

Common Name: Oregon Coast Steelhead Evolutionary Significant Unit



Photo courtesy of Jon Dickey

Species: *Oncorhynchus mykiss*

Area of Concern: The Oregon Coast Evolutionarily Significant Unit (ESU) occupies river basins on the Oregon coast from the mouth of the Columbia River south to Cape Blanco. For a map and further information see the website at: <http://www.nwr.noaa.gov/1salmon/salmesa/stlhorc.htm>.

Year First Listed as a “Species of Concern”: 1998

Species Description:

Life history:

The present spawning distribution of steelhead extends from the Kamchatka Peninsula in Asia, east through Alaska, and south to southern California, although the historical range of *O. mykiss* extended at least to the Mexico border (Busby et al. 1996). *Oncorhynchus mykiss* exhibit perhaps the greatest diversity of life history patterns of any Pacific salmonid species (Barnhart 1986), including varying degrees of anadromy, differences in reproductive biology, and plasticity of life history types between generations. They can be anadromous or freshwater resident (and under some circumstances, apparently yield offspring of the opposite form). Anadromous *O. mykiss* are called steelhead, and nonanadromous (freshwater resident) forms of the species are usually called rainbow trout; however, nonanadromous *O. mykiss* east of the Cascade Mountains in the Fraser and Columbia River basins are often called redband trout. Those that are anadromous can spend up to 7 years in fresh water prior to smoltification, and then spend up to 3 years in salt water prior to first spawning. Another life history variation is the ability of this species to spawn more than once (iteroparity), whereas all other species of *Oncorhynchus*, except *O. clarki*, spawn once and then die (semelparity). Two major genetic groups of *O. mykiss* (which applies to both anadromous and nonanadromous members of the species) are presently recognized in North America: the *inland* and *coastal* groups, generally separated in the Columbia River Basin by the Cascade Mountains.

In the Pacific Northwest, steelhead that enter freshwater between May and October are considered summer steelhead (=stream-maturing type) and steelhead that enter fresh water between November and April are considered winter steelhead (=ocean-maturing type). Summer steelhead enter fresh water in a sexually immature condition and require several months to mature and spawn; whereas, winter steelhead enter fresh water with well-developed gonads and spawn shortly thereafter. Some river basins have both summer and winter steelhead; others have only one type. In rivers where the two types co-occur, they are often separated by a seasonal hydrologic barrier, such as a waterfall.

Oregon Coast steelhead are part of the *coastal* group and are primarily winter steelhead; native summer steelhead occur only in the Siletz and Umpqua River basins. Populations of nonanadromous *O. mykiss* (rainbow trout) are relatively uncommon on the Oregon coast compared with other areas, occurring primarily above migration barriers and in the Umpqua River Basin. Iteroparity is more common among Oregon coast steelhead than in populations to the north, but more than two spawning migrations is unusual. Age structure appears to be similar to other west coast steelhead, dominated by 4-year-old spawners.

Habitat:

Most rivers on the Oregon coast are comparatively short, draining the Coast Range Mountains, have a single peak in flow in December or January, and have relatively low flow during summer and early fall. The coastal region receives fairly high precipitation levels, and the vegetation is dominated by Sitka spruce and western hemlock. Upwelling off the Oregon coast is much more variable and generally weaker than in areas south of Cape Blanco. While marine conditions off the Oregon and Washington coasts are similar, the Columbia River has greater influence north of its mouth, and the continental shelf becomes broader off the Washington coast.

Rationale for “Species of Concern” Listing:**Demographic and Diversity Concerns:**

Although NMFS determined on March 19, 1998 (Federal Register 1998) that listing of this ESU was not warranted, it was placed on the candidate list due to concerns over specific risk factors. In the initial coastwide status review (Busby et al. 1996), the Biological Review Team (BRT) concluded that the Oregon Coast ESU was likely to become endangered in the foreseeable future based primarily on two factors: (1) Pronounced and nearly universal short- and long-term declines in abundance for populations throughout the ESU, and (2) substantial contribution of non-native hatchery fish to natural escapements in most basins. These factors indicated that it was likely that natural stocks throughout the ESU were not replacing themselves. Abundance and trend estimates available at the time of the status review were based on angler catch through 1992. Subsequently, Oregon Department of Fish and Wildlife (ODFW) implemented catch-and-release regulations for wild steelhead for most coastal streams, so angler catch no longer provided any information about wild steelhead abundance or trends. Therefore, in the updated status review (WCBRT 1997) the BRT was able to review only recent abundance data for three of the over 40 steelhead populations in this ESU. The abundance of steelhead in the populations for which updated data was available (North Umpqua River summer and winter-runs and Salmonberry River in the Nehalem River Basin) was moderate, and the trends were stable or increasing. However, these populations were among the few that showed relatively stable trends in the previous status review, so there was reason to believe they may not have been representative of trends in the ESU as a whole (Chilcote 1997). Of particular concern was the absence of any recent information for a large number of streams that showed sharp declines in the initial coastwide status review.

Additional information provided some indication that the proportion of hatchery fish in natural escapements had declined in some of these coastal steelhead populations since the initial review. However, significant opportunities for deleterious effects remained as many programs continued to release non-native fish and ODFW data showed that hatchery fish strayed into and spawned in streams with no hatchery releases. NMFS concluded that steelhead in the Oregon Coast ESU did not warrant listing as a threatened species; however, abundance information in this ESU was sparse and may not have accurately portrayed the status of naturally spawned steelhead in this region. NMFS believed that additional monitoring of this ESU was necessary before it could be eliminated from ESA consideration. Therefore, NMFS concluded that this ESU warranted classification as a candidate species (Federal Register 1998).

Factors for decline:

Factors for decline for West Coast steelhead have been extensively examined in NMFS Factors For Decline document (NMFS 1996). Factors highlighted by this report for the Oregon Coast steelhead ESU included logging, genetic introgression with hatchery fish, agricultural development, minor habitat blockages, historic flooding exacerbated by timber removal and development, and overharvest. The status review emphasized that freshwater steelhead habitat on the Oregon Coast, like most other West Coast river basins, is far from pristine. Logging, agriculture, urbanization, dams for hydropower and flood control, and pollution contributed to the ESU's decline. Unfavorable ocean/climate conditions and severe storms, have also adversely affected the abundance and productivity of populations within the ESU.

Status Reviews/Research Completed or Underway:

As mentioned above, this ESU was part of a status review that was completed in 1996 (Busby *et al.* 1996). A proposed rule was published to list this ESU as a threatened species, but this was amended to a “not warranted” determination at the time of the final rule (Federal Register 1998). However, this final

rule placed the Oregon Coast steelhead ESU on the candidate species list (now a species of concern list) due to concerns over specific risk factors.

For further information on this Species of Concern, or on the Species of Concern Program in general, please contact Ms. Marta Nammack, NMFS, Office of Protected Resources, 1315 East West Highway, Silver Spring, MD 20910, (301) 713-1401, Marta.Nammack@noaa.gov; Dr. Scott Rumsey, NMFS, Northwest Region, Protected Resources Division, 525 NE Oregon Street #500, Portland, OR 97232, (503) 872-2791, Scott.Rumsey@noaa.gov; or Dr. Jeff Hard, NMFS, Northwest Fisheries Science Center, 2725 Montlake Blvd. E, Seattle, WA 98112, (206) 860-3275, jeff.hard@noaa.gov.

References:

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Busby, P. J, T. C. Wainwright, G. J. Bryant, L. J. Lierheimer, R. S. Waples, F. W. Waknitz, and I. V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. U.S. Dep. Commer., NOAA Tech. Memo NMFS-NWFSC-27, 261 p. (Available online at: <http://www.nwfsc.noaa.gov/publications/techmemos/tm27/tm27.htm>).

Chilcote, M. W. 1997. Conservation status of steelhead in Oregon. Portland, OR: Oregon Dept. Fish and Wildlife. 109 p.

Federal Register. March 19, 1998. FINAL RULE: Endangered and Threatened Species; Threatened Status for Two ESUs of Steelhead in Washington, Oregon, and California. Federal Register 63(53):13347-13371. (Available online at: <http://www.nwr.noaa.gov/reference/frn/1998/63FR13347.pdf>).

National Marine Fisheries Service (NMFS). 1996. Factors for decline, a supplement to the notice of determination for West Coast Steelhead under the Endangered Species Act. 83 p. (Available online at: <http://www.nwr.noaa.gov/1salmon/salmesa/pubs/stlhffd.pdf>)

West Coast Steelhead Biological Review Team (WCBRT). 1997. Status review update for deferred and candidate ESUs of West Coast Steelhead. 62. p. (Available online at: <http://www.nwr.noaa.gov/1salmon/salmesa/pubs/sru971218.pdf>)