Key Conclusions Regarding ESU Viability

Analysis of ESU

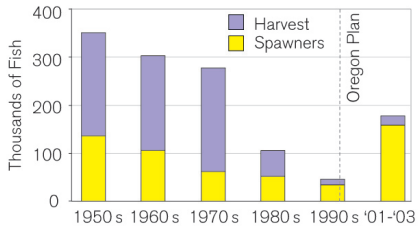
Biological Viability Status

PASS+

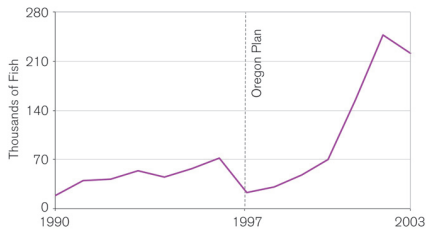
PASS

FAIL

Coho Abundance

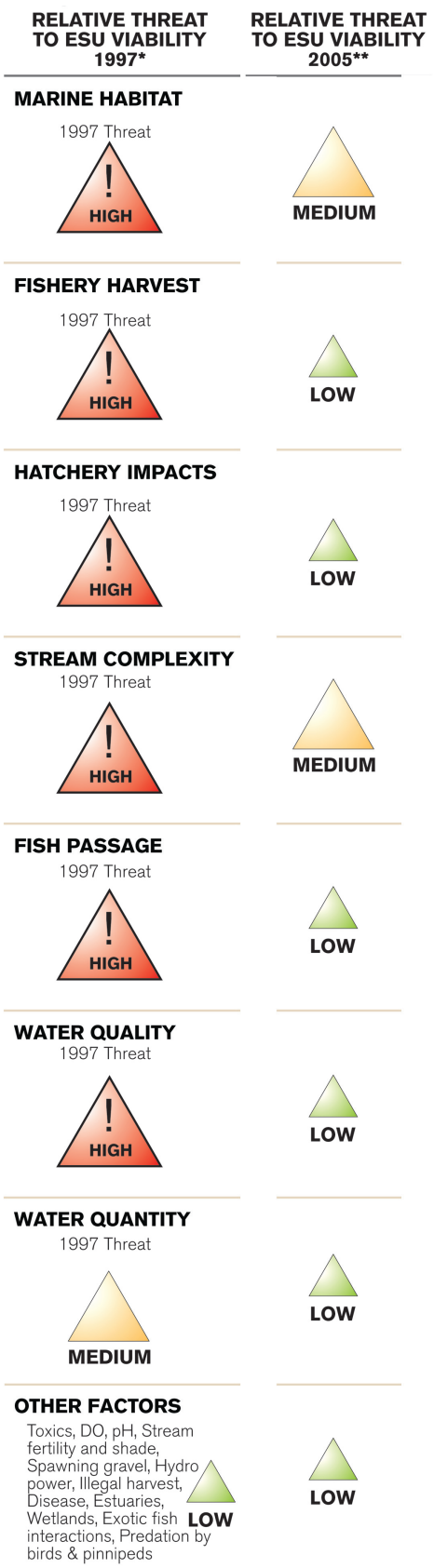


Number of Wild Spawners



Average abundance of wild coho spawners in the ESU during 2001-2003 was greater than the average for any of the previous five decades.

1. The Coastal Coho ESU is viable, that is, coho populations generally demonstrate sufficient abundance, productivity, distribution and diversity to be sustained under the current and foreseeable range of environmental conditions. In fact, the ESU retains sufficient productivity and is supported by sufficient habitat to be sustainable through a future period of adverse ocean, drought, and flood conditions similar to or somewhat more adverse than the most recent period of poor survival conditions (late 1980s and 1990s).
2. During and after the recent period of poor marine survival, coho populations generally demonstrated adequate resiliency to resist continued downward population trends, and demonstrated the ability to rebound dramatically as marine survival conditions improved.
3. The mechanisms for this response are most likely a combination of inherently strong density-dependent recruitment coupled with sufficient high quality habitats to sustain productivity during periods of adverse environmental conditions. This reasoning does not imply that habitat conditions are optimum for the species nor that habitat is currently sufficient to achieve broader Oregon Plan recovery goals for the ESU.
4. Although the ESU passed viability criteria, 7 of 21 independent coho populations failed at least one of the viability criteria. These populations are distributed across 4 of 5 population strata.
5. The possibility that a number of adverse environmental conditions could converge and create a catastrophic threat to ESU viability is real. The convergence of the worst marine survival conditions in the last five decades, drought and extreme floods all occurred in the 1990s. Although the impacts were dramatic, the ESU remained viable through this period and rebounded quickly once conditions moderated. The life cycle of the species, its population dynamics and structure, and its broad geographic distribution reduce the likelihood that catastrophic events or convergence of multiple adverse environmental conditions would result in this ESU not being viable in the foreseeable future.
6. The assessment that Oregon coastal coho are likely to persist into the foreseeable future is predicated on the assumption that freshwater habitat and marine survival conditions in the future will generally correspond with environmental conditions and variability evident in the past several decades.



This chart compares perceived level of threat to ESU viability, for each potential limiting factor, in 1997 and 2005.

* 1997 threats are Oregon's interpretation of NOAA evaluation.

** 2005 threats are Oregon's assessment.

Threats to ESU Viability

1. Based on Oregon's finding that the Coastal Coho ESU is viable – plus evaluation of habitat data, conservation efforts, and monitoring programs – current levels of threat to continued ESU viability were determined.
2. Oregon concluded that two risk factors (marine habitat and stream complexity) currently present moderate levels of risk to future ESU viability.
3. This finding is in sharp contrast to 1997 when many risk factors (marine habitat, fishery harvest, hatchery impacts, stream complexity, fish passage, and water quality) were thought to present high levels of threat to ESU viability.

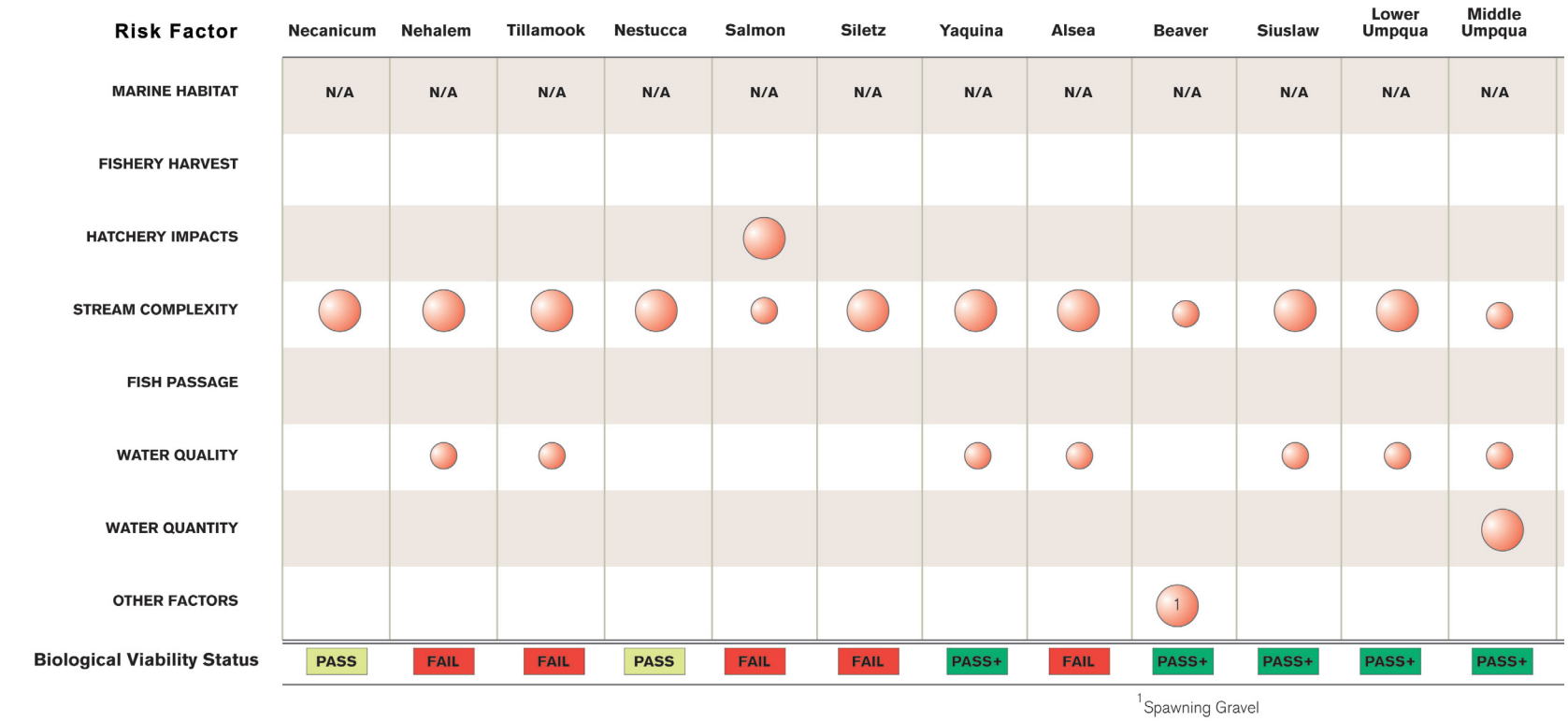
Future ESU Viability

1. A diverse set of conditions supports the conclusion that this ESU will maintain its viability into the foreseeable future. This set of conditions includes laws, management programs, monitoring, environmental conditions, and societal networks. In concert, these conditions serve to sustain and improve future viability of the ESU by: (1) reversing many of the environmental alterations and fishery impacts caused by historical management practices; (2) conserving existing conditions that support viability of the ESU; (3) creating future environmental conditions, based on an understanding of primary threats to individual populations, that will further improve the viability of the ESU in fulfillment of Oregon Plan objectives; and (4) maintaining a comprehensive monitoring program to allow adaptive management of conservation efforts as new information is gained.
2. It is unlikely that conditions currently supporting viability of the ESU will change so rapidly or dramatically as to preclude future, timely detection and protective action under Oregon management programs or the federal ESA.
3. Ongoing vigilance regarding conservation and restoration programs is necessary to sustain and improve viability of the ESU, most notably the responsiveness of these programs to variation in marine survival.

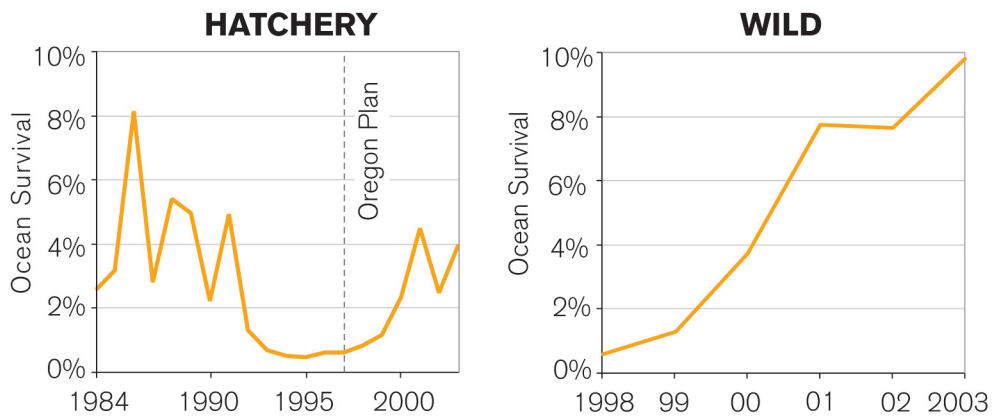
Key Conclusions Regarding Population Bottlenecks

1. Oregon has identified primary and secondary risk factor bottlenecks for each of the 21 independent populations that comprise the ESU.
2. This work will help prioritize future management and restoration work to further strengthen ESU viability and achieve the intent of the Oregon Plan.
3. Stream complexity and water quality were the two most commonly identified population bottlenecks, regardless of whether populations were or were not classified as viable.
4. Stream complexity was the primary bottleneck for 13 of 21 populations and was a secondary bottleneck for eight of 21 populations.
5. Water quality was not a primary bottleneck for any populations; however, it is a secondary bottleneck for 15 of 21 populations.
6. Other risk factors that were identified as primary population bottlenecks include: hatchery impacts (two populations), exotic fish species (three populations), water quantity (two populations), and spawning gravel (one population).
7. Oregon concludes that it will often be more reasonable to simultaneously pursue remediation of both primary and secondary population bottlenecks, using local data to prioritize restoration funding at local spatial scales, rather than to adopt a narrow view of only attempting to remediate the primary risk factor bottleneck.

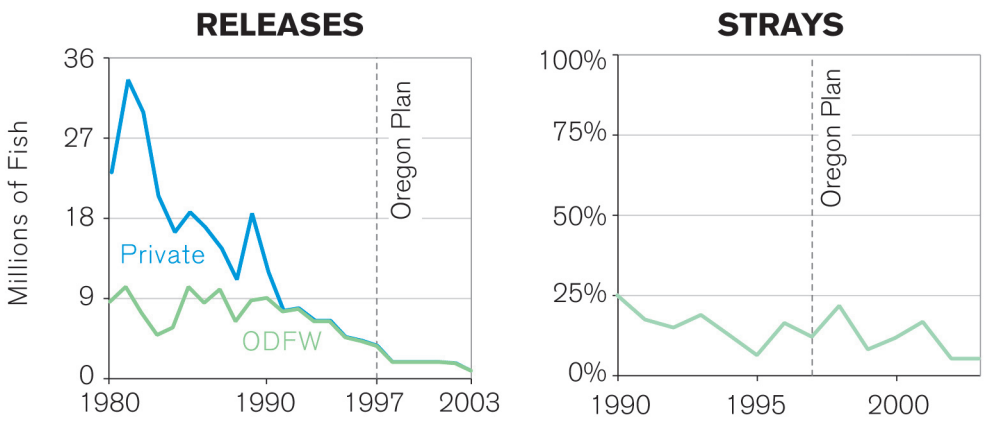
PRIMARY LIMITING FACTORS: The risk factor (bottleneck) that most limits the population. Consequently, effective efforts to improve viability or production of the population will address this risk factor first.



[1] Spawning Gravel



Survival of hatchery and wild coho salmon is strongly influenced by ocean conditions. The graph at left represents an average survival for all coho returning to Oregon hatcheries; the graph at right represents an average survival of wild coho returning to 5 life-cycle monitoring sites in the ESU. Year indicates year of return.

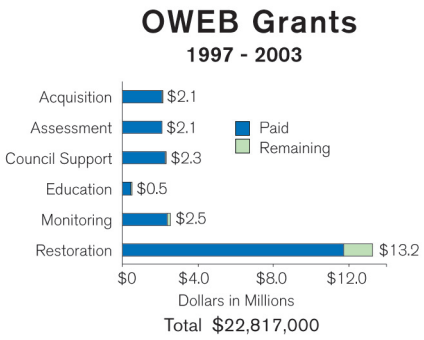


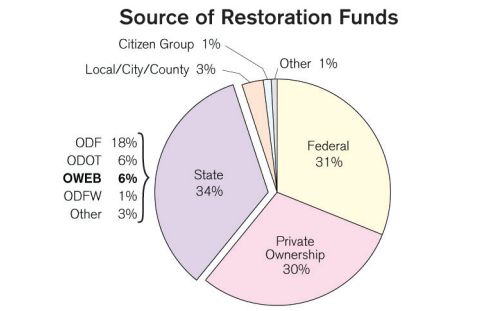
Estimated releases of hatchery coho salmon juveniles, and occurrence of stray hatchery coho adults in natural spawning streams, for the Coastal Coho ESU. The graph at left represents estimated releases of hatchery coho juveniles by private and ODFW hatcheries; the graph at right represents estimated percent of coho observed in spawning areas that were stray hatchery fish. Year indicates year of release or return.

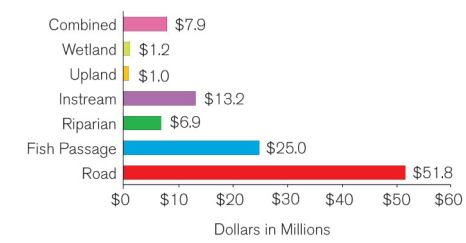
Summary of conclusions from the Coastal Coho ESU Assessment regarding population viability and risk factor bottlenecks.

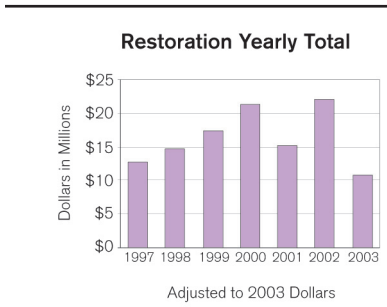
(Populations are listed north to south.)

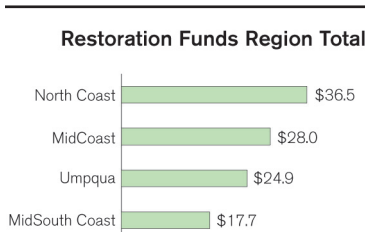
Key Conclusions Regarding Oregon's Conservation Effort











Restoration funding data for the Coastal Coho ESU. (Source: OWEB Restoration Database and federal Regional Ecosystem Office.)

1. Historical land, water and fish management activities that were the key contributing factors for the legacy of coho declines have been stopped.

2. State and federal laws established during the 1950s through 2004 (splash damming eliminated, gill-netting eliminated in coastal rivers, federal Clean Water Act, federal Endangered Species Act, Oregon Forest Practices Law, Oregon Fill and Removal Law, PFMC Harvest Matrix Amendment 13, Native Fish Conservation Policy, Salmon and Parks Initiative, etc.) establish a far more protective management environment than existed previously.

3. Implementation of the Oregon Plan beginning in 1997 demonstrated a substantial effort by the state to expand and strengthen an already considerable programmatic conservation and restoration effort – designed to improve the status and prevent any future deterioration of this ESU's viability.

4. Fishery harvest rates over the last decade have been maintained by management action at unprecedented low levels compared to the prior four decades.

5. Hatchery programs and impacts are lower now than in the past four decades.

6. Conservative fishery and hatchery management required by state and federal policies will continue to protect and strengthen future ESU viability.

7. Reduced adverse impacts from hatchery programs across the ESU in the last two decades may not have been fully reflected in populations that were most adversely affected by historical practices. Such positive expression of current management practices may occur in the next decade or so.

8. New regulatory and program action by DEQ, ODA, and ODF should further improve water quality and habitat supporting the ESU.

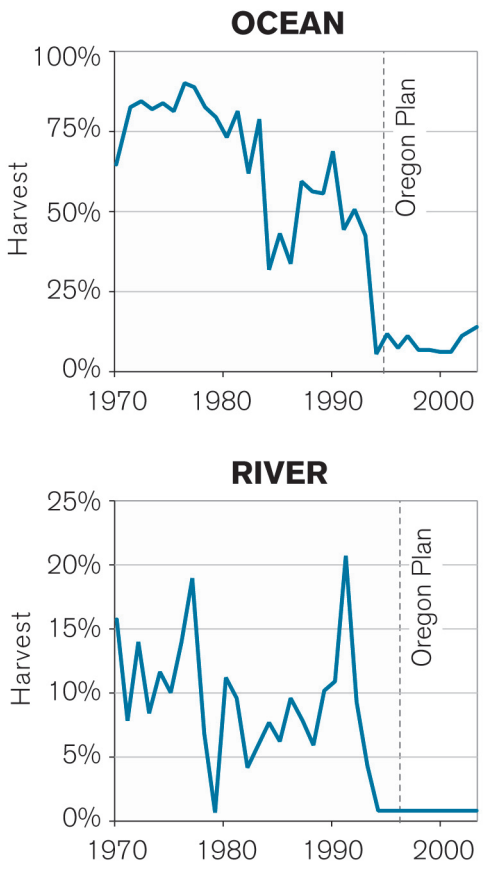
9. A new analysis of water use in the ESU indicates that permitted water use is not and will not become a primary limiting factor of ESU viability.

10. Restoration work (including fish passage) in the ESU during 1997-2003 exceeded any previous level of effort.

11. Recent analyses of wetlands associated with coastal estuaries indicate that these habitats are being protected by current regulations.

12. Primary habitat-related threats to coho viability are being addressed through ongoing conservation efforts.

Key Findings Regarding Future Conditions in the ESU



Estimated fishery mortality (harvest rate) of naturally produced coho salmon, (direct take plus indirect mortality). The top graph presents estimates of fishery mortality in ocean fisheries; the bottom graph presents estimates of mortality rate in river-based (terminal) recreational fisheries. Year indicates year of fishery.

1. Watershed councils have been established throughout the ESU; these groups will complement future conservation and restoration efforts by soil and water conservation districts, private landowners, and state and federal agencies.
2. State funding to support Oregon Plan work (e.g., restoration, watershed council support, soil and water conservation district support, monitoring, assessments, etc.) is provided by Oregon Law until at least mid-2014.
3. Substantial new investments in monitoring of coho, habitat, and water quality provided a rich source of data to support Oregon's ESU assessment and adaptive management of conservation efforts.
4. The ocean environment for coho survival improved since the mid-to-late 1990s, although current conditions and future trend is uncertain.
5. Abundance and density of coho spawners throughout the ESU increased since 1998 to the highest average level observed in five decades, reflecting a rapid and ESU-wide response of the populations that comprise the ESU. Higher spawner numbers distributed widely across the ESU should have a positive impact on the ESU as a consequence of increased input of marine derived nutrients.
6. Analyses by the Coastal Landscape Analysis and Modeling Study (CLAMS) suggest that the future availability of larger riparian trees in forestlands will increase on fish-bearing streams regardless of land ownership. In contrast, the future potential for wood recruitment is likely to vary across forestland ownerships, with the higher potentials on public lands and lower potentials on private lands. Oregon concludes that these projections suggest that future habitat conditions for coho across the ESU will be at least similar to and perhaps improved over current conditions.
7. CLAMS analyses did not consider what is likely to happen to riparian vegetation on agricultural or urban portions of the landscape. The State concludes that modest improvement in riparian vegetation is likely to accrue on agricultural lands under current rules but acknowledges that considerable uncertainty exists regarding specificity of improvement.
8. Monitoring of habitat and water quality since 1997 provides a baseline to detect future trends (positive or negative) that could affect ESU viability. The sensitivity (ability to detect change) of monitoring will increase substantially in the next 3-8 years as more data become available.