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Fish Facts

Columbia Basin Salmon, Steelhead, and Other Native Fish in Crisis

The Columbia River Basin once sustained 10-16 million salmon and steelhead, and a wide variety of other native fish species. Today over one-third of the historic salmon and steelhead populations are extinct and many of those remaining are considered quasi-extinct, with 50 or fewer wild fish returning to spawn each year. Of the 16 Columbia Basin salmon and steelhead stocks that originate above Bonneville Dam, 11 are either listed under the Endangered Species Act or have been extirpated. Other native fish (e.g., sturgeon and lamprey) have declined to alarmingly low levels. These declines have devastating consequences for Tribal Nations, recreational and commercial fishers, and all who call the Northwest home.

Of the 16 Columbia River salmon and steelhead stocks originating above Bonneville Dam, 4 are already gone and more than half of those remaining are listed under the Endangered Species Act.

Claims that Columbia Basin salmon are thriving and that abundance has increased since the construction of federal hydroelectric dams in the Columbia Basin are deeply misleading. In fact, to fully understand the status of each population of salmon and steelhead, multiple metrics must be used, of which abundance is only one (others are spatial structure, diversity, and population growth rate). A closer examination of abundance, along with the other metrics, shows that Columbia Basin salmon are in serious trouble.

HISTORIC LOWS ARE THE WRONG REFERENCE POINT

Measuring salmon abundance relative to a historical low point paints a false picture of growth. Relative to objective benchmarks, salmon abundance is abysmally low, even compared to levels required to keep species off the Endangered Species list. Objective reference points for current abundance include:

1 Historic declines

Salmon and steelhead abundance is down sharply from an estimated historic **10 to 16 million fish** returning each year[1]. Selectively looking at more recent returns obscures this broader picture of drastic declines (see graph below and map on next page).

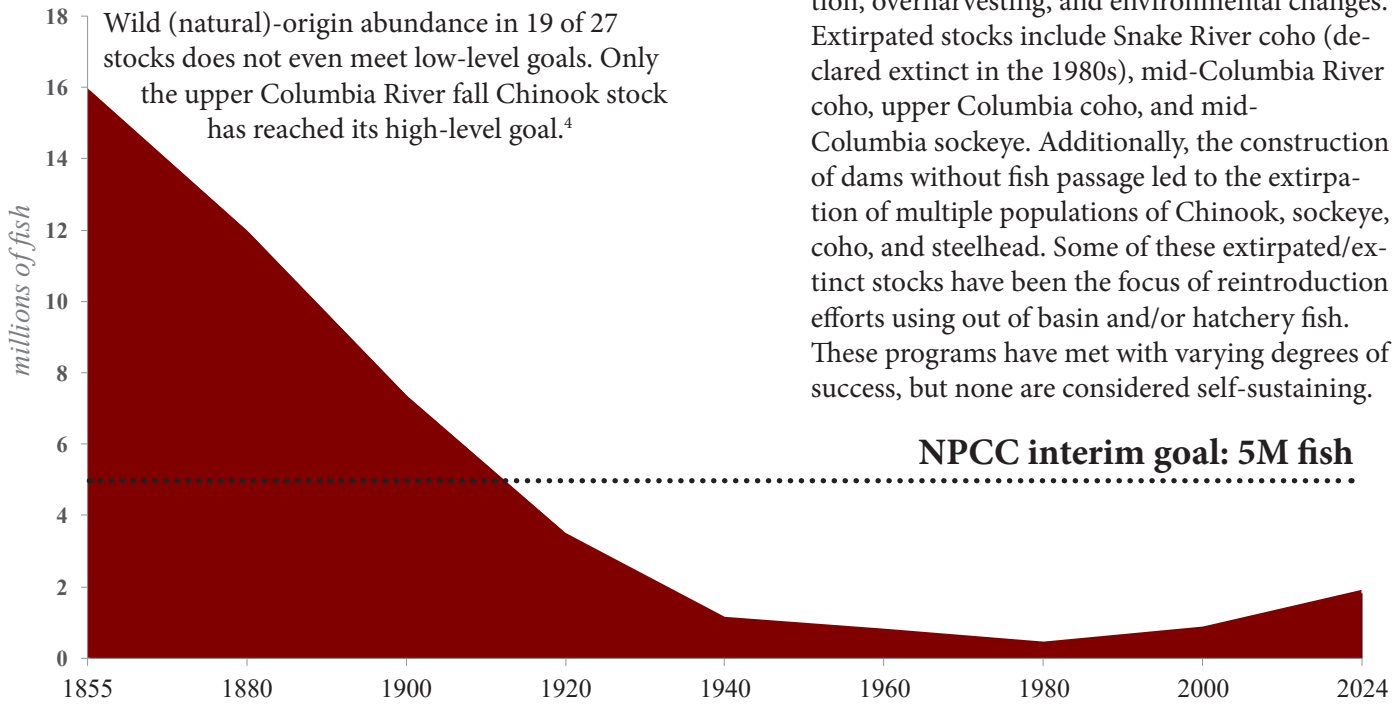
2 Healthy abundance

Salmon are well below healthy abundance levels. In 1987, the Northwest Power and Conservation Council (NPCC) set an interim goal of five million fish returning to the Basin[2]. Current Basin-wide returns are less than half that goal.[3] In 2020, the Columbia Basin Partnership Phase 2 Report established nonpartisan, science-based low-, mid-, and high-level abundance levels for each Columbia Basin salmon and steelhead stock. Wild (natural)-origin abundance in 19 of 27 stocks does not even meet low-level goals. Only the upper Columbia River fall Chinook stock has reached its high-level goal.[4]

3 ESA listing

Of the 16 salmon and steelhead stocks that historically returned to the Columbia River above Bonneville Dam , 7 persist at abundance so low they are listed for federal protection under the Endangered Species Act and four have been extirpated. Two of those stocks, upper Columbia River spring Chinook and Snake River sockeye are listed as "endangered" – the most severely imperiled ESA status. As of the most recent NOAA Fisheries status reviews, none of the ESA listed-listed salmon or steelhead populations in the Columbia Basin have been delisted or down-listed. NOAA concluded that all current listings remain warranted, with no changes in status recommended.[5]

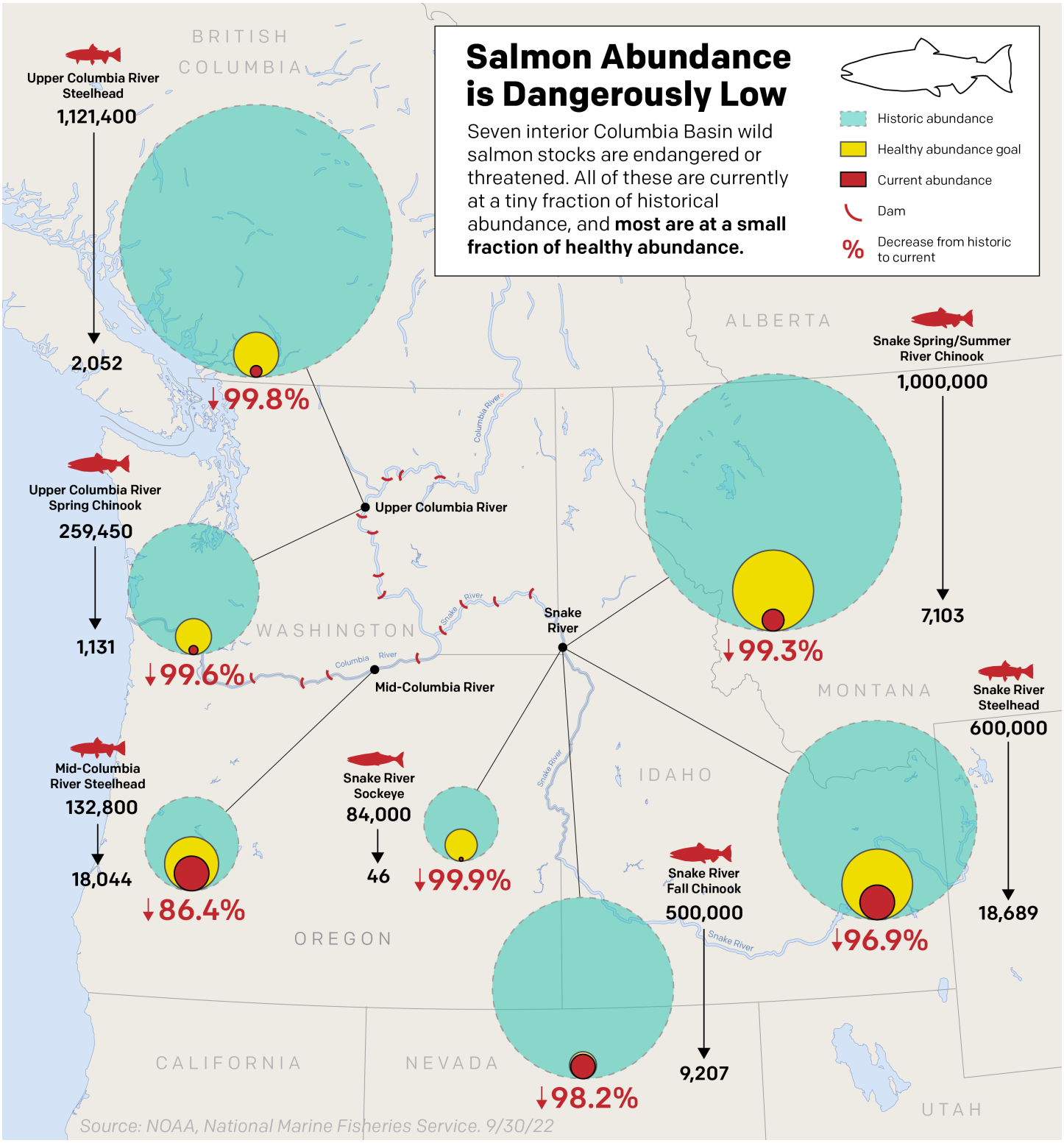
In addition to the ESA listings, four salmon and steelhead stocks have been extirpated due to factors such as dam construction, habitat degradation, overharvesting, and environmental changes. Extirpated stocks include Snake River coho (declared extinct in the 1980s), mid-Columbia River coho, upper Columbia coho, and mid-Columbia sockeye. Additionally, the construction of dams without fish passage led to the extirpation of multiple populations of Chinook, sockeye, coho, and steelhead. Some of these extirpated/extinct stocks have been the focus of reintroduction efforts using out of basin and/or hatchery fish. These programs have met with varying degrees of success, but none are considered self-sustaining.



Returning Columbia River salmon in 20-year snapshots, 1855-2024. 1855 data from NPCC historical run estimates; 1880-1920 data points extrapolated from Columbia River cannery output; 1940-present: dam counts & river mouth estimates

MOST POPULATIONS ARE DANGEROUSLY LOW

The chart below shows the annual populations of seven salmon and steelhead stocks in the Columbia Basin. The teal circles show the historic abundance of the stock; the yellow circles show the goal; and the red circles show the current population level. For example, Snake River spring/summer Chinook salmon have declined from 1 million fish to 7,103 fish—a 99.3% decline. Snake River sockeye have gone from 84,000 fish to only 46 fish—a drop of 99.9%.[6]



Different species, different geographic areas

Combining returns of all salmonids basin-wide is a coarse and incomplete way to evaluate salmon abundance. Species are not interchangeable—decreases in the number of Chinook (the largest "king" salmon), for example, cannot be offset by increases in smaller sockeye.

Similarly, increases in one geographic area can obscure continuing declines in others when all runs across the Basin are combined. For instance, due to improved tributary dam operations, habitat restoration, and hatchery programs (all occurring in Canada), Okanogan sockeye have seen significant increases in recent years. Meanwhile, Snake River sockeye remain dependent on a life support hatchery. In fact, despite the significant increases in Okanogan sockeye, sockeye harvest opportunities remain extremely limited in lower Columbia due to their intermingling with the nearly extinct Snake River sockeye salmon and the need to restrict harvest to protect these imperiled fish.

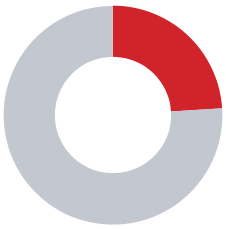
Fishers at Celilo Falls. 1951. CRITFC Matheny Collection

Tribal youth helping sort fish for spawning at Dworshak National Fish Hatchery. CRITFC.

WILD FISH AT RISK OF EXTINCTION

Most wild salmon and steelhead runs persist at a fraction of their historic abundance and geographic distribution, and some (including three of five in the Snake River) persist at less than one percent of their historic abundance[7] with less than half of the historical populations remaining in the Columbia watersheds. For example, of the 35 extant Snake River Spring/summer Chinook populations, eight (24%) had fewer than 50 spawners (quasi-extinction) return in 2024.[8] For wild Snake River steelhead, three out of 21 (14%) of populations had fewer than 50 spawners last year.

Combining returns of hatchery and wild fish obscures the low abundance and productivity decline in wild stocks. While hatchery production is important to allow for harvest opportunities that are culturally and economically important to the region, hatchery fish do not have the full genetic and geographic diversity of self-sustaining wild runs.



24% of Snake River spring/ summer Chinook are at the quasi-extinction threshold

14% of wild Snake River steelhead are at the quasi-extinction threshold

WILD FISH… AND HATCHERY FISH

Hatchery production

Hatchery production began in earnest to mitigate for dam construction in the 1940s. Prior to that, returns to the Columbia River were primarily wild fish. Today, "[h]atchery-origin fish … account for two-thirds of the average Columbia River return. Hatchery percentages are less than 10 percent for sockeye and chum salmon, but average 75 percent to over 90 percent for spring Chinook, summer Chinook, and coho salmon."[9]

Hatchery releases are concentrated in the lower portion of the basin; less than half of the Snake River populations have hatchery programs.

Unmet compensation goals

The promised level of hatchery-origin fish returning to make up for the impact of dams on wild fish (mitigation) is not being met (e.g. Lower Snake River Compensation Plan supported spring-summer Chinook salmon have never met their adult return goal established over 40 years ago). Even though hatchery production has increased, the majority of federal hatchery facilities in the Columbia Basin are not meeting and have never met their mitigation responsibilities in terms of adult returns and replacing lost fisheries opportunities.[10] Some hatcheries have had fish production reduced due to infrastructure constraints while other programs are still trying to develop hatchery production promised in mitigation commitments.

CONTRIBUTION TO MORTALITY

"Measuring" salmon abundance through selective and misleading numbers appears to be an attempt to support the false narrative that the federal hydrosystem does not harm salmon. But this narrative ignores the known and available information on the substantial role of the hydrosystem in salmon decline.

Pelican numbers are growing throughout the Columbia Basin due to the altered river environment created by the hydrosystem that is favorable to them. These fish-eating birds impact outmigating salmon smolts. ODFW.

Rebuilding report

Direct and indirect mortality associated with the hydrosystem is the largest freshwater limiting factor for upriver stocks. Hydrosystem-related alterations in the riverine environment (e.g., slower downstream migration times, warming water), avian bird colonies, and sea lion predation are the next largest freshwater limiting factors for most stocks (and still a major factor for the rest).[11]

Hydrosystem responsibility

The NPCC has estimated, through an exhaustive analysis with public review "declines in run size due to hydropower development and operation range from 5 to 11 million fish."[12] This compares with the total decline from all causes of about 7 million to 14 million adult fish."[13]

On the upper range of the NPCC estimate, the hydrosystem impact was responsible for 79% of the fish decline.

Failure to meet recovery targets

The Council set an interim goal at the low end of the range of losses caused by the hydropower system – **five million**. In 1987, the Council estimated the salmon population at 2.5 million returning fish. After 38 years, we are at about that same number,[14] even after significant reductions in salmon harvest and improvements in timber and mining practices.

[1] NPCC, Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin (March 1986), p.21. This was Appendix D of the 1987 PPCC Fish and Wildlife Program https://www.nwcouncil.org/reports/1987-columbia-river-basin-fishwildlife-program/.

[2] 1987 NPCC Fish and Wildlife Program, p.35, https://www.nwcouncil.org/sites/default/files/1987Program_0.PDF

[3] See Washington Department of Fish and Wildlife presentation: https://www.nwcouncil.org/fs/19333/2025_04_10.pdf.

[4] CPB Phase 2 Report page 47, Table 8, https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC_CRB_Phase2ReportFinal_508.pdf?null; Rebuilding Interior Columbia Basin Salmon and Steelhead, NOAA 2022 (Table 2).

[5] Interior Columbia and Snake River Salmon and Steelhead Maintain Listing Status, April 18, 2020, https://www.fisheries.noaa.gov/feature-story/interior-columbia-and-snake-river-salmon-and-steelhead-maintain-listing-status.

[6] Source: www.fisheries.noaa.gov/s3/2022-09/rebuilding-interior-columbia-basin-salmon-steelhead.pdf.

[7] Rebuilding Interior Columbia Basin Salmon and Steelhead, NOAA 2022 (Table 2).

[8] Nez Perce Tribe Department of Fisheries Resources Management, May 14, 2025, https://ryankinzer.github.io/SRAFS/.

[9] CPB Phase 2 Report at 42-43, https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC_CRB_Phase2ReportFinal_508.pdf?null. (Table 6)

[10] Tom Iverson, Yakama Nation Fisheries, personal communication.

[11] Rebuilding Interior Columbia Basin Salmon and Steelhead, NOAA 2022 (Table 3).

[12] 1987 NPCC Fish and Wildlife Program, p.38, https://www.nwcouncil.org/sites/default/files/1987Program_0.PDF

[13] 1987 NPCC Fish and Wildlife Program, p.38, https://www.nwcouncil.org/sites/default/files/1987Program_0.PDF

[14] https://www.nwcouncil.org/fs/19333/2025_04_10.pdf.