The Conflict: Recovering Southern Resident Killer Whales and Chinook Salmon

In passing the Endangered Species Act ("ESA"), 16 U.S.C. § 1531 et seq., Congress never intended that harming one imperiled species to provide theoretical benefits to another would be an acceptable ESA recovery action, yet that is exactly what the Oregon Department of Fish and Wildlife (ODFW) is asking the Oregon Fish and Wildlife Commission (the Commission) to do. In its 1978 decision TVA v. Hill, the U.S. Supreme Court held that it was the intent of Congress "to halt and reverse the trend towards species extinction, whatever the cost." This national resolve is directed toward all species at risk of extinction, not just some, and the costs are to be paid by society, not by threatened species. While the federal agency charged with protecting both ESA-listed Chinook salmon and has placed the burden of remedying society's failure to protect ESA-listed whales on the backs of ESA-listed salmon, Oregon need not follow that path as it will not lead to recovery of either species.

Specifically, ODFW is suggesting that Southern Resident Killer Whales (SRKW) recovery will be improved by releasing more hatchery Chinook salmon, even though it knows this action will harm Chinook salmon species and serve as another obstacle to the recovery of both species. Any prey increase program based on increased hatchery production harms threatened Chinook salmon and conflicts with the goals of the ESA. Federal agency records and independent expert reports demonstrate that Chinook salmon hatchery releases were injuring wild Chinook salmon populations even before the SRKW prey increase program began in Washington State. Releasing more hatchery Chinook salmon along the migratory path of the SRKWs will increase those impairments. To avoid more harm to wild Chinook salmon, and prevent additional harm to the SRKWs, the only option is action that avoids this proverbial "rob Peter to pay Paul" recovery strategy that is contrary to the goals of the ESA.

Rising Hatchery Production Increases Harm to Wild Fish

Releases of hatchery chinook salmon harm populations of wild Chinook salmon by: (1) destroying wild Chinook salmon eggs through redd superimposition; (2) increasing interbreeding between hatchery and wild Chinook salmon; and (3) decreasing the chances of recovering ESA-listed wild Chinook salmon as well as depressed Oregon coastal chinook salmon by lowering the inherent productivity of the native Chinook populations in both locations.

Releasing more hatchery Chinook will likely lead to more redd superimposition in native chinook watersheds, harming the ESA-listed Lower Columbia River's native fall Chinook salmon as well as candidate-species wild chinook salmon on the Oregon coast.

Redd superimposition occurs when later-arriving salmon builds its spawning nest (known as a "redd") on top of an existing redd. This can result in significant mortality to fertilized salmon eggs. Recent studies have found that hatchery Chinook salmon increase the incidence of redd superimposition on wild chinook populations. As a result, fewer eggs survive, and fewer wild chinook juveniles will mature and return as adults to perpetuate the population. Redd superimposition impacts will likely worsen if there are hatchery chinook production increases.

Additionally, releasing more hatchery Chinook will likely cause more adverse genetic impacts to wild Chinook salmon including increasing levels of hybridization between hatchery Chinook and wild chinook populations. Hybridization rates will likely rise further due to already increased releases of hatchery

Chinook. Based on agency recommendations for increased hatchery chinook releases for the SRKW prey increase program, this further harm the survival and the recovery of Oregon's chinook populations.

Hatchery Releases are Currently Preventing the Recovery of Chinook Salmon in the Columbia Basin

In 2015, an independent panel of scientific experts released a report indicating that high abundances of hatchery salmon in the Columbia River Basin are contributing to density-dependent impacts that prevent the recovery of wild salmon populations. Density dependence is the relationship between population density and population growth rate. Generally, when population density is high, growth rate is low due to competition for limited resources. When hatchery salmon spawn with wild salmon because the hatchery salmon do not return to supplementation programs or stray away from hatcheries, they "increase overall density and thus reduce the productivity of the natural population demographically through density dependence in the short term."

This independent scientific panel, in advising the Northwest Power & Conservation Council on Columbia River Basin salmon, reported that salmon densities in most of the ESA-listed populations that it examined are so high that they are constraining their recovery. According to ISAB, juvenile salmon densities in the Columbia Basin may be at the highest levels ever. At the same time, one third of historical habitat is no longer accessible due to dams and other passage barriers, while habitat in many accessible areas is degraded. Not surprisingly, the combination of wild and hatchery salmon and steelhead are likely exceeding the carrying capacity of some areas of the Columbia Basin and its estuary.

The Bottom and the Top Line

- ✓ Oregon, Washington and Idaho and the responsible federal agencies and Tribes may have temporarily managed to stop the slide to extinction for multiple salmon and steelhead populations, but they have not moved the needle in terms of recovery for a single ESA-listed Columbia Basin salmonid species.

Source: **Return(s) on investment: Restoration spending in the Columbia River Basin and increased abundance of salmon and steelhead. William K. Jaeger and Mark D. Scheuerell**
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0289246

- ✓ Hatchery practices have not met their original promises and goals since 1877, and a global synthesis of peer-reviewed scientific literature on the effects hatcheries on wild salmonids confirms previous findings of two previous reviews (in 1990 and 2010) that there are few examples of benefits for wild fish and scant evidence of no effect on wild populations.

Source: John R. McMillan et al., **A global synthesis of peer-reviewed research on the effects of hatchery salmonids on wild salmonids**, 30 Fish. Mgmt. & Ecol. 446 (2023), https://doi.org/10.1111/fme.12643.

Other Sources Addressing the Ineffectiveness of Hatchery Production to Create Prey for Orcas:

https://www.wildorca.org/fewer-smaller-chinook-salmon-in-the-salish-sea-provide-less-calories-to-endangered-orcas/

https://www.sanjuanjournal.com/news/chinook-managing-to-extinction/

Contact: David Moskowitz, The Conservation Angler * PO Box 13121 * Portland, OR 97213

TCA Testimony - Delivered on Friday February 15, 2024:

Hatchery chinook will never provide the necessary food for Orcas (particularly for the Southern Residents). These ocean predators co-evolved with chinook salmon in the Pacific Northwest – and with chinook salmon as their prime food source because they were very large fish. The Orca are a keystone predator. Would you expect Bald Eagles to survive if they had to hunt hummingbirds?

The Chinook salmon's evolutionary calling card is its size, not its numbers. The health of the chinook ecosystem cannot be measured by numbers, but rather, by biomass. And since the first commercial harvest of chinook began in the region, chinook salmon size has been declining due to harvest techniques followed by loss of historic spawning range.

Harvest has changed from terminal fisheries (at specific river mouths) to mixed stock fisheries in open ocean and large river estuaries. These practices have reduced age and size at maturity for wild chinook.

Hatchery chinook salmon do not attain the size of wild chinook because they mature at an earlier age – resulting in smaller adults, and with many more mini-jacks and jacks.

This difference between hatchery and wild chinook salmon means that increasing the number of chinook salmon will only amplify the losses of biomass for the Orcas as they are forced to forage and hunt for smaller and smaller prey. Humans are increasing the energy loss in the SRKW by feeding them hatchery chinook. The result is that orcas need to feed more, travel further to find more fish because the fish are smaller, and the stress and nutrition depletion contributes to reduced SRKW offspring survival.

We have turned the Orca from a Great Blue Heron to a Kingfisher – close your eyes and imagine the difference in size and hunting style of

those two birds. There are too many chinook salmon, and they are too small. Our harvest practices in the ocean and in freshwater have affected chinook age classes and size – chinook salmon size dropped by 50% between 1940 and 1980, and this is only getting worse.

Smaller chinook are less fecund – they have fewer eggs – and smaller chinook may not be able to spawn in the best places where their redds are less likely to be scoured by high water and less likely to be dewatered by lower streamflow. The bigger the chinook the more eggs and better redds. They are capable of putting more lottery tickets in a safer bowl. Recall, Chinook salmon size is their calling card!

There is compelling evidence that the North Pacific Ocean is at carrying capacity given the number of hatchery and wild salmon and steelhead – and that climate change is further destabilizing currents and temperatures such that prey species for salmon is changing.

Food is the currency in the natural world. Imagine walking into an arcade with 100 pennies in your pocket and you stand in line to get change so you can get 4 quarters in your pocket to play the game – but you have wasted time and energy to get the right currency.

Imagine the African Lions, where the whole pride feeds successfully when the Pride's best hunter takes down the biggest Zebra. Trophy hunting for big zebras is affecting the productivity and survival of African lions.

Hatchery production already harms depressed wild salmon populations – both ESA-listed and candidate species. Approving hatchery production as a mitigation measure to improve SRKW survival will fail.

Chinook harvest must be reduced to help provide wild chinook salmon as prey for SRKW throughout their entire migratory path. This reduction will yield benefits for Orcas and for the chinook themselves.