

Oregon Coast Coho Conservation Plan

2018 Annual Report

The Oregon Coast Coho Conservation Plan (OCCCP) was adopted by the Oregon Fish and Wildlife Commission in March 2007. The plan serves as the State of Oregon's management plan for the Oregon Coast (OC) Coho Salmon Evolutionarily Significant Unit (ESU). The OC Coho Salmon ESU is comprised of 5 strata (North Coast, Mid-Coast, Mid-South Coast, Lakes, and Umpqua) and 21 independent OC Coho Salmon populations within these 5 strata.

ESU Status Summary

In 2018, OC Coho abundance was still recovering from poor ocean conditions brought on by the marine heatwave termed "the blob" that created adverse effects on OC Coho Salmon prey sources, survival, and fisheries. With a slight increase from 2017 estimates, OC Coho wild spawner abundance for the ESU was 58% of the previous 28-year average. Fishing harvest was less than the allowable harvest approved by the Pacific Fishery Management Council (PFMC) under Amendment 13 (A-13).

Overall, overwinter rearing habitat likely continues to limit freshwater productivity. However, focused efforts for population scale OC Coho Salmon habitat restoration actions are being supported by state and federal agencies, tribes, and other non-governmental organizations. These entities are working to develop and implement Coho Salmon-specific strategic actions plans to address primary limiting factors. Given that freshwater production continues to be limiting, implementation of the OCCCP should continue.

Measurable Criteria

As mandated by the Native Fish Conservation Policy, measurable criteria were developed to evaluate progress towards reaching the desired status goals for each of the independent populations in six criteria categories: (1) abundance, (2) persistence, (3) productivity, (4) distribution, (5) diversity, and (6) habitat. Using data and summaries from the Western Oregon Rearing Project and the Oregon Adult Salmonid Inventory & Sampling Project, the results of each criterion's status for 2018 are summarized below. More information on these measurable criteria can be found at the ODFW Recovery Tracker website (<http://www.odfwrecoverytracker.org>).

Abundance

This criterion is intended to ensure adequate numbers of naturally-produced spawners return from the ocean to guarantee the health of the population and provide, in the majority of years, economic, societal, and ecological benefits. Naturally-produced OC Coho Salmon spawner abundance estimates for the ESU increased from 61,377 fish in 2017, to 74,060 fish in 2018. The marine survival category under A-13 was Medium, and the abundance estimate was approximately 10.3% of the ESU abundance goal identified in the OCCCP.

Escapement abundance goals were developed for each of the independent populations to ensure naturally-produced spawners are broadly distributed throughout the ESU. None of the independent populations met their escapement goals in 2018. Estimates were approximately 58% of the previous 28-year average abundance (127,480 wild adult Coho Salmon), with wild spawner abundance below average in all populations except the Lower Umpqua. The Umpqua Stratum was the closest to average at 88%, and the North Coast stratum was farthest from average at 38%. The Lakes stratum abundance estimate was less than half of the 28 year average.

Persistence

This criterion uses the forecast probability of persistence for each independent population based on results from population viability simulation models. A persistence criterion with a probability of 99% or greater significantly increases the likelihood that the ESU will remain viable under extreme marine survival conditions. This metric was last assessed in 2007, and will be updated in the 12-year OCCCCP assessment beginning in 2019. In 2007, 11 of the 21 independent populations passed the criteria with three populations (the Necanicum, Salmon, and the Sixes) falling below a 95% probability of persistence.

Productivity

The criterion for productivity is the annual estimate of naturally-produced recruits per spawner (R/S) in each independent population and the ESU. The number of recruits must be equal or greater than the number of spawners that produced them for a population to avoid further decline during low levels of abundance. The productivity criterion was designed to confirm individual populations are performing in accordance with this expectation.

Although not directly used in the productivity metric, juvenile density and parr abundance information relative to spawners provides some insight into freshwater productivity (note: the R/S productivity metric also includes marine production, as the “recruits” are returning adult spawners). The number of sites fully seeded increased from 5.8% in 2017 to 11.4% in 2018. The 2018 abundance estimate was 3.3 million parr. The abundance estimate for the 2016-2018 brood group was lower than those for the 2007-2015 brood groups and higher than the estimate for the 1998-2000 brood group. Site occupancy was 80% in 2018, which has been the average since 2000. Since 2008, site occupancy in the ESU has met a NOAA Fisheries recovery criterion of $\geq 80\%$ of sites occupied. Site occupancy for the 2016-2018 brood group was low relative to 2010-2012 brood group estimate and high relative to the estimates for the 1998-2003 brood groups.

Data suggest the rearing capacity may be slightly higher in the Mid-South Coast relative to the other strata. The 5 highest (and 12 of the 20 highest) parr abundance estimates were in the Mid-South Coast.

Within Population Distribution

This criterion has two metrics. The first uses the percentage of random, spatially-balanced surveys that have greater or equal to four wild adult Coho spawners/mile for each independent population. In 2018, approximately 52% of the 318 sites surveyed in the OC Coho ESU were

occupied by wild adult Coho Salmon. The occupancy rate was lower than the 5-year average for the ESU. Of the 21 independent populations, the Coos River and Middle Umpqua River populations were equal to their 5-year average, and the Beaver Creek population was slightly higher than the 5-year average at 100% occupancy. Occupancy rates were not assessed for the North Umpqua population or the Lakes Stratum because current monitoring in those areas is not based on random, spatially balanced surveys.

The second metric for this criterion uses a comparison of the spatial pattern of potential spawning distribution to that observed using spatial statistics for each independent population. Data for this second metric are not currently available.

Diversity

The metric for this criterion is the average of the 100-year harmonic mean of spawner abundance (projected from a population viability model) for each independent population. The threshold value for the metric is a harmonic mean of at least 1,200 naturally-produced adult Coho Salmon spawners. This metric was last assessed in 2007, and will be updated in the 12-year OCCCCP assessment beginning in 2019. However, although annual spawner abundance estimates are not the same as the 100-year harmonic mean projection for spawner abundances, in 2018, 15 of the 21 independent populations had annual estimates that exceeded 1,200 spawners.

Habitat Condition

This metric is defined as the amount of available high quality habitat across all freshwater life stages in each independent, non-lake population. With the exception of the three lake populations, achieving the desired status goals of the OCCCCP will require significant improvement to the quality of freshwater habitat. High quality habitat is defined as habitat that can produce 2,800 smolts/mile. Many different metrics go into the estimation of high quality habitat.

A 5-year roll-up assessment of habitat trends at the strata level was last completed for the NOAA Fisheries Status Review in 2015, and the data was also used in NOAA's Endangered Species Act OC Coho Recovery Plan (2016). Even though restoration efforts have been ongoing, there was minimal evidence of an improving trend in stream habitat conditions for the ESU. There was evidence of declines in habitat complexity and increases in fine sediment in several strata. Overall, overwinter rearing habitat likely continues to limit freshwater productivity.

Conservation Project Implementation

In 2018, ODFW continued to implement its commitments identified in the OCCCCP. The status of those commitments are discussed below by action, as identified in the OCCCCP.

Hatchery Management- This commitment was met and is being maintained. Hatchery releases were significantly curtailed; the last hatchery Coho releases into the North Umpqua occurred in May 2006 and the last hatchery releases into the Salmon River occurred in May 2007.

Harvest Management- This commitment was met and is being maintained. Harvest impact rates to naturally-produced OC Coho Salmon from fisheries continue to be managed through the PFMC’s Salmon Fishery Management Plan and the use of Amendment 13 Harvest Management Matrix, found by NOAA Fisheries to be consistent with the recovery of OC Coho Salmon. The Table below shows allowable harvest impacts approved by the Pacific Fishery Management Council (PFMC) under Amendment 13 and the actual harvest impact calculated post-season from 2014-2018.

Year	A-13 Allowable Harvest Impact	Actual Harvest Impact
2014	30%	14.4%
2015	15%	19.9%
2016	20%	8.7%
2017	30%	11.6%
2018	15%	12.7%

Table 1. Allowable and Post-harvest Impacts for 2014-2018.

Western Oregon Stream Restoration Program- This commitment is on-going. Budget constraints have led to a continued reduction in ODFW biologists supporting this program. High priority habitat restoration projects that create high quality OC Coho Salmon rearing habitat continue to be developed and implemented by various entities across the ESU, with a reduced level of ODFW technical involvement. Priority is placed on projects with willing landowners in areas that support high quality OC Coho Salmon rearing habitat. Technical assistance is being provided to local partners, and new restoration techniques for addressing key limiting factors are continually being explored.

ODFW has two Western Oregon Stream Restoration Program biologists that provide a significant amount of support in coordinating, planning, and implementing OWEB’s investments in the strata where these biologists are located (North Coast and Umpqua).

The OWEB Investment Tracking Tool located in [Oregon Explorer](#) was used to identify activities funded by OWEB to support conservation and recovery of the OC Coho ESU in 2018.

The Table below summarizes the OWEB’s investments by category for each OC Coho Salmon population for actions implemented by organizations such as watershed councils, tribes, Soils and Water Conservation Districts, state, and federal agencies. Occasionally, grants are awarded by strata if actions target more than one population, as seen below for Monitoring and Technical Assistance in the Mid-Coast.

Population	Capacity Building	Outreach	Monitoring	Restoration	Technical Assistance	Total
North Coast						-
Necanicum						-
Nehalem				\$133,208		\$ 133,208
Tillamook			\$27,250	\$302,731		\$ 329,981
Nestucca				\$14,804		\$ 14,804
Mid-Coast			\$129,998		\$106,704	\$ 236,702
Salmon			\$26,141		\$21,556	\$ 47,697
Siletz				\$37,898		\$ 37,898
Yaquina				\$15,893		\$ 15,893
Beaver						-
Alsea				\$64,723	\$18,293	\$ 83,016
Siuslaw		\$43,507		\$76,486	\$86,314	\$ 206,307
Lakes						-
Siltcoos				\$25,242		\$ 25,242
Tahkenitch				\$125,229		\$ 125,229
Tenmile						-
Umpqua						-
Lower Umpqua				\$123,128	\$7,537	\$ 130,665
Middle Umpqua			\$204,789	\$313,347		\$ 518,136
North Umpqua						-
South Umpqua				\$16,728	\$49,938	\$ 66,666
Mid-South Coast						-
Coos		\$44,153	\$225,123	\$515,651		\$ 784,927
Coquille				\$2,631,918	\$43,624	\$ 2,675,542
Floras				\$42,244	\$24,120	\$ 66,364
Sixes				\$5000	\$36,473	\$ 41,473
Totals	-	\$ 87,660	\$ 613,301	\$ 4,444,230	\$ 394,559	\$ 5,539,750

Table 2. OWEB funded activities by population and activity type in 2018.

Habitat Protection- This commitment is on-going. The Oregon Plan for Salmon and Watersheds has fostered significant investments in habitat restoration and protection. Steady increases in instream habitat restoration structures have been documented by ODFW habitat monitoring. More time is likely needed for these and on-going restoration projects to become detectable in habitat trends at the ESU and strata scale of monitoring.

ODFW staff continue to work collaboratively with multiple agencies to protect, enhance, and restore habitat. In 2018, the Winter Lake Restoration project was completed on working lands in the Coquille Watershed with the collaboration of multiple state, federal, and local partners. The project reconnected nearly 8 miles of tidal channel, restored 408 acres of tidal wetlands, and installed 7 new tide gates that improve water control on 1,700 acres of land and allows cattle to

graze in the summer for several additional weeks and greatly improves conditions for winter rearing juvenile salmonids in the Coquille basin.

ODFW continues to have staff committed to partnering with the Oregon Watershed Enhancement Board (OWEB), NOAA Fisheries, NOAA Restoration Center, Wild Salmon Center, and the National Fish and Wildlife Foundation on a Business Plan approach for the conservation of Oregon's coast Coho Salmon. The intent of the Coho Business Plan is to achieve the following:

- 1) Promote conservation and recovery of coast Coho in Oregon, and describe the essential role of voluntary habitat protection and restoration efforts.
- 2) Identify the highest priority projects required at the population (watershed) scale to advance regional recovery goals.
- 3) Aggregate the cumulative costs and anticipated benefits of these projects, and coordinate funding to support locally-led implementation.

Projects included in the Coho Business Plan are generated through a scientifically-based planning process that local communities use to develop a Strategic Action Plan (SAP) for a given Coho Salmon population. As the number of projects contained in the Business Plan increase, the Partnership will work with state, federal, and private partners to direct funding into locally-led project implementation. Additionally, OWEB developed the Focused Investment Partnership grant program, which can focus significant funding toward implementing SAP projects if grants are successfully obtained. In 2018, the [Siuslaw River SAP](#) was completed.

Promote Beaver Dams and Associated Habitat- This commitment is on-going. ODFW continues to promote beaver dams in OC Coho Salmon rearing habitats that support the objectives of the OCCCCP. In December 2018, ODFW hosted the annual Beaver Work Group meeting that was attended by multiple state, federal and non-profit organizations, and citizens. The group shared updates on research, upcoming publications, and beaver dam analogue projects.

Research, Monitoring and Evaluation Program- This commitment was implemented and is on-going. ODFW continues to conduct research, monitoring, and evaluation related to the OCCCCP. Below are updates on research topics identified in the OCCCCP that were implemented or completed in 2018.

Evaluate methods to maintain, enhance, or promote beaver dams in areas where they can create or maintain high quality Coho rearing habitat- ODFW partnered with the Upper Nehalem Watershed Council, NOAA Restoration Center, Wild Salmon Center, and National Fish and Wildlife Foundation to implement a beaver dam analogue (BDA) Pilot Study to advance our knowledge of the use of BDAs as a dam building foundation to provide persistent ponds that are known to provide the highest quality over-winter rearing habitat for juvenile salmonids. The project contains an extensive monitoring component designed to quantify salmonid response and profile the attributes of both successful and unsuccessful BDA's for use

by future aquatic habitat restoration technicians interested in facilitating the recovery of functional beaver dams on the landscape in western Oregon.

Evaluate re-establishment of a self-sustaining population of Coho in Salmon River-An evaluation of the re-establishment of a self-sustaining population of Coho in the Salmon River was completed (Jones *et al.*, 2018). The evaluation indicated two viability metrics improved significantly following the termination of Coho Salmon hatchery releases; 1) wild adult abundance increased, and 2) spawn timing expanded and shifted closer to the historical timing. The results found that hatchery closure can be an effective strategy to promote wild population recovery. However, continued monitoring is required to verify the long-term resilience and viability of the wild population.

Oregon Plan Outreach Program- This commitment is on-going. ODFW has designated staff to coordinate with key partners on actions to address the objectives in the OCCCP.

References

Jones, K. K., Cornwell, T. J., Bottom, D. L., Stein, S., & Anlauf-Dunn, K. J. (2018). Population viability improves following termination of coho salmon releases. *North American Journal of Fisheries Management*, 38, 39– 55.