

# Fisheries Impacts

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The harvest of salmon in the Pacific Northwest, the cultural lifeblood of numerous regional tribes, has declined as much as 90 percent over the past few decades. The plunge has resulted from a variety of human impacts, all of them aggravated by climate change.

Rampant population growth in the region has resulted in a multitude of environmental assaults on the region's aquatic ecosystems. Development that denudes the land of soil and plants, strips away natural filtering systems, hardens flood-plain surfaces, and excretes a toxic-pollutant soup. All have had a catastrophic effect on water-dwelling creatures as well as their land-based cousins. Increased flooding and siltation into riparian breeding grounds, rivers and coastal areas has seriously damaged the ability of salmon to reproduce their young in sustainable numbers. Repeated clear-cutting of the region's vast forests had also created severe stress on the ancient hydrological cycle that helps balance natural systems.

Salmon aren't the only victims of this ecological assault. One example: orca whales in Puget Sound are not only struggling to find chinook salmon, one of seven salmon species depleted by overharvesting in the Pacific and further beaten down by climate-change impacts. Because of pollutant loads in their bodies, orcas found dead in the Sound are legally required to be buried in toxic-waste dumps.



The assault on salmon viability has been ongoing in western Washington state for decades, resulting in ecological imbalance, political struggle, violence-and along the way a triumph for the region's tribes as they regained treaty fishing rights via the 1974 Boldt legal decision in federal court. In the three decades since that decision, area tribes have strengthened their capacity to address this fundamental challenge to their cultural identity and lifeways. But even as tribal capacity has increased, the synergistic impacts of climate change on the systems on which king, sockeye, chinook, chum, pink, and coho salmon, as well as steelhead (also a salmonid), depend have added more fuel to the fishing-rights fire. But today's fight for the fish must be focused more than ever on the destructive impacts of development in this high-growth region.

With harvesting rights restored and co-management of the resource established with the state, tribal fish and water experts have many more tools now to fight this ongoing battle. Despite their efforts, the salmon remain in dramatic decline. Fishing, a cultural practice that has long sustained tribes such as the Nisqually, Puyallup, Tulalip, Skagit, Quinault, Makah, and more than a dozen others, has not rebounded. Recovery efforts continue, and there have been notable successes, such as reintroductions of DNA-tested indigenous fish to regional waterways, but these days tribal water scientists and technicians focus as much on managing ecosystems as on managing fish. One is interdependent on the other, just as human health and happiness are so clearly dependent on the beauty and bounty of Puget Sound and the Pacific.

With typical climate-change irony, global-warming can mean too little water or too much. Drought impacts the region, as do floods intensified by changing weather patterns. Damage to

aquatic systems is circular; an arbitrary "beginning" might be found in the forests, where decades of overharvesting has destroyed their water-retention and aquifer-recharge capacity, compacted the soil via repeated incursions by heavy equipment, and stripped the understory of its ability to bind the soil and minimize siltation into streams and coastal areas.

Regional flooding has grown more intense and destructive—a condition many scientists attribute to climate change. Usable surface water has decreased by a third, with a similar decrease in water-table storage capacity. After water flows into the Sound, its life-friendly balance is disrupted in some areas due to algal blooms that sink, rot, and increase bacterial consumption of oxygen; several de-oxygenated "dead zones" affect places ranging from Hood Canal to the Pacific. Rivers and near-shore environments, where out-migrating salmon fry develop and returning adults gain strength for the last leg of their amazing journey, are rendered less productive by summer drought, increased water temperatures and associated diseases in fish, as well as by longstanding urban and industrial pollution. Dammed and straightened watercourses throughout the system disrupt the natural balance even more.



*Whale--Haida art.  
NativeNorthwest.com*

Steve Robinson, Legislative and Education Policy Analyst for the Northwest Indian Fisheries Commission, an organization representing the interests of twenty treaty fishing tribes in western Washington, says despite the enormity of the challenge, there's a lot of effective environmental work going on among tribal resource managers. As co-managers with the state, each regional tribe maintains a natural-resources department and is active in research, management, education and outreach, and each spends considerable time "pushing for better decisions" on how best to manage the natural resources that sustain both tribal and swelling non-tribal populations.

"Traditional knowledge," says Robinson, "is one of our key values. Tribes have been here for tens of thousands of years; others have been here for a few hundred. Through all those years the tribes have been outstanding stewards and maintained a deep, abiding respect for nature and the resources around us. There are important messages coming out of knowledge transferred from one generation to the next. A lot of it boils down to respect and personal responsibility."

Regional tribes face huge problems, he acknowledges. "That's been the case for a long time, and now climate change must be factored into all of it. We deal with a lot of questions. What decisions must be made so people can live according to the Seven Generations philosophy? What is a harvestable number of fish? How can we help others understand the necessity for natural habitats, and the ways they can help protect and restore them? Our salmon hatchery programs are attentive to rising sea levels. We have an outstanding fish-science lab. We're weighing in on the placement of wells, and trying to help people realize the risks of sea level rise, such as saltwater intrusion and erosion. We are already seeing increased storm intensity and there are major concerns about tsunamis. We're weighing in politically on the need to protect ancient glaciers, which are melting before our eyes. The Nisqually River, for example, is glacier-fed, and it's half-melted. If people don't begin to understand the messages in tribal legacies and stories, it and others will melt entirely. Then what do we do?"

The challenge, he readily concedes, is monumental and dizzyingly complex. "I don't think there's one of us who doesn't feel our plate is heaped up with ten servings. We're all keeping very, very busy in our various tasks. But I'm hopeful; I have to be. We can't lose that. A lot of people aren't hopeful. They figure it's just going to happen. But I believe, and Billy Frank Jr. [NWIFC's chairman and a leader in the regional tribal fight for justice and ecological protection] and other leaders here believe we have to keep hope alive. We have to help the average citizen learn to be engaged, to contribute to the solution rather than adding to the problem."

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This profile was developed in 2008 by Dennis Wall, Institute for Tribal Environmental Professionals, Northern Arizona University, with financial support from the U.S. Environmental Protection Agency. The profile is available on the Tribes & Climate Change website: [www4.nau.edu/tribalclimatechange/](http://www4.nau.edu/tribalclimatechange/). The tribal climate change profiles featured on the website are intended to be a pathway to increasing knowledge among tribal and non-tribal organizations interested in learning about climate change mitigation and adaptation efforts.

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