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Frequently Asked Questions on Snake River fall-run Chinook salmon delisting petition

What is NOAA Fisheries' 12-month determination?

On January 16, 2015, NOAA Fisheries received a petition from the Chinook Futures Coalition to delist Snake River fall-run Chinook salmon under the Endangered Species Act (ESA). We released a 90-day finding on April 22, 2015, indicating that further review was warranted. Upon accepting a petition, the ESA requires NOAA Fisheries to make a determination of whether the petitioned action is warranted within 12-months of receiving the petition. Though the status of Snake River fall-run Chinook salmon has improved considerably since its listing under the ESA in 1992, NOAA Fisheries has determined that delisting Snake River fall-run Chinook salmon is not warranted at this time; therefore, the species will retain its threatened status. This determination is based on key uncertainties associated with whether the strong returns in recent years can be sustained, whether improvements in natural productivity will continue, and resolving the influence of hatchery production on the wild population, among other factors.

What criteria did NOAA Fisheries use to evaluate the delisting petition?

Based on the petition, NOAA Fisheries is responsible for determining whether Snake River fall-run Chinook salmon warrants delisting from the federal Endangered Species Act (ESA). Section 4(b)(1)(A) of the ESA requires listing determinations based solely on the best scientific and commercial data available after conducting a review of the status of the species and taking into account efforts being made to protect the species. NOAA Fisheries must determine whether a species is threatened or endangered because of one or a combination of the following factors:

- (A) the present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) overutilization for commercial, recreational, scientific, or educational purposes;
- (C) disease or predation;
- (D) inadequacy of existing regulatory mechanisms; and/or
- (E) other natural or man-made factors affecting its continued existence.

What information did NOAA Fisheries evaluate in its determination?

To ensure our review of the petition was based on the best scientific and commercial data available, we integrated our five-year status review of West Coast salmon and steelhead with our review of the Snake River fall-run Chinook delisting petition. The [five-year review of West Coast salmon and steelhead](#) included a multi-step process. First, scientists from the NOAA Fisheries Northwest Fisheries Science Center collected and analyzed information about the viability of the listed Pacific Northwest salmon and steelhead, producing a [2015 report](#) detailing the results. Next, hatchery managers from NOAA Fisheries West Coast Region evaluated each hatchery program and stock to determine whether the respective stocks warranted inclusion in the associated Endangered Species Act listings. And finally, NOAA Fisheries West Coast Region evaluated

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information related to the five listing factors for Snake River Basin salmon and steelhead as part of a Snake River Five-Year Review Report. As part of this effort, we solicited information from the public to inform our review. We received information from federal and state agencies, Native American Tribes, conservation organizations, fishing and industry groups, and individuals. This, and other information routinely collected by NOAA Fisheries, informed the status review of Snake River fall-run Chinook salmon.

Concurrent to these efforts, NOAA Fisheries released a [proposed recovery plan](#) on November 2, 2015 for Snake River fall-run Chinook salmon. The proposed plan includes a detailed viability assessment for Snake River fall-run Chinook salmon that is largely incorporated into the Northwest Fisheries Science Center's 2015 report.

NOAA Fisheries' finding on the petition collectively relies on the information presented in the proposed recovery plan's viability assessment, the Northwest Fisheries Science Center's 2015 report, the review of West Coast salmon and steelhead hatchery programs, and the Snake River Five-Year Status Review Report.

How did NOAA Fisheries evaluate extinction risk in its determination?

We assessed the extinction risk of Snake River fall-run Chinook salmon based on a set of four biological criteria:

- abundance;
- productivity, or growth rate;
- spatial structure; and
- diversity.

Abundance and productivity need to be sufficient to provide for persistence under varying environmental conditions. The spatial structure of populations should provide for resilience to the potential impact of catastrophic events. And finally, genetic diversity should provide for patterns of phenotypic, genotypic, and life-history diversity that sustains natural production across a range of conditions, allowing for adaptation to changing environmental conditions.

Based on these objectives, the Technical Recovery Team—the scientific body whose work informed the development of the proposed recovery plan—concluded that one potential scenario for recovery would be to restore both the single remaining population to “highly viable”¹ status along with re-establishing a highly viable population above the Hells Canyon Complex, where Snake River fall-run Chinook salmon have been extirpated. The Technical Recovery Team also recognized that “different scenarios of [species] recovery may reflect alternative combinations of viable populations and specific policy choices regarding acceptable levels of risk.” Based on additional guidance from the Technical Recovery Team, NOAA Fisheries determined that, because of the species' unique characteristics (i.e., the remaining population is well distributed across a large area that is spatially complex, with successful spawning and rearing across a diverse set of habitats), in this case, delisting might be possible under other scenarios. These scenarios are described in Section 3.2.2 of the proposed recovery plan and include single population scenarios as well as a scenario that would involve reintroduction above Hells Canyon Dam. Please see, “What does the Proposed Recovery Plan identify as potential scenarios for recovering Snake River fall-run Chinook?” below, as well as [Section 3.2.2 of the proposed recovery plan](#) for more detail.

NOAA Fisheries has determined that the status of the single remaining population of Snake River fall-run Chinook salmon—the Lower Maintstem Snake River population located below the Hells Canyon Dam Complex—currently is considered “viable.” Its rating for abundance and productivity is now considered “low risk,” as is its rating for spatial structure. Diversity is still considered “moderate risk.”

¹ “Highly Viable” status refers to a 1% risk of extinction over 100 years; whereas “Viable Status” refers to a 5% or lower risk of extinction over 100 years.

Aren't there record levels of Snake River fall-run Chinook salmon returns? Why aren't the high returns sufficient for delisting?

Yes, Snake River fall-run Chinook salmon have been returning in strong numbers in recent years, and this is encouraging. The average abundance of 6,418 wild fish returning over the last 10 years (2005-2014) is above the proposed abundance criterion identified in the proposed recovery plan. Particularly strong ocean conditions have contributed to these abundant returns, specifically over the last three years. Overall, the status of the Snake River fall-run Chinook salmon has clearly improved from the time of listing under the ESA and since prior status reviews, which are conducted every five years. Additionally, the high fraction of hatchery fish spawning naturally (~70 percent) has likely contributed to the high abundance of returning wild fish, but this makes it difficult to resolve the natural productivity, adaptability, and spatial structure needs of natural-origin spawning fish. Nonetheless, abundance is only one metric to consider in the delisting decision. Productivity or growth rate, spatial structure, and genetic diversity, as discussed in more depth above (see “How did NOAA Fisheries evaluate extinction risk?”), also are key considerations that must meet specific criteria before delisting can occur.

How did NOAA Fisheries consider hatchery-origin fish in its analysis?

NOAA Fisheries’ [Hatchery Listing Policy](#) recognizes that the presence of hatchery fish can positively affect the overall status of the species by: contributing to the increased abundance of wild populations; improving spatial distribution across a broad geographic area; serving as a source population for repopulating unoccupied habitats; and conserving genetic resources of depressed wild populations. Conversely, a hatchery program can also have adverse effects that may affect a listing determination by reducing the reproductive fitness and productivity, and adaptive genetic diversity, of the species.

Hatchery production of Snake River fall-run Chinook salmon has increased and so have hatchery-origin returns. Considerable uncertainty remains about the effect of these programs on the Lower Mainstem Snake River population. Much of this uncertainty reflects the fact that the remaining population is very difficult to study because of its geographic extent, habitat, and logistics. This uncertainty, however, is more important in the case of Snake River fall-run Chinook salmon because the current population is the only remaining population, and it must reach a “highly viable” level under any delisting scenario for the species to be considered for delisting.

What is the relationship between this determination, the Five-Year Status Review, and the Proposed Recovery Plan?

Please see “What information did NOAA Fisheries evaluate in its determination?” above.

What does the Proposed Recovery Plan identify as potential scenarios for delisting Snake River fall-run Chinook salmon?

The [Proposed Recovery Plan](#) includes two potential delisting scenarios and a third “placeholder” scenario under which additional delisting scenarios could be developed. Each scenario requires specific viability criteria and potential metrics for measuring viability characteristics designed to meet the objectives adopted by the Technical Recovery Team. The scenarios provide a range of potential population characteristics that, if achieved, would indicate that the species has met the delisting objectives.

Scenario A – two populations, one highly viable and the other viable: This scenario would achieve recovery by improving the status of the remaining Lower Mainstem Snake River population to “highly viable,” and re-establishing the extirpated Middle Snake River population above the Hells Canyon Dam Complex to “viable” status.

Scenario B – single population measured in the aggregate: This scenario illustrates a single-population pathway

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to recovery with biological viability criteria evaluated in the aggregate (population-wide), based on all wild adult spawners. Under this scenario, the Lower Mainstem Snake River population would need to achieve “highly viable” status with a high degree of certainty.

Potential additional scenarios – natural production emphasis areas: There is potential to develop additional single-population scenarios that would be a variation of Scenario B. Under these potential additional scenarios, “natural production emphasis areas” for some major spawning areas would have a low percentage of hatchery spawners and produce a significant level of wild spawners. The remaining major spawning areas could have higher acceptable levels of hatchery spawners than under Scenario B. The population would still need to achieve a status of “highly viable” with a high degree of certainty.

In lieu of a final Snake River fall-run Chinook salmon recovery plan with final delisting scenarios against which to compare the species’ current status, we must base our determination in this review on whether delisting is warranted on the best scientific and commercial information available. The Technical Recovery Team viability recommendations, and the proposed delisting scenarios provide useful guides for evaluating the conditions that likely must be met for the petitioned delisting of Snake River fall-run Chinook salmon to be warranted.

How will we know if Snake River fall-run Chinook salmon is ready for delisting?

Based on the Technical Recovery Team’s viability recommendations, and all of the potential delisting scenarios in the Proposed Recovery Plan, the single remaining population of Snake River fall-run Chinook salmon must meet minimum requirements for “highly viable” status through a combination of “very low” abundance and productivity risk, as well as “low” to “very low” spatial structure and genetic diversity risk. The current genetic diversity risk falls short of the level necessary to support delisting.

When will the Proposed Recovery Plan become final?

NOAA Fisheries released the [Proposed Snake River Fall-run Chinook Salmon Recovery Plan](#) on November 2, 2015, for public comment. The timeline for completing a final recovery plan generally takes about a year from the time the public comment period closes.

How does NOAA Fisheries consider genetic diversity, and the associated risk rating, in its analysis?

A low risk to genetic diversity requires demonstration of patterns of phenotypic, genetic, and life-history traits that provide for resilience across a range of conditions, allowing for adaptation to changing environmental conditions. Abundant numbers of spawning adults does not by itself indicate that essential diversity traits are being conserved. NOAA Fisheries considered the Northwest Fisheries Science Center’s “moderate risk” rating in its analysis, recognizing that the rating reflects observed changes in major life-history patterns, shifts in phenotypic traits, and high levels of genetic homogeneity in samples for wild returns.

Do current habitat conditions support the delisting of Snake River fall-run Chinook salmon?

Habitat conditions in the mainstem corridor have improved since the last status review. However, if the delisting of Snake River fall-run Chinook salmon is to include the re-establishment of a spawning population above the Hells Canyon Dam Complex, the mainstem habitat above the complex currently is too degraded to support anadromous fish. With respect to the sole remaining Lower Mainstem Snake River population, there is uncertainty as to whether current habitat conditions are sufficient for the population to improve to, and be sustained at, a highly viable level. Analyses suggests the productivity of the population may be influenced by density dependence, poor ocean conditions, or poor migration conditions. The lack of major spawning aggregations with low levels of hatchery influence makes it difficult to evaluate the sufficiency of lower mainstem habitat conditions. At this time, it is unclear if current habitat conditions can sustain the recent high levels of adult returns and provide resiliency during periods of poor marine or freshwater survival.