American Fisheries Society
425 Barlow Place
Suite 110
Bethesda, MD 20814
301.897.8616
fisheries.org

December 23, 2023

Chairman Cliff Bentz
Subcommittee on Water, Oceans and Wildlife
Committee on Natural Resources
U.S. House of Representatives

Ranking Member Jared Huffman
Subcommittee on Water, Oceans and Wildlife
Committee on Natural Resources
U.S. House of Representatives

Re: Examining the Biden Administration's Efforts to Eliminate the Pacific Northwest's Clean Energy Production

Dear Chairman Bentz and Ranking Member Huffman:

On behalf of the American Fisheries Society (AFS), we submit this information for the record in follow-up to the December 12 hearing of the Water, Wildlife and Fisheries Subcommittee of the U.S. House of Representatives Committee on Natural Resources entitled "Examining the Biden Administration's Efforts to Eliminate the Pacific Northwest's Clean Energy Production."

AFS is the world's oldest and largest professional society of fishery scientists and resource managers. At its core, AFS is a science organization. AFS promotes the conservation and sustainability of fishery resources and aquatic ecosystems through dissemination of fisheries science via scientific journals on fisheries, conferences, and continuing education. Many of AFS' members live and work in the western United States and have long-studied salmon and their declining populations.

The science is indeed clear and compelling, supported by decades of rigorously peer-reviewed published reports and manuscripts, and demonstrates removing the four lower Snake River dams is essential to restore critically at-risk populations of wild Snake River salmon and steelhead. Snake River populations are currently hovering on the brink of extinction and action is urgently needed.

After carefully reviewing the science on this issue, AFS adopted a policy statement in support of breaching the lower four Snake River dams in January 2023 (Winters 2023). We attach it here for your consideration. The policy statement concludes that "[i]f Snake River basin salmon and steelhead are to be saved, then policymakers and stakeholders at all levels will need to implement appropriate

processes and funding provisions to breach the four dams on the Lower Snake River, as well as implement all necessary habitat rehabilitation."

Today, only 1–2% of formerly abundant, historic wild salmon and steelhead return to the Snake River to spawn (Winters 2023). Despite billions of dollars spent to date on Snake River anadromous fish restoration (including hatchery stocking), recovery efforts have not been effective (Hatch Magazine 2021; Storch et al. 2022; Jaeger and Scheuerell 2023; Winters 2023). Recent reports demonstrate that 42% of Snake River wild spring/summer Chinook Salmon and 19% of steelhead populations have declined to the threshold where extinction is highly likely (O'Toole 2021) and will continue to decline without breach.

The climate crisis increases the urgency for action and will continue to worsen conditions for these and other coldwater species. Ensuring access to the Snake River basin's intact and high elevation habitat provides the best opportunity for broadscale population recovery and persistence in the face of the climate crisis (Storch et al. 2022).

In the 1990s, 30 scientists from state, federal, tribal, and other entities participated in the PATH (Plan for Analyzing and Testing Hypotheses) process that evaluated smolt-to-adult ratios and the probability of achieving the interim survival and recovery standards of the National Oceanic and Atmospheric Administration (NOAA) Fisheries (Marmorek et al. 1998). The PATH analyses concluded that the Natural River option to restore the Snake River (via breaching the four lower Snake River dams) was the only option that would provide recovery. This option was found to have the "highest certainty of success and the lowest risk of failure." (Storch et al. 2022). The PATH conclusions have been reaffirmed by scientific review panels, agencies, and scientists for the past 25 years (ISAB 2019, Hatch Magazine 2021, NOAA Fisheries 2022).

In 2020, the Northwest Power and Conservation Council "reaffirmed the prior benchmark of smolt-to-adult returns (SAR) averaging 4% (range: 2%–6%) for spring/summer Chinook Salmon… (A) minimum SAR of 2% is required to consistently maintain existing populations, whereas SARs greater than 2% indicate degrees of population growth... Smolt-to-adult return rates equal to or greater than 4% achieved on a regular basis should promote a high likelihood of recovery (i.e., consistent generational increases in abundance... The Independent Scientific Advisory Board…has reviewed…the 2–6% SAR objective and identified extensive evidence to support these goals..."

The need to breach the four lower Snake River dams is further confirmed by comparisons of SARs versus the number of dams anadromous fish must pass. Recent SARs for Snake River wild spring/summer Chinook Salmon have averaged 0.7% above eight dams, in comparison to SARs for non-ESA listed, wild spring Chinook Salmon that pass fewer dams in the mid-Columbia River and continue to meet sustainable SAR objectives (McCann et al. 2019). From 2000-2017, wild Chinook Salmon SARs averaged 3.6% in the John Day River above three dams, 2.5% in the Yakima River above four dams, and 0.7% in the Snake River above eight dams (McCann et al. 2019). Importantly, temporal analysis also demonstrates that the productivity of Snake River Chinook salmon declined much more precipitously after construction of the Federal Columbia River Power System compared to productivity of Chinook salmon in the John Day River (Schaller et. al 2014). The John Day, Yakima, and Snake River

populations experience the same treaty and nontreaty fisheries, pinniped predation, and ocean conditions; the primary difference among them is the number of dams they must pass (Storch et al. 2022). Wild, Snake River anadromous salmon above eight dams are unable to meet SAR goals and are declining toward extinction. Importantly, recent models also demonstrate the population's ability to recover and grow with SARs approaching 2% (Jacobs et al. 2023).

The Columbia Basin Partnership established healthy and harvestable levels as the population goal for wild Chinook salmon and steelhead recovery (NMFS 2020). During the December 12 hearing, recent salmon returns were falsely characterized as "strong." Clearly, returns are not meeting established healthy and harvestable populations**.** Indeed, 2022 was a very low return year for wild Chinook salmon in Central Idaho. The Middle Fork Salmon River total redd count was n=322. That number is only 1.3% of estimated wild Chinook salmon returns to the drainage that occurred into the mid-1960s. Many areas with exceptionally high quality and connected natal habitat had zero fish return to spawn. These very low returns emphasize the severe threat of extinction and the urgency of restoring the Snake River migration corridor.

Hatcheries can provide harvest opportunities, especially in ensuring Treaty-protected tribal harvest that would not exist otherwise with the dams in place. However, a recent science review of Snake River spring/summer Chinook Salmon Hatchery Programs confirms hatchery mitigation efforts are unable to produce sufficient adult returns to meet goals and, often, basic broodstock needs (Independent Scientific Review Panel Review of the Lower Snake River Compensation Plan for Spring/Summer Chinook, 2022-2023).

Additionally, detrimental effects of hatcheries to wild populations are well documented (McMillan et al. 2023). For example, hatchery fish reduce subsequent reproductive capacities by up to 40% of hatchery fish and wild-born fish from hatchery parents (Araki et al. 2009). Nonetheless, in the short term, hatcheries serve as a means for tribes to harvest salmon for cultural, social, and economic reasons and for states to provide angling opportunities. However, a long-term solution requires restoring wild populations via breaching the four lower Snake River dams followed by reduced dependence on hatcheries.

Breach of the lower Snake River dams will also help meet broader ecological benchmarks for migratory fish rehabilitation (Storch et al. 2022). The lower Snake River dams and reservoirs produce lower and warmer flows that negatively affect adult immigration and juvenile emigration. Consequently, increased connectivity in the lower Snake River is critical for steelhead, Bull Trout, White Sturgeon, and Pacific Lamprey (Storch et al. 2022). Restoring the Snake River migration corridor will reestablish opportunities for repeat spawning to enhance populations (Vadas 2000; Vadas et al. 2016; Storch et al. 2022). This approach has been successfully used in Maine, where dam breaching increased abundances of repeat spawning Atlantic Salmon and non-salmon species (Winters 2023).

Despite often considered a "green energy" source, hydropower dam/reservoir systems have profound negative effects on water quality, cyanobacteria, instream flow, habitat blockage, and greenhouse-gas (methane/nitrous oxide) emissions (Storch et al. 2022; Winters 2023).

AFS supports actions to breach the four dams on the Lower Snake River and we further support a clear roadmap for ameliorating the economic (energy/transportation/irrigation) impacts of breach on those who rely on the dams (Hatch Magazine 2021; Storch et al. 2022; Winters 2023). To safeguard Snake River salmon and steelhead for future generations, we urge policymakers to embrace the science, implement urgent actions to breach the four lower Snake River dams, and to take additional actions to replace dam services. As a precedent, similar actions have recently been implemented to recover Klamath River fishes and to assist the diverse sets of stakeholders collaborating to restore that system (Davidson 2023; FERC 2022).

Thank you for your consideration. For additional questions, please contact Drue Banta Winters, dwinters@fisheries.org.

Sincerely,

Douglas J. Austen, Ph.D.
Executive Director

References

Araki H, Cooper B, Blouin MS. 2009. Carry-over effect of captive breeding reduces reproductive fitness of wild-born descendants in the wild. Biological Letters 5: 621-624.

Davidson, S., 2023. First of the Klamath dams comes down. Trout Unlimit. Mag. https://www.tu.org/magazine/conservation/ barriers/dam-removal/first-of-the-klamath-dams-comes-down.

FERC (Federal Energy Regulatory Commission), 2022. Final Environmental Impact Statement For Hydropower License Surrender and Decommissioning for the Lower Klamath Project. https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220826-3006&optimized=false.

Jacobs, G. R., R. F. Thurow, C. E. Petrosky, C. W. Osenberg, and S. J. Wenger. 2023. Life-cycle modeling reveals high recovery potential of at-risk wild Chinook salmon via improved migrant survival. Canadian Journal of Fisheries and Aquatic Sciences.

Hatch Magazine. 2021. Scientists draft letter calling on governors to tear down the lower Snake River dams: for salmon and steelhead to survive, the dams must go. Hatch Magazine (San Diego, CA), January 14. Available: https://www.hatchmag.com/articles/scientists-draft-letter-calling-governors-tear-down-lower/7715196 (August 2023).

ISAB (Independent Science Advisory Board). 2019. ISAB review of the Comparative Survival Study (CSS) Draft 2019 annual report. https://www.nwcouncil.org/reports/isab-review-comparative-survival-study-css-draft-2019-annual-report/.

ISRP (Independent Science Review Panel). 2023. ISRP review of the lower Snake River Compensation Plan Spring/Summer Chinook Program, 2022-2023. Available: https://www.nwcouncil.org/reports/isrp2023-01/.

Jaeger, W.K., and M.D. Scheuerell. 2023. Return(s) on investment: restoration spending in the Columbia River Basin and increased abundance of salmon and steelhead. PLoS (Public Library of Science) ONE [online serial] 18(7):e0289246. Available: https://doi.org/10.1371/journal.pone.0289246.

Marmorek, D.R., C.N. Peters, I. Parnell (Eds.), PATH Final Report for Fiscal Year 1998, Bonneville Power Administration, Portland, OR (1998). Available: http://www.essa.com/documents/1998_Final_Report.pdf.

McCann, J., B. Chockley, E. Cooper, B. Hsu, G. Scheer, S. Haeseker, R. Lessard, T. Copeland, E. Tinus, A. Storch, D. Rawding Comparative survival study (CSS) of PIT-tagged spring/summer/fall Chinook, summer steelhead and Sockeye. 2019. Annual Report to the Bonneville Power Administration,

Contract 19960200. Portland, OR. (2019). Available: http://www.fpc.org/documents/CSS/2019_Final_CSS.pdf.

McMillan, J. R., B. Morrison, N.Chambers, G. Ruggerone, L. Bernatchez, J. Stanford, H. Neville. 2023. A global synthesis of peer-reviewed research on the effects of hatchery salmonids on wild salmonids. Fisheries Management & Ecology 30:446-463.

NOAA Fisheries. 2022. Rebuilding interior Columbia Basin salmon and steelhead. U.S. National Oceanographic and Atmospheric Administration, National Marine Fisheries Service. Silver Spring, Maryland. Available: https://www.fisheries.noaa.gov/resource/document/rebuilding-interior-columbia-basin-salmon-and-steelhead (August 2023).

NPCC (Northwest Power and Conservation Council). Columbia River Basin Fish and Wildlife Program 2014: 2020 Addendum. 2020. Available: https://www.nwcouncil.org/sites/default/files/2020-9.pdf

O'Toole, P., editor. 2021. Nez Perce Tribe staff presentation on their analysis of Snake River basin Chinook and steelhead—quasi-extinction threshold and call to action (memorandum and presentation). Northwest Power and Conservation Council. Portland, Oregon. Available: https://www.nwcouncil.org/sites/default/files/2021_05_4.pdf (August 2023).

Schaller HA, Petrosky CE, Tinus ES. 2014. Evaluating river management during seaward migration to recover Columbia River stream-type Chinook salmon considering the variation in marine conditions. Canadian Journal of Fisheries and Aquatic Sciences 71:259-271.

Storch, A.J., H.A. Schaller, C.E. Petrosky, R.L. Vadas, Jr., B.J. Clemens, G. Sprague, N. Mercado-Silva, B. Roper, M.J. Parsley, E. Bowles, R.M. Hughes, and J.A. Hesse. 2022. A review of potential conservation and fisheries benefits of breaching four dams in the Lower Snake River (Washington, USA). Water Biology and Security [online serial] 1(2):100030. Available: https://doi.org/10.1016/j.watbs.2022.100030.Twidell, J. 2022. Renewable energy sources. 4th ed. Routledge. New York. Available:https://www.routledge.com/Renewable-Energy-Resources/Twidell/p/book/9780415633581.

Twidell, J. 2022. Renewable energy sources. 4th ed. Routledge. New York. Available: https://www.routledge.com/Renewable-Energy-Resources/Twidell/p/book/9780415633581.

Vadas, R.L. Jr. 2000. Instream-flow needs for anadromous salmonids and lamprey on the Pacific Coast, with special reference to the Pacific Southwest. Environmental Monitoring and Assessment 64:331-358. Available: https://doi.org/10.1023/A:1006486920036.

Vadas, R.L. Jr., H.A. Beecher, S.N. Boessow, and J.H. Kohr. 2016. Coastal Cutthroat Trout redd counts impacted by natural water supply variations. North American Journal of Fisheries Management 36:900-912. Available: https://doi.org/10.1080/02755947.2016.1173138.

Whittum, K.A., J.D. Zydlewski, S.M. Coghlan, Jr., D.B. Hayes, J. Watson, and I. Kiraly. 2023. Fish assemblages in the Penobscot River: a decade after dam removal. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science [online serial] 15:e10227. Available: https://doi.org/10.1002/mcf2.10227.

Winters, D.B., editor. 2023. Statement of the American Fisheries Society (AFS) and the Western Division of AFS about the need to breach the four dams on the lower Snake River. Fisheries 48:215-217. Available: https://doi.org/10.1002/fsh.10906; and https://fisheries.org/policy-media/recent-policy-statements/statement-of-the-american-fisheries-society-afs-and-the-western-division-afs-wdafs-about-the-need-to-breach-the-four-dams-on-the-lower-snake-river (August 2023).