SALMON NEED OUR HELP

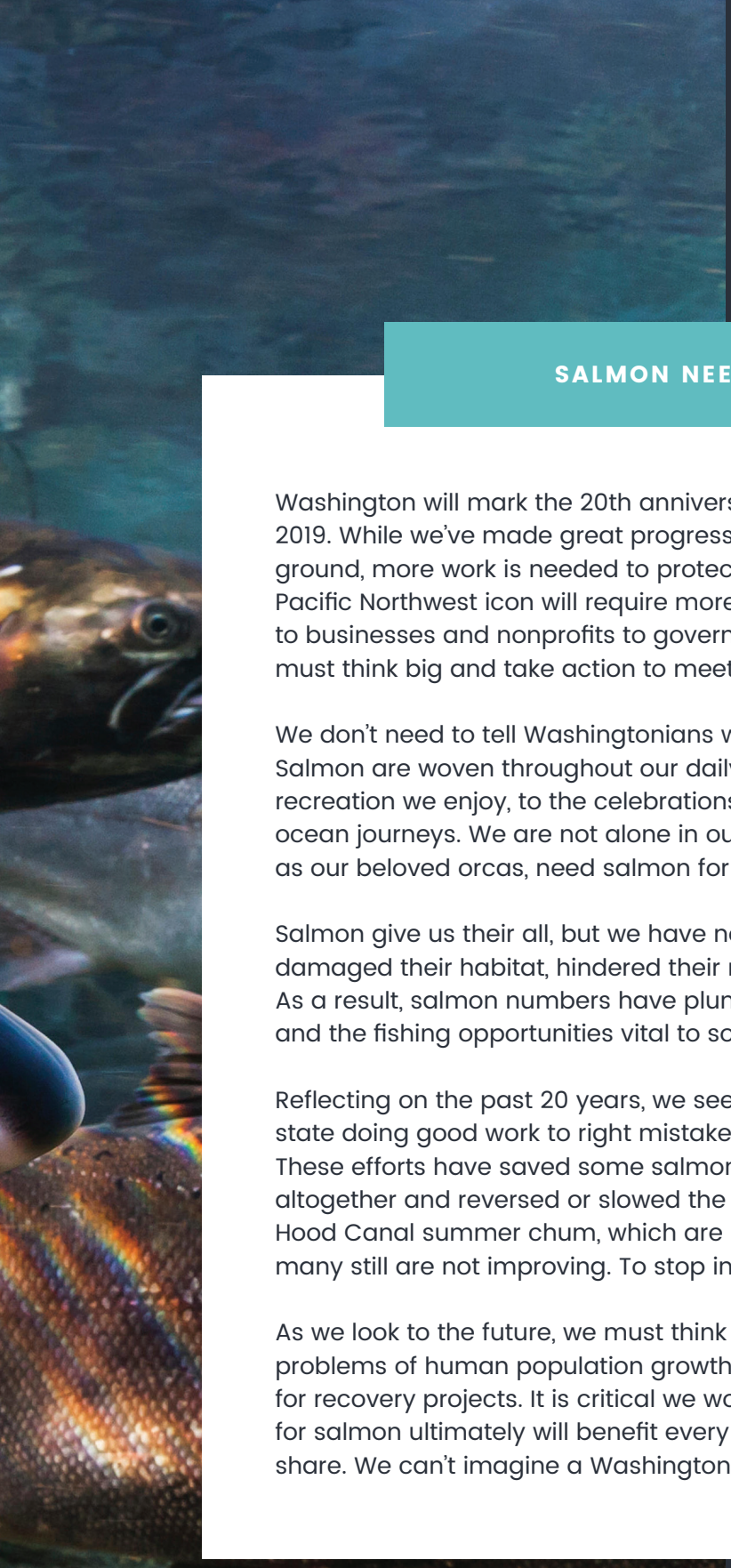
Saving Salmon for the Future

2018 STATE OF SALMON IN WATERSHEDS
EXECUTIVE SUMMARY

The 2018 State of Salmon in Watersheds is the State's biennial report on salmon, their habitat, and the progress of statewide salmon recovery efforts. More data and stories about salmon recovery: **stateofsalmon.wa.gov.**

Photo Credit: Paul Vecsei


Now
is the
time



SALMON NEED OUR HELP

Washington will mark the 20th anniversary of the Salmon Recovery Act in 2019. While we've made great progress putting important projects on the ground, more work is needed to protect and restore habitat. To save this Pacific Northwest icon will require more from all of us–from everyday people to businesses and nonprofits to government leaders. This is the year that we must think big and take action to meet the challenges ahead.

We don't need to tell Washingtonians what salmon mean to our state. Salmon are woven throughout our daily lives from the food we eat, to the recreation we enjoy, to the celebrations welcoming salmon home from their ocean journeys. We are not alone in our reliance. Many other species, such as our beloved orcas, need salmon for their survival.

Salmon give us their all, but we have not done as well by them. We have damaged their habitat, hindered their migration, and polluted their waters. As a result, salmon numbers have plummeted along with the local orcas and the fishing opportunities vital to so many.

Reflecting on the past 20 years, we see thousands of people across the state doing good work to right mistakes and improve the plight of salmon. These efforts have saved some salmon populations from disappearing altogether and reversed or slowed the downward decline of others. Witness Hood Canal summer chum, which are nearing recovery goals. But far too many still are not improving. To stop investing in salmon is not an option.

As we look to the future, we must think about big solutions to these big problems of human population growth, climate change, and lack of funding for recovery projects. It is critical we work together to act now. What is good for salmon ultimately will benefit every living thing in this special place we share. We can't imagine a Washington without salmon. Can you?

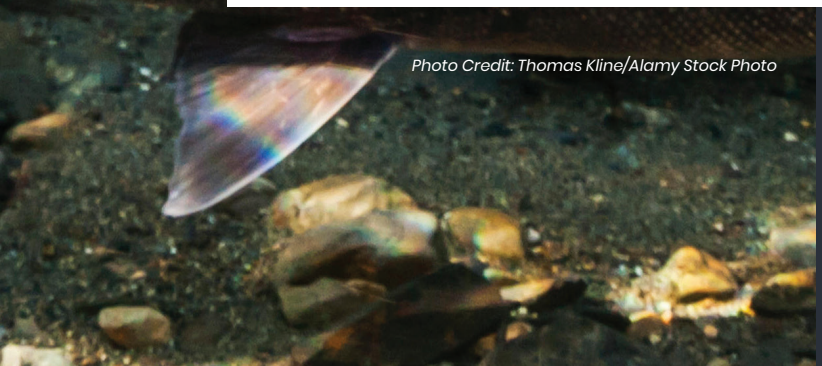


Photo Credit: Thomas Kline/Alamy Stock Photo

Salmon are in Trouble

The development of the West brought with it the decline of salmon. As cities and counties grew, we paved over pristine habitat, overfished, dammed rivers, hardened shorelines, and polluted the waterways. By the 1990s, the damage was undeniable.

In 1991, the federal government declared the first salmon in the Pacific Northwest endangered under the Endangered Species Act. In the next few years, 14 additional species of salmon and steelhead and 3 species of bull trout were listed as at-risk of extinction. By the end of the decade, wild salmon had disappeared from about 40 percent of their historic breeding ranges in Washington, Oregon, Idaho, and California. In Washington, the numbers had dwindled so much that salmon, steelhead, and bull trout were listed as threatened or endangered in nearly three-fourths of the state.

Today, nearly 20 years later, we see that salmon recovery efforts have been instrumental in helping some species turn the corner towards recovery and have slowed the decline of several other species; however too many others remain precariously close to the brink of extinction.

IN MOST OF THE STATE, SALMON NUMBERS ARE BELOW RECOVERY GOALS

The statewide picture for salmon is clear. Challenges are outpacing solutions making salmon recovery efforts as vital now as they were 20 years ago. While some species such as Hood Canal summer chum and Snake River fall Chinook are demonstrating large successes and continue to push towards recovery, other species, such as Puget Sound Chinook and upper Columbia River spring Chinook are falling further behind.

Progress in some sectors, such as hatcheries, harvest, and nearshore restoration, are being offset with challenges in other sectors such as general habitat loss, disease, predation, and invasive species. In addition, warming oceans, changing stream environments, shifting food webs, and other issues associated with climate change are playing a greater role.

Since 2016, Snake River spring and summer Chinook appear to be declining, so these species shifted to the lower "Not Making Progress" categorization. For lower Columbia River coho, limited data before 2010 and marine survival rate decreases in recent years make progress difficult to assess and led to assigning coho to the "Not Making Progress" category.

PROGRESS TOWARD RECOVERY

BELOW GOAL (ENDANGERED SPECIES ACT-LISTED SALMON IN WASHINGTON)			NEAR GOAL
Getting Worse	*Not Making Progress*	*Showing Signs of Progress*	*Approaching Goal*
Upper Columbia River Spring Chinook	Upper Columbia River Steelhead	Mid-Columbia River Steelhead	Hood Canal Summer Chum
Puget Sound Chinook	Lower Columbia River Chum	Lake Ozette Sockeye	Snake River Fall Chinook
	Lower Columbia River Coho	Lower Columbia River Steelhead	
	Lower Columbia River Fall Chinook	Snake River Steelhead	
	Lower Columbia River Spring Chinook	Puget Sound Steelhead*	
	Snake River Spring and Summer Chinook		

One important way to measure the health of salmon species is by counting the number of adult fish that return from the ocean to spawn in their native rivers. The chart above is a non-statistical evaluation of natural-origin (wild) fish that returned to spawn.

In addition to the number of fish, the National Oceanic and Atmospheric Administration (NOAA) evaluates attributes that are not shown in this report such as productivity, life history, genetic diversity, and the spatial structure (where and when the fish migrate and spawn) of the populations. NOAA also considers threats and factors affecting the health of listed fish including habitat, harvest, and hydropower impacts.

Data Sources: The Washington Department of Fish and Wildlife and tribes.

**Recovery goals for Puget Sound steelhead are under development. NOAA's draft recovery goals are available for public review at www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/puget_sound/puget_sound_salmon_recovery_domain.html.*

CHALLENGING TIMES FOR BULL TROUT

Bull trout were listed as threatened in 1998 and a five-state recovery plan was completed in 2015. Bull trout rely on cold, pristine headwater streams for spawning and rearing, and migrate extensively. This has left them extremely vulnerable to both habitat degradation and climate change. In many areas of the state, we lack basic information about the distribution, abundance, and population trends. In other areas, data shows a mix of trends, from moderate increases in strongholds to the collapse of some local populations.

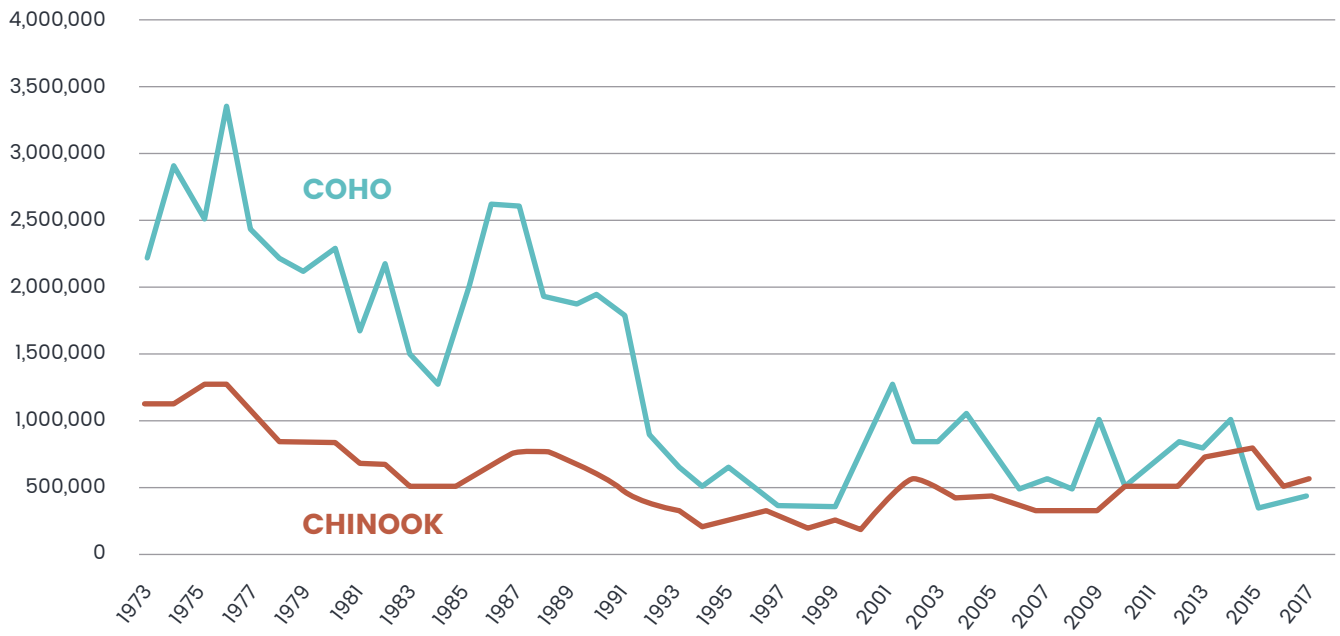
Fishing Opportunities

Salmon fishing in Washington has decreased dramatically since the early 1970s, affecting treaty tribes, recreational anglers, and the commercial fishing industry. The drop in fishing is the direct result of the long-term decline in salmon caused by a variety of factors, such as habitat loss, dams, hatcheries, over fishing, predation, and invasive species, all exacerbated by climate change.

Fishing in Washington State relies heavily on salmon produced in hatcheries. The Department of Fish and Wildlife and treaty Indian tribes mark hatchery fish by clipping off adipose fins so hatchery fish can be easily identified by recreational anglers. Generally, anglers are allowed to keep marked hatchery salmon but must release wild fish. Marked fish provide important information about ocean survival rates and migration patterns. Marking hatchery fish is believed to have reduced-but not eliminated-sport harvest impacts to wild salmon. However, harvest remains constrained because of too few wild salmon. Salmon recovery cannot be achieved by changes to hatcheries and fishing regulations alone, but will require more improvements to salmon habitat. Both wild and hatchery salmon depend on good habitat for their survival.

Fewer salmon and fewer and shorter fishing seasons are hard on all fishing communities–tribal, commercial, and recreational. Fewer salmon also hurts our economies, cultures, and our way of life in the Pacific Northwest as well as disrupting other wildlife that depend on salmon.

THE DECLINE OF SALMON FISHING IN WASHINGTON



Data Source: Washington Department of Fish and Wildlife. Data is for hatchery and wild coho and Chinook salmon caught (tribal and non-tribal) in the state's rivers and the ocean as reflected on sport catch record cards and commercial landings.

Photo Credit: Mark Riedesel

Salmon Recovery Differs around the State

The Endangered Species Act requires the federal government to develop recovery plans for salmon determined to be at risk of extinction. In Washington, regional organizations formed to develop recovery plans and coordinate plan implementation. Different species of salmon, steelhead, and bull trout face different challenges around the state and are responding differently in their regions. So too are the about 150 different populations that make up those species.

Hood Canal Salmon Recovery Region: Summer chum abundance is approaching recovery goals in both the Hood Canal and Strait of Juan de Fuca populations. Revised fishing regulations, habitat protection and restoration, and ocean conditions that support salmon survival have increased summer chum salmon numbers. Loss of habitat from population growth and development remains the biggest threat.

Lower Columbia River Salmon Recovery Region: Of the 74 populations of salmon, steelhead, and bull trout, 8 are meeting their recovery goals. The presence of dams in the Columbia River and key tributaries, along with current development trends, make salmon recovery especially expensive and challenging here.

Middle Columbia River Salmon Recovery Region: Salmon and steelhead runs are recovering. While real progress has been made, additional work is needed to remove fish passage barriers, restore key tributaries and floodplains, and continue to improve water management.

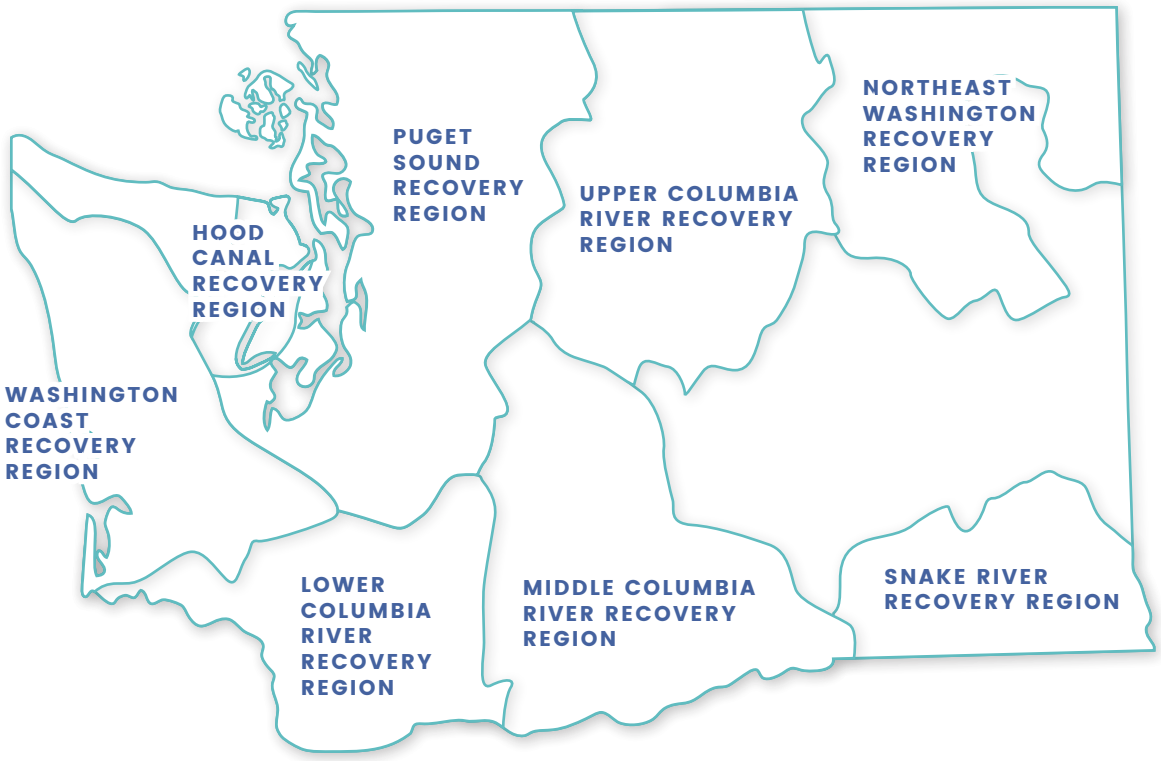
Northeast Washington Salmon Recovery Region: Bull trout and westslope cutthroat trout recovery is 14 years in the making. Fish passage barriers are being removed and habitat in the rivers is improving thanks to restoration projects. Many challenges remain, such as the loss of habitat, barriers to fish passage, rivers that are too warm and without enough dissolved oxygen, and invasive fish that out compete or eat native trout.

Puget Sound Salmon Recovery Region: Puget Sound is home to 59 listed populations of Chinook salmon, steelhead, and bull trout, most of which continue to decline. The greatest challenge is balancing the needs of the more than 4 million people living in the Puget Sound region while also protecting and restoring critical salmon habitat.

Snake River Salmon Recovery Region: Very significant salmon recovery actions have occurred through regional collaboration. The largest hurdles to fish migration have been removed now in Asotin Creek and the Touchet and Tucannon Rivers. Sediment and temperatures levels are at their lowest since Endangered Species Act listings occurred. There remain many more habitat actions to complete. In addition, there are unknown issues in fish survival that require more monitoring and research before they can be resolved.

Upper Columbia River Salmon Recovery Region: Salmon are responding to restoration projects. The runs are nearly double what they were 10 years ago, but endangered spring Chinook are in desperate need of continued recovery efforts to survive. Given that half of the historic habitat of our salmon and steelhead is inaccessible beyond Chief Joseph and Grand Coulee Dams, the health of our remaining four watersheds is of the utmost importance to sustaining these species into the future. Upper Columbia spring Chinook is the only endangered salmon species in Washington State and it is declining. Salmon and steelhead from our region swim 500 miles over nine dams to and from the ocean, and many are eaten by birds and sea lions on this migration.

Washington Coast Salmon Recovery Region: Washington's coast is home to more than half of the state's non-listed populations of salmon. While certain coho and chum populations have been increasing, some populations of Chinook and steelhead appear to be decreasing. The biggest challenges are barriers blocking migration, too many old logging roads putting sediment in streams, and invasive weeds choking riverbanks.



Salmon Recovery Works

Nearly 20 years in, salmon recovery organizations understand what salmon need to survive: healthy habitats, ability to travel freely from home rivers to the ocean and back, and hatchery and harvest management decisions that work in harmony with habitat recovery. In three areas of the state, salmon are making real progress toward viability. Below are examples of successful recovery efforts.

1. **Hood Canal:** Summer chum populations are increasingly strong and nearing recovery goals. Scientists believe these fish will be recovered within the next decade. They are watching the chum to ensure the fish can withstand changes in their habitat caused by climate change.

2. **Middle Columbia River:** The abundance and spatial distribution of middle Columbia River steelhead populations have improved significantly during the past decade. Many of the populations in the Klickitat, Rock Creek, Walla Walla, and Yakima basins are nearing recovery goals, and a population has reestablished in the White Salmon River now that Condit Dam is gone. Steelhead have benefited greatly from habitat restoration and passage projects. Much progress has been made removing fish passage barriers, increasing in-stream flows, and improving habitat conditions in all of these areas, with strong support from local communities. Unfortunately, the past 3 years have seen relatively low numbers of adult salmon returning because of poor ocean conditions. The region is optimistic that the significant improvements in freshwater habitat conditions that have been achieved will allow a rapid rebound as ocean conditions recover.

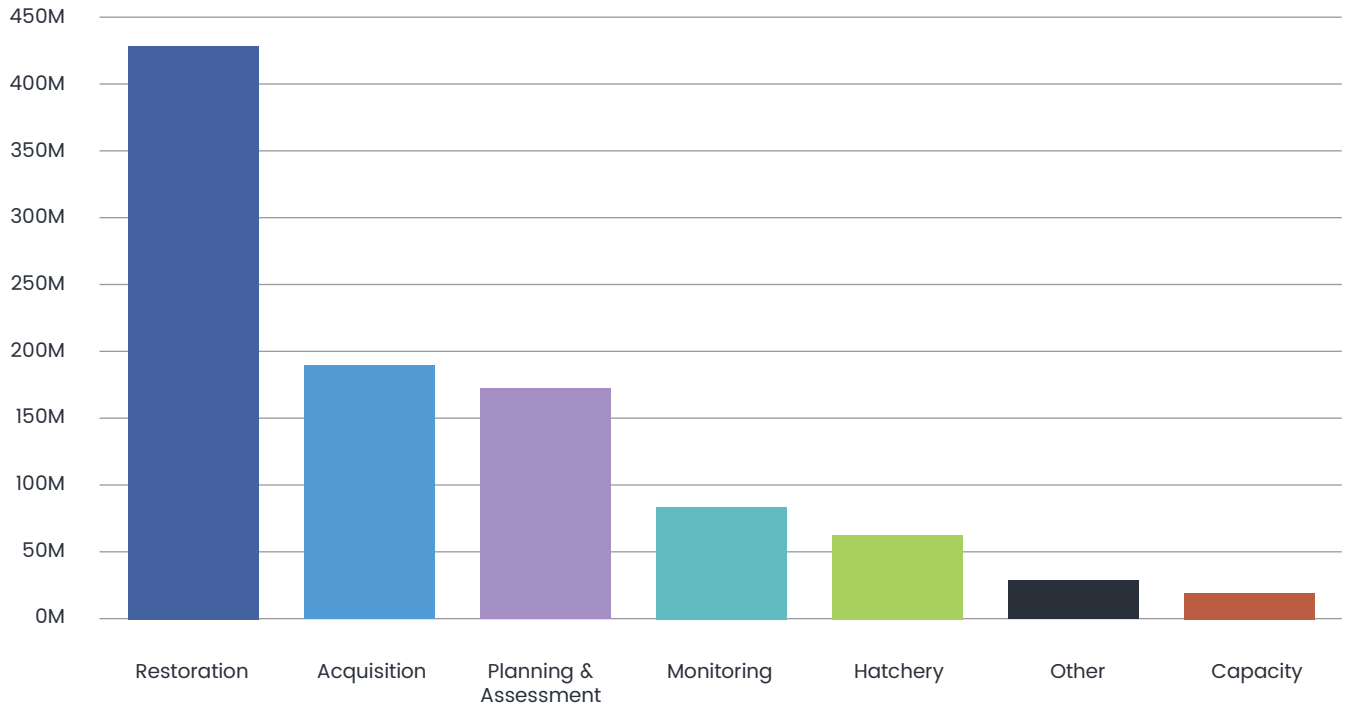
3. **Snake River**: Fall Chinook populations in the Snake River also are showing signs of progress. They have benefited from an all-H (habitat, hatchery, harvest, and hydropower) recovery approach. These improvements can be attributed largely to hatchery management improvements, hydropower passage improvements in the Columbia and Snake Rivers, harvest management, as well as habitat restoration work.

For more detail on each region's successes and challenges, visit **stateofsalmon.wa.gov**

Photo Credit: Kristen Kirkby

How is Salmon Recovery Funding Spent?

FUNDING BY PROJECT TYPE



This chart shows funds distributed ($981,781,151) by the Washington Recreation and Conservation Office from 1999-2017. The total above does not include the local matching resources, which would bring the statewide total investment to more than $1.2 billion

SUCCESS AROUND THE STATE

HOOD CANAL CHUM NEARING RECOVERY

Recovery organizations, Indian tribes, and local governments completed many projects to recover summer chum in this region. During many years, people came together to make and honor fishing agreements and to restore and protect priority salmon habitat so that these important fish have a chance to survive and thrive.

The number of chum has grown steadily and now passes the bottom range of the recovery goal. Progress also has been made in other measures that are used to judge whether chum are healthy enough to be considered recovered, such as whether they are biologically diverse enough to withstand a range of conditions and whether they are spread out enough geographically to withstand catastrophic events.

Caution is advised in moving toward delisting prematurely, but with the right ocean and river conditions, there is reasonable potential for delisting of Hood Canal summer chum salmon from the protections of the Endangered Species Act within the next decade.

For more information, visit **ourhoodcanal.org/content/salmon** and **stateofsalmon.wa.gov.**

MONITORING PROJECTS SHOWS RESTORATION CAN INCREASE SALMON NUMBERS

Washington has been monitoring its salmon recovery projects and the data has proven that projects do restore habitat and as a result, the numbers of salmon increase. For example, estuary restoration projects in the South Fork Skagit River delta cumulatively restored 682 acres of tidal wetlands that nurture about 160,000 young Chinook salmon every year. In general, system-wide monitoring of Chinook salmon densities in the Skagit delta show an increase of 690 smolts per hectare in restored habitat. Restoration efforts also increased the overall length of time juvenile Chinook spent in estuaries in the Skagit, which gave them more time to grow and resulted in greater fish survival. Similarly, in the Nisqually River estuary near Olympia, restoration of about 900 acres resulted in fish staying in the estuary 30 percent to 75 percent more of the time, giving them time to transition from freshwater to saltwater.

Challenges Facing Salmon

Salmon have a complicated life. They are born in freshwater rivers and streams but spend much of their lives in estuaries and the ocean, traveling far and wide. At the end of their lives, they return to their home streams to spawn the next generation, beginning the cycle all over again. During their travels, they encounter many obstacles that challenge their survival from habitat loss, poor ocean conditions, more and bigger floods, drought, pollution, predators and competitors, and barriers to passage to name a few.

HABITAT LOSS

The population in Washington has grown by 1.6 million people since 1999, when the statewide salmon recovery strategy was adopted. Our population needs houses, drinkable water, and other resources, which strain the environment in the following ways:

- Development along our shorelines often results in bulkheads, seawalls, and other armoring to protect buildings and infrastructure. These armored shorelines destroy salmon habitat by preventing waves from grabbing sediment from land and creating sandy beaches. Instead the sandy beaches are eroded, leaving rocky beaches that are inhospitable to salmon and the fish they eat. Shoreline armoring exists on 27 percent of Puget Sound's 2,500 miles of shoreline. While we are seeing increased removal of armoring in the past few years, hundreds of miles remain hardened.

- Development of land along streams often removes the trees and bushes that provide shade, filter pollution, and when they drop branches and leaves create good salmon habitat. Since the arrival of settlers in the early 1800s, between 50 percent and 90 percent of land along streams and other waterways has been lost or extensively modified.

- Land development increases paving and impervious surfaces, which in turn increases the amount of pollution and contaminated stormwater entering waterways. Stormwater runs off roofs and pavement, picking up pollution from oil, fertilizers, pesticides, garbage, and animal manure, before heading, usually untreated, into street drains and then directly into streams, bays, and the ocean. Untreated stormwater runoff contains many chemicals and has a profound impact on salmon. In the past decade, up to 90 percent of coho salmon in urban streams in the Puget Sound watershed died before they could spawn because of toxic stormwater runoff.

- Population growth increases the need for water for drinking, for use in homes and businesses, and for irrigation. More demand for water often impacts the quality and the amount of water left in streams to support salmon.

Challenges Facing Salmon

CLIMATE CHANGE

Air temperatures increased across the Pacific Northwest by about 1.54 degrees Fahrenheit from 1901 to 2016, and are projected to continue rising, reaching increases of 4.99 to 8.51 degrees Fahrenheit by the end of the century. Summer air temperature will see the largest increases. Warmer air translates into less snow accumulating in the mountains, earlier melting of that snow, and less and warmer water in the streams in the summer. Observations since the 1950s have shown the following:

- 25 percent decrease in snowpack levels measured April 1 in the Cascade Mountains.
- A nearly 20 percent increase in water in snow-influenced rivers in the late winter and early spring.
- Drier streams in the summer. Stream flow in the summer as a percentage of the annual flow decreased up to 15 percent.

Fish listed under the Endangered Species Act are of great concern because they are especially sensitive to changes in stream temperature and habitat. Salmon need cool, clean water to survive. The predicted combination of warmer summers with less water in streams, snowmelt occurring earlier in the year, and more water in winter streams, means many freshwater species, particularly salmon, steelhead, and trout will be affected in the ways described below.

- Rising stream temperatures can stress the health and fitness of salmon leading to increased disease and death, as well as decreased spawning success.

Photo Credit: Summer Chinook salmon downstream of State Route 20 during elevated river temperatures. Photo by Chris Fisher, fisheries biologist with the Confederated Tribes of the Colville Reservation.

- More floods, and more severe floods in the winter can scour places salmon lay their eggs, and earlier floods can flush out young salmon before they are ready.
- More severe and frequent fires and floods can increase the amount of fine sediment that enters streams and fills in pools and buries spawning gravels.
- Warmer, drier summers can increase the number and intensity of fires, destroying more trees along streams and leading to “flashier” systems, with bigger floods during storms and less water in the river at other times. Fewer trees along streams also means fewer branches, downed trees, and root wads will fall into streams and create fewer places for fish to rest and hide from predators. Very hot and intense fires also can destroy the native seed bank in the soil and leave burnt areas susceptible to invasive vegetation.
- Major climate changes can alter food webs including what is available for salmon to eat and what animals eat salmon. For example, warmer stream temperatures can adversely impact the stream insects that juvenile salmon eat, as well as allow warm water fish species to expand their distribution in the watershed and eat more juvenile salmon.

RESTORE ACCESS TO SPAWNING AND REARING HABITAT

In 2001, the western Washington tribes sued Washington State for its failure to correct fish-blocking culverts, saying it damaged their treaty rights to fish. In 2013, the U.S. District Court ruled in favor of the tribes, requiring four state agencies to correct barriers at an estimated cost exceeding $3.6 billion. The U.S. Supreme Court affirmed this decision in 2018.

Combined, the four agencies have corrected more than 330 fish passage barriers, allowing access to at least 1,042 miles of potential upstream habitat for fish.

Many additional efforts are underway.

- As part of the 1999 Forests and Fish Law, private landowners and state forestland managers in Washington have removed 7,300 fish passage barriers since 2001 across 9.3 million acres, opening 5,100 miles of fish habitat. Large private and state forest landowners are 84 percent done with their goal and are on track to correct the fish barriers they are responsible for by 2021.
- The Family Forest Fish Passage Program administered jointly by several natural resource agencies has corrected 397 barriers, since 2003, opening 933 miles of habitat in small, privately owned forests.
- To ensure new barriers are not created, the Washington Department of Fish and Wildlife requires an environmental permit commonly known as a Hydraulic Project Approval. Anyone planning certain construction activities in or near state waters, including work on culverts, must obtain a permit from the department.
- In 2014, the Legislature created the Brian Abbott Fish Barrier Removal Board, chaired by the Washington Department of Fish and Wildlife, with the purpose of coordinating the removal of fish passage barriers under state, local, tribal, and private ownership that block salmon access to prime spawning and rearing habitat.

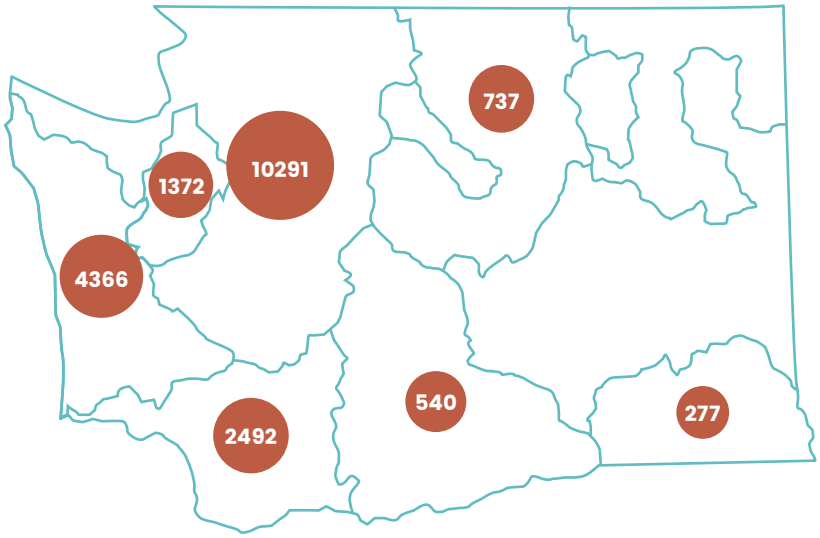
Photo Credit: Dave Weeman, Stevens County Conservation District.

Challenges Facing Salmon

FISH PASSAGE BARRIERS

Addressing fish passage is critical for salmon recovery in Washington State. Salmon need to be able to reach the ocean and return home to spawn. They also need to be able to reach healthy habitats to feed, grow, and transition from saltwater to freshwater. Some of the most frequent barriers to fish are culverts, which are pipes and other structures that carry streams under roads. Poorly designed culverts can create fish passage problems when they are too high for fish to reach, too steep for fish to swim through, or when the water velocity exceeds fish swimming capabilities.

The Washington Department of Fish and Wildlife estimates that about 20,000 barriers to salmon and steelhead exist across the state.



NUMBER OF KNOWN PASSAGE BARRIERS TO SALMON AND STEELHEAD

Note: This map shows barriers by salmon recovery region. Data are from August 2018.

PREDATORS AND INVASIVE SPECIES

Sea lions, seals, and other marine mammals as well as birds and non-native fish are eating more salmon, compromising salmon recovery. Some studies estimate that hungry sea lions and seals may be eating up to 44 percent of adult spring Chinook heading up the Columbia River from the ocean. The problem is complex and varied across the state. In some cases, infrastructure, such as dams and dredge-spoil islands in the Columbia River, exacerbate the issue. In other cases, climate change and landscape changes caused by wildfires or human activities can increase the number of predators.

In addition, salmon face threats from invasive species, which are not native to Washington and don't have natural predators. These species can compete with salmon for food and habitat and sometimes eat salmon. For example, northern pike, a voracious predator that can eat up to two-thirds of its body length, recently has been found in Washington and eats salmon and steelhead.

Collaboration is the Foundation for the Future

WE'RE IN THIS TOGETHER

Washington State's network of organizations are committed to recovering salmon. Today, collaboration and partnerships are necessities. The challenge of recovering salmon spans jurisdictional boundaries and will take all of us working together to face the big challenges of the future.

Citizens and Landowners
Every day, people make decisions that can either benefit or burden our natural environment. People can contribute to salmon recovery by making good land use decisions, using products that don't harm salmon, and keeping pollution out of our waterways. See more things you can do for salmon: https://stateofsalmon.wa.gov/howtohelp. Landowners and forest landowners also play vital roles because many of the restoration projects occur on their land. Private forestland owners also have been actively removing barriers to fish migration.

Counties and Cities
Counties and cities are responsible for protecting salmon habitat through the Growth Management Act, the Shoreline Management Act, land use plans, critical area ordinances, shoreline management plans, and other practices.

State Agencies
A half dozen state agencies play pivotal roles in salmon recovery. The Department of Fish and Wildlife co-manages with treaty Indian tribes salmon fishing and hatcheries. It also restores and protects habitat, works with local governments to protect habitat, and participates in programs to remove barriers to fish passage in streams. The Department of Ecology improves and protects water quality, manages and conserves water resources, and manages coastal and inland shorelines to ensure our state has sufficient supplies of clean water for communities and the natural environment. The Salmon Recovery Funding Board, Governor's Salmon Recovery Office, and the Recreation and Conservation Office provide statewide policy and funding for salmon recovery.

The Department of Transportation is working to remove barriers to fish passage under roads in the state highway system. The Department of Natural Resources also is removing barriers, cleaning up aquatic lands, and regulating forest practices that impact salmon. The Conservation Commission provides voluntary programs for private landowners to implement conservation on their property and for counties to use locally driven watershed plans and voluntary, incentive-based tools to protect critical areas. The Puget Sound Partnership serves as the regional organization for the recovery of salmon in the Puget Sound area.

Indian Tribes
Indian tribes in Washington are fiercely committed to protecting and recovering salmon. Tribal governments are responsible for hundreds of successful salmon habitat restoration projects. Jointly with state government, treaty Indian tribes co-manage the salmon resource and produce about 40 million salmon annually. Tribes use their treaty rights to protect salmon and habitat for the benefit of all Washington citizens.

Federal Government
Multiple federal agencies have a role in salmon, steelhead, and bull trout recovery. Two key agencies are the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA), which is responsible for recovering salmon and steelhead under the Endangered Species Act, and the U.S. Department of Interior's Fish and Wildlife Service, which is responsible for managing the recovery of bull trout. The agencies fund recovery efforts and approve or write recovery plans, as well as provide science and monitoring information.

Lead Entities, Project Sponsors, and Regional Recovery Organizations
A myriad of local and regional organizations are the front line staff making salmon recovery happen. Washington's Salmon Recovery Act organizes the state's efforts by region and watershed. Regional salmon recovery organizations wrote recovery plans that identify specific actions needed to recover salmon, steelhead, and bull trout listed under the Endangered Species Act to sustainable levels. The federal government approved these science-based plans and now the regional organizations coordinate the implementation of those plans. Lead entities are local, watershed-based organizations that develop local salmon habitat recovery strategies and then recruit organizations to do projects that will restore or protect salmon habitat. Project sponsors are organizations that do the on-the-ground projects. Project sponsors can include cities and towns, counties, Indian tribes, nonprofits, fisheries enhancement groups, conservation and irrigation districts, state and federal agencies, and colleges and universities.

Photo Credit: Mike Hovis

MEETING OUR COMMITMENTS

Indian tribes are active leaders in protecting and restoring salmon and their habitat, and co-manage salmon fishing with the Washington Department of Fish and Wildlife. These co-managers, in cooperation with federal agencies and other states, set the fishing seasons each year. Salmon fishing opportunities are managed with the dual goals of conservation and sustainability of salmon. The co-managers focus fishing on healthy stocks of hatchery and naturally spawning salmon and steelhead.

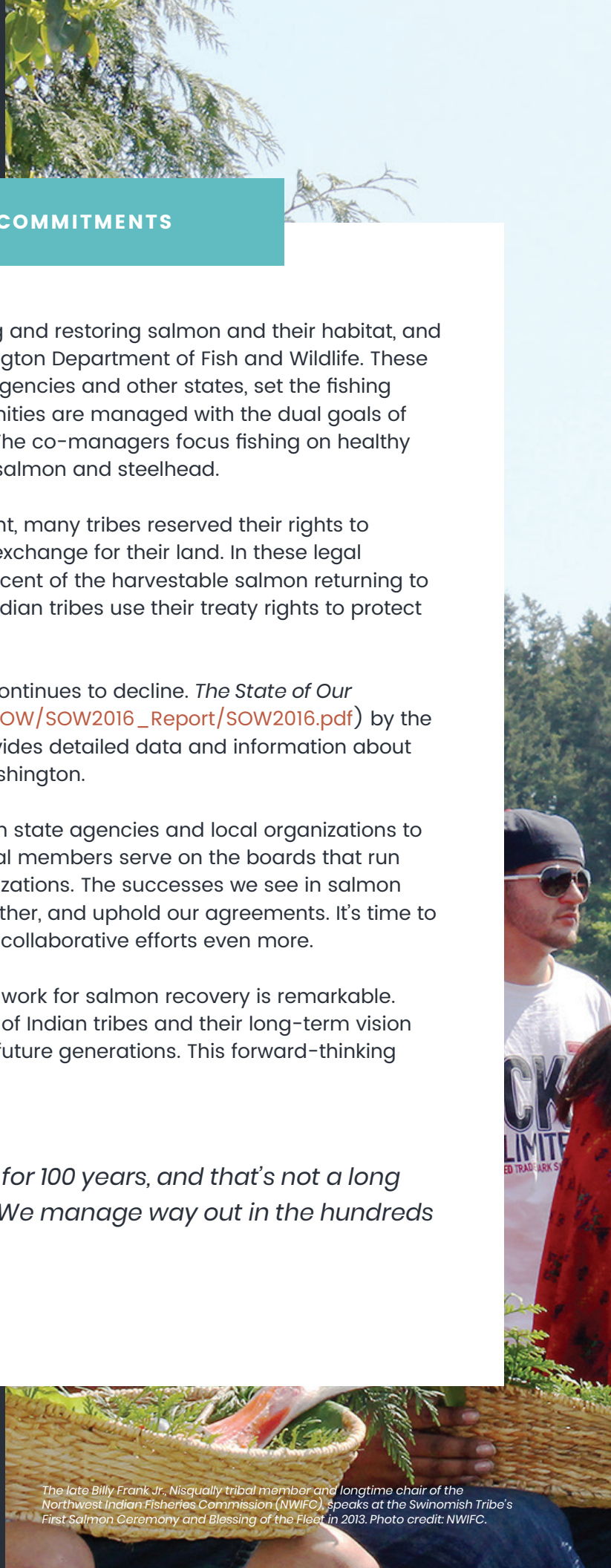
Through treaties with the federal government, many tribes reserved their rights to harvest fish and other natural resources in exchange for their land. In these legal promises, treaty tribes are entitled to 50 percent of the harvestable salmon returning to Washington waters. As sovereign nations, Indian tribes use their treaty rights to protect the natural resources, which benefits us all.

Treaty rights are at risk as salmon habitat continues to decline. *The State of Our Watersheds* report (https://geo.nwifc.org/SOW/SOW2016_Report/SOW2016.pdf) by the Northwest Indian Fisheries Commission provides detailed data and information about pressures on salmon habitat in western Washington.

Indian tribes in Washington work closely with state agencies and local organizations to protect and restore habitat for salmon. Tribal members serve on the boards that run the regional and watershed recovery organizations. The successes we see in salmon recovery come from our ability to work together, and uphold our agreements. It's time to support and build on the strengths of these collaborative efforts even more.

The tireless commitment by Indian tribes to work for salmon recovery is remarkable. We can find inspiration from the dedication of Indian tribes and their long-term vision to keep salmon strong and harvestable for future generations. This forward-thinking approach is inherent in tribal cultures.

> *"My dad only walked on this earth for 100 years, and that's not a long time. To us, that's not a long time. We manage way out in the hundreds of years for our resources."*
>
> *- Billy Frank, Jr.*



The late Billy Frank Jr., Nisqually tribal member and longtime chair of the Northwest Indian Fisheries Commission (NWIFC), speaks at the Swinomish Tribe's First Salmon Ceremony and Blessing of the Fleet in 2013. Photo credit: NWIFC.

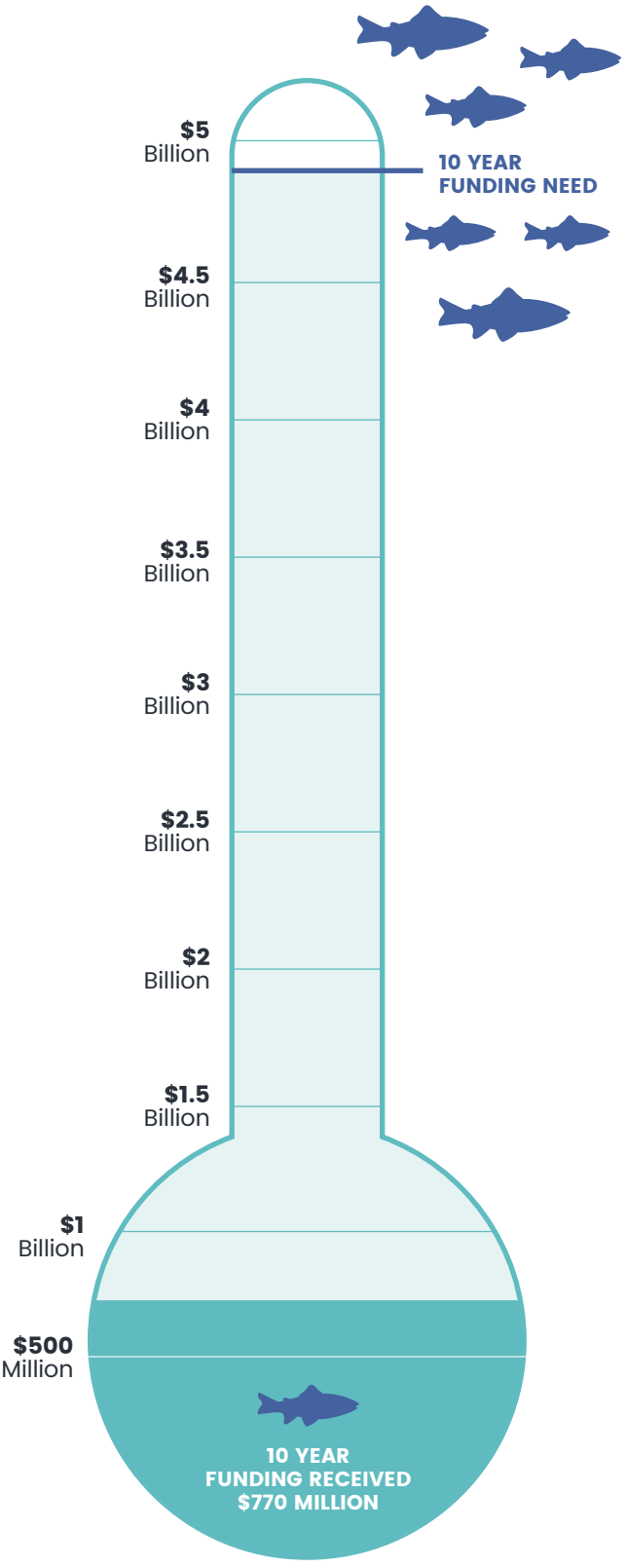
Taking Action

It took more than 150 years to bring salmon to the brink of extinction. It will take perseverance, partnership, trust, innovation, and increased investment to bring salmon back.

The pressure on salmon continues to be great–from a growing human population taking up valuable salmon habitat and polluting rivers, to increasing numbers of predators such as sea lions. We've made significant investments and progress towards recovery, established partnerships, and learned a great deal about how to recover salmon.

During the first 20 years, we tackled many of the smaller, easier projects, established critical partnerships, and created the infrastructure of people, policy, and process to carry recovery work into the future. Many of the implemented projects are successful as measured by the number of fish using the habitat or changes to the landscape that we know supports salmon survival. We aren't seeing dramatic changes in populations not because what we are doing is not working, but rather because we are not doing enough.

There remains a need for larger projects that affect entire landscapes, the harder projects to change people's behavior, and the more complex projects that require fundamental changes in how we handle a growing population. These are all projects that require significant investments, sacrifice, and the willingness to make the tough decisions.



**The estimated statewide cost of habitat-related elements in regional salmon recovery plans for 2010-2019 is $4.7 billion in capital costs. This amount does not reflect non-capital costs. Percent funding available is 16.34 percent of the funding needed. www.rco.wa.gov/documents/gsro/SalmonRecoveryFundingReport2011.pdf. The actual funding represents funded and proposed projects for state and Pacific Coastal Salmon Recovery Fund funding, administered by the Recreation and Conservation Office, from 2010-2019 with a total of $770 million, including the funding request for 2019. Represented programs include the Chehalis Basin Strategy, Estuary and Salmon Restoration Program, Brian Abbott Fish Barrier Removal Board, Family Forest Fish Passage Program, Flood Plains by Design, Puget Sound Acquisition and Restoration, Salmon state projects, Washington Coast Restoration Initiative, and Yakima Basin Integrated Plan. The results are only for projects, not activities. Activities include regional and lead entity support, hatcheries, monitoring, research, outreach, and enhancement.*

MORE FUNDING IS NEEDED

For salmon recovery to be successful, the recovery plans must be fully funded. We know how to recover salmon and restore their habitat, and tracking efforts have proven the work is successful. While there have been significant investments in recovery, government funding has not been enough to fully implement the salmon recovery plans. Without enough funding, the projects and changes needed to recover salmon from the brink of extinction cannot be implemented. Without these projects and changes, salmon will go extinct.

To deliver salmon recovery on the ground, additional funding is needed for the regional and local watershed organizations responsible for implementing the salmon recovery plans. Regional organizations have never been funded fully to lead implementation of recovery plans. A 2011 study of the cost of implementing the regional recovery plans' habitat projects alone showed a need far greater than state and federal money provided. That study showed the statewide cost of habitat-related elements in regional salmon recovery plans for 2010-2019 is $4.7 billion in capital costs.* Recovery organizations received only a fraction of that amount, about 16 percent. Is it any wonder that salmon remain on the brink of extinction?

FUND LARGER HABITAT RESTORATION AND PROTECTION PROJECTS

Many of the smaller habitat projects have been completed. Funding is needed now for larger projects that affect larger, more complex landscapes and cross jurisdictional boundaries. These high priority habitat restoration and protection projects need to be funded to achieve salmon recovery. For example, Chinook salmon and steelhead must travel 7 miles, partially in a concrete channel, through Walla Walla, sometimes getting trapped inside and dying because the water is too hot. A local partnership called the Mill Creek Working Group is working on a watershed solution that will open 50 miles of spawning and rearing habitat in the short term. This large and complex project is estimated to cost $25 million and require the involvement of the Confederated Tribes of the Umatilla Reservation, Washington Department of Fish and Wildlife, Walla Walla County, the City of Walla Walla, U.S. Army Corp of Engineers, Walla Walla County Conservation District, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Tri-State Steelheaders Regional Fisheries Enhancement Group, the Snake River Salmon Recovery Board, and other local groups.

Taking Action

On the west side of the Cascade Mountains, King County is planning a $15 million project to reconnect 52 acres of floodplain to the Cedar River by removing nearly a half-mile long levee and its fill, building a side-channel, and planting the area to create more diverse types of habitat for salmon, steelhead, and trout. The Cedar River in this area doesn't have enough places with slow-moving water for fish to grow and hide from predators.

Complex projects like these are the ones that will make the biggest difference but also require the most effort and funding.

BETTER CONTROL OF HARMFUL DEVELOPMENT

We need stronger protections, better compliance, and more enforcement of land use regulations to protect shorelines and improve fish passage and water quality. Increased enforcement and greater precautions should be activated for construction in or near salmon waters and for habitat and water quality violations. Revisions should be made to eliminate exemptions for building docks, shoreline armoring, bulkheads, and rock walls along shorelines.

Development cannot continue the way it has if we are to recover salmon. With anticipated population growth, low-impact development requirements, native landscaping, and green infrastructure need to become the norm. Any new development must use softer techniques while watershed functions are restored by retrofitting previous development impacts.

MANAGE AND CLEAN UP STORMWATER

Much of Washington's development was done before modern stormwater requirements and now impact both stream function and water quality. Solving stormwater problems after they are created is tremendously expensive—estimates for restoring small urban streams can reach over a billion dollars. Stormwater from new development is much better managed, but is nowhere near sufficient to protect salmon. Even though Washington is a national leader in stormwater management, to sustain salmon we will need to invest heavily in remediating the impact of development. We need to make more careful choices about where and how we accommodate growth and where we choose to protect salmon habitat.

SAVING SALMON, SAVING ORCAS

Orca populations, local to the Puget Sound and Salish Sea, are starving and listed as endangered under the federal Endangered Species Act. Without changes, they, like the salmon they eat, face extinction. Fortunately many of the actions necessary to recover salmon align and support the actions recommended to save the orcas by the Governor's Southern Resident Killer Whale Task Force. Regional recovery plans include the following major priorities:

- Restore and protect priority salmon habitat.
- Restore and protect the habitat needed for the fish that salmon eat.
- Enforce and strengthen land use regulations for shoreline protection, fish passage, and water quality.
- Support hatcheries that use the best available science to protect and sustain salmon while also providing fishing opportunities.
- Continue to carefully manage fishing by humans.
- Reduce predation on salmon.

Photo Credit: Candice Emmons/NOAA Fisheries, permit #16163

Taking Action

ADDRESS CLIMATE CHANGE

To meet the needs of salmon, and to mitigate the threat of climate change, we must act. There are many actions we know work–many old, some new. Actions needed are as follows:

- We must act to keep our rivers and streams filled with cool, clean, oxygen-rich water. We can do this by planting trees and protecting mature forests, enhancing streamside forests, and establishing corridors along streambanks that will shade and stabilize streams and streambanks.

- We must act to protect and improve existing, productive habitat in our freshwater, river mouth, estuarine, and nearshore environments.

- We must create, enhance, and protect cold spots in streams. We can do this by installing large woody structures in streams to catch and trap sediment, and make deep, complex pools and side channels filled with cool, clean water.

- We must protect cold water springs and groundwater sources, which can help maintain cooler summer pool temperatures.

- We must increase the amount of water in streams during the late summer by upgrading irrigation systems. We also must capture more water throughout the watershed through beaver reintroduction, wood loading in small streams, forest management for snowpack retention, and floodplain reconnection. We must protect wetlands, springs, and large groundwater seeps from development and water removal, as these subterranean water sources will become increasingly important when surface flows are altered by climate change.

- We must protect salmon against raging floods by reconnecting and increasing floodplains, wetlands, side channels, and tributary habitat to provide more places with slow-moving water so salmon can take refuge.

- We must fund programs and projects to correct fish passage barriers so salmon can reach existing habitat upstream and water, sediment, and wood can move freely downstream, creating better habitat for fish.

- We must act to implement adaptive management programs in our watersheds based on measuring and monitoring the results of our actions.

RESTORE ACCESS TO SPAWNING AND REARING HABITAT

Removing barriers to fish passage is one of the most effective ways to increase salmon numbers. The Brian Abbott Fish Barrier Removal Board coordinates the 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 enhance previous investments. We also must continue efforts to remove and decommission problematic forest road systems.

ENGAGE COMMUNITIES

Look for ways to educate and tell the important story of salmon recovery to empower and encourage current and future generations to act. If we are to change behaviors, we must do a better job of informing Washingtonians about the importance of salmon, the ways in which we can each make a difference, and how we need to do things differently. Recovering salmon will take all of us doing more to help and changing what we do to better align with what salmon need to survive and to thrive.

REDUCE SALMON PREDATORS AND DESTRUCTIVE INVASIVE SPECIES

We must increase management activities to control animals that eat salmon, such as sea lions, as well as non-native, invasive animals that compete with and prey on salmon, such as northern snakehead. Efforts also must be made to control non-native plants, such as knotweed, Eurasian watermilfoil, and flowering rush that outcompete native plants and degrade salmon habitat. We should prioritize preventing the introduction of novel invasive species and controlling those that are already in the state. For example, northern pike, are established in the upper Columbia River and its tributaries. If management actions aren't bolstered, northern pike could spread downstream where they could harm salmon both by eating salmon and depleting the fish that salmon eat.

INTEGRATE HARVEST, HATCHERY, HYDROPOWER, AND HABITAT ACTIONS

We must address threats to salmon throughout their lives. There is no single action that will recover salmon. Harvest management can help ensure that enough wild 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. Hatchery reform 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 can ensure 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. More progress will occur when each "H" works in concert with the others and integration occurs at all scales.

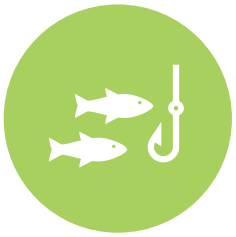
What Salmon Recovery Gives Us

Salmon recovery stimulates local and rural economies in Washington:

Every $1 million spent on forest and watershed restoration generates between 15.7 and 23.8 jobs.

Every $1 million spent on forest and watershed restoration generates $2.2 million to $2.5 million in economic activity.

Salmon restoration funding since 1999 has resulted in more than $1 billion in total economic activity.



Salmon recovery supports healthy, harvestable salmon, which in turn supports the recreational, commercial, and tribal fishing economies and related businesses; provides an economic boost to rural communities; and enriches the Northwest way of life.

Photo Credit: Don Freeman

SALMON RECOVERY GIVES BACK TO OUR COMMUNITIES AND ENJOYMENT OF NATURE

Reconnected floodplains reduce flood risks for communities.

Restored rivers provide clean and reliably available water essential for drinking and irrigation.

Healthy forests and estuaries absorb carbon, offer refuge for wildlife, and provide economic opportunity for rural communities and recreation for outdoor enthusiasts. Estuaries provide particularly important habitat for Chinook salmon to rest, eat, and grow before heading to the ocean.

Restored habitat provides outdoor places for recreation, such as swimming, fishing, and boating, and for educational opportunities.

A balanced food web sustains many species that depend on salmon, such as bears, eagles, and orcas. The diet of resident orcas is nearly exclusively salmon.

Photo Credit: Ian Couch

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 the National Oceanic and Atmospheric Administration's National Marine Fisheries Service through the Pacific Coastal Salmon Recovery Fund and data from many individuals. Especially significant are contributions from the Washington Department of Fish and Wildlife, the Northwest Indian Fisheries Commission, the Washington Department of Ecology, salmon recovery organizations, 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****.*

Citations for facts presented in this report are online at ***stateofsalmon.wa.gov.***

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