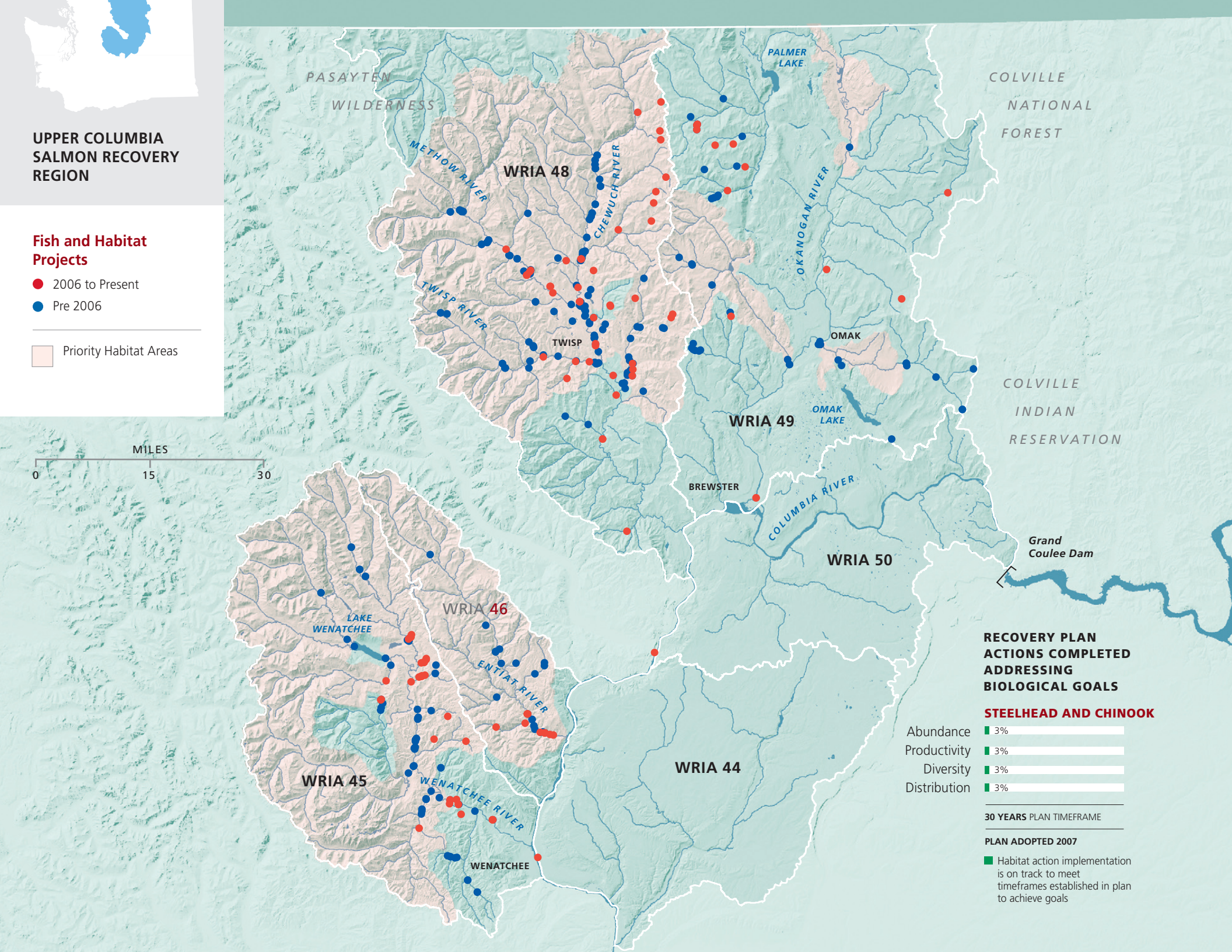
COUNTIES

Chelan, Douglas, Okanogan

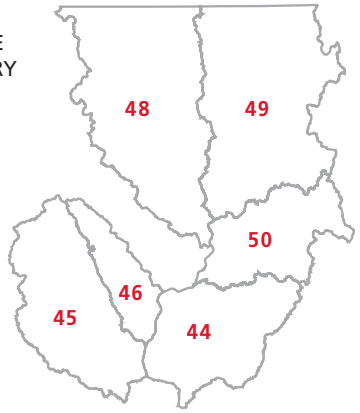
WATER RESOURCE INVENTORY AREAS (WRIAs)

44 Moses Coulee
45 Wenatchee
46 Entiat
48 Methow
49 Okanogan
50 Foster

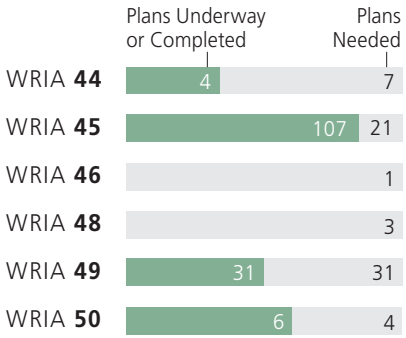



UPPER COLUMBIA SALMON RECOVERY REGION
Fish and Habitat Projects
2006 to Present
Pre 2006
Priority Habitat Areas
MILES
0
15
30
PASAYTEN WILDERNESS
COLVILLE NATIONAL FOREST
COLVILLE INDIAN RESERVATION
PALMER LAKE
METHOW RIVER
CHEWUCH RIVER
OKANOGAN RIVER
TWISP RIVER
WRIA 48
TWISP
OMAK
OMAK LAKE
WRIA 49
BREWSTER
COLUMBIA RIVER
WRIA 50
Grand Coulee Dam
WRIA 46
LAKE WENATCHEE
ENTIAT RIVER
WRIA 44
WRIA 45
WENATCHEE RIVER
WENATCHEE
RECOVERY PLAN ACTIONS COMPLETED ADDRESSING BIOLOGICAL GOALS
STEELHEAD AND CHINOOK
Abundance 3%
Productivity 3%
Diversity 3%
Distribution 3%
30 YEARS PLAN TIMEFRAME
PLAN ADOPTED 2007
Habitat action implementation is on track to meet timeframes established in plan to achieve goals

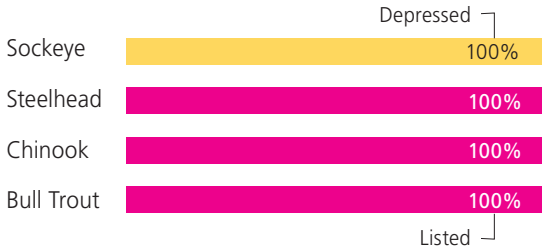
WATER RESOURCE INVENTORY AREAS (WRIAs)

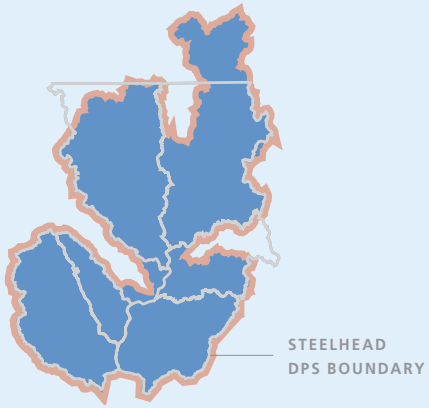


Watershed Cleanup Plans



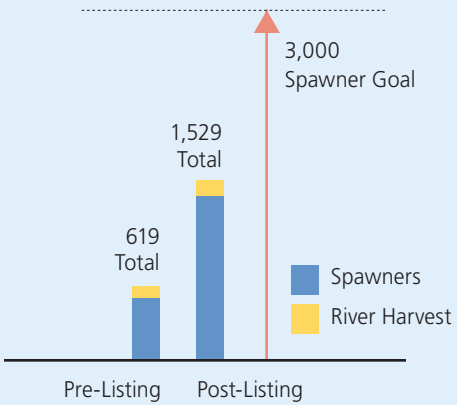
Fish Status



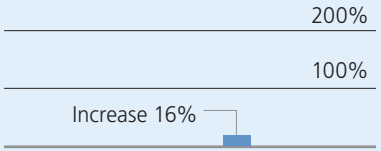


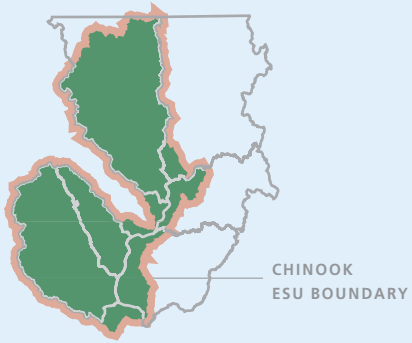
Steelhead Wild Adult Abundance DPS Scale[29]

ANNUAL AVERAGE



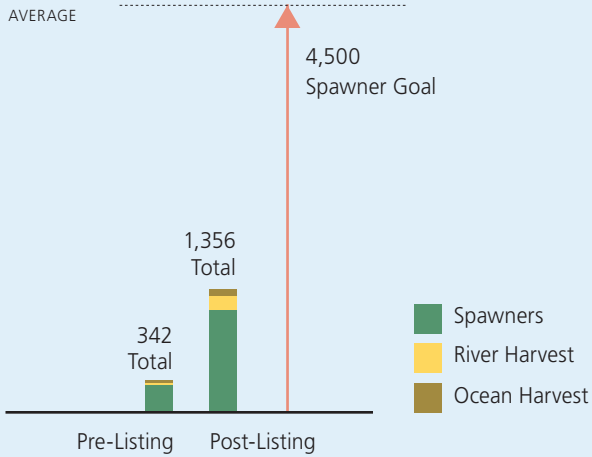
Steelhead Wild Juvenile Production[30] Since Listing



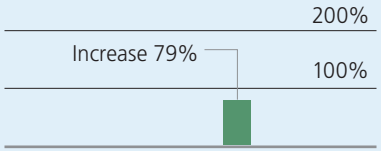


Chinook Wild Adult Abundance ESU Scale[29]

ANNUAL AVERAGE



Chinook Wild Juvenile Production[31] Since Listing



UPPER COLUMBIA SALMON RECOVERY REGION

METHOW BASIN WRIA 48

WASHINGTON STATE ARCHIVES

PASAYTEN WILDERNESS

WRIA 48 Boundary

WRIA 48

LOST RIVER

CHEWUCH RIVER

MAZAMA

METHOW RIVER

WRIA 48 Boundary

WINTHROP

MILES

0 5 10

TWISP RIVER

TWISP RIVER

BOULDER CREEK

TWISP

LAKE CHELAN SAWTOOTH WILDERNESS

METHOW BASIN

BREWSTER

The 1,805 square mile Methow River Water Resource Inventory Area (WRIA 48) extends approximately 80 miles from the Cascade Mountains, 9,000 feet above sea level to its confluence with the Columbia River at Pateros, Washington, 775 feet above sea level. Approximately 14% of the land within the watershed is privately owned, with the rest in federal or state holdings. Indigenous native peoples once lived a mostly nomadic existence in this semi-arid basin. Most homesteaders entered the Methow Valley in the late 1800s, finding the Methow, Twisp and Chewuch as its major rivers. Settlers soon introduced unlined agricultural irrigation canals to supply consistent water for their crops and livestock.

Methow Valley
Riparian Restoration

Beaver Creek
Barrier Removal Before

Beaver Creek
Barrier Removal After

SALMON RECOVERY FUNDING BOARD. GROUP PHOTO: METHOW SALMON RECOVERY FOUNDATION

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous

In Their Own Words

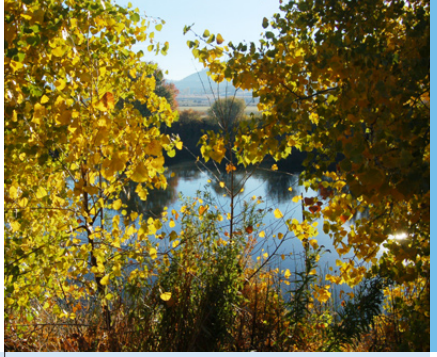
Endangered Species Act listings triggered reviews of factors contributing to the decline of fish. What they found was pretty discouraging: 26 irrigation diversions either not screened or not in compliance with new screening standards; 5 stream reaches with impaired flows resulting from irrigation diversions; 27 road culverts and 19 irrigation diversions either blocking or restricting fish passage to over 100 miles of streams; no ongoing riparian restoration projects. Even more frustrating was the lack of coordination among federal, state, and local agencies and organizations that led to wasted, duplicated efforts and aggressive and inconsistent enforcement policies. This situation confused the public, resulted in legal battles, and led one local to dub the atmosphere "our Klamath mentality."

Today, the Methow story is all about relationships. **"We've spent the last 10 years working on them, listening to each other, building collaborations and trust"** says Chris Johnson of the Methow Salmon Recovery Foundation. The Methow Conservancy works with to educate community residents on the importance of, and opportunities for, habitat protection and restoration. Through the cooperative efforts of irrigators, interested landowners, agencies, and organizations salmon restoration has made great progress.

The community has fixed all 26 irrigation diversions; put in place conservation measures that will restore flows in all five stream reaches; replaced 26 road culvert barriers and 18 irrigation diversions, with the last ones scheduled for construction in 2009. At least 6 miles of riparian stream banks have ongoing riparian restoration projects. As Jennifer Molesworth, Bureau of Reclamation liaison notes, "If you are a fish coming to the Methow today, you've got a lot more places to go."

None of this progress would happened without landowners and agency officials living in the community, determined to leave differences behind and create a cooperative working atmosphere concentrated on practical problem-solving. A key element has been the Methow Restoration Council, a voluntary informal coordinating body that offers stakeholders a forum to discuss ideas, projects, and problems with regulators and permitting agencies in an unofficial and pre-decisional setting. Greg Knott, a member of the Council, says "Success breeds success.

CHRIS DRIVDAHL



> "If you are a fish coming to the Methow today, you've got a lot more places to go."
>
> JENNIFER MOLESWORTH

We have had some terrific success on the ground, and these have empowered locals to keep in the restoration game. Yes, we have created a salmon industry but this is a good thing. Our industry now is putting resources back, and it is becoming a key economic factor for us."

UPPER COLUMBIA SALMON RECOVERY REGION

METHOW BASIN WRIA 48

UNIVERSITY OF WASHINGTON DIGITAL COLLECTION

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
No FERC Licensed Projects	N/A

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete blockages: 49; Partial blockages: 87
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results		
Run size achieved, 5 year average pre- and post listing. Wild component of Wenatchee-Methow Major Population Group	**Chinook**	Pre-listing	342
		Post-listing	1,356
	Steelhead	Pre-listing	619
		Post-listing	1,529
Juvenile abundance, post listing mean[32]	**Chinook:**		29,876
	Steelhead:		9,231

Is water clean enough to support wild salmon?

Indicator	Measured Results	
Water quality index parameters	Fecal coliform	2
	Dissolved oxygen	0
	pH	0
	Temperature	2

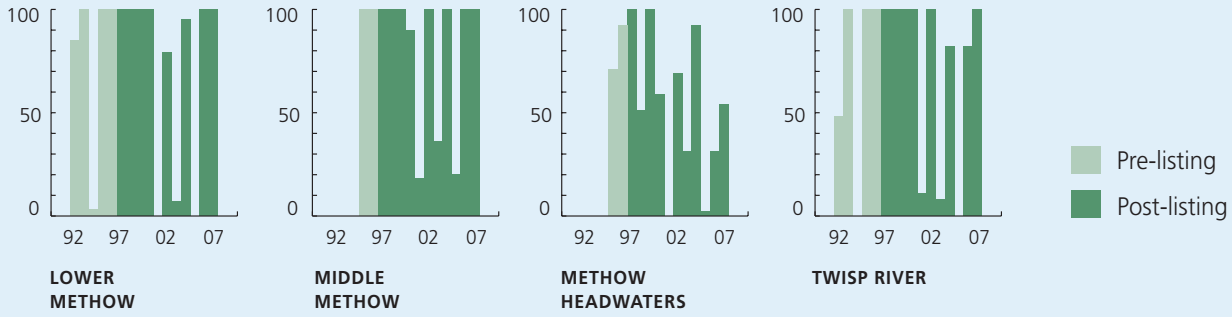
Stream segments meeting standard

Stream segments not meeting standard

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Actual Instream flow set	Instream flow rule filed 1976

Percent of time flow met during fish critical period **August 1 to September 30**



Does harvest management protect wild salmon?

Indicator	Measured Results
Wild spawners 5 year average pre- and post listing average (MPG scale)	**Steelhead** Pre-listing 526; Post-listing 1,395; 3,000 RECOVERY PLAN SPAWNER ESCAPEMENT GOAL **Chinook** Pre-listing 302; Post-listing 1,142; 4,500 RECOVERY PLAN SPAWNER ESCAPEMENT GOAL
Percent of wild salmon run that is harvested, 5 year average pre- and post listing (MPG scale)	**Steelhead** Pre-listing 15%; Post listing 9% **Chinook** Pre-listing 12%; Post listing 16%

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does the level of hatchery influence on populations meet Hatchery Scientific Review Group standards?	**Fish populations meeting standard**[33] **Chinook**..... No **Coho**..... Yes **Steelhead**.. No **Chum**..... N/A

Snake River Salmon Recovery Region

PHOTOS: CHRIS DRIVDAHL

The Snake River Salmon Recovery Region is located in the southeastern corner of Washington. Rolling, semi-arid crop and pasture lands are flanked by the forested Blue Mountains to the south.

The Snake River is a major transportation corridor for many of the region's products, which are barged downstream to Columbia River ports. The recovery region is sparsely populated, with residents scattered throughout the area in communities of less than 1,000 people or clustered in a few larger cities. The recovery plan was completed in June 2005 and approved as an interim plan by NOAA Fisheries Service in March 2006. The plan covers the Walla Walla portion of the middle Columbia steelhead listing in Washington.

PLAN TIMEFRAME
15 years

ESTIMATED COST
$115 million

RECOVERY PLAN IMPLEMENTATION
Three-year implementation schedule identifies $19.3 million habitat project needs

STATUS
Washington portions of Snake River steelhead, Chinook, Middle Columbia steelhead adopted as interim recovery plan by NOAA Fisheries Service 2006. Draft Middle Columbia River steelhead (DPS scale) recovery plan issued by NOAA Fisheries Service 2008. Federal draft bull trout recovery plan; status review underway

Key Facts

LISTED FISH

Steelhead, Snake River (threatened) 1997
Steelhead, Middle Columbia (threatened) 1997
Sockeye[34] (endangered) 1991
Spring Chinook (threatened) 1992
Fall Chinook (threatened) 1992[35]
Bull trout (threatened) 1998

MAJOR FACTORS LIMITING RECOVERY

- Degraded floodplain and channel structure
- Riparian degradation
- Degraded water quality and temperature
- Impaired stream flows in tributaries
- Excessive sediment
- Barriers to fish passage in tributaries
- Harvest impacts
- Hydropower system mortality on Columbia River

REGIONAL RECOVERY ORGANIZATION

Snake River Salmon Recovery Board

FEDERALLY RECOGNIZED TRIBES

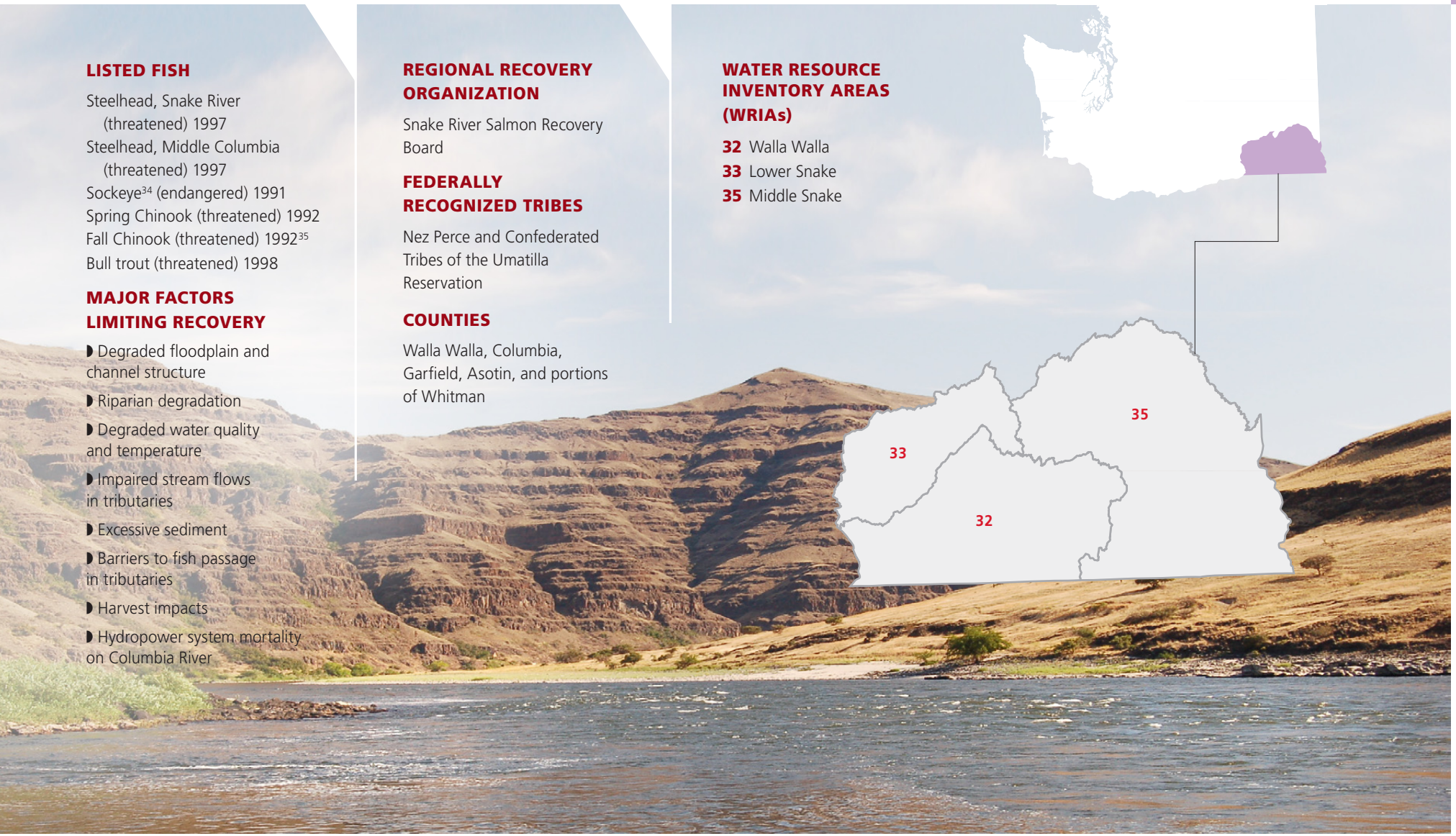
Nez Perce and Confederated Tribes of the Umatilla Reservation

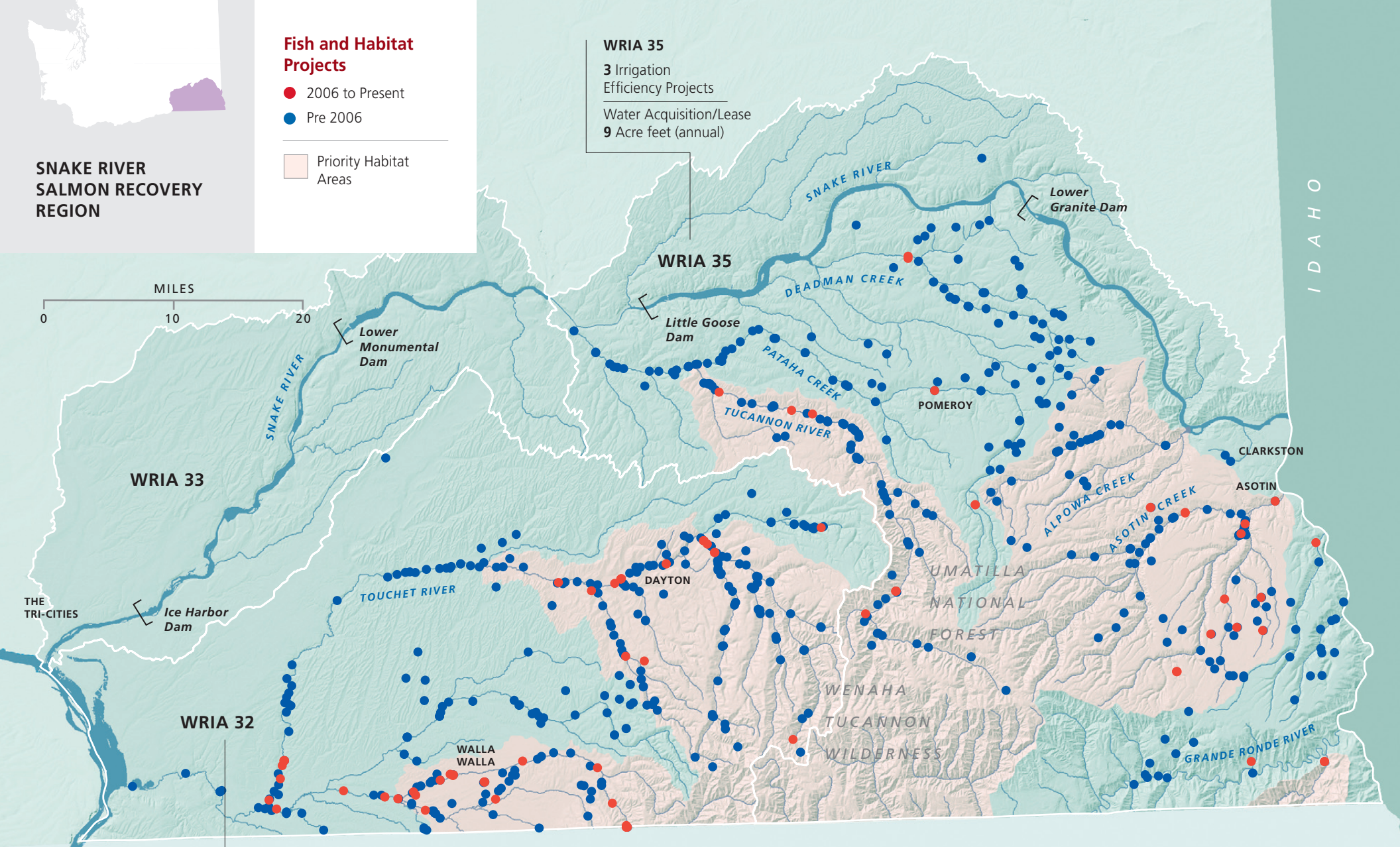
COUNTIES

Walla Walla, Columbia, Garfield, Asotin, and portions of Whitman

WATER RESOURCE INVENTORY AREAS (WRIAs)

32 Walla Walla
33 Lower Snake
35 Middle Snake





WRIA 32

257 Irrigation Efficiency Projects

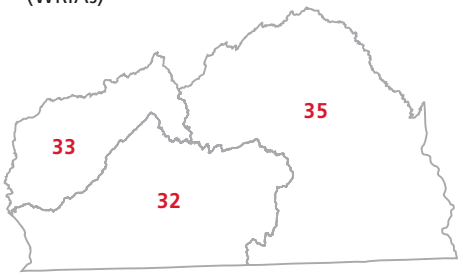
RECOVERY PLAN ACTIONS COMPLETED ADDRESSING BIOLOGICAL GOALS

	MIDDLE COLUMBIA STEELHEAD	SNAKE RIVER FALL CHINOOK	SNAKE RIVER STEELHEAD	SPRING/SUMMER CHINOOK
Abundance	10%	70%	60%	10%
Productivity	10%	60%	40%	10%
Diversity	70%	60%	90%	90%
Distribution	70%	90%	50%	90%
	15 YEARS PLAN TIMEFRAME	**15 YEARS** PLAN TIMEFRAME	**15 YEARS** PLAN TIMEFRAME	**15 YEARS** PLAN TIMEFRAME

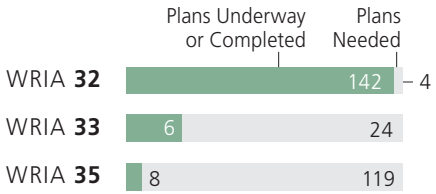
ALL PLANS ADOPTED 2005

- Habitat action implementation is not currently on track to meet timeframes established in plans to achieve goals
- Habitat action implementation is slower than planned, but underway
- Habitat action implementation is on track to meet timeframes established in plan to achieve goals

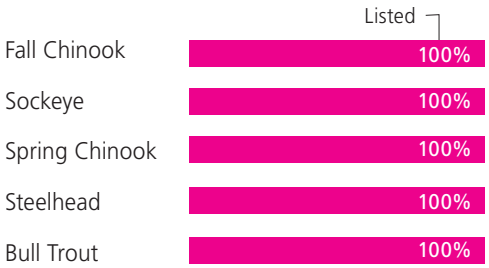
WATER RESOURCE INVENTORY AREAS (WRIAs)

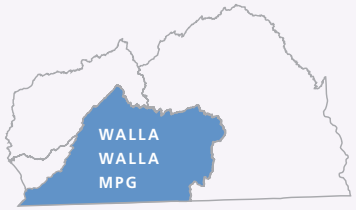


Watershed Cleanup Plans



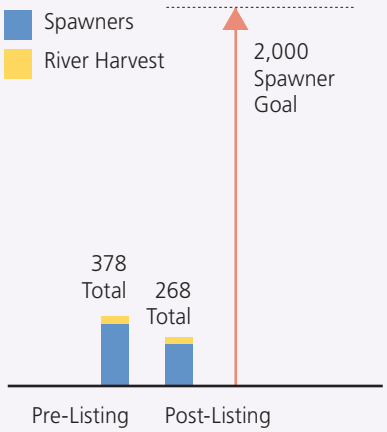
Fish Status





Mid-Columbia Steelhead Wild Adult Abundance Walla Walla MPG[36]

ANNUAL AVERAGE

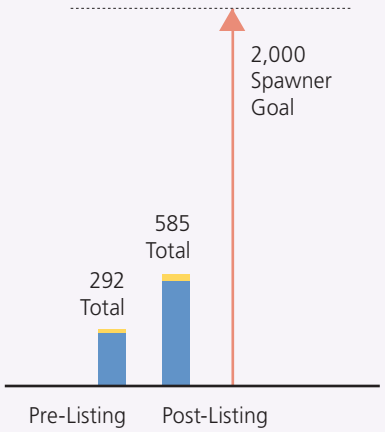


Steelhead Wild Juvenile Production Since Listing

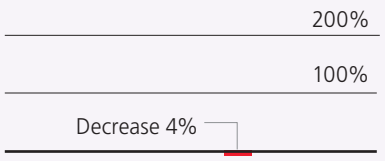
Data Not Available

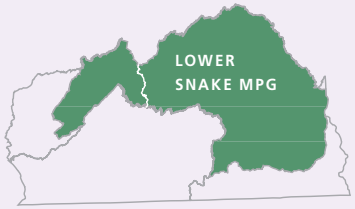
Snake River Steelhead Wild Adult Abundance Lower Snake MPG

ANNUAL AVERAGE



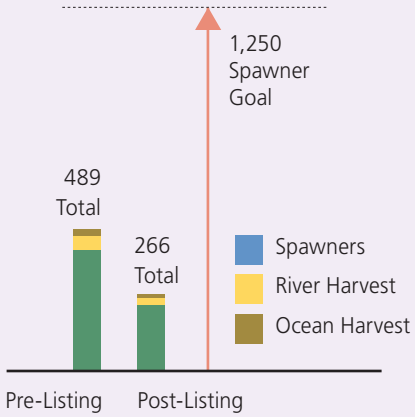
Steelhead Wild Juvenile Production[38] Since Listing



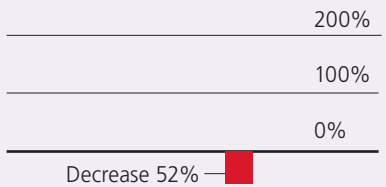


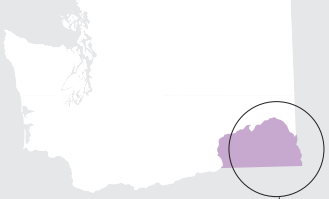
Spring Chinook Wild Adult Abundance Lower Snake MPG[37]

ANNUAL AVERAGE

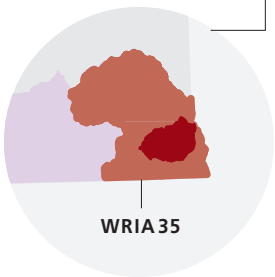


Spring Chinook Wild Juvenile Production[38] Since Listing





SNAKE RIVER SALMON RECOVERY REGION



ASOTIN BASIN MIDDLE SNAKE WATERSHED WRIA 35

VIRNA HAFFER. WASHINGTON STATE HISTORICAL SOCIETY

Asotin Basin drains approximately 325 square miles of the larger Middle Snake WRIA 35 in Asotin and Garfield Counties. The headwaters of Asotin Creek, the main watercourse in the Basin, originate in the Blue Mountains at about 6,200 feet and flow into the Snake River at around 800 feet in elevation. The Nez Perce tribes lived in the Asotin area for many years before Lewis and Clark passed through on their expedition in 1805 and 1806. A few tentative permanent settlements were established during the 1860s, mostly along Asotin Creek near what would later become Asotin. Asotin County was formed from the eastern portion of Garfield County in 1883 and grew steadily during the 1880s and 1890s. Wheat and barley were early crops, followed by cattle farming. Plum, peach, and apple orchards were also planted and actively maintained.

WRIA 35 Boundary

SNAKE RIVER

Lower Granite Dam

DEADMAN CREEK

Little Goose Dam

PATAHA CREEK

WRIA 35

POMEROY

TUCANNON RIVER

ALPOWA CREEK

LEWISTON

CLARKSTON

IDAHO

ASOTIN

ASOTIN CREEK

UMATILLA NATIONAL FOREST

ASOTIN BASIN

TUCANNON RIVER

WENAHA TUCANNON WILDERNESS

GRANDE RONDE RIVER

OREGON

MILES

0 5 10

Asotin Creek Instream Habitat Improvement Before

Asotin Creek Instream Habitat Improvement After

Headgate Park Riparian Enhancement, Asotin Creek

SALMON RECOVERY FUNDING BOARD. PHOTO RIGHT: CHRIS DRIVDAHL

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous

In Their Own Words

Jerry Hendrickson and Harold Thompson

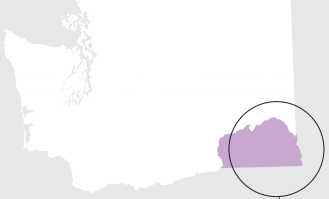
There is a history of landowner interest in restoration efforts in this area. The Asotin Creek watershed was a Natural Resource Conservation Service "model watershed," selected in 1991 on the basis of landowner willingness to participate. The area also was part of Bonneville Power Administration's first "ridge top to ridge top" restoration program, completed in 1995. Even with these kinds of efforts, locals weren't ready to just jump on the recovery train. They needed to believe they were part of a community-based solution. As landowner Jerry Hendrickson notes, **"Once agencies put the regulatory hammer away and start listening, landowners will do the right thing.** They just want someone to listen to them and help them understand. We're making real headway here now." Cheryl Sonnen, Asotin County Conservation District staff, agrees. "Landowners talk. The first person who tried CREP now educates others about its benefits."

Locals emphasize the value of agencies having staff living in the community and working with them on projects. Cattle rancher and orchardist Harold Thompson said, "Communication wasn't all that good until Steve (Martin) and Brad (Johnson) came in. **They had a hard time selling us on some things, but we're listening now.**" Thompson is well known for climbing on his bulldozer and "fixing the creek" in the years leading up to the work done on the salmon recovery plan.

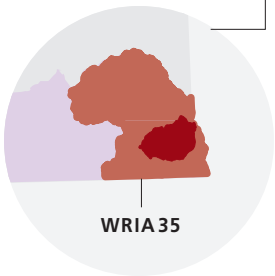
Today he acknowledges there might be another way. "Asotin Creek used to have diked, straight channels, and was full of debris and brush. **At first I was scared about what might happen with these new ideas guys were pushing, but now we have more meanders and the creek is working much better."**

Pride in what they have accomplished is shared by all. Hendrickson says with a sly grin, "Outsiders think we are a bunch of good ol' boys back slapping each other, rather than a well-oiled machine that is getting the job done." Sonnen echoes the sentiment: "Success is due to private landowners who are proactive and willing to do projects. Success would not happen without them." Brad Johnson, Asotin County Public Utility District staff, adds his kudos as well: **"In this area, no one person is bigger than the team."**

> "Outsiders think we are a bunch of good ol'boys back slapping each other, rather than a well-oiled machine that is getting the job done."
>
> JERRY HENDRICKSON



SNAKE RIVER SALMON RECOVERY REGION



ASOTIN BASIN MIDDLE SNAKE WATERSHED WRIA 35

WASHINGTON STATE ARCHIVES

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
No FERC Licensed Projects	N/A

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete blockages: 17; Partial blockages: 28
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results		
Run size achieved, 5 year average pre- and post listing.	**Spring Chinook** (Lower Snake MPG)	Pre-listing	489
		Post-listing	266
	Asotin Steelhead	Pre-listing	165
		Post-listing	454
Juvenile abundance, post listing mean[32]	**Spring Chinook** (Lower Snake MPG):		2,337
	Asotin Steelhead:		39,994

Is water clean enough to support wild salmon?

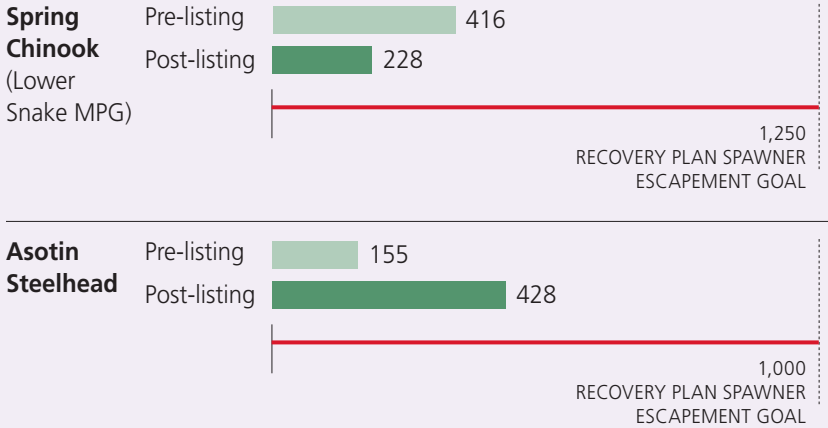
Indicator	Measured Results	Stream segments meeting standard	Stream segments not meeting standard
Water quality index parameters	Fecal coliform	4	14
	Dissolved oxygen		9
	pH	4	19
	Temperature	10	62

Do rivers and streams have flows that support wild salmon?

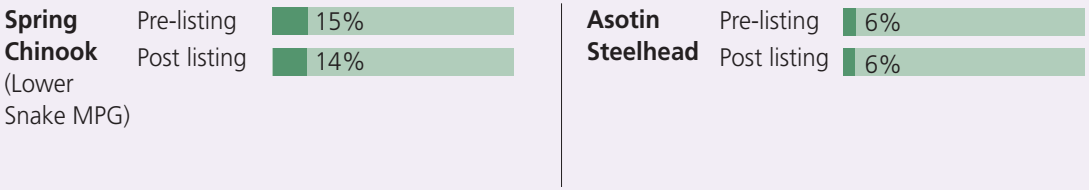
Indicator	Measured Results
Instream flow set	No instream flow rule set
Percent of time flow met during fish critical period **August 1 to September 30**	N/A

Does harvest management protect wild salmon?

Indicator	Measured Results
Wild spawners 5 year average pre- and post listing average	



Indicator	Measured Results
Percent of wild salmon run that is harvested, 5 year average pre- and post listing	



Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does the level of hatchery influence on populations meet Hatchery Scientific Review Group standards?	**Fish populations meeting standard**[39] **Chinook**..... Yes **Coho**..... N/A **Steelhead**.. Yes **Chum**..... N/A

Northeast Salmon Recovery Region

PHOTOS: CHRIS DRIVDAHL

The Northeast Washington Salmon Recovery Region encompasses the mainstem Columbia River and tributaries above Chief Joseph Dam to the Canadian border, Spokane River and its tributaries upstream to Post Falls Dam, and the Pend Oreille River and its tributaries from the Canadian border upstream to Albeni Falls Dam. It includes mountain ranges with elevations from 5,000 to 7,000 feet. Major river valleys include the Spokane, Pend Oreille, Colville, Kettle, San Poil, and Columbia.

The Pend Oreille River is the second largest river in Washington and flows for 155 miles from its headwaters at Lake Pend Oreille to the confluence with the Columbia River in British Columbia. The region is mostly rural with large areas of forested mountains and valleys of open pasture.

Key Facts

LISTED FISH

Bull trout (threatened) 1998

RECOVERY PLANNING STATUS

Federal bull trout draft recovery plan; status review under way

REGIONAL RECOVERY ORGANIZATION

None

FEDERALLY RECOGNIZED TRIBES

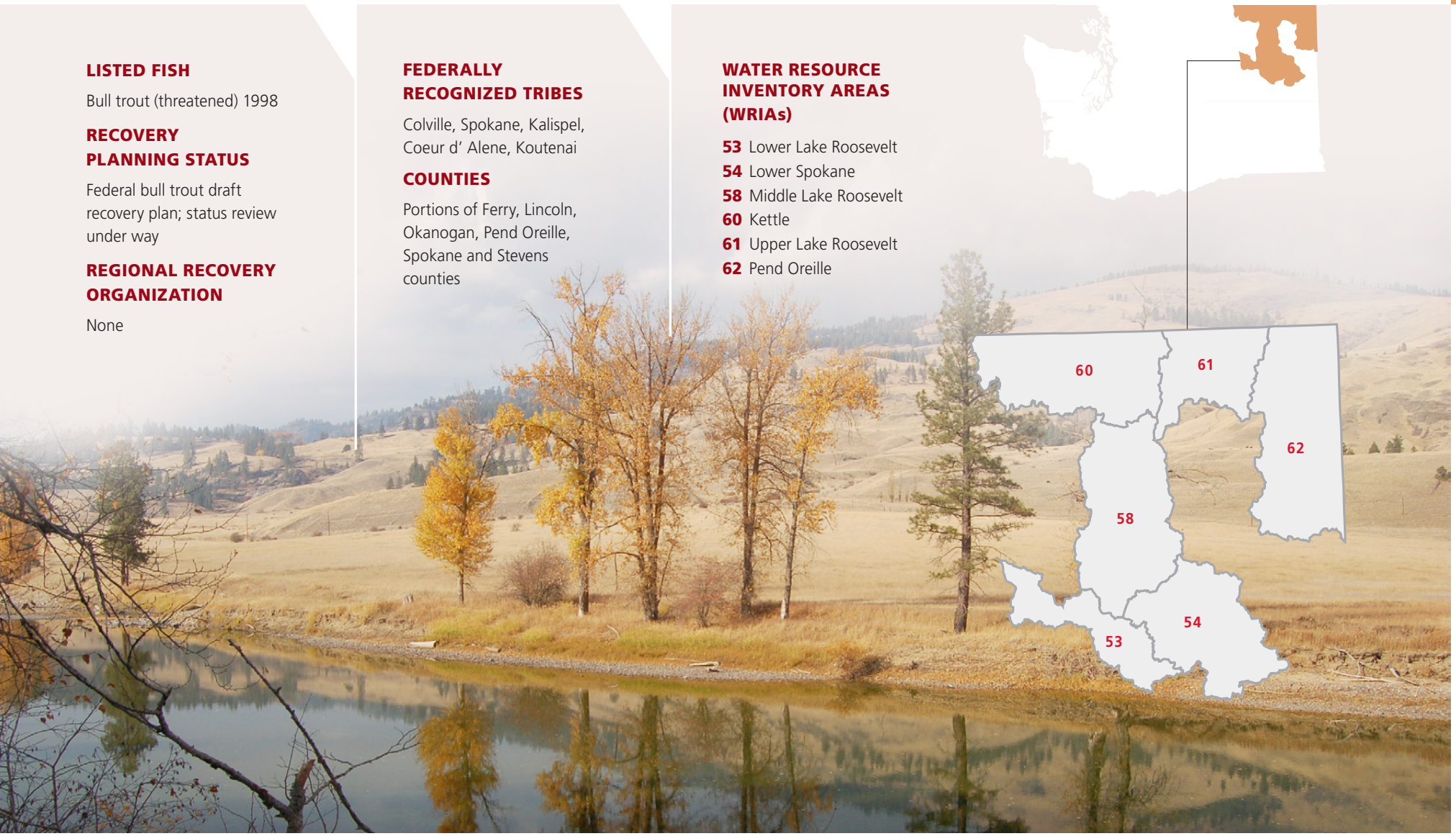
Colville, Spokane, Kalispel, Coeur d' Alene, Koutenai

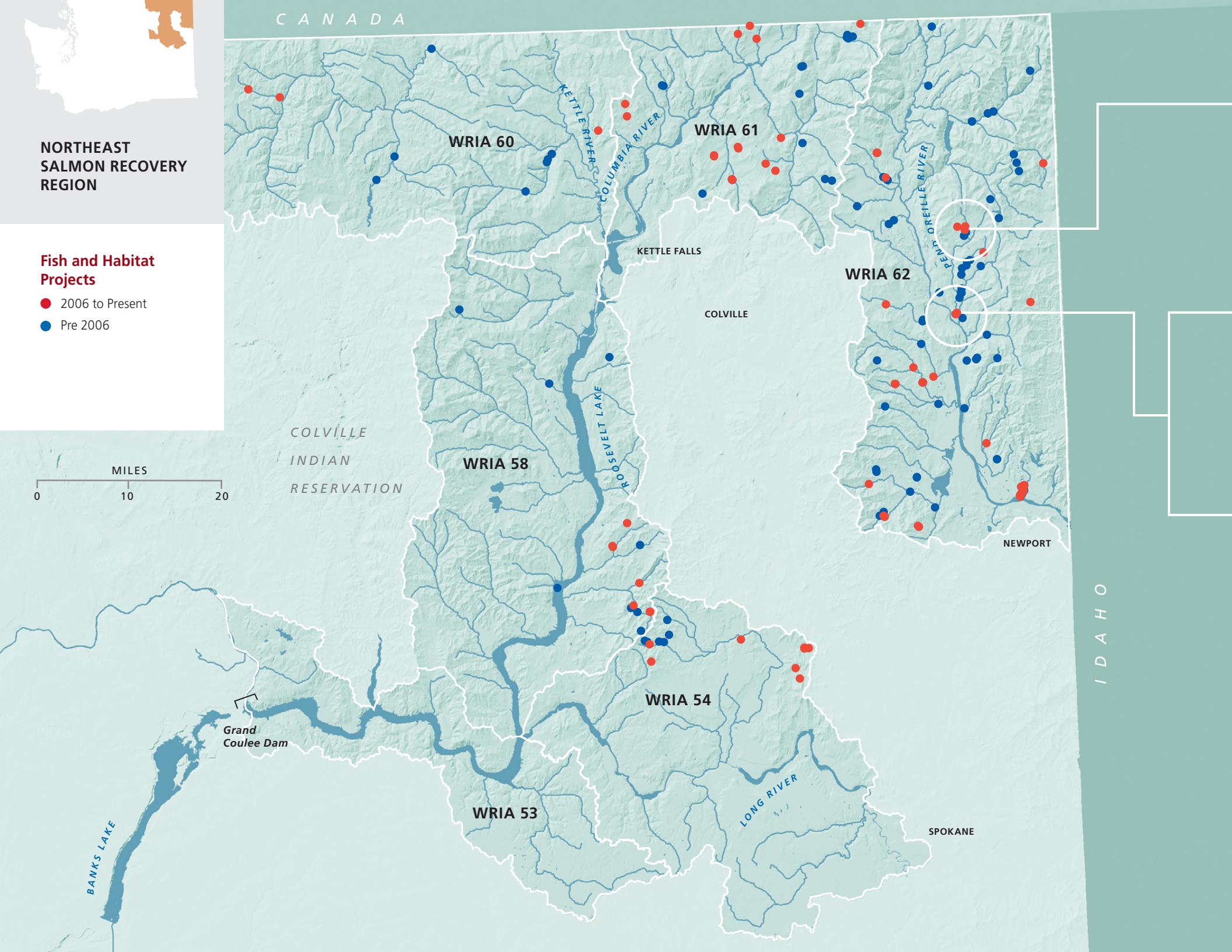
COUNTIES

Portions of Ferry, Lincoln, Okanogan, Pend Oreille, Spokane and Stevens counties

WATER RESOURCE INVENTORY AREAS (WRIAs)

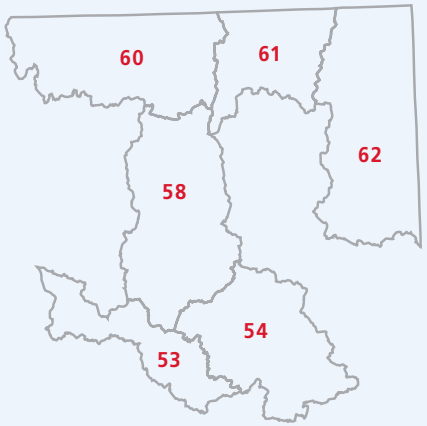
53 Lower Lake Roosevelt
54 Lower Spokane
58 Middle Lake Roosevelt
60 Kettle
61 Upper Lake Roosevelt
62 Pend Oreille



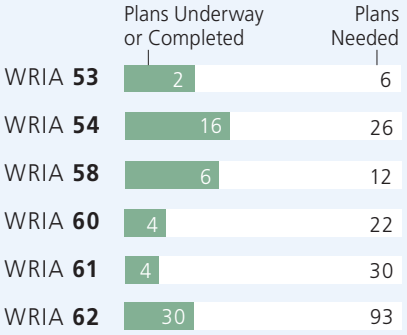

NORTHEAST SALMON RECOVERY REGION
Fish and Habitat Projects
2006 to Present
Pre 2006
MILES
0
10
20
CANADA
IDAHO
WRIA 60
WRIA 61
WRIA 62
WRIA 58
WRIA 54
WRIA 53
KETTLE RIVER
COLUMBIA RIVER
PEND OREILLE RIVER
ROOSEVELT LAKE
LONG RIVER
BANKS LAKE
KETTLE FALLS
COLVILLE
NEWPORT
SPOKANE
COLVILLE INDIAN RESERVATION
Grand Coulee Dam

SALMON RECOVERY FUNDING BOARD. RIGHT: CHRIS DRIVDAHL

WATER RESOURCE INVENTORY AREAS (WRIAs)



Watershed Cleanup Plans



Fish Status

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous

End Notes

1 The large percentage change in the average harvest rate for Lower Columbia Chinook is a result of Washington ocean fishing, which was closed in 1994, 1995 and 1996 for non-treaty sport and troll fisheries, and greatly reduced for Treaty troll fisheries. This means the pre-listing five-year average harvest rate was based on only 1994-1995, which averaged 12% compared to 1998-2008 average harvest rate of 32%. Data source is WDFW.

2 The percentage increase for Upper Columbia Chinook is a result of an increase in average harvest rate from 12% to 19%. Data source is WDFW.

3 R. Bilby and L. Mollot. 2008. Effect of changing land use patterns on the distribution of coho salmon (*Oncorhynchus kisutch*) in the Puget Sound region. Canadian Journal of Fisheries and Aquatic Sciences 65: 2138-2148.

4 This is a new indicator for our policy question. The Hatchery Scientific Review Group (HSRG), an independent organization authorized by Congress, has made recommendations to reduce risks and maximize benefits from hatchery programs. This indicator evaluates whether fish populations within a watershed currently meet standards of the HSRG (in terms of the level of hatchery influence each population receives, as determined by things like the proportion of hatchery fish in natural spawning areas).

5 Regional and watershed maps are courtesy WDFW. Project locations are from the Recreation and Conservation Office-Salmon Recovery Funding Board (PRISM), U. S. Forest Service, some Conservation Districts, some Regional Fisheries Enhancement Groups, NOAA Fisheries, and Bonneville Power Administration. Where available, priority habitats are as shown in regional recovery plans.

6 Fish information is from the Department of Fish and Wildlife. Where possible, data were verified and correlated with recovery plans. Recovery goals are from regional recovery plans approved by NOAA-Fisheries. Smolt (juveniles) production is the average post-listing in sampled watersheds.

7 Water quality and quantity data reflect Department of Ecology information only. Many local governments, federal agencies, and tribal organizations also collect water information. At this time, the data are not correlated or compared with state information so we have not included them in the report. This is an area of monitoring where information certainly exists, and future documents should bring the important aspects together for a more comprehensive picture. There are 73,886 miles of rivers and streams statewide, and 2,943 miles of marine estuaries. Approximately 4000 miles of streams were assessed, representing about 5% of the total, while only 3% or marine waters were. Washington has adopted a new approach to water quality assessment. The new method changes the number of assessed segments, so the number of Total Maximum Daily Load (TMDL) plans needed, or completed may not correspond to previous reports. The latest comprehensive assessment included over 30,000 assessed segments, compared to 2,362 segments in the 2004 State of Salmon Report. This results in an increased number of plans needed.

Categories used for basin water quality measure:

- Clean up plans needed. These are polluted waters that require a TMDL and are part of the traditional 303(d) list of impaired water bodies. Placement in this category means that Ecology has data showing that the water quality standards have been violated for one or more pollutants and there is no TMDL or pollution control plan.
- Clean up plans completed or underway. These include waters that have pollution problems that are being solved either through a TMDL that is actively being implemented, or a pollution control plan that is expected to solve the problems, or waters that are impaired by causes that cannot be addressed through a TMDL.

8 The *Washington Comprehensive Monitoring Strategy for Watershed Health and Salmon Recovery* (2002) recommends using the number of days annually during which minimum instream flows are met and the volume of water restored to streams where water availability and flows are limiting factors (as well as several other parameters) as indicators for our efforts to protect and restore rivers for salmon. Instream flows are adopted into rule (Administrative Code) for a specific volume of water to be in the stream for a specific time, measured at a designated location. An instream flow is essentially a water right with the priority date being the date of the rule adoption. The instream flow would limit or constrain junior water rights (i.e. those water rights issued after the adoption date of the instream flow), but NOT senior water rights (those water rights issued before the adoption date of the instream flow). Instream flows are sometimes not met due to natural fluctuations in stream flow. Stream flow is the amount of water you would see in a stream if you went out and looked at the stream. We

have chosen the two months of most salmon returns for spawning (August 1 – September 30) to look at whether we are meeting the instream flow rules adopted by Ecology.

9 Numbers are generally reported by Evolutionarily Significant Unit (ESU), Distinct Population Segment (DPS) or Major Population Groups (MPG). NOAA Fisheries considers an ESU a "species" under the Endangered Species Act. These are genetically distinct population groups that have evolved over time based on geography and other factors. For steelhead, this is a DPS. The term MPG is used to refer to groups of populations within an ESU or DPS that are geographically and genetically cohesive. These MPGs are a level of organization between independent populations and ESUs. Records kept for harvest management were used in this report, but they are not easily converted to useful measures of "fish in" abundance for watersheds. For example, steelhead harvest data are translated from "steelhead management units" to MPGs or as much as possible, but conversion errors may exist because harvest management units are not necessarily aligned with recovery units. Many times data were available for certain populations but not the entire MPG, ESU, or DPS. Unless otherwise noted, pre-listing numbers represent five-year averages. Post-listing averages represent up to eight years.

10 Abundance, productivity, diversity and distribution are the four biological parameters –called Viable Salmonid Population or VSP parameters – used by NOAA Fisheries to evaluate the status of ESUs and DPSs. *Abundance* is the total number of wild adults returning to a certain point. *Productivity* is the number of young fish produced by adults. *Diversity* is the genetic and life history variability within fish populations. *Distribution* is how salmon and steelhead are distributed within their watersheds. Conditions for all four must be favorable for fish to recover. Percentages are gross estimates based on regional circumstances and best professional judgment of managers and scientists involved in implementing habitat actions, and are based on the timeframe laid out in the plans to achieve their goals. Plan adoption is when plans were adopted by the state; federal actions, including "roll ups" of management units or within other states, may have occurred subsequent to state adoption.

11 Puget Sound Chinook juvenile production data are from the Skagit, Cedar and Green rivers, and Bear Creek.

12 Compared to other species data are limited for wild steelhead in the Puget Sound DPS. Data are from areas/watersheds where WDFW and co-managers have done work. Large systems predominate escapement and harvest data. Escapement surveys for wild winter steelhead are hampered due to environmental issues like glaciated rivers, high water/flood events. Escapements are often index counts only; expansions have not been done/attempted. Wild summer steelhead are not reflected. All wild harvest by sport anglers was halted in early 2000s. There is little directed harvest by tribes; where it occurs it is often in pursuit of chum, spring Chinook, and sockeye. Harvest of hatchery and wild steelhead is predominately in terminal areas. Some low level harvest of hatchery steelhead may be included in wild steelhead harvest estimates because of a lack of hatchery-wild breakout.

13 Preliminary data used where available since steelhead populations, MPGs, and recovery spawner goals have not yet been identified by Puget Sound Steelhead Technical Recovery Team.

14 The Nisqually fall Chinook population has been managed as a hatchery population for the last few decades. Genetic studies indicate that the native Nisqually Chinook stock no longer exists. The first steps in recovery of a sustainable wild spawning population of Chinook in the Nisqually were to halt further introductions of Chinook stocks from outside the Nisqually and to ensure that more than 1,200 fish spawn in the wild each year. This was achieved by changing hatchery management and allowing more Chinook to escape harvest. The next step to be implemented over the next 10 to 15 years in phases will be to isolate the returning hatchery fish from the returning natural origin fish to allow them to begin adapting to current environmental conditions in the river. Salmon habitat in the Nisqually is also being protected and restored to increase the watershed's ability to support a natural population. There are no state hatcheries in the Nisqually watershed. The tribal hatchery has a reform plan that will address HSRG standards.

15 There are no steelhead hatchery programs in the Nisqually watershed.

16 WDFW has undertaken summer chum supplementation and reintroduction programs in several streams using indigenous broodstocks to reduce short-term extinction risk to existing wild populations and to increase the likelihood of recovery. The escapement for pre-listing years

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includes conservation measures enacted in harvest reduction and early phases of a supplementation program that started in 1992 before Hood Canal summer chum were listed in 1999. Escapement would have been even lower in pre-listing years had these conservation measure not been implemented to protect and recover Hood Canal summer chum. In recent years, supplementation-origin fish have accounted for an average of 25% of returning adult summer chum. These supplementation-origin fish are treated no differently from natural-origin fish, meaning that they return to spawn in the wild, unlike returns to more traditional hatchery programs.

17 Data are not available to estimate BC and AK portions of harvest

18 Chum spawners extrapolated from hatchery returns, 2003-2007 data only.

19 There is no directed commercial, tribal, or recreational harvest of Lower Columbia chum in the Lower Columbia. Harvest is incidental to commercial fisheries on other species.

20 Chum peak run counts only available; area under the curve used to convert peak run size to total run size. Prior to 2002 population was considered to be 100% wild; after 2002 about 10% is part of a supplementation program.

21 Chum juvenile production data are from Duncan Creek.

22 Steelhead juvenile production data are from the Kalama and Wind rivers, Cedar Creek, and Cowlitz Falls.

23 Chinook juvenile production data are from the Kalama River and Cowlitz Falls.

24 Coho total wild run size is preliminary data from WDFW and does not include Gorge MPG.

25 Coho recovery goal is under development by Lower Columbia Fish Recovery Board and fish agencies.

26 The Middle Columbia steelhead Distinct Population Segment (DPS) is located in the middle Columbia Region, part of which (Yakima MPG) is covered by the Yakima Fish and Wildlife Recovery Board, and a second part that is in the Snake River Region and covered by the Snake River Salmon Recovery Board. NOAA-Fisheries has completed a recovery plan for the Klickitat MPG portion of the DPS. Goals and priority habitats for that area were not available at publication time.

27 Steelhead juvenile production data are from the upper Yakima, Tieton (Naches), Satus Creek and Toppenish populations.

28 There are no hatcheries in the Naches watershed.

29 Harvest data are not available on an MPG scale.

30 Steelhead juvenile production data are from the Methow and Wenatchee rivers.

31 Spring Chinook juvenile production data are from the Chiwawa and Wenatchee rivers.

32 2004-2007

33 The Methow watershed includes state and federal hatcheries.

34 Although listed in Washington, Snake River sockeye are not resident and are not covered by this report.

35 Listed wild mainstem Snake River fall Chinook benefit from changes in hatchery, harvest, and hydropower activities within and outside Washington's Snake River recovery region. In addition, the habitat actions in Washington's Snake River recovery plan for spring/summer Chinook and steelhead benefit listed fall Chinook. The abundance of natural origin adult fall Chinook counted at Lower Granite Dam has increased from a pre-listing average of 267, to a post-listing average of 2,703, due to beneficial activities upstream of Lower Granite Dam, increased survival of fish in the ocean, reduced harvest outside the region, and improved mainstem habitat and passage conditions.

36 Middle Columbia steelhead harvest data available only for Walla Walla MPG.

37 Spring Chinook harvest data not available for Asotin Creek and Washington portion of Wenaha River. Adult hydropower passage mortalities not included in spring Chinook total run size.

38 Steelhead and spring Chinook juvenile production data are from the Tucannon River.

39 There are no hatcheries in the Asotin basin.

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