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THE HONORABLE MICHAEL H. SIMON

Pro Se

UNITED STATES DISTRICT COURT
DISTRICT OF OREGON, PORTLAND DIVISION

NATIONAL WILDLIFE FEDERATION,, et al.,

Plaintiffs,

and

STATE OF OREGON, et al.,

Intervenor-Plaintiffs,

v.

NATIONAL MARINE FISHERIES SERVICE,
et al.,

Defendants.

and

PUBLIC POWER COUNCIL, et al.,

Intervenor-Defendants.

No. 3:01-cv-00640-SI

DECLARATION OF DEBORAH A. GILES, IN
SUPPORT OF AMICUS CURIAE BRIEF OF
JAMES WADDELL

I, Deborah A. Giles, hereby state and declare as follows:

1. I received my PhD from the University of California Davis in 2014. My master's thesis and PhD dissertation both focused on Southern Resident killer whales. Currently, I am a killer whale scientist at the Center for Conservation Biology, and resident scientist and lecturer at the University of Washington Friday Harbor Labs, where I teach Marine Mammals of the Salish

Sea and Marine Biology. In addition, I am the science and research director for the nonprofit Wild Orca, translating science and engaging with the public and policymakers to prevent the extinction of the critically endangered Southern Resident killer whales. I was formerly the killer whale research director at the Center for Whale Research.

2. My professional background, experience, and publications are detailed in my curriculum vitae, a true and accurate copy of which is attached as Exhibit A to this declaration.

3. Since 2009, I have worked with Dr. Samuel Wasser and the University of Washington's Conservation Canine team, utilizing detection dogs to locate floating killer whale fecal matter to monitor the physiological health of Southern Resident killer whales. Southern Resident killer whale feces can be genotyped to determine which whale the fecal sample came from, and they can be examined for stress, nutrition and pregnancy hormones, toxicants, microbiome, parasites, bacteria, and microplastics found in the whales. Analysis of fecal samples confirms that Chinook salmon are the dominant fish species eaten by these whales.

4. Since 2010, I have worked with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) on a project deploying acoustic suction-cup recording tags on killer whales, to measure received noise levels by whales.

5. In 2018-2019, I served on Washington State Governor Inslee's Southern Resident Killer Whale Recovery Task Force on the prey and vessel working groups, and was an invited panelist for Governor Inslee's Lower Snake River Dams Stakeholder Engagement workgroup.

6. The National Oceanic and Atmospheric Administration (NOAA) Fisheries Service (also known as NOAA Fisheries, National Marine Fisheries Service, or NMFS) listed the Southern Resident killer whales (SRKWs) as endangered under the Endangered Species Act (ESA) in 2005, when the population numbered 88 whales. Despite more than fifteen years of

federal protection, the population has continued to decline from a high census count in 1995 of 98 whales, to a near historic low of only 73 whales today. Since listing in 2005, the average annual increase is negative 0.97 percent, with births and deaths almost equal in many years. The population must increase by an average 2.3 percent per year for 28 years in order to be removed from the Endangered Species list.¹ The Southern Resident orca population is not expected to increase without a substantial increase in prey availability. In fact, NOAA Fisheries projects a continued downward trend over the next 50 years.²

7. NOAA Fisheries has identified the critically endangered Southern Resident Killer Whales as one of the nine most at-risk species under its jurisdiction.³ NOAA Fisheries considers these orcas to be a “recovery priority #1C”—a species whose extinction is almost certain in the near future without remedying primary threats, of which insufficient prey is listed first.⁴

8. The great weight of scientific authority agrees on these key facts about the Southern Resident orcas: (1) the whales are nutritionally limited;⁵ (2) they feed primarily on Chinook;⁶ and (3) to meet their prey needs requires an adequate supply of Chinook throughout the year and throughout their range, not just in some months.⁷

9. In addition, the Southern Resident orcas are among the most contaminated marine

¹ NMFS (2008) *Recovery Plan for Southern Resident Killer Whales (Orcinus orca)*, p. II-82, available at <http://www.nwr.noaa.gov/Marine-Mammals/Whales-Dolphins-Porpoise/Killer-Whales/ESA-Status/Orca-Recovery-Plan.cfm>.

² 84 Fed. Reg. at 49,215; National Marine Fisheries Service, West Coast Region, *Proposed Revision of the Critical Habitat Designation for Southern Resident Killer Whales, Draft Biological Report* at 7-8 (Sept. 2019) (hereafter *NOAA Biological Report*).

³ NOAA Fisheries, *Species in the Spotlight, Priority Actions 2021-2025*, available at https://media.fisheries.noaa.gov/2021-04/SIS-Action-Plan-2021-SRKW-FINAL_508.pdf.

⁴ *Id.*, at 3.

⁵ Letter from Giles, Bain, Wasser, et al. to Gov. Inslee & Orca Task Force (Oct. 15, 2018), available at <https://www.documentcloud.org/documents/5002547-Orca-Scientists-Letter-10-15-18-Final.html>.

⁶ *Id.*

⁷ *Id.*

mammals in the world. Because they are apex predators, they eat high on the food chain. The fish they eat are laden with toxic chemicals, particularly persistent organic pollutants, such as DDT, PCBs and PBDEs. The fat soluble toxic chemicals bioaccumulate over time in each orca's body and are stored in the orca's blubber. The orca's high toxic load is exacerbated by prey scarcity. If the whales have a sufficient prey base, the toxicants remain sequestered in their blubber and do little harm to the orca. When there is a scarcity of prey, the orcas live off their blubber, metabolizing their fat stores. This permits the toxicants to enter the orca's blood stream, essentially poisoning the whale. This can lead to weakened immune systems, reproductive malfunctions, and developmental defects, among many other health issues. While abundant prey does not eliminate stored toxicants, it does help the them remain sequestered in the orcas' fat reserves.

10. Comparing the population of mammal-eating orcas ("transient" or "Bigg's" orcas) to Southern Resident orcas, both of which share the same waters, leads to the conclusion that food scarcity for the Southern Resident orcas, as compared to food abundance for the Bigg's orcas, is the difference between a declining SRKW population and a thriving, increasing Bigg's orca population.⁸ Despite having markedly higher toxicant loads than SRKWs, the Bigg's orcas' rich prey source appears to buffer them from toxicant impacts.

11. Southern Resident orcas need more Chinook salmon available on a year-round basis, as quickly as possible. Lack of prey, and the additive effects of noise and contaminants,

⁸ The Bigg's killer whale population has grown steadily over the last 40 years, doubling since 1990 to a 2018 total of over 500 individuals (Towers et al. 2018). A subset of this population (approximately 350 individuals) has been identified as more likely to occur within coastal waters. Within this subset, there were 112 births and 27 deaths from 2012 to the end of 2018, resulting in a greater than 4% growth rate (Towers et al. 2019). While not all these whales use the Salish Sea on an annual basis, well over 200 individual whales in at least 50 different matriline currently use the region on a regular basis (Shields et al. 2018), as compared to 12 matriline 25 years ago (Baird and Dill 1995). In contrast, during the same time period (2012 through 2018), the Southern Resident orcas had 12 calves born that still survive, and 27 deaths. Six more SRKWs have died from 2019 to date, while only five calves have been born and survived during the same period. Orca Network, *Southern Resident Orca Community Demographics, Composition of Pods, Births and Deaths since 1998*, available at [https://www.orcanetwork.org/Main/index.php?categories_file=Births and Deaths](https://www.orcanetwork.org/Main/index.php?categories_file=Births%20and%20Deaths).

has caused a steady increase in mortality and a 69% pregnancy failure rate. These factors in combination have led to the recent decline in the Southern Resident orca population. The low number of reproductive-age females left – 27 – with less than half of these successfully reproducing in the last ten years, underscores just how little time we have to turn this trajectory around with urgent and effective action.

12. Salmon are the mainstay of the Southern Resident orca’s diet. This diet must support daily life activities (*e.g.*, foraging, traveling, socializing, resting), in addition to gestation, lactation, and growth.⁹ Southern Resident orcas preferentially consume Chinook salmon, particularly older (>3 years), larger Chinook age classes.¹⁰ Historically, Chinook’s large size, high fat and energy content, and year-round occurrence from multiple sources within the Southern Resident’s range contributed to this preference – and the preference persists “despite the much lower abundance of Chinook in some areas and during certain time periods compared to other salmonids.”¹¹ Underscoring the importance of Chinook to Southern Residents, scientists have found a strong correlation between Chinook abundance and Southern Resident impaired body condition (“peanut head”), reduced growth rate, reduced overall length, reduced social cohesion, reduced fecundity, and reduced survival.¹²

13. The overall decline of the Southern Resident killer whale population has coincided with years of low salmon abundance.¹³ NOAA Fisheries itself recognizes that a principal impediment to orca recovery is a severe shortage of the whales’ preferred food, Chinook salmon.¹⁴ Two more Southern Residents died in 2021, another low salmon year. K21 was the oldest living male Southern Resident, until he died at only 35 years of age. L47 was the

⁹ *NOAA Biological Report* at 27.

¹⁰ *Id.* at 10, 27.

¹¹ *Id.* at 10.

¹² *Id.* at 13; Ford *et al.* 2005; Durban *et al.* 2009; Ward *et al.* 2009a; Ford *et al.* 2010; Fearnbach *et al.* 2011; Ayres *et al.* 2012; Ward *et al.* 2013; Groskreutz *et al.* 2019.

¹³ Ward *et al.* 2009; Ford *et al.* 2010.

¹⁴ 84 Fed. Reg. at 49,215; *NOAA Biological Report*.

most prolific living matriarch, until she died at 47 years of age. The trend is going in the wrong direction. It is an extinction trend—not a recovery trend.

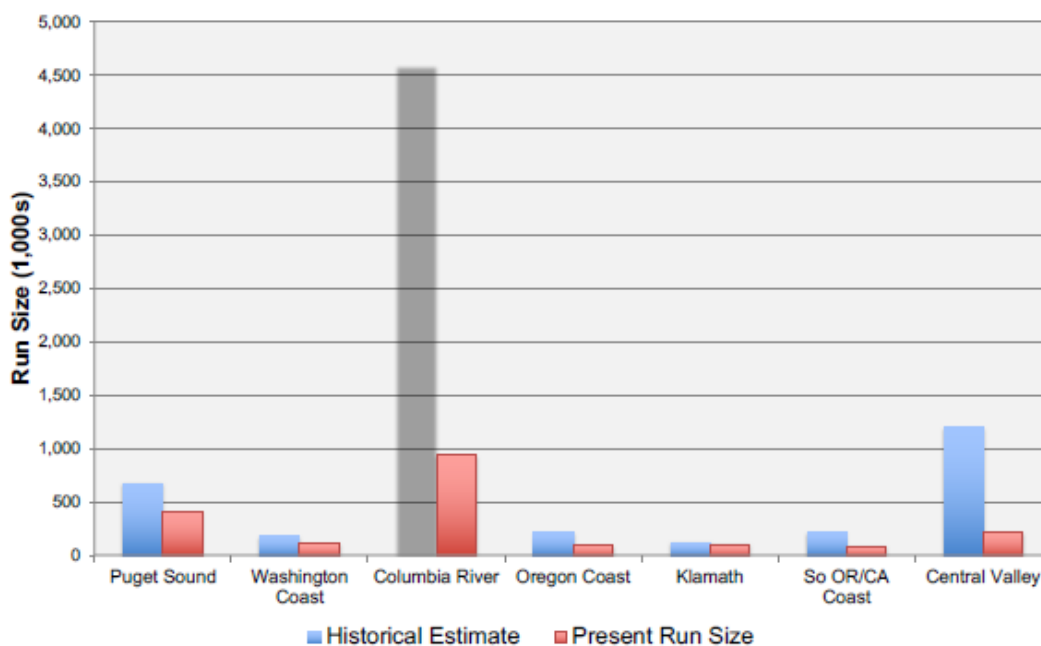
14. The Southern “Resident” killer whales got their name because they used to be seen regularly (i.e. “resident”) in the inland waters of the Salish Sea/Puget Sound during the late spring through early fall months. In the last several years they have spent more and more time in coastal waters. Yet even historically, this genetically distinct population of killer whales has spent more than half their time swimming back and forth throughout their known range as far south as Monterey, California, and as far north as Southeast Alaska. Their visits to the coastal waters off Westport, Washington and the mouth of the Columbia River coincide with high concentrations of spring Chinook salmon.¹⁵

15. In the last 10 to 15 years substantial scientific evidence has highlighted the important relationship between salmon from the Columbia Basin, which includes Snake River Chinook, and the future survival of the critically endangered Southern Resident orcas. Indeed, *NOAA Fisheries stated in its 2008 Southern Resident Killer Whale Recovery Plan that “[p]erhaps the single greatest change in food availability for resident killer whales since the late 1800s has been the decline of salmon in the Columbia River basin.*”¹⁶ NOAA Fisheries’ statement is supported by its graph, below.

¹⁵ J. Acoust. Soc. Am., Vol. 134, No. 5, November 2013, Hanson et al.: *Killer Whale Acoustic Recorder Occurrence*, 3486, available at <http://oceanwidescience.org/cms/wp-content/uploads/2014/12/Hanson-et-al-2013.pdf>], 2013 Southern Resident Killer Whale Satellite Tagging, available at http://www.nwfsc.noaa.gov/research/divisions/cb/ecosystem/marinemammal/satellite_tagging/blog.cfm.

¹⁶ NMFS (2008) *Recovery Plan for Southern Resident Killer Whales (Orcinus orca)*, p. II-82, available at <http://www.nwr.noaa.gov/Marine-Mammals/Whales-Dolphins-Porpoise/Killer-Whales/ESA-Status/Orca-Recovery-Plan.cfm>.

Historical Chinook salmon abundance



Source: Various, compiled by Jim Myers NWFSC

16. Much of NOAA Fisheries' research indicates that the Southern Resident orcas are likely to be especially reliant on the Columbia/Snake River watershed's early spring, nutrient-rich Chinook salmon runs.¹⁷ Indeed, the mouth of the Columbia Basin is one of the Southern Resident orcas' frequent places to fish. Data compiled from tagged whales, dedicated surveys, and passive acoustic monitoring indicates the Southern Residents spend significant time in the winter and spring off the mouth of the Columbia and have been present there 35 times more often than would be expected by chance.¹⁸ Diet data collected along the outer coast have been

¹⁷ Ayres KL, et al., *Distinguishing the Impacts of Inadequate Prey and Vessel Traffic on an Endangered Killer Whale (*Orcinus orca*) Population* (2012) PLoS One 7: e36842, available at <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0036842>.

¹⁸ Hanson, M.B., E.J. Ward, C.K. Emmons, and M.M. Holt. 2018. *Modeling the occurrence of endangered killer whales near a U.S. Navy Training Range in Washington State using satellite-tag locations to improve acoustic detection data*. Prepared for: U.S. Navy, U.S. Pacific Fleet, Pearl Harbor, HI. Prepared by: National Oceanic and Atmospheric Administration, Northwest Fisheries Science Center under MIPR N00070-17-MP-4C419. 8 January 2018.

limited to spring months, but indicate that Chinook salmon are an important component of SRKW throughout the year.¹⁹ Other NOAA Fisheries' data indicate that Chinook remains an important dietary component for Southern Residents in the winter when the orcas range in outer coastal waters,²⁰ while elevated triiodothyronine values in early spring indicate that Southern Resident orcas forage particularly on the early spring Columbia River run.²¹

17. Analysis of fish scale and Southern Resident fecal samples collected on the outer coast indicate that, as is the case in inland waters of the Salish Sea/Puget Sound, Chinook are the primary species consumed on the outer coast.

18. The map below from NOAA NWFSC shows the concentration of Southern Resident orca presence off the Columbia River mouth. The map is derived from NOAA Fisheries' data from satellite tracking tags on Southern Resident adult males K25 in 2013 and L84 in 2015.²² Both tracked orcas are now deceased. K25 died in 2019 at age 28, and L84 died also in 2019 at age 29,²³ in what should have been the prime of their lives. Notably, 2019 was another scarce salmon year.

¹⁹ Hanson, et al., NOAA NWFSC, *Endangered predators and endangered prey: Seasonal diet of Southern Resident killer whales*, *Plos One* March 2021, p. 17, available at <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0247031>.

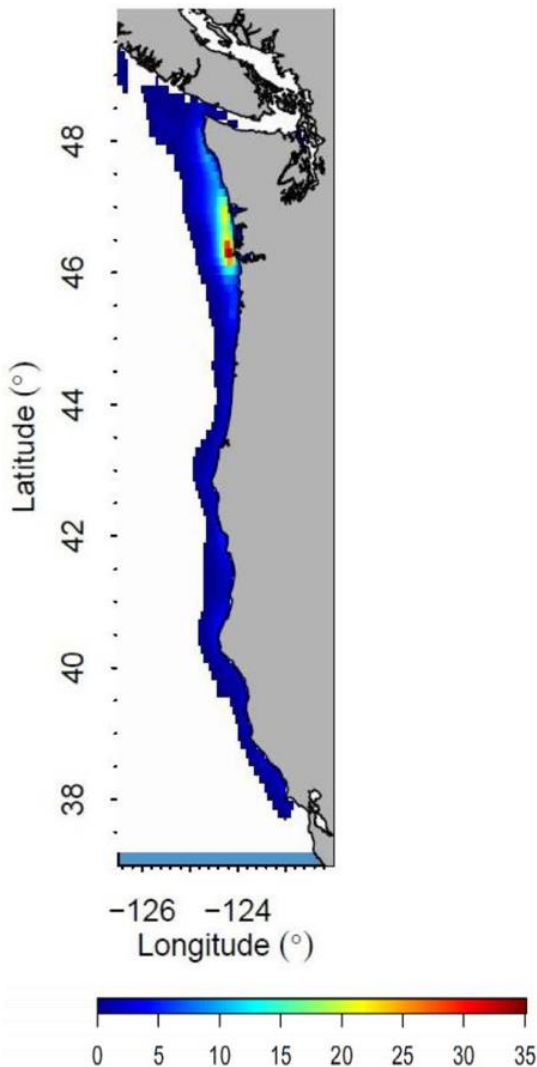
²⁰ Hanson et al. 2021

²¹ NOAA Biological Report at 11; Wasser et al. 2017; Hanson, M.B., J.A. Nystuen, M.O. Lammers. *Assessing the coastal occurrence of endangered killer whales using autonomous passive acoustic recorders*, *J. Acoust. Soc. Am.* 134 (5)(November 2013), Ward, E. et al, NWFSC *Science to Inform SRKW Distribution and Diet, Presentation to Pacific Fisheries Management Council SRKW Working Group*, May 2019, available at <https://www.fisheries.noaa.gov/webdam/download/92840008>, <https://www.fisheries.noaa.gov/event/ad-hoc-southern-resident-killer-whale-workgroup>.

²² https://www.navymarinespeciesmonitoring.us/files/9315/3186/7492/Hanson_et_al_2018_Modeling_Occurrence_of_SRKW_in_NWTRC.pdf, Pg. 31.

²³ Orca Network, *Id.*

Figure 3. Estimated density for the K25 and L84 movement tracks using a state space movement model, with 10-minute intervals. The heat map is scaled relative to a uniform distribution of habitat use (e.g. dark red values indicate 35x higher than expected by chance).



19. In partnership with the Washington Department of Fish and Wildlife (WDFW), NOAA Fisheries created a preliminary priority list of West Coast Chinook salmon stocks important to the Southern Resident orcas' recovery. Despite a likely bias towards inland fish stocks, of the top fifteen priority stocks, seven are from the Columbia Basin, including both fall and spring Chinook.²⁴ As both NOAA Fisheries and WDFW acknowledge, this is a preliminary

²⁴ NOAA Fisheries West Coast Region & Washington Department of Fish and Wildlife, *Southern Resident Killer Whale Priority Chinook Stocks Report* (June 22, 2018).

list of priority stocks that may change with further data and analysis. This limitation is particularly important because critics of the priority list have pointed out that the priorities are based on conditions at the time data were collected (e.g., the stocks that were depleted before the data collection occurred, rate lower than they would have rated if the data collection had started earlier), do not take into account potential for recovery of stocks, and may reflect more about sampling locations and sample size, than stock priority (e.g., most data comes from Puget Sound sampling, with more limited data from the outer coast).

20. The federal agencies' contention that maintaining the continued low adult salmon returns to the Columbia and Snake Rivers does not harm these critically endangered whales is not scientifically supported. The current depleted level of adult Chinook returns to the Columbia is a critical component of the prey scarcity these whales face. This shortage is compounded by the fact that adult Chinook returns, especially hatchery stocks that comprise most of these returns, consist of an increasing number of younger – and hence smaller – fish than in the past.²⁵ This fact means that these whales must expend far more energy today to obtain the same caloric value of prey with the net effect of less nourishment.

21. The Columbia-Snake Basin has the greatest potential to increase the abundance of Chinook salmon, based on its historical Chinook production.²⁶ By 2001 the federal agencies knew that the best opportunity to increase the abundance of Chinook in the Columbia-Snake system required breaching the four lower Snake River dams. At that time a synthesis of several analytical evaluations and reviews on salmonid recovery in the lower Snake River, commissioned by the Columbia River Fisheries Program Office of the U.S. Fish and Wildlife Service, concluded, ***“[a]lthough the results vary somewhat among approaches, all available science appears to suggest that dam breach has the greatest biological potential for recovering***

²⁵ CSS 2017 Annual Report, Chapter 6 at pp. 171-174.

²⁶ See Myers, NWFSC, Historical Chinook Salmon Abundance Graph, , para. 15, *supra*.

Snake River salmon and steelhead.²⁷

22. The best available science also establishes that Southern Resident orcas will not be recovered without breaching the four lower Snake River dams, as the Snake River is the Columbia's largest tributary and once produced nearly half of the entire basin's Chinook. Even given the decimated Chinook populations in the Columbia-Snake system, the Southern Resident orcas currently rely heavily on those populations. In a recent NOAA Fisheries study, Columbia River Chinook salmon represented slightly over half (54%) of the prey remains samples collected off the Washington coast, which NOAA Fisheries called remarkably similar to the approximately 53.7% collected in outer coast troll fisheries based on genetic analysis.²⁸ See also graph below.

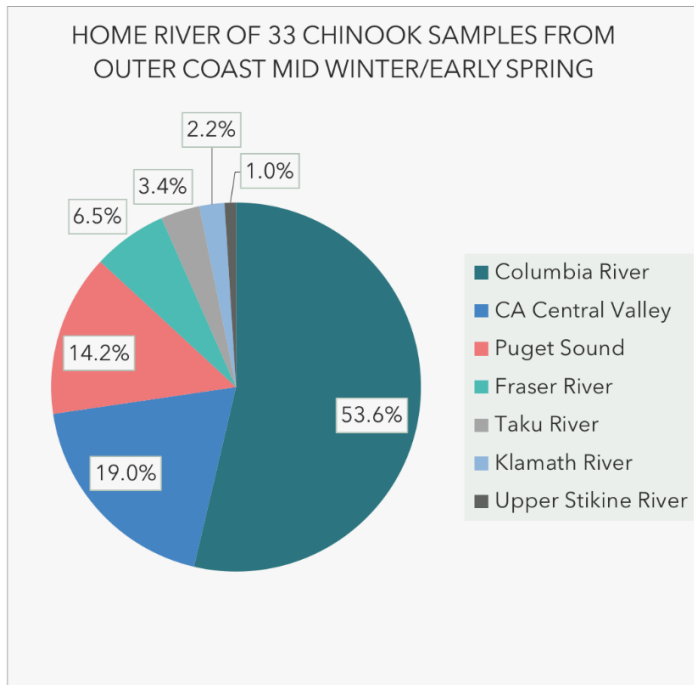


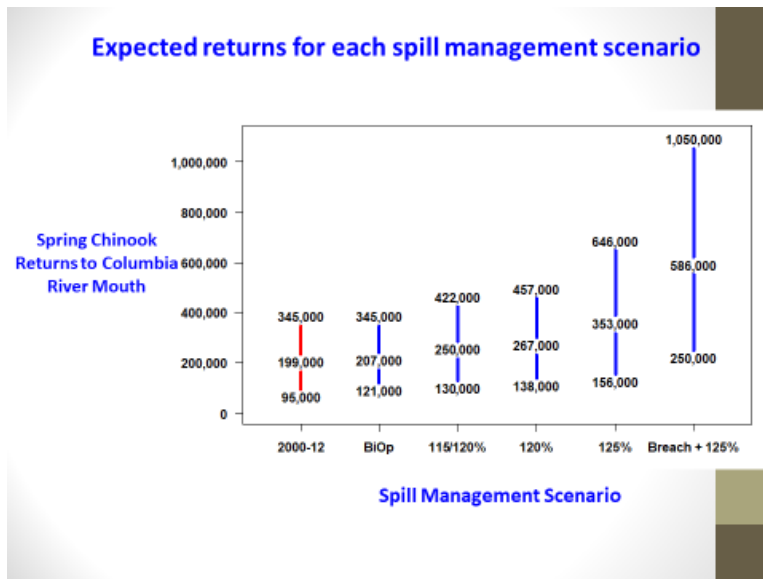
Figure 1 Hanson et al importance of Columbia Basin Chinook to SRKWs in winter

²⁷ Budy, P., *Analytical Approaches to Assessing Recovery Options for Snake River Chinook Salmon* (2001), p. 4, UTCFWRU 2001(1): 1-86, available at <https://www.fws.gov/columbiariver/publications/recopt.pdf>.

²⁸ Hanson et al. March 2021, p. 17.

23. The predicted and uniquely high recovery potential of Chinook from the Columbia and Snake River Basins is significant.²⁹ Wilderness acreage provides the highest quality in-stream spawning habitat for spring Chinook. Breaching the four lower Snake River dams would open the gateway to a vast, 5,500-mile expanse of largely intact spawning and rearing streams that run through millions of acres of wilderness. These are the highest elevation streams, and, therefore, the most global warming resistant salmon streams in the entire lower 48 states. In short, breaching these dams would greatly increase a critical food source for the Southern Resident orcas, particularly in the winter and spring months.

24. The graph below from the Fish Passage Center Presentation to the Orca Recovery Task Force shows the number of spring-run Chinook expected to return to the lower Snake River with breaching the four lower Snake River dams. The graph makes clear that Columbia-Snake Basin Chinook production remains important today.



²⁹ CSS 2017 Annual Report, Chapter 2 (discussing dramatic improvements in SARs for spring Chinook with dam breach and adequate spill at lower Columbia dams); Declaration of Chris A. Pinney in Support of Amicus Curiae Brief of Jim Waddell, Amicus Brief and declarations filed contemporaneously); and graphs set forth in this declaration.

25. As explained above, restoring healthy, abundant salmon to the Snake River is critical to providing a more substantial prey base for the endangered Southern Resident orcas—a species whose extinction is almost certain in the near future, as determined by NOAA Fisheries, without immediate and significant recovery actions.

26. When all of this evidence is taken into account, it is clear that lower Snake River restoration, including dam removal, is the single biggest and most effective step we can take to restore the ESA-listed Snake River salmonids and the critically endangered Southern Resident killer whales. The evidence of continued decline for both Southern Resident killer whales and Snake River Chinook also highlights the great urgency to take this action as soon as possible. It is my opinion that any margin for error in recovering these orcas has disappeared. Unless the four lower Snake River dams are breached in in the very near future as part of the recovery measures, the Southern Resident orcas will not survive or recover.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on 14th of October 2021.



DEBORAH A. GILES