# Salmon are ours to save





### FROM THE GOVERNOR

# Why we fight for salmon

**Salmon connect us, feed us, and, in many ways, restore us.** The migratory reach of the salmon defines the boundaries of the Pacific Northwest. Our state is blessed with salmon in every region. They journey from our coasts and across mountains, through our ports, cities, and suburban backyards; they traverse farms and orchards and great forests through mighty rivers and small streams, persisting in our dynamic, diverse, and shared geography.

Salmon are a cultural touchstone and an economic engine, and they're great to eat.

Indian tribes rely upon them as a major source of food and a foundation of their way of life.

Salmon give back. All that we do to rebuild their once mighty runs restores the land and water upon which all our lives depend.

Nearly 20 years of sustained statewide efforts by thousands of Washington residents to restore salmon to our landscape has made our communities more resilient in the face of warming temperatures, drought, forest fires, and sea level rise.

We know how to restore salmon, but the challenges are accelerating. Salmon are in trouble, and we need to step up and double down, innovate, and make good on our investments.

# Salmon recovery brings multiple benefits

From clean water to more resilient communities, salmon recovery efforts provide a high return on investment for the state and its residents.



# Reconnected floodplains reduce flood risks for communities.



**Free-flowing rivers** with intact floodplains provide complex natural habitat for fish, plants, and animals.



Natural shorelines and estuaries filter pollutants, support shellfish, and shelter salmon.



**Clean and reliably available water** is essential for drinking
water, irrigation, swimming,
and boating.



**Healthy forests** absorb carbon, offer refuge for wildlife, and provide economic opportunity for rural communities and recreation for outdoor enthusiasts.

All of these make our communities more resilient in the face of climate change and its impacts—warmer temperatures, greater stresses on our forests, changes in our river and stream flows, rising sea levels.

For more than a century, salmon in the Northwest have been hampered by obstructed passage, overdrawn water, polluted runoff, and habitat loss through urban and rural development, agriculture, and forestry. We overfished, and we relied too heavily on hatchery programs whose impacts weren't fully understood without addressing habitat concerns.



# SALMON RECOVERY STIMULATES LOCAL AND RURAL ECONOMIES IN WASHINGTON



Every \$1 million spent on watershed restoration results in an average of 16.7 jobs.



80 percent of grant money stays in the county where a project is located.



For every estimated \$1 million spent on watershed restoration, \$2.2–\$2.5 million is generated in total economic activity.



Salmon recovery funding since 1999 has resulted in more than \$1.1 billion in total economic activity.

"Salmon Stories" in our stateofsalmon.wa.gov Web site are visually-based stories from tribes, salmon recovery groups, and agencies around the state.

# Salmon are in trouble

We measure salmon recovery in several ways: the number of fish that return to the spawning grounds; the available level of tribal, sport, and commercial harvest; and the health of our rivers, streams, and forests. These data best indicate salmon health when evaluated at watershed and regional scales against specific goals for each species. For more information, visit our Web site, **stateofsalmon.wa.gov**, where we report on salmon recovery by region.

In most of the state, salmon are below the abundance recovery goals set in our federally approved recovery plans.

BELOW GOAL (ENDANGERED SPECIES ACT-LISTED SALMON IN WASHINGTON)			NEAR GOAL
Getting Worse	Not Making Progress	Showing Signs of Progress	Approaching Goal
Puget Sound Chinook Puget Sound	Upper Columbia River steelhead	Middle Columbia River steelhead  Lake Ozette sockeye	Hood Canal summer chum
steelhead*  Upper Columbia River	Lower Columbia River chum	Lower Columbia River coho	Snake River fall Chinook
spring Chinook	Lower Columbia River fall Chinook	Lower Columbia River steelhead	
	Lower Columbia River spring Chinook	Snake River spring and summer Chinook	
		Snake River steelhead	

The chart shows broad trends in abundance for fish listed under the federal Endangered Species Act. "Abundance" represents the number of fish returning to spawn (either total number of fish spawning naturally or number of wild-born fish spawning naturally). The type of abundance data available and used for evaluation depends on several factors, including the ability to distinguish between hatchery-origin and natural-origin fish on spawning grounds. In most cases, the fish that are counted toward recovery goals are wild-born (natural-origin) spawners.

Abundance is one key piece of information the National Oceanic and Atmospheric Administration (NOAA) uses to evaluate salmon recovery status. Additional attributes for evaluating population status that are not shown in this report include productivity, life history, genetic diversity, and the spatial structure of the populations (i.e., where and when fish migrate and spawn). NOAA also considers threats and factors affecting the health of listed fish populations including habitat, hatcheries, harvest, and hydropower (the 4 Hs) impacts.

Data Sources: This is a nonstatistical evaluation of adult abundance trends for wild fish and is based on data provided by the Washington Department of Fish and Wildlife, tribes, and regional salmon recovery organizations.

\*Recovery goals for Puget Sound steelhead are under development

## SALMON FISHING OPPORTUNITIES ARE DECLINING

Harvest in Washington State, by commercial, tribal, and sport fishers, has sharply decreased since the early 1970s. Many factors have reduced salmon populations, including natural phenomena such as ocean conditions, floods, drought, and predators. Human factors reducing salmon numbers include development of land and water resources: timber harvest, agricultural practices, urbanization, water diversion, hydropower, overfishing, and hatchery practices.

This chart illustrates historic and recent catch numbers based on sport catch record cards and commercial landings. The fish caught are hatchery and wild coho and Chinook salmon in both marine and freshwater. Tribal catch is not included here.

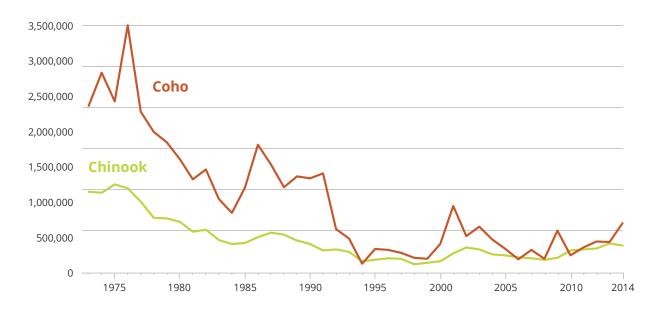
### TROUBLE IN THE PUGET SOUND REGION

As in other regions of the state, Puget Sound is losing habitat faster than it can be restored. This region has the largest and most rapid population growth in Washington and is predicted to increase in population faster than before. Puget Sound treaty tribes have identified several major habitat problems in the region, including:

- Shoreline armoring
- Water quality
- Storm water
- In-stream flows
- Impervious surfaces
- Loss of forest cover
- Fish passage barriers
- Development in floodplains and estuaries

There is a clear need for increased habitat protection for salmon in Puget Sound. The Northwest Indian Fisheries Commission's *State of Our Watersheds* report details habitat problems in Puget Sound. www.nwifc.org/publications/state-of-our-watersheds/

#### NUMBER OF FISH CAUGHT DROPS TO PROTECT LISTED SALMON



# Our statewide locally led road to recovery

As envisioned in the *Statewide Strategy to Recover Salmon: Extinction is not an Option* (1999), Washington State has crafted an effective network of organizations and governments committed to recover at-risk salmon and steelhead and the habitats upon which they depend.

#### Northeast Washington Recovery **Puget** Region Sound Recovery **Upper Columbia** River Recovery Region Region **Hood Canal** Recovery Region Washington Recovery Region Middle Columbia **Snake River** Lower Columbia **Recovery Region** River Recovery Region

## ORGANIZED BY REGION AND WATERSHED TO BEST EFFECT

To meet the needs of people and fish, recovery was organized by region and watershed. Recovery organizations were created to write and coordinate the implementation of plans to restore each salmon and steelhead population listed under the Endangered Species Act.

The recovery organizations are directed by county, city, tribal, and citizen representatives and advised by state and federal agency scientists. Their plans call for the integration of habitat recovery by willing landowners and changes to harvest, hatchery, and water quality management to improve salmon fitness, abundance, and survival. Regional organizations participate in local and longrange community planning to improve watershed health for people and salmon. With designated watershed "lead entities,"

they identify and prioritize projects that will help implement their recovery plans, and then forward those projects for consideration to the Salmon Recovery Funding Board.

For nearly 20 years, thousands of Washington State residents have sustained this effort, making changes to their properties, serving on boards, and attending community meetings. This is an unprecedented, locally led, statewide approach to recover endangered species, and while we have enjoyed significant project funding support from the federal government, we do not have the funds necessary to fully staff the regional organizations charged with implementing these plans. As challenges mount, we must ensure that the government's commitment is equal to that of its citizens.

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## LOWER COLUMBIA CONSERVATION AND SUSTAINABLE FISHERIES PLAN

Historic hatchery and harvest practices are among many factors that contribute to the decline of the lower Columbia River's 104 listed salmonid populations. The Lower Columbia Fish Recovery Board and the Washington Department of Fish and Wildlife are implementing a collaborative plan to reduce hatchery and harvest impacts, sustain fisheries, and help meet recovery goals. The plan is part of an all-H recovery strategy and includes the following:

- Changes in hatchery production levels
- Eliminating hatchery production on refuge streams
- Using natural-origin fish in hatchery programs
- Controlling hatchery fish in natural spawning areas
- Increasing harvest of hatchery fish
- Adaptive management protocols

## WASHINGTON COAST: PROTECT THE BEST AND RESTORE THE REST

The Washington Coast Region may represent the last best chance for the Pacific Northwest to protect wild and self-sustaining populations of salmon. While salmon and steelhead populations in the Washington Coast Region are seriously degraded from historic levels experts suggest that the current abundance of coastal salmon runs is probably only about 10 percent of what it was a 100 years ago—they are healthier here than anywhere else in the state. This is largely because their habitat is more intact than elsewhere, and protecting this habitat is a high priority because it is far easier and less expensive to maintain good habitat than it is to recreate or restore degraded habitat. Science strongly suggests that investments made now in the Washington Coast Region can significantly contribute to the successful restoration of wild salmon populations. Rethinking recovery, by protecting populations before they are listed, is more likely to ensure the long-term sustainability of wild salmon.

For more on each region and more salmon recovery stories like the following, visit:

### stateofsalmon.wa.gov



Climate Change and Salmon



Habitat: Through Salmon Eyes



Beyond the Dams: Reconnecting the Upper Columbia River



Seeing the Forest for the Trees

# SUSTAINED INVESTMENT IN SALMON HABITAT RECOVERY PROJECTS

The Salmon Recovery Funding Board, created in the Salmon Recovery Act of 1998 (RCW 77.85), sets statewide policy and distributes funding. Since 2000, it has invested more than \$1 billion in salmon recovery projects. Its investment in 7 regional organizations and 25 lead entities engages thousands of people committed to implementing salmon recovery at the local level. These investments leverage funding from other sources, generate local matching resources and in-kind contributions from thousands of individuals, and are the foundation for salmon recovery in Washington.

### ACTIONS BY NORTHWEST TREATY TRIBES

Indian tribes are leaders in protecting and restoring salmon and habitat, as well as co-managing fisheries with the Washington Department of Fish and Wildlife. Through treaties with the United States government, many tribes reserved their rights to harvest fish, shellfish, wildlife, and other natural resources in exchange for their land. As sovereign nations, they exercise treaty rights that protect us all. They also implement projects in partnership with others that lead to greater environmental successes.

# PARTICIPATION FROM LOCAL ORGANIZATIONS AND PRIVATE LANDOWNERS

Conservation districts, regional fisheries enhancement groups, land trusts, and other organizations in each region work closely with local communities and willing landowners to implement habitat improvement projects on their land.

### INVOLVEMENT OF LOCAL GOVERNMENTS

One of the key elements of the statewide strategy is habitat protection. Counties and cities are charged with protecting salmon habitat through use of the Growth Management Act, the Shoreline Management Act, land use plans, critical area ordinances, shoreline management plans, and other conservation and management practices.

### IMPROVEMENTS THROUGH THE FOREST AND FISH AGREEMENT

Private forest landowners invested more than \$170 million to remove fish barriers from forest roads through the Forest and Fish Agreement. The agreement protects riparian conditions and water quality, and reduces sediment through road maintenance and abandonment plans on forest lands.

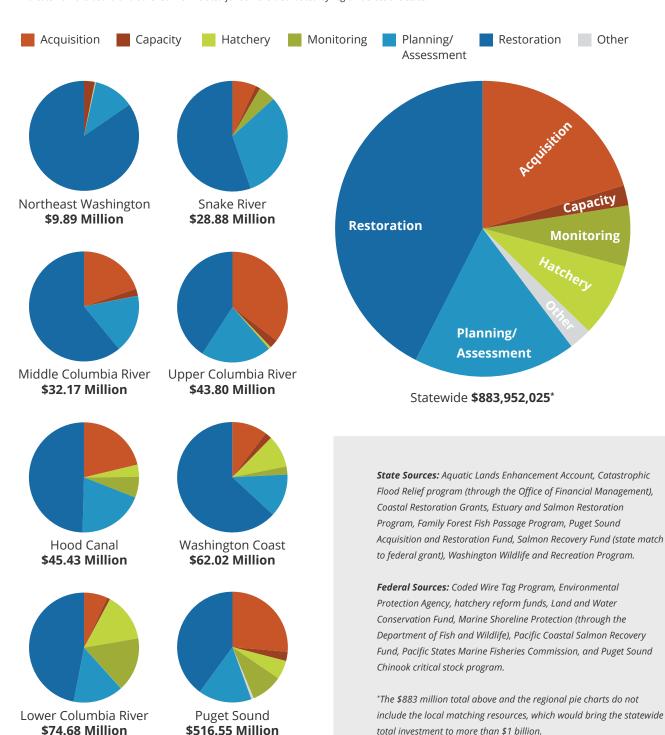
### **ELIMINATING FISH BARRIERS**

Removing barriers, such as inadequate culverts beneath road crossings or ineffective fish ladders at low head dams, allows salmon to quickly return to their historic spawning grounds. During the past 16 years, more than 6,500 fish passage barriers have been replaced with fish-friendly culverts and bridges in Washington streams. The Washington State Legislature created the Fish Barrier Removal Board in 2014 to address the estimated 35,000–45,000 fish passage barriers across the state.

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# 1997–2015 FUNDS MANAGED BY THE WASHINGTON RECREATION AND CONSERVATION OFFICE (RCO)—BY REGION AND PROJECT TYPE

RCO is a state agency that manages multiple conservation funds and boards, including the Salmon Recovery Funding Board. The charts below indicate how the board and other salmon-related funds were distributed by region across the state.



Treaty obligations confirmed by federal courts require the State to open habitat blocked by state-owned fish passage barriers (culverts) in western Washington. The court has ordered the Washington Department of Transportation (WSDOT) and other state agencies to correct 825 barriers (culverts) blocking fish passage by 2030. In the 2015-17 Biennium, WSDOT will spend \$88.7 million on stand-alone fish passage projects. The current estimate to meet the injunction is \$2.4 billion.

The Family Forest Fish Passage Program, developed in 2003, assists small-acreage forest landowners with repairing barriers. So far, 413 private barriers have been fixed opening nearly 1,000 miles of habitat.

#### MITIGATING HYDROPOWER IMPACTS

The Northwest Power and Conservation Council, Bonneville Power Administration's Fish and Wildlife Program, and the Federal Energy Regulatory Commission licensing process support critical fish passage, habitat, and hatchery programs throughout the state.

### MANAGING HATCHERIES FOR HARVEST AND RECOVERY

Congress established a hatchery review initiative in 2000, in recognition of the role hatcheries play in meeting harvest and conservation goals for salmon and steelhead. The initiative's independent Hatchery Scientific Review Group (HSRG) made recommendations for improving hatcheries in Washington. Eighty-eight percent of Washington Department of Fish and Wildlife hatcheries are consistent with the independent HSRG recommendations for proper broodstock management. In addition, the department has updated and submitted new hatchery genetic management plans to meet NOAA Fisheries requirements and support salmon recovery. Ninety percent of these plans are under review. Due to past practices, hatchery stray rates in some watersheds remain significantly above HSRG recommendations and pose a risk to recovery. The department has established rigorous monitoring and adaptive management programs that meet federal permit requirements and reduce stray rates and risks to salmon recovery.

ESTIMATED FISH
PASSAGE BARRIERS
BY WATERSHED

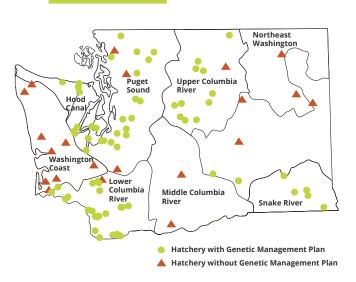


Tens of millions of dollars are needed for capital construction projects at Washington Department of Fish and Wildlife hatcheries to meet recovery goals.

#### HARVEST CO-MANAGEMENT

# HATCHERY AND GENETIC MANAGEMENT PLANS AT THE WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

(SALMON, STEELHEAD, TROUT)



Washington tribes and Washington State co-manage fisheries to provide harvest opportunities for salmon and steelhead. Conservation is the goal of co-management. Harvest is focused on healthy stocks of hatchery and naturally spawning salmon and steelhead. Beyond Washington, our salmon and steelhead are largely harvested in Alaska and Canada. Co-managers, in cooperation with federal agencies and other states, set fishing seasons. The goal of harvest management is to conserve weak stocks while providing limited harvest opportunities that do not jeopardize recovery efforts.

### SUPPORT FOR MAJOR REGIONAL INITIATIVES

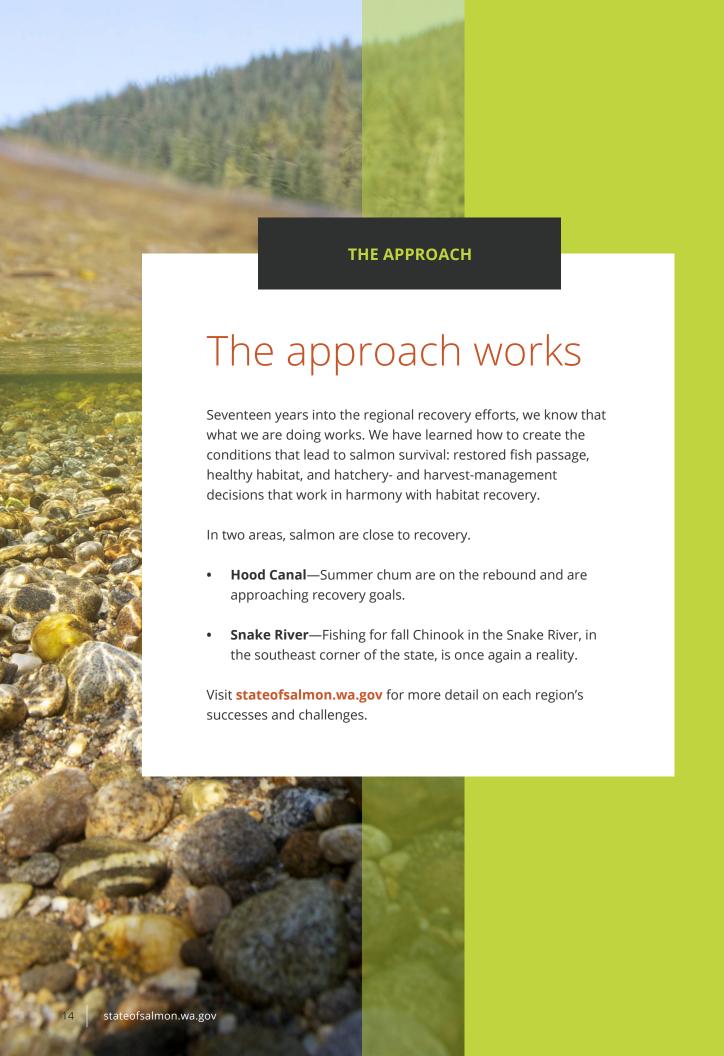
Regional initiatives that support salmon recovery receive broad support. These include the Puget Sound Acquisition and Restoration program, the Yakima Basin Integrated Water Resource Management Plan, and the Washington Coastal Restoration Initiative.

### CORRECTING URBAN STORM WATER RUNOFF

Washington Department of Ecology has taken a performance-based approach with local governments. Governments adopting low-impact development codes to address urban storm water runoff will see cleaner, less erosive storm water runoff, and will depart from past practices that favored expensive collection, distribution, and treatment elsewhere.

### **ENSURING CLEAN COLD WATER**

Washington Department of Ecology works with local communities to protect stream flows for fish while ensuring adequate water supplies that are safe to drink, sustaining farms and gardens, and allowing swimming, boating, and commerce. Washington's Water Quality Assessment lists the status of all water bodies in the state as required by the federal Clean Water Act and is available on the Department of Ecology's Web site.



# But the challenges are outpacing progress

Despite some successes, salmon are still in trouble.



#### CLIMATE CHANGE AND PREDATION

Scientists predict that average annual temperatures in the Pacific Northwest will increase between 3.6 degrees Fahrenheit and 10.8 degrees Fahrenheit by the end of the century. Warmer air temperatures translate to warmer water temperatures. The effects from climate change include the following:

- Shrinking snowpack
- Wetter springs and winters
- Unfavorable ocean conditions for marine survival
- Drier summers and falls
- Floods and forest fires

Salmon need cool, clean water to survive. Major landscape alterations and climate change create environments that increase predators of salmon such as sea lions, birds, and other fish.



### **POORLY MANAGED DEVELOPMENT**

Since 1999, when the statewide recovery strategy was adopted, the human population in Washington has increased 24 percent. By year 2040, the number of Washingtonians is estimated to increase by another 25 percent. This growing human population with its associated demands on resources is exerting serious pressure on an already compromised ecosystem, including the following:

- Development that results in habitat loss
- · Water diversion and withdrawal for human and agricultural use
- Poor water quality in area streams resulting from increased development
- Forest and agricultural practices



### **CHALLENGES**

# A CLOSER LOOK AT FISH-IN AND FISH-OUT MONITORING

Fish-in and fish-out monitoring is the counting and tracking of adult salmon coming in to spawn (fish-in) and the number of juvenile or young fish headed to sea (fish-out). Measuring this transition tells us the extent that freshwater habitat and marine habitat affect the salmon numbers overall. This is a critical step to getting to recovery because it helps to identify key limiting factors or survival bottlenecks.

Due to limited resources, fishin and fish-out monitoring is done only in select watersheds. In general, Chinook salmon are easier to monitor than steelhead. For example, in Puget Sound all of the major watersheds have some level of monitoring for Chinook. By comparison only one major watershed in Puget Sound has good estimates for wild steelhead.

To get to recovery, we need additional effort and funding, especially for Endangered Species Act-listed populations of salmon.



#### **DATA GAPS**

Although scientific monitoring and evaluation of our recovery investments were written into our recovery plans from the beginning, they've never been fully funded. It's never been more important than now.

In the State of Salmon Web site we show some of the data we have by region, but still lack the comprehensive statewide information needed to fully inform salmon recovery.

For more information about how we monitor water quality, fish abundance, and other factors, visit **stateofsalmon.wa.gov**. To learn about the Salmon Recovery Funding Board monitoring programs, visit the Habitat Work Schedule: **hws.ekosystem.us/monitoring**.

### **FUNDING NOT KEEPING PACE**



Eroding federal, state, and local budgets limit our ability to fully implement the recovery plans. Without full funding, the recovery organizations lack the capacity to address the multiple issues that impact salmon recovery, and agencies are not able to meet their commitments. State programs that support salmon recovery must be restored and enhanced. The Washington Department of Fish and Wildlife's budget has been cut by 40 percent during the past decade; its work integrating hatchery and harvest reforms with habitat recovery is essential. The Department of Ecology has lost funding to implement watershed management plans and to maintain stream gauges to measure flows. Adequate funding must be supplied to the natural resource agencies that support salmon recovery.

### **OUR RESPONSE**

# Time to step up and make good on our investments

Salmon recovery works, but it's not moving fast enough to meet the accelerating challenges. Washington State's salmon recovery infrastructure has proven successes, and it is a critical part of meeting the challenges ahead. But without investment and strong habitat protection, it won't work. We don't need a new strategy or plan. Rather, we need a renewed commitment to the effort begun almost two decades ago: extinction is not an option. To continue our sport, tribal, and commercial fisheries and meet the challenges ahead to protect habitat, all of the salmon recovery interests must work together. No one state agency, organization, or local strategy can recover salmon alone—we must work together.



# The way

It took more than 150 years to bring salmon to the brink of extinction; it may take just as long to bring them all the way back. But every inch we earn delivers benefits for all. Now is the time to reinvest and recommit to salmon recovery in our state.

### INTEGRATE HARVEST, HATCHERY, HYDROPOWER, AND HABITAT ACTIONS TO BEST EFFECT

While progress has been made in each of these areas, they are not being adequately integrated. We must address threats to salmon throughout their life cycle. There is no single action that will recover salmon. Harvest management can help ensure that enough natural-origin fish are returning to their natal streams. **Hatchery reform** can ensure that fish reaching the spawning grounds are well adapted to conditions resulting in greater spawning success. It also will preserve the genetic integrity and enhance survival of wild fish by preventing too many hatchery fish from overwhelming the spawning grounds. **Hydropower system management** ensures that the life cycle needs of salmon are addressed. Habitat protection and restoration can help ensure that returning fish will find sufficient spawning habitat and that their offspring will have the rearing habitat they need to improve their survival in migrating to the ocean. One of the key elements of the statewide strategy is habitat protection. Laws that protect salmon habitat must be enforced at the local level. More progress will occur when each of the "Hs" works in concert with the others

The integration must occur at all scales and must involve tribes in full co-management of the resource.

# forward

### FULLY FUND THE REGIONAL RECOVERY ORGANIZATIONS

Regional recovery organizations have never been funded to capacity so that they could fully lead implementation of recovery plans through a well-coordinated and integrated all-H approach. Habitat recovery, so critical to salmon survival, is an obvious need, yet the regional organizations must staff up to continue this work and meet other recovery needs.

# INCREASE STATE AGENCY RESOURCES TO MEET SALMON RECOVERY COMMITMENTS

Many state agencies have committed to actions in the regional recovery plans, yet they have not all met their commitments, in part due to tight budgets. If salmon recovery in our state is to succeed, these agencies must be funded so they can keep their commitments and support the regional organizations in recovery efforts.

## RESTORE ACCESS TO SPAWNING AND REARING HABITAT

Removing barriers to fish passage is one of the most effective ways to increase salmon production in freshwater. The recently-established Fish Barrier Removal Board is charged with coordinating removal of failing culverts, bridges, and other impediments blocking salmon access to prime spawning and rearing habitat. Carrying out the board's statewide program will open miles of habitat and connect previous investments.

### MONITOR FISH AND HABITAT TO MANAGE RECOVERY

Salmon, habitat, and water quality data are the foundation for understanding where we are and how far we still have to go. To know whether we are recovering salmon, we need adequate data to determine the following:

- Productivity, abundance, spatial distribution, genetics, and life history diversity of salmon populations
- Watershed and stream health (to find out if habitat conditions on which fish depend are getting better or worse)
- Relative effectiveness of projects and programs.

## COMMUNICATE TO BUILD TRUST AND SUCCESS

The Governor's Salmon Recovery Office plans to hold an annual statewide salmon policy forum for regional organizations, state agencies, and the Governor's Office to understand each other's priorities, align budgets, and test innovations. The Salmon Recovery Funding Board and Governor's Salmon Recovery Office will continue to support opportunities for the broader salmon recovery network to build relationships among partners, aid direct communication, and provide a venue for member organizations to coordinate and collaborate on salmon recovery issues. Washington State reaps multiple benefits from salmon recovery.

We are committed to continue and accelerate this fight.



#### **RECREATIONAL FISHING IN WASHINGTON IS BIG BUSINESS**

According to a study prepared by TCW Economics, recreational anglers in Washington State spent an estimated **\$904.8 million** in 2006 on fishing-related equipment and trip-related items. This provides an economic boost to rural economies and enriches the Northwest way of life.

This publication was printed on recycled paper. An electronic version is available on our Web site. If you would like copies of this document in an alternative format, please contact the Governor's Salmon Recovery Office at the address listed below.

Development of this report is not possible without funding from NOAA Fisheries through the Pacific Coastal Salmon Recovery Fund and data from many individuals. Especially significant are contributions from the Washington Department of Fish and Wildlife, Washington Department of Ecology, salmon recovery regions, lead entities, tribes, and the Salmon Recovery Funding Board.

To find more data and specifics about your region, your rivers, and the salmon that live there, go to stateofsalmon.wa.gov.

