The Great Pacific Northwest Salmon Conundrum

Robert T. Lackey

Department of Fisheries, Wildlife, and Conservation Sciences
Oregon State University
Corvallis, Oregon 97331

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Email: Robert.Lackey@oregonstate.edu
Phone: (541) 602-5904
Web: https://blogs.oregonstate.edu/lackey/publications/

FEATURE

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Salmon are an icon of the Pacific Northwest, but the populations of wild salmon in the region are mere fractions of their former size, despite massive funding for recovery efforts. Source: Adobe Stock.

WHEN PEOPLE THINK OF THE U.S. PACIFIC NORTHWEST, the iconic salmon often come to mind. Although universally treasured, wild salmon are well on their way to disappearing from the region (Oregon, Washington, and Idaho). Why? Certainly not for lack of concern or because society has been unwilling to spend money to save them. In fact, many billions have been spent on salmon recovery. A large, well-funded "salmon recovery industry" has long thrived in the region, and there appears to be no end to this funding stream.

Indeed, the sheer amount of research focused on salmon is greater than any other group of fishes in the world. As a result, we have quite a clear picture of these animals, their environment, and what has caused their long-term decline. But the reality is that despite the massive sums spent on salmon science, Pacific Northwest wild salmon runs—or the mass migration of salmon to spawn in the upper reaches of rivers—continue to decline. In other words, this is not a policy challenge that can be solved with more science. It is, rather, a question of

Most salmon in the Pacific Northwest retail market are raised in net pens abroad, such as these pens off the coast of Norway. But the success of farm-raised salmon in the retail market does not reflect the realities faced by wild salmon in the region. Source: Adobe Stock.

political will. And therein lies the rub.

Wild salmon decline is a natural resource policy conundrum. Everyone supports the recovery of these popular and iconic species, and a steady flow of money continues to fund an army of scientists and other technical experts tasked with reversing the decline. But a reversal in declining salmon populations will remain unachievable unless there are substantive public policy changes, some of them politically contentious.

A Dwindling Population

To get a clear picture of what is going wrong with salmon populations in the Pacific Northwest, it is useful to compare it with other regions. Outside the Pacific Northwest, there are flourishing wild salmon populations—that is, salmon that have not been raised in freshwater hatcheries or saltwater net pens. Many wild runs in Alaska and Eastern Russia are doing well. Farmed salmon populations in many parts of the world are also thriving. Fish farms in British Columbia, Chile, Norway, and a few other locations provide abundant fresh salmon to retail markets year-round. Even in the Pacific Northwest, supplemental stocking from hundreds of inland fish hatcheries sustains runs substantially higher than the wild-only runs, but still low by historical standards. These hatchery-enhanced runs are large enough to permit sustainable harvests, though at greatly reduced levels.

Most of the relatively small remaining salmon runs in the Pacific Northwest are maintained largely by releases of hatchery-raised fish, with wild salmon—typically defined as "those whose parents spawned naturally in natural habitat"—making up only a small portion. Even when both hatchery and wild salmon are counted, salmon runs are typically a single-digit percentage of the pre-1850s level. Scientists and others have documented the decline of salmon in the region for years. Elaborate, popular, and expensive efforts to recover wild salmon runs continue unabated, especially in the past few decades—largely a response to the Endangered Species Act requirements.

Using hatcheries to sustain relatively large salmon runs is plausible, if technically challenging. However, the dictates of the Endangered Species Act regarding wild salmon have made the continued role of hatcheries to supplement wild runs controversial. Many wild salmon advocates argue that supplemental stocking from hatcheries actually worsens the viability of wild salmon runs. Of course, without hatcheries, there would be essentially no salmon fishing in most of the region.

In short, it is unlikely that current efforts will successfully restore wild salmon to the abundant populations that can assure self-sustainability and support substantial sport and commercial harvest. How can current efforts to restore salmon populations in the Pacific Northwest avoid being added to the long list—well over a century in the making—of noble, expensive, and failed salmon recovery efforts? Even if we continue to spend billions on restoring wild salmon runs, these efforts will be only marginally successful without a serious response to the fundamental changes that have occurred in the Pacific Northwest—and the changes still to come. A successful

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When gold was discovered in California in 1848, waves of ambitious treasure hunters were not far behind. As the human population grew, freshwater habitats for salmon shrank. Salmon populations soon followed suit. Source: Adobe Stock.

wild salmon recovery strategy must address several overarching and undisputed realities.

Challenging Realities

Any successful salmon recover strategy must consider the current realities of the Pacific Northwest—and how and why must they be changed—to have any chance of recovering wild salmon to anything approaching historical levels.

The first reality that salmon recovery efforts must contend with: a low baseline population. Wild salmon abundance in the Pacific Northwest is low and has been for a long time. Most spawning runs today have shrunk to less than 10% of their pre-1850s levels. Over two dozen distinct population segments are now listed as threatened or endangered by the Endangered Species Act. Many runs have already disappeared entirely, and more will follow unless the long-term trajectory is reversed.

The next issues to address are the causes of salmon decline. Scientists and policy makers have long been aware of the main causes of the dire state of salmon runs along the West Coast. The list of threats to salmon populations is extensive and well-documented: mining, damming, water pollution, habitat alteration, overfishing, irrigation and other water withdrawals, predation on salmon by a range of species, interaction and competition with hatchery-produced salmon and other, often non-native fish species, and short and long-term changes in climate and ocean conditions. And this is hardly an exhaustive list. The challenges that salmon face are manifold, to say the least.

As one might suspect, these difficulties are linked to a third, overarching issue that successful salmon recovery efforts simply cannot ignore. Where wild salmon were once plentiful (Europe, Eastern Asia, Eastern North America), the decline in their populations is almost inversely proportional to the area's growth in the human population and the associated infrastructure. In the long term, as the human population expanded in these regions over centuries, the size of salmon runs predictably declined to low levels. Prior to 1850, Oregon, Washington, and Idaho were home to a few hundred thousand people. Today, this same region is home to roughly 14 million people. Over the

Assuming the most likely rate of human population growth in the Pacific Northwest, there will be somewhere between 35 and 45 million people by the year 2100. Based on past experience elsewhere, the devastating consequences for wild salmon in the region are predictable.

Billions of dollars have poured into projects to reverse the decline of salmon populations in the PNW—such as this large fish ladder designed to assist salmon migration. But addressing the factors that actually cause the decline will require immense behavioral and lifestyle changes. Source: Adobe Stock.

same period, the wild salmon population declined from roughly 40–50 million to only a few million. Assuming the most likely rate of human population growth in the Pacific Northwest, there will be somewhere between 35 and 45 million people by the year 2100. Based on past experience elsewhere, the devastating consequences for wild salmon in the region are predictable.

This all adds up to a fourth, unavoidable reality. Without dramatic changes in politically popular public policies and lifestyle choices, options for restoring salmon runs to significant, sustainable levels are limited. It is not just the sheer number of humans in the Pacific Northwest, but their individual and collective lifestyles that reduce the abundance of wild salmon. A growing human population means not only more people, but also more demand for houses; roads; grocery stores; coffee shops; electricity for air conditioning and heating; athletic facilities; parking; domestic, industrial, and agricultural water; office buildings; ski resorts; and schools. And this list could certainly go on. Unabated, this increasing "footprint" will accelerate the downward pressure on the remaining wild salmon runs.

Most of the relatively small remaining salmon runs in the Pacific Northwest are maintained largely by releases of hatchery-raised fish.

Given these four realities, what are the prospects for current wild salmon recovery efforts to change the long-term, downward trajectory for wild salmon in the Pacific Northwest? The simple answer: poor, and getting worse. Indeed, the political and practical trade-offs necessary to achieve salmon recovery will not get easier as we move through this century.

The Policy Conundrum

Owing to a lack of political will, the policy conundrum of wild salmon recovery remains. Wild salmon recovery enjoys popular support at the abstract level, but it appears that we are collectively unwilling to make the difficult, expensive, and politically unpopular decisions needed to reverse the decline in any significant way. If we continue to spend billions of dollars on what is politically popular while failing to change the source of salmon decline, efforts to restore wild salmon runs will fail, and the long-term downward trajectory of wild salmon will continue.

Perhaps these billions of dollars spent to recover wild salmon should be considered "guilt money"—modern-day indulgences, a tax that society and individuals willingly endure to alleviate collective and individual remorse about the sorry state of wild salmon. Ultimately, such spending is unlikely to help wild salmon populations bounce back. But it helps many people feel better as they continue the behaviors and choices that threaten wild salmon populations. We cannot restore wild salmon populations by throwing money at the problem while ignoring the realities that led to their decline. Nor is it enough simply to understand the realities that threaten the region's salmon. A successful wild salmon recovery strategy must combine knowledge and political will to change these realities. Only then can we give wild salmon in the Pacific Northwest a fighting chance. ■

Robert T. Lackey (Robert.Lackey@oregonstate.edu) is a professor of fisheries at Oregon State University, where he teaches a course in ecological policy and mentors graduate students. He was previously deputy director of the U.S. Environmental Protection Agency's 350-person National Environmental Research Laboratory in Corvallis, Oregon, from which he retired in 2008. For his work strengthening the role of science in policy, he received the EPA Gold Medal, the agency's highest award. Lackey is a fellow of the American Fisheries Society and the American Institute of Fishery Research Biologists.