

NOAA Fisheries' June 2004 Proposed Hatchery Listing Policy and
Proposed Listing Determinations for West Coast Salmonids

Comments & Response

Comment: The Court's ruling in Alsea Valley Alliance v. Evans held that NOAA must count hatchery and wild fish equally.

Response:

- The *Alsea* Court ruled that NOAA Fisheries must list an entire ESU and cannot list just one portion of an ESU (that is, only the naturally spawned fish).
- In previous listings NOAA Fisheries had determined that certain hatchery stocks and natural populations belonged to the same "species" or ESU. In general, if it is determined that an ESU warranted listing, NOAA Fisheries excluded hatchery stocks from the listing finding that protecting hatchery fish was not essential to the conservation of the ESU.
- The Court did not tell the agency to treat hatchery and natural fish equally, or how to consider hatchery fish when evaluating the risk of extinction.
- In evaluating an ESU's risk of extinction, the agency believes it must consider both the benefit and the harm from hatchery-bred salmon to the ESU as-a-whole.

Comment: The Proposed Hatchery Listing Policy is not based on science.

Response:

- NOAA Fisheries conducted an exhaustive review of the scientific literature on artificial propagation in developing the proposed hatchery listing policy.
- There is a great deal of uncertainty about the ability of hatchery fish to mitigate extinction risk in the long term, and a range of scientific opinion.
- The Proposed Hatchery Listing Policy involves a legal interpretation of the statute as well as policy discretion given the uncertainties and range of opinion.

Comment: All hatchery fish are good/All hatchery fish are bad.

Response:

- There is a range of hatchery programs with different goals and management practices. Similarly, artificial propagation poses a range of potential benefits and risks to the conservation of salmon populations and ESUs.
- In the current status review, NOAA Fisheries detailed the specific risks and benefits of each hatchery program included in an ESU.

Comment: Recent increases in abundance and record salmon runs demonstrate that many ESUs should no longer be listed.

Response:

- It is true that salmon runs in many parts of the Pacific Northwest have been higher recently than they have been for many years — a result that is generally attributed to favorable marine conditions and high ocean survival, as well as some improvements to freshwater habitat.
- However, reliance on improved ocean conditions is not a sound conservation strategy. Recent increases in abundance might be only temporary and could mask a failure to address underlying factors for decline. The real conservation concern for West Coast

salmon and *O. mykiss* is how populations will fare during periods of moderate and poor ocean survival.

Comment: NOAA Fisheries' "counted" hatchery fish equally with natural fish in determining whether to list an ESU.

Response:

- The agency did not "count" hatchery fish in terms of indiscriminately lumping the numbers of hatchery fish and natural fish to determine if an ESU should be listed.
- The agency did "count" hatchery fish in terms of considering the potential benefits and risks of hatchery programs to the short- and long-term viability of an ESU. On a case-by-case basis NOAA Fisheries evaluated the net contribution of hatchery programs to the abundance, productivity, spatial structure, and diversity of an ESU in assessing overall extinction risk.
- Hatchery programs can increase, decrease, or have no net effect on an ESU's extinction risk depending upon how it has been and is being managed, the health of the natural populations being affected, and the specific risks faced by the ESU. In some circumstances hatchery programs may mitigate the immediacy of risks faced by an ESU, but their contribution over the long-term remains limited or uncertain.

Comment: Pacific salmon cannot be at risk of going extinct because hatcheries produce them by the tens of thousands every year.

Response:

- Although hatcheries can increase the total number of returning salmon over the short term, their contribution to the long-term viability of an ESU is uncertain. Artificial propagation can pose serious risks to the long-term conservation of an ESU.
- Our ability to sustain hatchery populations over the long term is unproven.
- Hatchery production is an intensive form of human intervention that is subject to a variety of logistic and technical uncertainties. Such uncertainties include disease outbreaks, mechanical failures, environmental catastrophes, human error, funding cuts, staff reductions, and changing societal priorities. These uncertainties further complicate evaluating the potential contribution of artificial propagation into the future.
- Hatcheries are not a substitute for addressing the ecosystem factors that limit a species' recovery. The ESA identifies artificial propagation as one of many "methods or procedures that may be used to bring a threatened or endangered species to the point where the protections of the ESA are no longer necessary." The continued and indefinite use of such methods for achieving conservation does not meet the stated purpose of the ESA to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." Artificial propagation is not a substitute for bringing a species to the point where ESA protections are no longer necessary, nor does it address the factors impairing the ecosystems upon which salmonids depend.

Comment: Hatchery and wild salmon cannot co-exist.

Response:

- There are many technical and logistical challenges to sustaining hatchery production and conserving wild populations, but there is good reason to think it is possible.

- Hatchery production can be consistent with the conservation of wild populations if: the incidental effects of isolated hatchery programs on wild populations (e.g., competition, predation, disease transfer, mixed-stock harvests, genetic interactions) remain below a level that causes significant risk; the genetic resources that reside in hatchery programs are successfully integrated into the recovery process in a case-specific manner that maximizes benefits and minimizes risks.
- Much scientific research has been and is being devoted to achieving these goals, and improvements in hatchery practices and management are encouraging.

Comment: Including hatchery fish in ESUs will result in increased extinction risk for natural populations

Response:

- Including certain hatchery stocks in ESUs recognizes that these hatchery programs were founded using local natural populations, and that they continue to incorporate natural fish as broodstock. Important genetic resources reside in these hatchery programs that may prove useful in efforts to conserve and recover listed ESUs.
- Hatchery managers, in cooperation with NOAA Fisheries, are in the process of developing Hatchery Genetic Management Plans (HGMPs). These HGMPs will specify biologically-based artificial propagation management strategies for all hatcheries to ensure the conservation and recovery of listed ESUs.

Comment: Hatchery reform efforts have eliminated past risks associated with hatchery programs

Response:

- Although considerable improvements have been made in fish culture and fisheries management that can help reduce direct and indirect adverse effects on natural populations, reform efforts cannot make the risks associated with artificial propagation disappear entirely.
- Genetic risks and domestication selection associated with artificial propagation cannot be eliminated entirely without eclipsing the survival advantage provided in the hatchery environment.

Comment: Interbreeding between hatchery and wild fish increases diversity

Response:

- Interbreeding between hatchery and wild fish can actually reduce genetic diversity among populations. The diversity that has evolved among salmonid populations reflects genetic and life-history adaptations to local conditions and makes populations resilient to short-term environmental variability and long term ecological change. The erosion of diversity among populations poses risks to the viability of salmonid populations and ESUs.
- If a wild population has suffered an extreme loss of diversity and an interbreeding hatchery population is closely related to the wild population, this interbreeding can benefit diversity and fitness of the wild population in the short term.
- If the hatchery population is unrelated to the wild population, interbreeding will increase the diversity of the combined population but will decrease local adaptations and reproductive fitness.

Summary of Proposed Listing Determinations for 27 Evolutionarily Significant Units

| Salmonid Species | ESU Reviewed | Current ESA Status | Recommended Proposed Listing Determination | Number of Hatchery Stocks Included in ESU |
|-------------------------------------------|---------------------------------|--------------------|--------------------------------------------|-------------------------------------------|
| Sockeye Salmon <i>O. nerka</i> | Snake River | <i>Endangered</i> | <i>Endangered</i> | 1 |
| | Ozette Lake | <i>Threatened</i> | <i>Threatened</i> | 2 |
| Chinook Salmon <i>(O. tshawytscha)</i> | Sacramento River Winter-run | <i>Endangered</i> | <i>Threatened</i> | 2 |
| | Central Valley Spring-run | <i>Threatened</i> | <i>Threatened</i> | 0 |
| | California Coastal | <i>Threatened</i> | <i>Threatened</i> | 7 |
| | Lower Columbia River | <i>Threatened</i> | <i>Threatened</i> | 17 |
| | Upper Willamette River | <i>Threatened</i> | <i>Threatened</i> | 7 |
| | Upper Columbia River Spring-run | <i>Endangered</i> | <i>Endangered</i> | 6 |
| | Puget Sound | <i>Threatened</i> | <i>Threatened</i> | 22 |
| | Snake River Fall-run | <i>Threatened</i> | <i>Threatened</i> | 4 |
| | Snake River Spring/Summer-run | <i>Threatened</i> | <i>Threatened</i> | 15 |
| Coho Salmon <i>(O. kisutch)</i> | Central California Coast | <i>Threatened</i> | <i>Endangered</i> | 4 |
| | S. Oregon/N. California Coasts | <i>Threatened</i> | <i>Threatened</i> | 3 |
| | Oregon Coast | <i>Candidate</i> | <i>Threatened</i> | 5 |
| | Lower Columbia River | <i>Candidate</i> | <i>Threatened</i> | 21 |
| Chum Salmon <i>O. Iceta</i> | Hood Canal Summer-run | <i>Threatened</i> | <i>Threatened</i> | 8 |
| | Columbia River | <i>Threatened</i> | <i>Threatened</i> | 3 |
| <i>O. mykiss</i> | Southern California | <i>Endangered</i> | <i>Endangered</i> | 0 |
| | South-Central California Coast | <i>Threatened</i> | <i>Threatened</i> | 0 |
| | Central California Coast | <i>Threatened</i> | <i>Threatened</i> | 2 |
| | California Central Valley | <i>Threatened</i> | <i>Threatened</i> | 2 |
| | Northern California | <i>Threatened</i> | <i>Threatened</i> | 2 |
| | Upper Willamette River | <i>Threatened</i> | <i>Threatened</i> | 0 |
| | Lower Columbia River | <i>Threatened</i> | <i>Threatened</i> | 10 |
| | Middle Columbia River | <i>Threatened</i> | <i>Threatened</i> | 7 |
| | Upper Columbia River | <i>Endangered</i> | <i>Threatened</i> | 6 |
| Snake River Basin | <i>Threatened</i> | <i>Threatened</i> | 6 | |