

Appendix G

CHART Assessment for the Ozette Lake Sockeye Salmon ESU

CHART Participants

The CHART for this ESU consisted of the following NOAA Fisheries biologists: DeeAnn Kirkpatrick (CHART Leader), Steve Fransen, Tom Hooper, Mike Parton, and Tim Tynan. Steve Ralph (Environmental Protection Agency) is another federal biologist who served on this CHART.

The following biologists working for NOAA Fisheries provided valuable expertise to the CHART, but were not part of deliberations or the formal scoring/rating process: Bill Graeber (NOAA Fisheries), John Meyers (National Park Service [NPS]), and Tom Sibley (NOAA Fisheries).

ESU Description

The Ozette Lake sockeye salmon ESU was listed as a threatened species in 1999 (64 FR 14528; March 25, 1999). The ESU includes all naturally spawned populations of sockeye salmon in Ozette Lake and streams and tributaries flowing into Ozette Lake, Washington. The agency recently conducted a review to update the ESU's status, taking into account new information and considering the net contribution of artificial propagation efforts in the ESU. We recently published the results of this review and concluded that Puget Sound Chinook salmon (including two hatchery programs) should remain listed as threatened (70 FR 37160; June 28, 2005). The Puget Sound Technical Recovery Team considers the Ozette Lake sockeye ESU to be comprised of one historical population with multiple spawning aggregations.

Migration of adult sockeye salmon (typically 4-year-old fish) up the Ozette River generally occurs from April to early August (WDFW et al. 1993). High water temperatures in the lake and river and low water flows in the summer may create a thermal block to migration and influence timing of the sockeye salmon migration (LaRiviere 1991). Recorded water temperatures in late-July and August in the Ozette River near the lake outlet have exceeded the temperature range over which sockeye salmon are known to migrate (Gustafson et al. 1997).

Disjunct spawning times for fish at different beach spawning sites within the lake suggest that Ozette Lake sockeye may be composed of discrete subpopulations (Dlugokenski et al. 1981). The primary existing spawning aggregations occur in two beach locations—Allen's and Olsen's beaches, and in two tributaries, Umbrella Creek and Big River. Both

of the tributary spawning groups were initiated through a hatchery introduction program. Spawning fish are occasionally found in other tributaries and may occur at other beach locations within the lake (Makah Fisheries 2000). The extent to which sockeye spawned historically in tributaries to the lake is controversial (Gustafson et al. 1997), but it is clear that multiple beach-spawning aggregations of sockeye occurred historically, and that genetically distinct kokanee currently spawn in large numbers in all surveyed lake tributaries (except Umbrella Creek and Big River). During low water levels in summer, much of the available beach spawning habitat may become exposed (Bortleson and Dion 1979).

Eggs and alevins reside beneath fine gravel/cobble generally from 1.3 to 10.2 cm in diameter (Reiser and Bjornn 1979). Incubation is temperature dependent and generally takes as little as 50 days (or less) or more than five months (Hart 1973). After hatching most juveniles spend one winter in Ozette Lake rearing before outmigrating to the ocean as two-year-old fish during April and May (Dlugokenski et al. 1981). Juvenile sockeye feed primarily on plankton and a variety of terrestrial and aquatic insects (Hart 1973, Scott and Crossman 1973). The fish typically spend two years in the northeast Pacific Ocean foraging on zooplankton, squid, and, infrequently, on small fishes (Scott and Crossman 1973).

Recovery Planning Status

The Puget Sound TRT considers the Ozette Lake sockeye ESU to be comprised of one historical population with multiple spawning aggregations (Ruckelshaus et al. 2001, 2002). A local technical team (the Lake Ozette Steering Committee) has developed initial technical assessments and preliminary recovery strategies. The Makah tribe intends to complete the technical analysis of the factors limiting recovery of Ozette Lake sockeye and develop an initial draft recovery plan for the ESU by the end of 2005. NOAA Fisheries will support that effort with both technical and recovery planning staff assistance.

CHART Area Assessment and Conservation Value Rating

The CHART assessment for this ESU addressed a single subbasin containing a single (Ozette Lake) watershed.

Ozette Lake Subbasin (HUC4# 17100101)

The Ozette Lake subbasin includes a single watershed and is located in Clallam County, Washington, in the northwest corner of the Olympic Peninsula. The watershed encompasses approximately 101 mi² and approximately 317 miles of streams; Ozette Lake is a dominant feature of the watershed.

Fish distribution and habitat use type data from the Washington Department of Fish and Wildlife (WDFW) identify approximately 40 miles of occupied riverine/estuarine habitat in this watershed (WDFW 1993). In addition, Ozette Lake covers approximately 12 mi² and contains important spawning beaches and rearing areas. The CHART concluded that all of these occupied areas contained PCEs, including spawning beaches, lake and river rearing habitat, and river migration corridors. The CHART noted several corrections to the information regarding distribution of fish and PCEs for this ESU, including recent spawning/rearing range extension in Solberg Creek (J. Meyers, NPS, personal communication). These corrections were discussed with WDFW (B. McTeague, WDFW, personal communication) and were later incorporated into its GIS database (WDFW et al. 2003) for this species/area. Management activities that may affect PCEs in this watershed include, but are not limited to, forestry and introduction of exotic invasive plants. Map G1 depicts the areas occupied by this ESU and under consideration for critical habitat designation. This watershed supports the one and only population constituting this ESU; therefore, the CHART concluded that this watershed warranted a high conservation value rating.

While the CHART did not identify any unoccupied areas that may be essential for this ESU, they did note that tributary streams near lake spawning beaches may have a major influence on PCEs (e.g., sedimentation and substrate recruitment).

Marine Areas

NOAA Fisheries' analysis focused on freshwater and estuarine habitats upstream of the mouth of the Ozette River. While marine areas are occupied by this ESU, within this vast area the agency has not identified "specific areas within the geographical area occupied by the species . . . on which are found those physical or biological features . . . essential to the conservation of the species."

Changes to the CHART's Initial Assessments

The CHART reviewed the public and peer reviewer comments received on the Team's initial findings for this ESU as well as new information relevant to evaluating habitat areas for this ESU. As a result, the CHART did not change the high conservation value rating for this watershed, and there were only minor changes (approximately 4 miles (6.6 km)) to the delineation of occupied habitat areas based on new information submitted by the Makah Tribe (Makah Fisheries Management 2003,2004; Makah Tribe 2005). The proposed critical habitat designation (69 FR 74572, December 14, 2004) summarizes the comments and responses pertaining to the CHART's initial determinations for this ESU.

References and Sources of Information

References cited above as well as key reports and data sets reviewed by the CHART include the following:

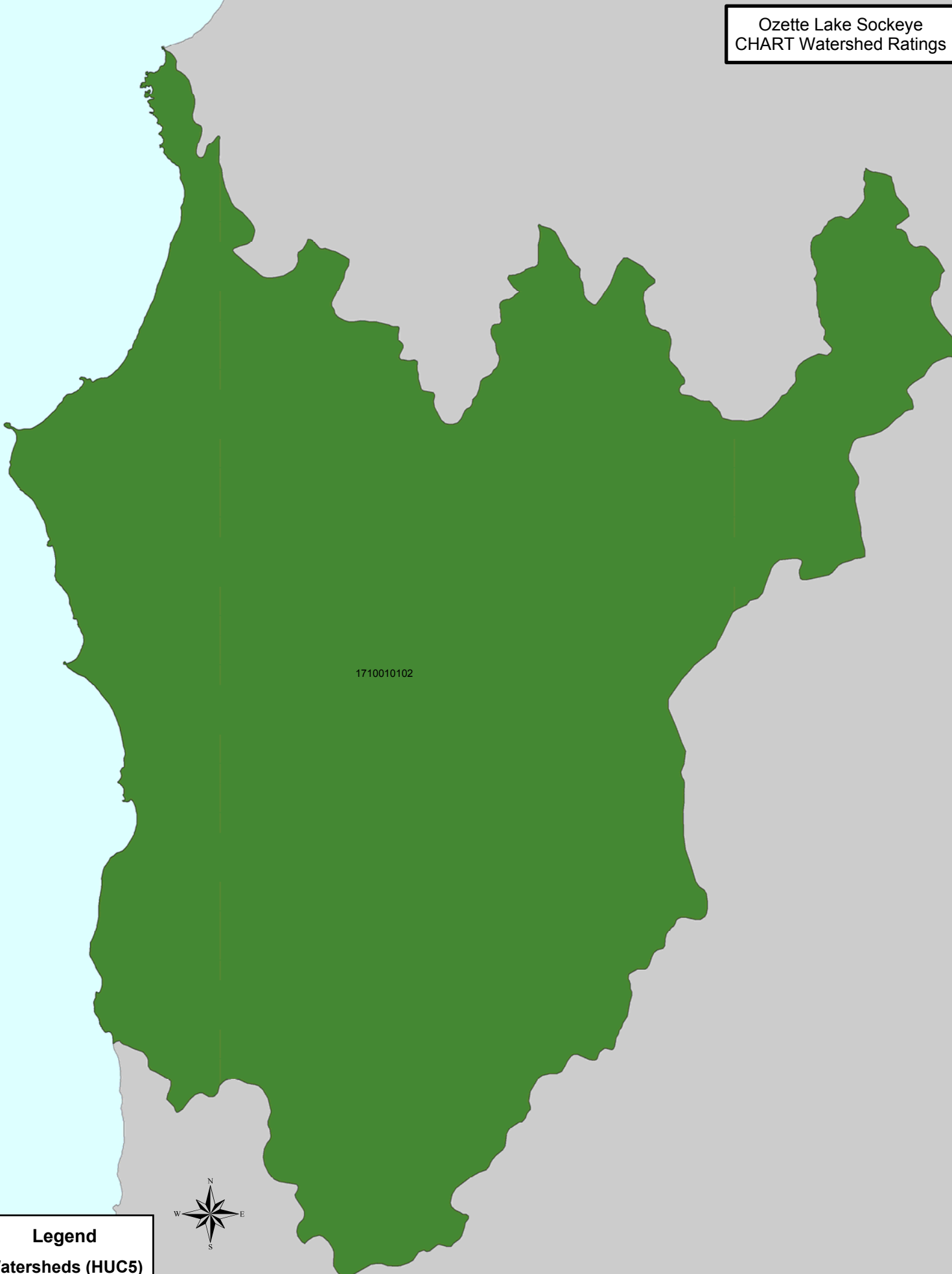
- Beauchamp, D.A., and M.G. LaRiviere. 1993. An evaluation of competition and predation as limits to juvenile sockeye salmon production in Lake Ozette, Washington. Final Report to Makah Tribal Fisheries Management, Neah Bay, WA.
- Bortleson, G.C., and N.P. Dion. 1979. Preferred and observed conditions for salmon in Ozette Lake and its tributaries, Clallam County, Washington. U.S. Geological Survey Water Resources Investigations 78-64.
- Crewson, M., J. Freudenthal, P. Gearin, M. Haggerty, J. Haymes, J. Meyer, A. Ritchie, W. Sammarco. 2002 DRAFT. Lake Ozette sockeye limiting factors analysis-preliminary report.
- Currens, K., R. Fuerstenberg, W. Graeber, K. Rawson, M. Ruckelshaus, N. Sands, J. Scott. 2003 DRAFT. Independent populations of sockeye salmon in Lake Ozette. Puget Sound Technical Recovery Team.
- Dlugokenski, C.E., W.H. Bradshaw, and S.R. Hager. 1981. An investigation of the limiting factors to Lake Ozette sockeye salmon production and a plan for their restoration. U.S. Fish and Wildlife Service, Fisheries Assistance Office, Olympia, WA.
- Gustafson, R.G., T.C. Wainwright, G. A. Winans, F. W. Waknitz, L. Ted Parker, and R. S. Waples. 1997. Status Review of Sockeye Salmon from Washington and Oregon. NOAA Technical Memorandum NMFS-NWFSC-33.
- Hart, J.L. 1973. Pacific fishes of Canada. Fisheries Research Board of Canada, Bulletin No. 180. 740 p.
- Jacobs, R., G. Larson, J. Meyer, N. Currence, J. Hinton, M. Adkison, R. Burgner, H. Geiger, L. Lestelle. 1996. The sockeye salmon *Oncorhynchus nerka* population in Lake Ozette, Washington, USA. Technical Report NPS/CCSOSU/NRTR-96/04.
- Kemmerich, J. 1945. A review of the artificial propagation and transplantation of the sockeye salmon of the Puget Sound area in the State of Washington conducted by the federal government from 1868 to 1945. U.S. Fish and Wildlife Service Report.
- LaRiviere, M.G. 1991. The Ozette Lake sockeye salmon enhancement program. Makah Fisheries Management Department, Unpubl. Rep., 9 p.

- Makah Fisheries Management (MFM). 2000. Lake Ozette Sockeye Hatchery and Genetic Management Plan. Biological Assessment Section 7 Consultation. Bureau of Indian Affairs.
- MFM. 2003. Resource Management Plan Report for Ozette Lake Sockeye, 2003. Report prepared by C. Peterschmidt and J. Hinton (MFM) dated August 11, 2004.
- MFM. 2004. Resource Management Plan Report for Ozette Lake Sockeye, 2004. Report prepared by C. Peterschmidt and J. Hinton (MFM) dated June, 2004.
- Makah Tribe. 2005. GIS data provided by C. Peterschmidt (MFM) to NOAA Fisheries pertaining to the distribution of sockeye salmon in the Ozette Lake watershed.
- NOAA Fisheries. 2003. Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead. Report of the West Coast Salmon Biological Review Team dated February 19, 2003.
- NMFS. 2005. Habitat Distribution for 12 Evolutionarily Significant Units of Pacific Salmon and Steelhead in Oregon, Washington, and Idaho. August 2005. GIS data available from:
<http://www.nwr.noaa.gov/1salmon/salmesa/crithab/CHsite.htm>.
- Philip Williams & Associates, Ltd (PW&A). 2002 DRAFT. The effect of Ozette River logjams on Lake Ozette: Assessing historic conditions and the potential for restoring logjams. Prepared for Makah Tribe.
- Phinney, L. and P. Bucknell. 1975. A catalog of Washington streams and salmon utilization. Volume 2 coastal region. Washington Department of Fisheries.
- Reiser, D.W., and T.C. Bjornn. 1979. Habitat requirements of anadromous salmonids. U.S. For. Serv., Pac. Northwest For. Range Exp. Stn. Gen. Tech. Rep. PNW-96. 54pp.
- Scott, W.B. and E.J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada, Bulletin No. 184. 966 p.
- Smith, C.J., Ph.D. 2000. Salmon and steelhead habitat limiting factors in the north Washington coastal streams of WRIA 20. Washington State Conservation Commission Report.
- Washington Department of Fish and Wildlife (WDFW) and Western Washington Treaty Indian Tribes (WWTIT). 1993. 1993 Washington State salmon and steelhead stock inventory (SASSI). WDFW, Olympia, WA, 212p.

Washington Department of Fish and Wildlife (WDFW). 2003. "Fishdist: 1:24,000 (24K) and 1:100,000 (100K) Statewide Salmonid Fish Distribution". GIS data layer. (M. Hudson, data manager). Available from Washington Department of Fish and Wildlife, 600 Capitol Way N, Olympia WA 98501-1091.

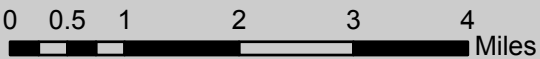
Map G1. Ozette Lake Sockeye Salmon ESU – Habitat Areas Under Consideration for Critical Habitat Designation

Ozette Lake Sockeye
CHART Watershed Ratings

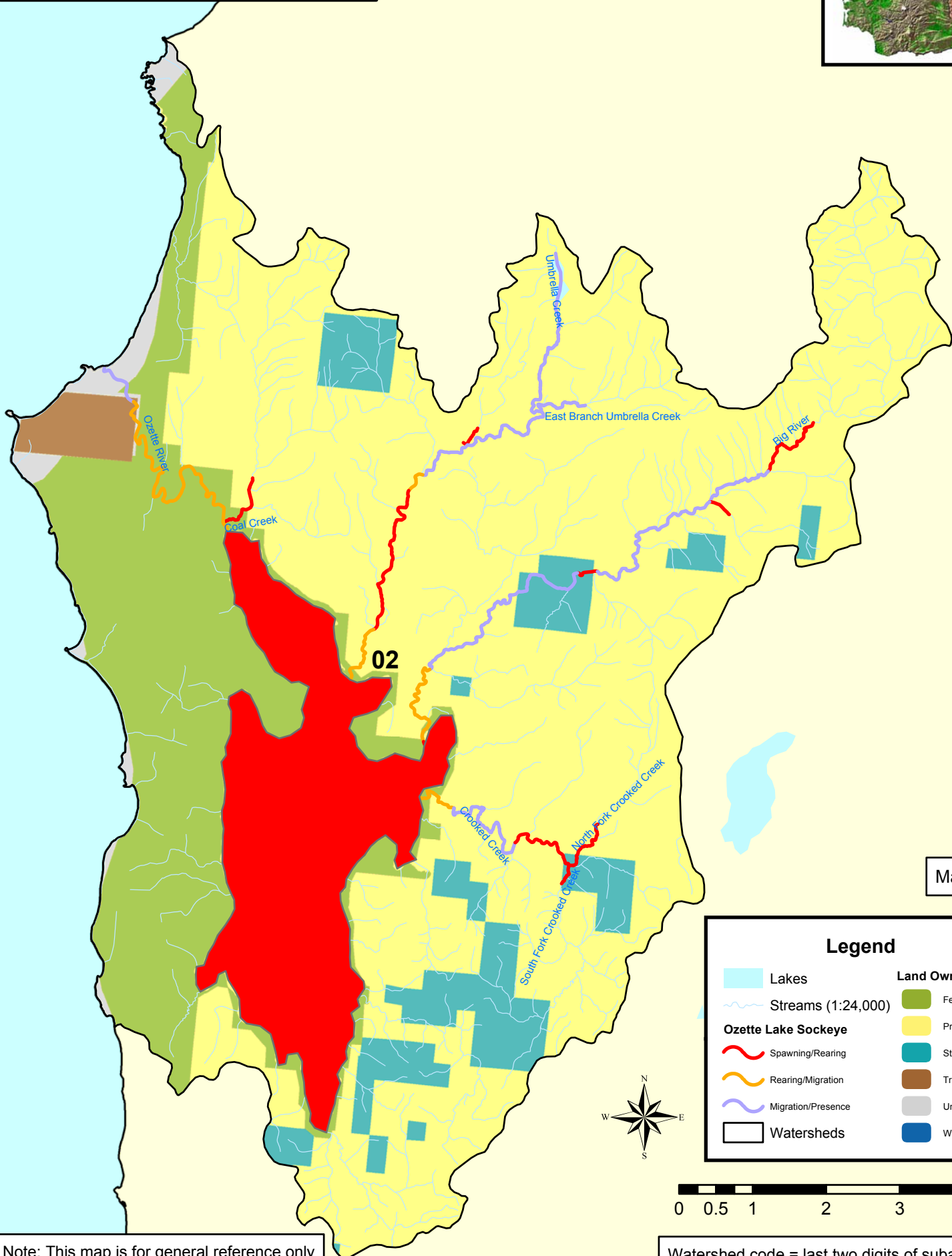


1710010102

Legend
Watersheds (HUC5)
CHART Ratings
High



Ozette Lake Sockeye Distribution
Hoh/Quillayute Sub-basin (17100101)



Map G1

Legend

Lakes	Land Ownership
Streams (1:24,000)	Federal
Ozette Lake Sockeye	Private/Other
Spawning/Rearing	State/Local
Rearing/Migration	Tribal
Migration/Presence	Unassigned
Watersheds	Water

Note: This map is for general reference only

Watershed code = last two digits of subbasin code