Hearing of the Subcommittee on Water, Wildlife and Fisheries

Testimony of Todd Myers
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My name is Todd Myers, and I am the Environmental Director at the Washington Policy Center. I have worked in environmental policy for more than two decades, including work at the Washington State Department of Natural Resources when the state implemented the landmark Forests and Fish rules that removed culverts and opened thousands of miles of fish habitat and created new protections for salmon streams to keep them cool. I am currently a member of the Puget Sound Salmon Recovery Council.

Across the Pacific Northwest, including the Snake River, salmon recovery is going much more slowly than I would like. After decades of effort, we are missing our salmon recovery goals in every part of the state and in several places across the Pacific Northwest. Understandably, this is creating frustration among those of us for who work on improving salmon populations. I worry, however, that this frustration is becoming counterproductive – leading some to grasp at silver bullet solutions rather than focus on a region-wide, science-based approach that, while slow, is the most likely path to increasing salmon populations.

Spending $35 billion – or more — to destroy the four Lower Snake River dams would be counterproductive, not just for the climate, energy reliability, and the economy, but for salmon by misallocating resources that could do so much good across the region.

The federal scientific agencies agree. The most comprehensive study of the impact of the dams ever completed, the Columbia River System Operations EIS, determined the dams should not be removed. That study concluded keeping the dams would "meet the Improve Juvenile Salmon, Improve Adult Salmon, and Improve Lamprey objectives. According to the CSS model, Snake River Chinook and steelhead are expected to see relative improvements in SARs [smolt-to-adult return ratios] of 35% and 28% respectively."[1]

By way of contrast, the report from the Biden Administration calling for the destruction of the dams stated very clearly that it is not a scientific document. A note early in the report says, "This report does not constitute a regulatory or policy requirement and does not supersede or modify existing analysis in ESA recovery plans, viability assessments, 5-year reviews, or ESA consultation documents. The report also does not assess the impacts of implementing any rebuilding measures nor suggest funding sources, needed authorizations, or regulatory compliance measures required for implementation."[2]

That report sets the bar for Snake River recovery at what they call "mid-range" population, which they acknowledge "exceed ESA recovery abundance thresholds." It notes, "Columbia River salmon and steelhead abundance remains farm below historical levels." This is an aspirational goal, but no river in the Northwest (or perhaps the nation) meets this recovery bar. If the goal is set above ESA targets or at

[1] Columbia River System Operators, "Columbia River System Operations Final Environmental Impact Statement," July 2020, https://www.nwd.usace.army.mil/CRSO/Final-EIS/
[2] NOAA Fisheries, "Rebuilding Interior Columbia Basin Salmon and Steelhead," September 30, 2022, Rebuilding Interior Columbia Basin Salmon and Steelhead | NOAA Fisheries

the level of historical abundance, there is little justification for singling out the Snake River compared to the many other rivers with poor returns compared to historical levels.

The status of salmon populations and recovery

To understand why the EIS supported keeping the dams and why focusing on the Snake River dams is counterproductive, it is important to understand the current state of salmon runs. *The Seattle Times* recently noted, "The state and tribes have invested millions to raise hatchery fish, restore critical habitat, keep rivers cool and clean up industrial and agricultural pollution. Yet the efforts haven't been enough to keep the river open to fishing this summer…" [3]

The story wasn't about the Snake River, but the Snohomish River in Western Washington where there are no dams. While some are fixated on the status of salmon on the Snake River, the unfortunate reality is that salmon across the Pacific Northwest are struggling.

For example, a recent assessment by NOAA Fisheries found that Chinook populations in Puget Sound declined between 2004 and 2019. As the Washington State report on the State of Salmon in Watersheds notes, salmon populations across the state are not improving, from Puget Sound Chinook, to the Snake River Spring/Summer Chinook (but not the Fall Chinook), Lower Columbia Chinook, as well as runs elsewhere.[4]

The challenge Washington and neighboring states face is that recovery is complex and we have to address numerous factors. Lack of quality habitat – good estuaries and floodplains or fish barriers like culverts – is one problem. High water temperatures in streams is another threat. A report this year from the Washington State Academy of Scientists noted that the number of Chinook being eaten by seals and sea lions is "substantial and has increased steadily," concluding that "predation is considered a primary driver of increasing mortality rates."[5] Ocean conditions also play a major role in the cycle of salmon returns. Pollution, like 6PPD-quinone, a compound in tire rubber which kills coho salmon at low doses, also puts pressure on salmon populations.

With so many factors, salmon recovery is complex, and results take a long time. A recent scientific assessment of the effectiveness of salmon recovery efforts noted that in some cases it could take two decades to simply discern the benefits of habitat restoration projects.

Dams play a role in that complex list of impacts on salmon. I personally have voted for Washington state to remove a dam on the Nooksack River. The key, however, is not to focus on particular types of risks to salmon, but to target our efforts where they can make the most impact to increase salmon populations. Fixating on dams can lead us to search for silver bullet answers that aren't there.

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[3] Breda, Isabella, "Summer Chinook fishing on premier WA rivers called off as salmon struggle," The Seattle Times, June 21, 2023, https://www.seattletimes.com/seattle-news/environment/summer-chinook-fishing-on-premier-wa-rivers-called-off-as-salmon-struggle/

[4] Washington State Recreation and Conservation Office, Governor's Salmon Recovery Office, "Salmon Abundance," https://stateofsalmon.wa.gov/statewide-data/salmon/

[5] Washington State Academy of Sciences, "Pinniped Predation on Salmonids in the Washington Portions of the Salish Sea and Outer Coast," November 2022, https://app.leg.wa.gov/ReportsToTheLegislature/Home/GetPDF?fileName=Pinniped%20Predation%20on%20Salmonids%20in%20the%20Washington%20Portions%20of%20the%20Salish%20Sea%20and%20Outer%20Coast_5d43c6d6-3aad-442a-9271-0315d351eaf2.pdf

The experience of dam removal on the Elwha River

For example, some who want to destroy the Snake River dams point to the removal of two dams on the Elwha River on the Olympic Peninsula in Washington state. The dams have been gone for a decade, but Chinook populations have not improved. The Chinook run in 2022 was below the 10-year average and Chinook fishing is still banned on the Elwha due to low populations. Additionally, about 95 percent of Elwha Chinook are hatchery fish. Those who hope that removal of the Snake River dams will help increase the population of wild salmon cannot currently point to the Elwha.

Even on the Elwha River, where the dams had no fish passage – in contrast to the Snake River dams – the recovery strategy includes many elements. A recent scientific assessment of salmon recovery across the Pacific Northwest from federal agencies noted that the population increases that have occurred are due to many factors. The authors wrote, "Harvest limitations, natural fish recolonization, and hatchery fish supplementation were combined with the expanded availability of freshwater habitat to accelerate fish response."[6] Even in the case of the Elwha, recovery involved many complementary actions.

A focus on dam destruction as the key to increasing populations contradicts the science and experience of salmon recovery in the Pacific Northwest.

The status of Snake River salmon

It is also important to note that the claims we hear today that Snake River salmon are on the edge of extinction have repeatedly been inaccurate. In 1999, environmental groups purchased an ad in *The New York Times* claiming that unless the Snake River dams were removed, "wild Snake River spring Chinook salmon, once the largest run of its kind in the world, will be extinct by 2017."[7] Instead, about six times as many Chinook, wild and hatchery, returned in 2017 as in 1999.

Similar claims are being made today.

Just two years ago, dam opponents wrote in the Spokane Spokesman-Review, "Imagine Snake River without any salmon. That's not hyperbole."[8] It is hyperbole. Using a projection from the Nez Perce, dam opponents claimed that wild Chinook populations would steadily decline and would be "functionally extinct" by 2025. In fact, wild Chinook returns more than doubled last year. For all Chinook, 2022 was the third year in a row of increases and the fifth-highest returns since 2000.[9]

This was not unexpected. Ocean conditions play a significant role in the cycle of salmon returns on the Snake and across the Pacific Northwest. In 2019, dam opponents claimed low populations were evidence that salmon would soon disappear on the Snake. That year, however, was the bottom of the population

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[6] Pacific Northwest Aquatic Monitoring Partnership, "Management Implications from Pacific Northwest Intensively Monitored Watersheds," May 31, 2022, https://www.pnamp.org/document/15207

[7] Kareiva, P. and Carranza, V., Fealty to symbolism is no way to save salmon. In: Effective Conservation Science: Data Not Dogma. Edited by Peter Kareiva, Michelle Marvier, and Brian Silliman: Oxford University Press (2018). © Oxford University Press. DOI: 10.1093/oso/9780198808978.003.0015, https://academic.oup.com/book/26688/chapter-abstract/195481536

[8] O'Mara Collin and Macy, Ayssa, "Sen. Murray and Gov. Inslee must keep their promise to save wild salmon," Spokane Spokesman-Review, June 6, 2021, https://www.spokesman.com/stories/2021/jun/06/collin-omara-and-alyssa-macy-sen-murray-and-gov-in/

[9] Columbia Basin Research, "DART Columbia Basin "Quick Look" Adult Passage | Columbia Basin Research," https://www.cbr.washington.edu/dart/quick_look/adult

cycle and, predictably, populations have increased over the past three years as ocean conditions improved.

That is why in 2019 I predicted the increase we have seen over the last three years. That year, I co-authored an op-ed with Governor Inslee's former salmon advisor, in which we noted, "Some people point to low runs in 2019 on the Snake as evidence that we need to remove the dams. Salmon populations run in a cycle, however, and we are seeing the same low runs across the region."[10] Despite that predictable cycle, there will be a downturn again in the near future and we will hear that salmon are doomed. This is not a rational or science-based way to make public policy or to help salmon.

Smolt-to-Adult return ratios (SARs)

While Chinook and other Snake River salmon are unlikely to become extinct, they are not recovering as quickly as we would like. One metric used to assess the success of recovery efforts is the smolt-to-adult return ratio, known as SARs. This is simply the metric of what percentage of baby salmon (smolt) that head downstream return four years later. The higher the ratio, the more likely a salmon stock is to become self-sufficient and increase population.

The ratio can also test another hypothesis from dam opponents – that the stress of passing the dams creates delayed mortality among Snake River salmon. Even if 96 to 98 percent of smolt successfully pass each dam, the claim is that salmon die at higher rates later.

The data show this is unlikely and that SARs on the Snake River are similar to other rivers, with and without dams. A peer-reviewed study of SARs across the Northwest from Welch et al. published in October 2020 concluded, "Within the Columbia River, the SARs of Snake River populations, often singled out as exemplars of poor survival, are unexceptional and in fact higher than estimates reported from many other regions of the west coast lacking dams."[11]

After some dam opponents criticized the study, an Independent Scientific Advisory Board (ISAB) was convened and agreed with the study's assessment of Snake River SARs. The authors of that assessment wrote, "The ISAB concurs with the general conclusion…that current SARs for Chinook populations from the Columbia Basin and in other systems are generally low, with recent values below 2% (after accounting for fishery interceptions) being common."[12]

Despite that, some have claimed that high SARs on the Yakima River (not far from the mouth of the Snake River) cited in that study, are evidence that the dams are the cause of the low returns. That is contradicted by the data and local experts.

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[10] Myers, Todd and Martin, Steve, "Removing Snake River dams is misguided approach to saving orcas," The News Tribune, January 25, 2020, https://www.thenewstribune.com/opinion/op-ed/article239608063.html

[11] Welch, David Warren, and Porter, Aswea Dawn, and Rechisky, Erin Leanne, "A synthesis of the coast-wide decline in survival of West Coast Chinook Salmon (Oncorhynchus tshawytscha, Salmonidae)," Fish and Fisheries, Volume 22, Issue 1, January 2021, https://onlinelibrary.wiley.com/doi/epdf/10.1111/faf.12514

[12] Independent Science Advisory Board, Northwest Power and Conservation Council, "ISAB Review of the Coast-Wide Analysis of Chinook Salmon Smolt to Adult Returns (SARs) by Welch et al.," June 29, 2021, https://www.nwcouncil.org/reports/isab-review-coast-wide-analysis-chinook-salmon-smolt-adult-returns-sars-welch-et-al/

The same data from the Welch et al. study show that two rivers even farther downstream – the Warm Springs River and the Carson River – have lower SARs than the Snake River populations. If dams are the cause of low SARs, why do returning salmon that pass fewer (or no) dams have even worse return rates?

Additionally, salmon recovery experts I spoke to in the Yakima River watershed indicate that while the SARs were good for a short period of time, the current SARs may actually be lower than the Snake.

The simple truth is that when we look at the science of salmon returns on the Snake, we return to the conclusion that salmon recovery is slow everywhere and that the Snake River runs reflect broader trends and are not unique.

The impact of the dams on river temperatures

As the concern about climate change and the impact on habitat increases, some have expressed concern about the impact the dams have on river temperatures. Salmon are cold water fish and warm water temperatures is an area of concern for all salmon. As I noted, I was at the Washington State Department of Natural Resources when we changed forest practice laws to address this very issue – providing more shade to keep streams cool.

On the Snake River, however, it is unlikely that the dams are significantly impacting temperatures and that temperature is the cause of poor returns.

The salmon stock in most jeopardy, the Spring/Summer Chinook run, travel downstream before river temperatures are typically warm enough to have a negative impact.[13] They also return in the Spring when temperatures are well below the 68-degree threshold that is considered to be the danger zone for salmon. By way of contrast, the Fall Chinook, which return later and are sometimes exposed to higher temperatures, are one of the few salmon populations in Washington state this is recovering, and the state of Washington lists them as approaching recovery goals.

Spring Chinook simply aren't exposed to high temperatures. Even this year, when the Spring Chinook run was delayed a few weeks, temperatures on the Snake were still about 59 degrees during the peak of the Spring run – well below the temperature that risks significant impacts.

Despite that, some dam opponents claim the dams are increasing river temperatures and harming salmon. In a letter, dam opponents cited at 2003 model from the EPA, and claimed, "When considered collectively, the four lower Snake Dams could affect temperatures up to a potential maximum of 6.8° C/12.2° F."[14] It has now been two decades since that model was released and we can use real-world data to determine the accuracy.

First, the model does not pass a simple smell test. The hottest summer in the last two decades was in 2015, where poor snowpack combined with a hot summer to increase river temperatures. Even then, temperatures at the Ice Harbor Dam – the farthest downstream – never reached 73 degrees. If the 12.2

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[13] National Marine Fisheries Service West Coast Region, "Status of the Species: Snake River Spring/Summer Chinook Salmon," February 2023, https://www.fisheries.noaa.gov/s3/2023-02/feb-2023-status-snake-r-spring-summer-chinook.pdf

[14] Cannamela, David, "2019 Scientists" Letter re: Warming waters in the lower Snake River, threat to salmon survival," email to Scott Pugrud and the Idaho Office of Species Conservation, October 21, 2019, https://species.idaho.gov/wp-content/uploads/2020/11/4.-Salmon-Workgroup-Public-Comment-10.22.19.pdf

degrees F impact was accurate, it would imply the temperature without the dams would have been 61 degrees. That is simply not possible since the temperature at the Lower Granite Dam, the farthest upstream, was about 67 degrees at that time and it is not likely that temperatures downstream would be lower than upstream.

Similarly, when Washington state set temperature records in June of 2021, the water at Ice Harbor dam reached only 72 degrees. Suggesting that temperatures should have been 12 degrees lower is not plausible.

I did an additional test of the model by examining river temperatures between 2007 and 2019.[15] According to the EPA model, the maximum temperature impact between Lower Granite and Ice Harbor is estimated at 4.69 degrees C. Using data collected by the Army Corps of Engineers, over thirteen years there is not a single instance of temperatures reaching that level of difference.[16] We measured the temperature difference in two ways. First, we looked at same-day comparisons between the two dams. The highest real-world difference we found was 3.9 degrees C on August 10, 2007.

I also looked at temperature differences over the course of a week because it takes time for water to travel downstream. The highest variance we saw over the course of a week was 3.7 degrees, which occurred during the last week of July 2007. The amount of time it takes water to travel downstream varies, and other calculations are possible. But, it is unlikely that any timeframe would yeild the 4.69 degrees temerature rise projected in the model.

Even if the model exaggerates the temperature impact, the dams may still increase temperatures, albeit by a lower amount, and that could harm salmon.

It is important to note that unlike dams that have large reservoirs behind them, like the Grand Coulee Dam on the upper Columbia, the Snake River dams are “run of river,” which means they do not store water to the degree that other dams do. Slow-moving pools behind dams tend to increase water temperatures. The Snake River dams can still have an impact on temperatures, but the potential impact is less than we see elsewhere.

Some portion of the increase in river temperature is due to natural causes and the river warms naturally as water flows downstream. Disaggregating what portion of the impact is natural and what is due to the dams is difficult, which is why EPA used a model rather than real-world data. Actual temperature data can, however, provide a reasonable range of temperature impact. Examining data between 2007 and 2019 reveals that the impact of the dams on temperatures is likely small and decreasing.

Comparing temperatures between Lower Granite dam (the farthest upstream) and Ice Harbor (the farthest downstream) on the same day shows the maximum temperature difference – and the maximum potential impact of the dams on temperature and fish – fell from 3.9 degrees C in 2007 to 2.1 degrees C in 2019 – a reduction of 46 percent. Comparing temperatures at Lower Granite to those a week later at

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[15] Myers, Todd, “Real-world data contradicts letter on Snake River dams and temperatures,” Washington Policy Center, January 13, 2020, https://www.washingtonpolicy.org/publications/detail/real-world-data-conradicts-letter-on-snake-river-dams-and-temperatures

[16] Columbia Basin Research, “Columbia Basin Conditions Year Comparisons for Single Project,” at http://www.cbr.washington.edu/dart/query/basin_conditions_projcomp.

Ice Harbor shows a similar decline, with the maximum increase in temperature falling from 3.7 degrees C to 2.4 degrees C – a decline of 35 percent.

Focusing on the maximum difference doesn't tell the whole story. Those temperature increases occur when there are few fish in the river, between the Spring and Fall runs. When fish are in the river, the average temperature difference in the Spring is about one degree C (less than two degrees F). The same is true in the Fall, with average temperature differences reaching about one degree C.[17]

The decline in temperature differential within the same year, and over the past two decades is evidence that the U.S. Army Corps of Engineers are improving their ability to manage river temperatures and reduce the impact of the dams. One technique is to release cold water from the Dworshak Dam on the Clearwater River in Idaho when salmon are spawning.

Again, it is likely that the four Lower Snake River dams have some impact on river temperatures, but the real-world data are at odds with the model's projections. Those data show that the potential temperature impact is small when salmon are spawning, that temperatures are typically below levels considered serious for salmon, and that the temperature impact has significantly declined over the past 15 years.

The Snake River dams and Southern Resident Killer Whales

Finally, one additional argument for destroying the dams is that improved salmon runs would also help the Southern Resident Killer Whales in Puget Sound, which are a listed species. The Southern Residents rely almost entirely on Chinook for their diet and low populations across the region are the major cause of their decline. Some have argued that destroying the dams would increase the number of Chinook available to the Southern Residents.

Scientists from NOAA Fisheries have stated clearly that destroying the dams would not have a meaningful impact on salmon available to the Southern Residents.

In a 2016 NOAA fact sheet titled, "Southern Resident Killer Whales and Snake River Dams," agency staff wrote, "the relative size of the Snake River salmon stocks compared to others on the West Coast means that increases in their numbers, whether from breaching dams or otherwise, would result in only a marginal change in the total salmon available to the killer whale."[18]

Additionally, NOAA Fisheries and the Washington State Department of Fish and Wildlife prioritized the most important watersheds for Puget Sound orca, ranking the Snake River ninth overall.

NOAA's fact sheet went on to say, "The best option for long-term recovery of both salmon and whales is restoring habitat across a diversity of west coast rivers." Again, focusing so much attention and resources on the Snake River distracts from salmon recovery efforts across the region that are more critical, both to the orca and salmon.

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[17] Before we published this research, I sent it to the dam opponents who signed the letter expressing concern about the dams' impact on temperatures. They responded that they would not be providing feedback.

[18] NOAA Fisheries Service West Coast Region, "Southern Resident Killer Whales and Snake River Dams," 2016, https://www.salmonrecovery.gov/doc/default-source/default-document-library/3-16-2016_srkw_factsheet-pdf_t_d.pdf

What can be done for salmon?
What, then, should be done to help recover salmon on the Snake, the Columbia, and other parts of the region?

First, we cannot allow frustration at the slow pace of recovery across the region to cause us to look for silver bullets that don't exist. Scientific prioritization must continue to be our guide on where and how to allocate state and federal dollars. It took decades for salmon to get to this point and it will take time for them to recover.

Second, the federal government should continue to support the work of the Pacific Northwest National Laboratory to find ways to reduce the impact of the dams in particular and improve our understanding of salmon runs more generally. Technology they have developed has already been very effective at tracking salmon and reducing mortality at the dams. One reason up to 98 percent of smolt successfully pass individual dams is the work of PNNL to understand how salmon interact with the dams.

Third, the federal government should follow the recommendations of NOAA Fisheries in the most recent status review of Snake River Spring/Summer Chinook. That review, released in February of this year, notes, "The greatest opportunities for advancing recovery include: (1) prioritizing actions that improve habitat resilience to climate change; (2) reconnecting stream channels with floodplains; (3) developing local- to basin-scale frameworks that prioritize restoration actions and integrate a landscape perspective; (4) implementing restoration actions at watershed scales; and (5) reducing pinniped predation on adults returning to the lower Columbia River."

Finally, both the state and federal governments should increase funding for science-based salmon recovery grants. There is much more work to be done to recover salmon and it will require funding. Rather than offering money to politically targeted projects, it should be put into grant programs using science-based metrics.

Thank you for the opportunity to provide information on this important issue.