

# Coho Salmon

*Oncorhynchus kisutch*

Onkos = hook

Rynchos = nose

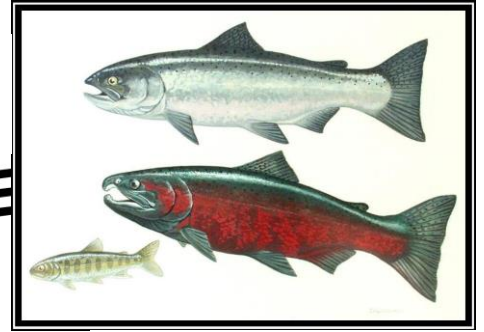


Image from <http://fineartamerica.com>

## Physical Description:

During the salt water phase of life, coho salmon have silver sides and dark blue backs. After leaving the ocean to spawn the body of an adult coho undergoes dramatic changes. Mature male and female coho become conspicuously red (females often more so) and develop greenish blue heads and backs which sometimes include dark spots. Sexually mature coho salmon of both sexes develop pronounced hooked noses and the males may develop a slightly humped back. The gums of coho are white and their tongues are black. Adult coho salmon average 28 inches in length and are typically between seven and eleven pounds but have been recorded as heavy as thirty six pounds.

## Natural History:

Coho salmon natural history can be described in general terms. These descriptions are central themes around which a great deal of diversity has evolved in coho. For conservation purposes, maintaining diversity is key.

### Spawning:

Coho spawn in small streams with stable gravel bottoms to which they return after living in salt water for one to three years. Eggs hatch after six to seven weeks in late winter or early spring.

### Life Cycle:

Young coho life stages:

- Alevin - salmon life stage between an egg and a fry. At this stage, the alevin do not have a protective shell and are essentially small fish with an attached yolk sac from which to derive nourishment. Once the yolk sac has been completely absorbed (another six to seven weeks), the alevin leave the redd.
- Fry - a juvenile salmon that has absorbed its egg sac and is rearing in a stream. Salmon fry quickly develop into parr which have characteristic vertical bars and spots which are good for camouflage.

- Parr (also known as a fingerling) - a large juvenile salmon that has vertical 'parr' bars and spots. Parr remain in or near their natal streams for one to two years.
- Smolt - 3.9 to 5.9 inches long and distinguished by their silvery color. Smolts undergo significant physical changes that allow them to live in saltwater. Most coho smolts migrate to the ocean from late March through late July. Some move only as far as brackish estuaries the first spring then return to fresh water in the fall where they remain until the following spring.

### **Range:**

The range for coho salmon includes both coasts of the North Pacific Ocean, from Monterey Bay, California through Alaska and from eastern Russia around the Bering Sea to Japan. Coho salmon were introduced to the Great Lakes, USA and can also be found in countless U.S. reservoirs.

### **Diet:**

While still in freshwater, coho eat plankton and aquatic insects but switch to eating small fish upon entering the ocean.

### **Status:**

There are seven populations of coho salmon that have been identified as Evolutionarily Significant Units (ESUs) in Washington, Oregon and California. Three populations have been listed as threatened under the U.S. Endangered Species Act (ESA), these include the Lower Columbia River ESU, the Oregon Coast ESU and the Southern Oregon/Northern California Coasts ESU. Further, the Central California Coast ESU has been given the highest protections under the ESA by being listed as an endangered population. The Puget Sound/Strait of Georgia ESU is currently considered a Species of Concern under the ESA until more information can be gathered to determine if a threatened or endangered status is warranted.

Coho populations have declined significantly when compared to historic numbers. For example, the Southern Oregon/Northern California region is currently producing roughly 10,000 adults or less annually compared to 150,000 to 400,000 in the 1940s. Presently, there are likely less than 5,000 (more often closer to around 3,000) wild coho salmon spawning in the SONCC region of California each year and the 23 year-average of total wild adult coho spawners in the SONCC region of Oregon is a little over 6,000. While some years yield more substantial coho runs, the overall trend across all ESUs is one of decline.

### **Threats:**

The major threats for Pacific salmon have been identified as the 4 Hs:

- Harvest - Pacific salmon have historically been, and continue to be, an important target species for recreational and commercial fisheries. Harvest is being controlled more today but might still be a factor where populations are small and weak.
- Habitat - chemical pesticides can alter the 'smell' of the stream disrupting homing mechanisms. Soaps and detergents can clog the gills of fish and result in high mortality. Copper from brake pads can be toxic to salmon in fresh water. Land-use activities such as logging, road construction, urban development, mining, agriculture, and recreation result in habitat modification. Examples of habitat modification include: alterations in

stream banks, changes in stream water temperatures and water quality, reduction in available prey, elimination of spawning and rearing habitat, and removal of native vegetation which results in erosion and increased sedimentation. Most western states have lost 80 to 90 percent of their historic riparian habitat. Over the past 200 years, the lower 48 states have lost over 50% of their wetlands. Most of the estuaries in Washington, which are especially important to salmon smolts, have been altered by dredging, diking, filling of wetlands and tidal areas, and degraded water quality.

- Hydro - dams have reduced or eliminated accessible habitat and resulted in high mortality of salmon. Changing the natural flow of dammed rivers results in increased water temperature and reduced water flow necessary for migration, spawning, rearing, sediment flushing from spawning areas and transport of debris, all of which have a negative effect on salmon.
- Hatcheries - extensive hatchery programs were established to mitigate fisheries and habitat destruction. While hatcheries successfully provide fishing opportunities, impacts on wild salmon may include competition, genetic hybridization, and disease transmission. Fisheries that target mixed stock of hatchery and wild salmon can over harvest the wild fish. Hatchery fish have decreased fitness due to being fed pellets, and therefore not having to search for food, as well as being protected from predation. Glenwood Springs Hatchery on Orcas Island, operated by Long Live the Kings, is a progressive hatchery that strives to rear the salmon in a more natural setting.

In addition to these threats there is increasing concern over the effects that salmon farming has on wild Pacific salmon populations. Some of the detriments of salmon farms include escapement of non-native Atlantic salmon, lethal outbreaks of sea lice, antibiotic resistance, disease, and toxins, all of which can affect wild salmon. Climate change is also a concern as it can increase the risk of diseases in wild salmon and reduce the amount of water in spawning habitat. Short term changes in weather such as El Nino and La Nina, which dictate rainfall levels, can have devastating effects on salmon populations for a given year.

Additional information on threats to Pacific salmon can be found at <https://www.fisheries.noaa.gov/data-tools/west-coast-salmon-vulnerability-species-specific-results>.

### **Conservation Efforts:**

There are a variety of conservation efforts currently being undertaken. In 1999, critical habitat was designated for the Central California Coast and the Southern Oregon/Northern California Coasts ESUs. In 2008, NOAA issued a final rule designating critical habitat for the Oregon Coast ESU. In 2016, NOAA issued a final rule designating critical habitat for the Lower Columbia River coho ESU and Puget Sound steelhead. More information on the recovery plan can be found at

[https://archive.fisheries.noaa.gov/wcr/protected\\_species/salmon\\_steelhead/recovery\\_planning\\_and\\_implementation/](https://archive.fisheries.noaa.gov/wcr/protected_species/salmon_steelhead/recovery_planning_and_implementation/). Removal and modification of dams that obstruct salmon migration has been undertaken. A successful example of this is the Elwha Dam Removal Project in Washington State. More information on this project can be found at <http://www.nps.gov/olym/naturescience/elwha-ecosystem-restoration.htm>. Restoration of degraded habitat and improved water quality are being attempted in many areas.

The Puget Sound Partnership is the regional salmon recovery organization for Puget Sound salmon. They are focusing on protecting and restoring habitat, raising awareness, reforming

hatchery management, and developing and monitoring an adaptive management strategy. More information about the Puget Sound Partnership can be found at <https://psp.wa.gov/>.

The Pacific Coastal Salmon Recovery Fund (PCSRF) was established by Congress in 2000 to support the restoration of salmon species. The fund is overseen by NMFS (also known as NOAA) and carried out by state and tribal governments. PCSRF grantees, such as the Washington Department of Fish and Wildlife (WDFW), contract with local watershed groups, conservation agencies, land trusts, and other entities to manage salmon habitat restoration projects. In turn, those agencies contract with local businesses and suppliers to carry out the work.

### **Fun Facts:**

- Coho salmon are also called silver salmon or “silvers.”
- Coho are one of the most targeted by anglers because of their acrobatics during the fight.
- Coho salmon have been documented 900+ miles offshore. However, most stay close to the shoreline.
- Young coho defend their territory by performing a “wig-wag dance.”

### **Sources:**

<http://www.nmfs.noaa.gov/pr/species/fish/cohosalmon.htm>

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/salmon-saumon/facts-infos/coho-eng.html>

<http://wdfw.wa.gov/fishing/salmon/coho.html>

<https://caltrout.org/wp-content/uploads/2017/05/SONCC-Coho-final.pdf>

<https://odfw.forestry.oregonstate.edu/spawn/pdf%20files/reports/2017CohoAnnualReport.pdf>

<https://archive.fisheries.noaa.gov/wcr/publications/frn/1997/62fr24588.pdf>



Coho salmon photo by NOAA

Created by D.A. Giles  
October 2014  
Reviewed by Gene Helfman  
and Barbara Rosenkottter  
Updated by Tracie Merrill  
November 2019