

Oregon Coast Coho

1. Proposed Priority Description

The native fish populations and the habitat that comprise the Oregon Coast Coho (OC Coho) Evolutionarily Significant Unit (ESU)

A) What is the native fish or wildlife habitat to be conserved or other natural resource issue to be addressed?

We are proposing supporting freshwater and estuarine habitats for Oregon Coast Coho be addressed through this priority. This proposal includes restoration and conservation of the watershed functions that build and maintain those critical fish and wildlife habitats. Specifically we are identifying the populations of coho salmon (*Oncorhynchus kisutch*) that occur in coastal watersheds between the Necanicum River to the north and the Sixes River on the south coast and typically referred to as the OC Coho Evolutionarily Significant Unit.

B) What are the specific expected ecological outcome(s) to be achieved after this priority is addressed?

The long term protection and restoration of natural watershed functions that create and maintain stream complexity, good water quality and quantity and system appropriate sediment regimes. The subsequent goal is the rebuilding of OC Coho fish populations to a level that will provide for sustainable fisheries and other ecological, cultural and societal benefits.

C) What is the defined geographic location within which this proposed priority can be successfully addressed?

Starting on the north coast in the Necanicum River and extending down the coast and ending in The Sixes River watershed. With the exception of the Umpqua River all the other watersheds within the distribution of OC Coho begin at the crest of the coast range. The Umpqua has its headwaters in the Cascade Range. The OC Coho ESU is made up of 21 independent populations (larger and more resilient over time) and 35 dependent populations (smaller and potentially less resilient due to their size and degree of isolation) along the Oregon Coast. The minimum scale for success is the population or watershed and much of the work will be done in a sequenced fashion within 6th Hydrologic Units (sub watersheds). To achieve the conservation goals identified in the State's Conservation plan (to produce enough natural OC Coho to provide for sustainable fisheries and other ecological, cultural and societal benefits) you would need to restore, through conservation and restoration, functioning ecosystems in the majority of the independent populations.

1. Significance to the State

A) Why is this proposed priority of ecological significance to the state, even though it may not be present everywhere in the state?

A properly functioning ecosystem, as represented by robust OC Coho populations provides significant societal, cultural and economic resources that drive key portions of Oregon's economy. Healthy ecosystems provide clean, abundant water that support human, fish, and wildlife populations. The decline in OC Coho and their supporting freshwater and estuarine habitats can be reversed and repaired. The Oregon Coast is the most likely candidate for permanent, near term restoration of a salmon ESU anywhere in the state.

From terms of fish production there are no high head dams, and hatchery and harvest issues have been addressed to the state and federal government's satisfaction. The limiting factors for OC coho are few in number. The primary or secondary limiting factor in the 21 independent populations is lack of instream complexity. Identifying, prioritizing, and implementing short and long term restoration (short term efforts are physical instream repairs, and long term is repairing or protecting the ecosystem functions that produce the controlling elements for instream complexity) is the key to achieving the State's goals. It is interesting to note that these same ecosystem functions are also the primary drivers for the water quality issues (temperature and sediment) that also affect the majority of Oregon's coastal mainstem rivers. Repairing OC Coho habitat will go a long way to repairing the water quality problems that have put so many of Oregon's streams on the federal 303(d) list.

B) Are there any social and/or economic considerations that the Board should understand regarding this proposed priority?

Oregon Coast Coho was the focal species of the Oregon Plan for Salmon and Watersheds (Oregon Plan). Over the last 15 years OC coho and their habitats have been the focus of a considerable conservation effort by the State of Oregon, local and private entities, and federal natural resource management partners. Much of this conservation effort has been developed and implemented under the Oregon Plan. The Oregon Plan brings together various governmental and non- governmental entities to implement conservation strategies for fish populations throughout Oregon, including those belonging to the Oregon coast coho ESU. We believe that a more strategic and methodical approach to the implementation of the Oregon Plan will result in the State meeting its conservation goals for OC coho in a timely and cost effective manner with substantial benefits to other fish and wildlife species as well as the human communities that occupy the Oregon Coast.

OC Coho are part of a \$2.5 billion recreational hunting, fishing, shellfish fishing, and wildlife watching economy. The watershed functions that create suitable habitat for OC

coho also support other fish, and wildlife species. Clean, abundant water is also a result of the same properly functioning ecosystems that support OC Coho. In fact there are several functions, such as healthy riparian areas, that are pivotal in maintaining all of the water quality, quantity and physical habitat configurations needed to support not only the \$2.5 billion dollar a year outdoor recreational economy mentioned above, but these functions also help support key sectors of the \$178 million year commercial fishery. The rural Oregon coast outdoor recreation economies described above also represent one significant leg of a multi-legged economy that includes timber production, agriculture and urban areas with significant incomes from tourists and retirees. All of these different and diverse economies are driven by healthy functioning ecosystems. OC Coho are an indicator of the status of those ecosystems.

C) In addition to its significance to the state identify how the proposed priority fits within regional & local ecological priorities.

Starting in 2005 ODFW conducted a multiyear stakeholder process to create the Oregon Coast Coho Conservation Plan. In 2011 ODFW hired a full time Conservation Plan implementation coordinator to begin working with watershed councils, Soil and Water Conservation Districts, Non-Governmental Organizations and state and federal agencies to develop population specific strategic action plans to provide short and long term goals and objectives for protection and restoration of physical habitat for OC Coho. Part of the OCCCP Implementation Strategy is to incorporate and coordinate with all the other conservation and recovery planning efforts such as the NW Forest Plan, NOAA Recovery Plans, various local watershed council watershed scale plans and several coordinated estuarine centric programs (Tillamook Estuaries Partnership, and the South Slough National Estuarine Research Reserve).

Limiting Factors

A) What ecological limiting factors exist that relate to the proposed priority identified? *Limiting factors* are the physical, biological, or chemical conditions and associated ecological processes and interactions (e.g., population size, habitat connectivity, water quality, water quantity, etc.) experienced by the habitat that may influence viable population parameters (i.e. abundance, productivity, spatial structure, and diversity).

Stream complexity and, water quality are the primary limiting factors for the majority of OC Coho populations. Stream complexity is a term that refers to the ability of a stream to provide a variety of habitat conditions that create shelter for rearing juvenile coho salmon, especially habitat conditions that create shelter during the overwinter rearing period. We are particularly concerned with habitat of such quality that it provides overwinter survival at rates high enough to produce a positive recruits-per-spawner relationship during periods of extremely adverse ocean conditions. Habitat conditions that create sufficient shelter for overwintering juveniles may be characterized by the presence of one or more features including the following: large wood, a lot of wood, pools, connected off-channel alcoves, beaver ponds, pasture trenches, lakes, connected wetlands, and other conditions. When finer scale analysis is conducted the

lack of summer rearing habitat, as well as winter rearing habitat is also a limiting factor. Exotic fish species, spawning gravel, ocean conditions, harvest, and hatcheries are the other limiting factors affecting different OC Coho populations to various degrees.

B) Reference any framework(s) that exist (Recovery Plans, Implementation plans, etc.).

Existing plans and strategies that OC Coho are included in, or are the primary focus of, include the Oregon Coast Coho Conservation Plan, the Coastal Multi-Species Plan, the Northwest Forest Plan, the draft NOAA Fisheries OC Coho Recovery Plan, the Oregon Conservation Strategy, and the Oregon Plan for Salmon and Watersheds. There is also a draft OC coho implementation plan that is working with all the above mentioned efforts to produce a single, strategic, spatially and temporally sequenced and coordinated implementation of the efforts identified above. There are several Oregon Department of Environmental Quality Total Maximum Daily Load (TMDL) plans and the draft mid-coast Implementation ready TMDL that is under development.

Threats and Benefits

- A) What overall threats exist to the proposed priority identified? *Threats* are the human actions (e.g., fishing, development, road building, etc.) or natural (e.g., flood, drought, volcano, tsunami, etc.) events that *cause or contribute-to* limiting factors. Threats may be associated with one or more specific life cycle stages and may occur in the past, present, or future.**

Habitat – Freshwater and Estuarine habitats including historic splash damming and stream cleaning, loss of riparian areas due to land management actions, reduction of beaver populations, tide land / wetlands diking, channelization, roads, urban development, loss of in stream complexity, loss of floodplain connectivity, loss of floodplains, loss of side channels and back water areas (all human induced).

Ocean Conditions (natural) – various changes in ocean productivity

Climate Change – changes in rain fall intensity and patterns, air and water temperature, ocean acidification, sea level rise and ocean wave energy increases.

Water Quality (human induced) – water temperature, sediment levels, other pollutants

Water Quantity (natural and human induced) – water withdrawals, loss of ground water recharge

Predation (both indigenous and introduced) – non-native fish and increases in native avian and penniped populations/concentration.

Fishery Harvest (human induced) – This threat has been adequate addressed by ODFW

Hatchery Impacts (human induced) – This threat has been adequately addressed by ODFW

B) What will happen if the threats aren't addressed?

Loss or the continued decline of OC Coho populations and its supporting habitats will result in general reduction of fish and wildlife populations. This could result in cascading losses in multiple significant economic drivers including commercial and recreational fishing, tourism, agriculture, timber production, and retirees through both the loss in natural resources, recreational opportunities and the potential increase in regulatory efforts as additional legal measures are taken to limit habitat declines. Other impacts include increases in cost of social services through the loss of natural flood control, increases in cost of water (drinking, irrigation, and industrial supplies), and increases in social health costs.

C) Describe the economic, social, iconic and cultural benefits of addressing the outcome and impacts of not addressing it.

Please see 1B above.

D) Briefly summarize how much has been done already, how much is remaining.

Based on monitoring ODFW about 30% of the needed miles of high quality habitat to support the minimum number of spawners needed to replace themselves during a period of protracted poor ocean conditions (< 3% survival) currently exists. This leaves about 70% to be restored.

E) What is your best estimate of cost to address the priority, and as a result, how economically feasible do you believe it is to address this priority over time?

Costs to restore watershed functions to all the watersheds on the Oregon coast within the footprint of OC Coho will probably cost in excess of \$500 million. The economic cost of not addressing this need is likely higher. For example Lincoln County, alone, receives approximately \$70 million / year from the recreational hunting, fishing and wildlife viewing industry (Runyan 2009). Commercial fish landings on the Oregon coast were \$178 million in 2013. All of these are examples of economic drivers or social costs that are directly linked to healthy functioning (or non-functioning) watersheds.

5. Opportunities

Ecological:

1) What are the measures of ecological success?

ODFW has identified specific metrics to measure the status and trends of both OC Coho and the physical habitat that supports them. ODFW also manages a survey program that collects, analyzes and disperses this information. The metrics include abundance (at both the ESU and population scales), miles of high quality habitat, distribution, diversity, persistence and productivity all measured at the population scale. Furthermore ODFW annually reports on physical habitat trends at the strata level as

they relate to sediment, instream large wood volume, pools (frequency and depth) and other attributes that measure status and trends of habitat limiting factors.

2) What's the likelihood of ecological success in the short (6-year), medium and long-term (define the term lengths)?

The likelihood of local small scale success within a 6 year time period is good. In a six year time frame you will have seen the development and maturation of strategic plans at the population level and 4 to 5 years' worth of synchronized and prioritized projects implemented on the ground. Some of these projects will have started making significant beneficial changes to physical processes on the landscape within this time period, with greater sequential changes accruing in the following 10 to 15 years (medium term). The desired status goals for abundance of Oregon Coast coho as listed in the OCCCP, are ambitious and represent the long term goals. The most likely scenario presented in the OCCCP is one where it will take at least 50 years to achieve these goals.

3) What types of voluntary conservation actions could be undertaken to address the proposed priority?

In-stream large wood placement, legacy structure removal, channel reconstruction/relocation, off- and side-channel habitat restoration, stream bank restoration, set-back or removal of existing berms, dikes, and levees, livestock fencing, stream crossings and off-channel livestock watering, riparian vegetative planting, tide/flood gate removal, replacement, and retrofit, fish passage, piling and other structure removal, in-channel nutrient enhancement, road and trail erosion control and decommissioning, non-native invasive plant control, riparian vegetation treatments (thinning, diversification), beaver habitat restoration, shellfish bed/nearshore habitat restoration, and modification of land use activities to better support riparian function, sediment recruitment and water quality (temperature and quantity).

4) Should the proposed priority be divided into geographic areas that are appropriate for partners to address?

Yes. OC Coho are already divided into unique populations. There are a total of 56 populations with 21 independent populations and 35 dependent populations. Most existing partnerships, local conservation efforts and underlying scientific field data are already formed along these population boundaries.

Social:

1) Do partnerships exist to address the proposed priority? If so, briefly describe. If not, note why this proposed priority is important enough that partnerships may form to address it.

Yes there are a multitude of partnerships in place that are currently addressing OC Coho conservation. There are a, few long term, strategic, specific and prioritized plans developed and currently being implemented. There are several efforts underway to bring the various partnerships (state, federal, and local) together at the population scale

to forge a single coordinated, strategically planned and implemented effort within each population. Making OC Coho a priority will further cement this strategy.

2) What social opportunities exist to address the proposed priority? Is there momentum built?

Yes, there is considerable momentum around the conservation and restoration of OC Coho. Coordinated efforts have been underway since the late 1990s. The prioritization and subsequent partnership formation will revitalize these long term efforts. Social opportunities are available through the 20 local Watershed Councils and 11 Soil and Water Conservation Districts within the ESU. All of these private citizen efforts have been a strong on-the-ground force in conducting restoration and conservation programs. In addition there are major land holdings by the U.S. Forest Service and Bureau of Land Management, and the State of Oregon in the form of three large state forests; the Elliot State Forest, Tillamook State Forest and Clatsop State Forest. There are also other smaller state forestland inholdings in Lane, Benton, Lincoln, Polk, Tillamook and Clatsop counties.

3) Describe educational benefits, if any.

A systematic development of strategic action plans to address population scale and ESU wide conditions for OC Coho will help educate the local public and agency representatives about how the physical and biological components of ecosystems work and how human activities affect those physical functions and biological communities. And conversely the systematic application of social constrains on top of physical and biological watershed scale needs will help bring forth new solutions to allow the State to meet its resource conservation and economic goals.

4) Summarize the social, community, political, regulatory or other factors that will help lead to the success of this proposed priority.

There are well established local groups (watershed councils, SWCDs, and other NGO's) that have been working together and with local state and federal agencies in excess of 10 years. In addition the OC Coho are listed as threatened under the federal Endangered Species Act. Many of the mainstem streams on the Oregon coast do not meet federal or state water quality standards and therefore have a TMDL (total maximum daily load allocation plan) in place or are in the process of generating or updating one.

Improve incentives for conservation actions taken by landowners including buy-out, easements, and tax incentives. Making conservation a good business deal will help improve status of OC Coho habitat.

5) What can be leveraged to address the proposed priority (funding, acreage impacts, and other resources)?

Economic Benefits

1) Describe the economic benefits of addressing the ecological proposed priority, including ecosystem services.

Several economic drivers as well as the collateral benefits of restoring various types of ecosystem services are mentioned in previous sectors.

FOR ALL SUBMISSIONS: Assess the proposed priority by locating the proposed priority in one of the quadrants below. Describe why the proposed priority falls in this quadrant. There is no wrong answer to this question and there may be multiple answers.

The priority, its general limiting factors and their solutions are well known and easily understood. The challenging element is to implement restoration and protection in a systematic, methodical manner. This is particularly challenging due to the fact that there are a wide verity of landowners with varying land management priorities and approaches. As well as a wide variety of conservation organizations, many with individual goals and objectives that are not completely formed or do not appear to fit within a general strategically coordinated approach to restoration.

6) Is there other information the Board should know regarding this priority?

7) In lieu of attaching letters of support for this proposal, please submit a list of other supporting individuals or organizations.

ODFW, ODEQ, ODA, ODF, NOAA, EPA, COE, USFWS, BLM, USFS, NRCS, the Coastal Watershed Councils (including the Necanicum, Upper and Lower Nehalem, Tillamook, Nestucca, Salmon/Drift Creek, Siletz, Yaquina, Alsea, Mid-Coast, Siuslaw, Partnership for the Umpqua River, Smith River, Tenmile, Coos, Coquille, and South Coast), SWCDs, Wild Salmon Center, National Fish and Wildlife Foundation, OWEB, Tillamook Estuary Partnership, South Slough National Estuarine Research Reserve.