# Oregon Coast Coho Conservation Plan
# 2016 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

Following abnormally warm ocean temperatures that started in 2014 and encompassed a large portion of the Pacific West Coast, referred to as 'the Blob", and a strong El Niño pattern in 2015, poor marine survival for OC Coho Salmon resulted in 2016 having the third lowest wild spawner abundance estimate recorded for OC Coho Salmon since the peak in 2002. This increase in ocean temperature created adverse effects on the OC Coho Salmon prey sources, survival, and fisheries; fishing harvest was less than half of the allowable harvest approved by the Pacific Fishery Management Council under Amendment 13.

Overall, overwinter rearing habitat likely continues to limit freshwater productivity. However, focused efforts for watershed scale OC Coho Salmon habitat restoration 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 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, measureable 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. The results of each criterion's status for 2016 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 57,106 fish in 2015 (the lowest level recorded since 1999), to 75,904 fish in 2016. This was the third lowest wild OC Coho Salmon spawner

abundance estimate recorded since the peak in 2002. Though we were in a Medium marine survival category, the abundance estimate is approximately 10.6% of the ESU abundance goal identified in the OCCCP.

Escapement abundance goals were developed for each of the independent populations to ensure that naturally-produced spawners are broadly distributed throughout the ESU. None of the independent populations met their escapement goals in 2016. The five highest wild abundance populations were in three of the five strata; North Coast, Mid-Coast, and Mid-South Coast. All five strata were considerably below the prior 26-year average abundance (132,006 wild Coho Salmon); however, there were no new record lows (or highs) in wild Coho Salmon abundance for any of the 21 populations or 5 strata. Additionally, individual populations were low in 2016, with 20 of the 21 populations below the 1990-2015 average. Populations in the North Coast and Mid-Coast strata were closer to average than those in the Mid-South Coast, Lakes, and Umpqua strata. The Coquille had the highest wild Coho Salmon abundance, accounting for 13% of the ESU total.

**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 not be re-assessed until 2019. In 2007, 11 of the 21 independent populations passed the criteria with three populations (the Necanicum, Salmon, and the Sixes) falling below 95% 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). Juvenile OC Coho Salmon density estimates for the ESU were lower in 2016 relative to the average from the 2013-2015 broods for the ESU. However, site occupancy estimates for the strata were similar to the averages for the 2013-2015 brood groups. Though spawner abundance estimates in 2015 were at a 16-year low, juvenile occupancy from the brood in 2016 exceeded 80%. This is comparable to the occupancy rate observed since 2004.

Monitoring of Coho Salmon parr abundance against the abundance of female spawners that produced them suggest parr production was limited in the OC Coho ESU at current spawner

levels. The number of parr produced per female increased when female spawner abundance decreased and, conversely, parr numbers decreased when female spawner abundance increased.

**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 2016, 67% of the 238 sites surveyed in the OC Coho ESU were occupied by adult Coho Salmon. Occupancy was lower than the 5-year average rate for: the ESU overall, 3 of 4 sampled strata, and 13 of 21 sampled populations. The proportion of surveys in 2016 that were occupied and contained naturally-produced Coho ranged from 0% for the Mid-South Coast dependent populations to 100% in the Beaver independent population. Occupancy rates are typically lowest in the Umpqua stratum and highest in the Lakes stratum. Due to not being able to meet sampling protocols this year, we were unable to determine occupancy rates for the North Umpqua population or the Lakes stratum.

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 not be re-assessed until 2019. However, although annual spawner abundance estimates are not the same as the 100-year harmonic mean projection for spawner abundances, in 2016, 14 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 OCCCP 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 used in the federal Endangered Species Act OC Coho Recovery Plan (finalized in 2016). Even though restoration efforts have been ongoing, there is minimal evidence of an improving trend in stream habitat conditions for the ESU. Additionally, there is 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 2016, ODFW continued to implement its commitments identified in the OCCCP. The status of those commitments is discussed below by action, as identified in the OCCCP.

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 post-season from 2013-2016.

| Year | A-13 Allowable Harvest Impact | Post-Harvest Impact |
|---|---|---|
| 2013 | 30% | 15.8% |
| 2014 | 30% | 14.4% |
| 2015 | 15% | 19.9% |
| 2016 | 20% | 8.7% |

Table 1. Allowable and Post-harvest Impacts for 2013-2016.

Western Oregon Stream Restoration Program- This commitment is on-going. Budget constraints have led to a 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 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 three 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 (Mid-Coast, Mid-South Coast, and Umpqua).

The OWEB Investment Tracking Tool located in Oregon Explorer was used to identify activities that OWEB funded in 2016, to support conservation and recovery of the OC Coho ESU. 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 Capacity Building and Monitoring in the Mid-Coast.

| Population | Capacity Building | Outreach | Monitoring | Restoration | Technical Assistance | Total |
|---|---|---|---|---|---|---|
| **North Coast** | | | | | | - |
| Necanicum | | | | | | - |
| Nehalem | | | | | | - |
| Tillamook | | | $27,863 | | | $ 27,863 |
| Nestucca | | | | $ 398,452 | | $ 398,452 |
| **Mid-Coast** | $42,777 | | $ 129,998 | | | $ 172,775 |
| Salmon | | | | | | - |
| Siletz | | | | $240,998 | | $240,998 |
| Yaquina | | | | | | - |
| Beaver | | | | | | - |
| Alsea | | | | $ 56,390 | | $ 56,390 |
| Siuslaw | | $ 48,815 | $21,393 | $7,140 | $172,370 | $ 249,718 |
| **Lakes** | | | | | | - |
| Siltcoos | | | | | | - |
| Tahkenitch | | | | $ 274,713 | | $ 274,713 |
| Tenmile | | | | | | - |
| **Umpqua** | | | | | | - |
| Lower Umpqua | | | | $ 173,015 | | $ 173,015 |
| Middle Umpqua | | | | $ 428,728 | | $ 428,728 |
| North Umpqua | | | | | $149,184 | $149,184 |
| South Umpqua | | | $87,844 | $ 228,023 | | $ 315,867 |
| **Mid-South Coast** | | | | | | - |
| Coos | | $ 44,153 | $ 139,441 | $ 344,836 | | $ 528,430 |
| Coquille | | | | | $185,346 | $ 185,346 |
| Floras | | | | $ 10,000 | $24,120 | $ 34,120 |
| Sixes | | | | | | - |
| **Totals** | $42,777 | $92,968 | $406,539 | $2,162,295 | $531,020 | $3,235,599 |

Table 2. OWEB funded activities by population and activity type in 2016.

Habitat Restoration and Protection- This commitment is on-going. The Oregon Plan for Salmon and Watersheds has fostered significant investments in habitat restoration. 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 on habitat related actions. Of particular note, this includes a partnership with the Oregon Watershed Enhancement Board (OWEB), NOAA Fisheries, 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.

Additional support for Coho Salmon conservation and recovery was provided by ODFW in the form of coordinated development with NOAA Fisheries on the Oregon Coast Coho Salmon federal Endangered Species Act Recovery Plan which was finalized in December 2016. ODFW also began working on GIS stream layers to support the Oregon Department of Forestry's effort to improve riparian protections in salmon, steelhead, and bull trout habitat.

Promote Beaver Dams and Associated Habitat- This commitment is on-going. ODFW continues to promote beaver dams in OC Coho rearing habitats that support the objectives of the OCCCP.

Research, Monitoring and Evaluation Program- This commitment is on-going. ODFW continues to conduct research, monitoring, and evaluation related to the OCCCP.

New work includes the Mill Creek-Siletz large wood placement research and monitoring project which began in 2014. The goal of this project is to identify the relationship between fine-scale geomorphic responses to large wood addition and reach-scale habitat conditions, then link these changes to fish survival and production at the basin scale. Effectiveness monitoring is being conducted annually for 6 years.

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.