North Pacific Coast (WRIA 20) Salmon Restoration Strategy

(2011 Edition)

North Pacific Coast Lead Entity

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Acronyms

CC	Citizen Committee
ESA	Endangered Species Act
IG	Initiating Governments
LE	Lead Entity
NOPLE	North Olympic Peninsula Lead Entity
NPCLE	North Pacific Coast Lead Entity
SASSI	Salmon and Steelhead Stock Inventory
SRFB	Salmon Recovery Funding Board
TC	Technical Committee
WCSSP	Washington Coast Sustainable Salmon Partnership
WDFW	Washington Department of Fish and Wildlife
WRIA	Water Resource Inventory Area

"Protect the best and restore the rest."

Executive Summary

The primary goal of the North Pacific Coast Lead Entity (NPCLE) is to maintain and improve ecosystem productivity and genetic diversity for all WRIA 20 salmonid species by protecting the highly productive habitats and populations, and restoring impaired habitat and populations with the potential to recover. To accomplish this goal the Lead Entity will utilize the best available science to set priorities, and incorporate socio-political factors in decision-making that help provide direction and focus for the success of project sponsors (NPCLE, 2007).

The North Pacific Coast is the newest Lead Entity for salmon recovery in Washington State (27th) under the Salmon Recovery Funding Board, and encompasses the same boundary as Watershed Resource Inventory Area 20 (WRIA 20). In 2006 this group split off of the North Olympic Peninsula Lead Entity (NOPLE), whose watersheds all drain into the Strait of Juan de Fuca, and became the North Pacific Coast Lead Entity (NPCLE), which has all watersheds draining into the Pacific. NPCLE is also a member of the Washington Coast Sustainable Salmon Partnership (WCSSP) similarly established in 2007. WCSSP is a strategic regional association comprised of the four Lead Entities (LEs) along the Washington coast: Pacific County LE, Grays Harbor County LE, Quinault Nation LE and North Pacific Coast LE.

The North Pacific Coast recovery area encompasses 935,250 acres of land and over 80 miles of coastline starting in the south in the Hoh River Basin at the Steamboat Creek drainage, and extending north to the Ocean Creek drainage at Cape Flattery. The largest drainage area is the centrally located Quillayute River watershed, which is fed by the Dickey, Sol Duc, Calawah and Bogachiel River systems. The north end of this salmon recovery area is dominated by the extensive stream basin of Lake Ozette and the independent drainages of the Sooes/Tsoo-yess and Wa'atch Rivers.

The area experiences some 90-240+ inches of rainfall per year, being located in one of three temperate rain forests in the world. Land ownership in this region is dominated by federal, state and private commercial forest holdings. Wilderness or late seral stage forest protection covers much of the upper watersheds and nearly all the coast. The coast also includes reservation lands belonging to three tribes with an extensive overlay of indigenous Usual and Accustomed (U & A) hunting and fishing areas covering each watershed. In addition to tribal U&As and treaties the nearshore is under several layers of State and federal authority depending upon the resource. The lower elevation portions of the river systems are predominantly in either privately or government-owned commercial forestry. The relatively small remainder is in diverse rural-residential, recreational and agricultural use. There are several small urban centers with the City of Forks as the largest.

Two salmonid species in NPCLE have been listed for federal protection: bull trout (*Salvelinus confluentus*) and Lake Ozette sockeye (*Onchorhynchus nerka*). Both of these species are listed as threatened under the Endangered Species Act (ESA). The five year review of the Recovery Plan for Bull Trout was completed by the U.S. Fish and Wildlife

Service (USFWS) in 2008, and in 2010 they released an update to the critical habitat designation (USFWS, 2010). The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) has finalized the Lake Ozette Sockeye Recovery Plan (NMFS, 2009) and is currently prioritizing its first actions in concert with the Lake Ozette Sockeye Steering Committee. Chinook (*Onchorhynchus tshawytscha*), coho (*Onchorhynchus kisutch*), chum (*Onchorhynchus keta*) and steelhead (*Onchorhynchus mykiss*) stocks in NPCLE, and Lake Pleasant sockeye, are still considered *healthy* under Washington State's Salmon and Steelhead Stock Inventory (SASSI, 2002). However, recent tribal escapement data on many of these stocks show declines in recent years that could support designations of *depressed* or even *critical* (PFMC, 2010 and Appendix C).

This strategy document has two primary sections: The first section describes the goals and objectives of the plan, the methodology of how projects are identified and annually prioritized, and the application procedure for individuals and organizations who wish to apply as project sponsors.

The second section is broken down into geographic regions by watersheds, and contains a final section that covers a nearshore project area along the entire coastline of WRIA 20. Chapters within Section 2 first provide the context of restoration in the specific basin and then provide a current list of prioritized projects for each basin or habitat region.

ACKNOWLEDGEMENTS:

The North Pacific Coast Lead Entity Initiating Governments and Citizen Committee would like to thank all the hard work of the Technical Committee (Appendix E) and the Lead Entity Coordinator in producing this updated strategy for salmon restoration in WRIA 20. They would also like to acknowledge the extremely valuable regional publications that preceded and support this document by providing the scientific information that is the basis for its authority. These are Carol Smith's (2000) Limiting Factors Analysis, the 2005 version of NOPLE's strategy (NOPLE, 2005), Jay Hunter's (2006) compilation of salmon restoration prioritization for the Quillayute Basin, the North Pacific Coast Lead Entity 2007 Initial Habitat Strategy for Salmonid Projects Considered within WRIA 20 (NPCLE, 2007), the 2010 edition of the North Pacific Coast (WRIA 20) Salmon Restoration Strategy, and the Hoh basin tributary analysis by McMillan and Starr (2008).

Section 1: Project Prioritization and Application Process

1.1 Goals and Objectives

The primary goal of the North Pacific Coast Lead Entity is to maintain and improve ecosystem productivity and genetic diversity for all WRIA 20 salmonid species by protecting highly productive habitats and populations, and restoring impaired habitat and populations with the potential to recover. To accomplish this goal the Lead Entity will utilize the best available science to set priorities, incorporate socio-political factors in decision-making, and help provide direction and focus for the success of project sponsors (NPCLE, 2007).

A guideline publication consulted in most of the salmon habitat prioritization processes applied to WRIA 20 basins in recent years is "A Review of Stream Restoration Techniques and a Hierarchical Strategy for Prioritizing Restoration in Pacific Northwest Watersheds" (Roni, Beechie, Bilby, Leonetti, Pollock and Pess, 2002). This publication presents the results of an analysis by Northwest Fisheries Science Center scientists of several types of restoration approaches and their effects on multiple salmonid species over time. The primary recommendations promoted in this publication have been adopted by the North Pacific Coast Lead Entity in its project prioritization process (NPCLE, 2007), and it serves as the default prioritization guidance for projects that have not yet been identified and ranked in this document.

The Roni et al (2002) review found that *"watershed restoration should focus on restoring natural processes that create and maintain habitat rather than manipulating instream habitat."* Based on that philosophy, the authors suggest that restoration efforts are usually most effective if they adhere to the following hierarchical strategy:

1. **Analyze the site**: The first step is an analysis of the watershed, reach or project site. The analysis should identify both healthy and degraded habitat based on the natural characteristics of the site. If degraded habitat is found, determine what habitat-forming processes specific to that site are altered and the factors responsible.
2. **Protect the best**: The most effective step after the analysis is to protect salmonid habitat that is already healthy.
3. **Reconnect healthy habitat**: The next most effective action is to reconnect healthy but isolated habitat. Examples include removing fish passage barriers (culverts, weirs, and other barriers to formerly accessible fish habitat) and reconnecting the stream or river to sloughs, wetlands, high flow channels and estuarine habitat.
4. **Fix bad roads**: Road repair is high on the list because failing and poorly designed roads hurt salmonid habitat in many ways. Roads can increase delivery of fine sediment that chokes spawning beds. Culverts can change stream hydrology or block the transport of sediment, wood and nutrients. Road-related landslides can increase bedload supply, filling rearing pools and decreasing stream stability.
5. **Restore riparian processes**: Damage to the riparian zone includes any alteration that disrupts its normal interaction with the stream, river or wetlands. Examples include: truncation of the floodplain through channelization bank armoring, dikes, some modes of timber harvest; conversion of riparian zones from conifers to hardwoods (which can

reduce the long-term supply of LWD); dominance by noxious weeds; and livestock grazing in riparian corridors (which can cause stream bank erosion, channel sedimentation and widening, and decreased water quality).

6. **Restore instream habitat**: Instream habitat restoration (adding LWD, boulders, spawning gravel and nutrients) is last because it has tended to be a temporary fix and because results are variable. LWD placement should promote natural channel forming processes by mimicking natural LWD accumulations which are replenished by yearly high flows and as such should be secure enough to withstand peak flows**.** LWD used as channel roughening agent should be complex and remain well anchored using the minimum of metal hardware.

1.2 Project Prioritization Method

The process of prioritizing projects within the WRIA 20 boundaries has been revised from the 2007 strategy to focus evaluation more on how proposed projects will affect critical watershed processes and biological integrity within varying spatial and temporal scales. However, most of the key prioritization considerations from the original strategy remain as key components in this revised strategic restoration plan, which in turn incorporated most of the same prioritization variables utilized by Quileute Natural Resources in its assessment of salmon projects in the Quillayute watershed (Hunter, 2006), and the old NOPLE strategy (NOPLE, 2005) under which the initial SRFB projects in WRIA 20 were implemented from 1999-2006. The primary development of the new prioritization matrix presented here took place in 2008 and 2009 with its draft application to Hoh River basin projects for Rounds 9 and 10 of the Salmon Recovery Funding Board. Its final implementation across WRIA 20 was in the 2010 Edition of The North Pacific Coast (WRIA 20) Salmon Restoration Strategy.

This new prioritization matrix has been developed with a suite of characteristics selected by the NPCLE Technical Committee to address the types of projects and strategy they employ, the physical habitat conditions, and the biological conditions of the fish and their immediate environment that follows from Roni et al, 2002. The first three categories of the matrix are for overall consideration in promoting a project to be on the annual restoration project list (Appendix B). For individual projects actively being proposed in a specific round, the matrix further considers variables such as the urgency of the project to be undertaken immediately, the likelihood of success given the qualifications of the sponsor, the specific requirements of the grant round, and the level of community support.

Table 1 lists each metric with a brief description and the range of points used for ranking and weighting projects by the NPCLE Technical Committee.

Table 1. Project Ranking Matrix

CODE	PROJECT STRATEGY (consider only as many as appropriate)	Category Description	Score Range
P/P	**Preservation/Protection.**	Obtains permanent protection from direct human impacts to habitat conditions through conservation easements or land purchase.	**0 to 10**
ASST	**Assessment to define projects and/or to fill data gaps.**	Conducts empirical studies to ground truth current conditions prior to restoration actions or to determine the effects of restoration actions.	**0 to 10**
RP_{long}	**Restoration of Processes - Long term**	Undertakes actions that support natural processes to permanently recover habitat conditions.	**0 to 10**
RPH_{short}	**Restoration of Physical Habitat - short term**	Undertakes engineered restoration of degraded habitat to immediately improve habitat conditions on a temporary time scale.	**0 to 5**
RFP	**Reconnect Fragmented / Isolated Habitats**	Undertakes actions that repair physical corridors and restores functions of previously connected habitat areas.	**0 to 10**

PROJECT METHOD TYPE (consider only as many as appropriate)		Category Description	Score Range
ACQ	**Acquisition/Easement**	Purchase and/or a contractual agreement to maintain or improve salmon habitat conditions.	**0 to 4**
FPsg	**Fish Passage**	Remove stream-crossing structures or restore, upgrade and replace stream-crossing structures to allow migration of all fish life history stages and the natural movement of streambed material and large woody material.	**0 to 4**
RD	**Road Decommissioning**	Elimination of existing road(s) and reestablishment of natural channel configuration and natural habitat functions.	**0 to 4**
DRN	**Drainage / Stabilization**	Increase water crossing structure sizes to better accommodate peak flows. Increase number of cross drains to avoid excess flow into any drainage, and/or remove side cast at segments in risk of failure.	**0 to 4**

FP&W	**Flood Plain & Wetland**	Remove, relocate and re-design road segments, dikes, bank armoring, revetments and approach fills that are specifically impacting floodplain or wetland function and hydrology.	**0 to 4**
LWD	**Large Woody Debris Placement**	Design and place engineered woody debris accumulations and logjam structures to enhance channel stability, stabilize spawning substrate, accumulate natural wood, and/or to protect significant habitat features for the maintenance of productive fish habitat.	**0 to 4**
INV	**Invasive Species Control**	Inventory and remove invasive species within basins using appropriate methods for removal and control. Should also include restoration, planting and monitoring plans.	**0 to 4**
RIP^{M}	**Riparian Planting**	Fence riparian areas from livestock, relocate parallel roads and other infrastructure from riparian areas. Promote appropriate age and species composition of vegetation.	**0 to 4**
STRCT^{Remv}	**Instream structure removal / abandonment**	Permanent removal of culverts, failed bridges, cedar spalts, and other anthropogenic instream blockages so that the channel returns to natural conditions.	**0 to 4**
STRCT^{Imp}	**Instream Structure Improvement/replacement**	Improvement of existing culverts, bridges, or other failed instream structures so that the channel returns to adequate flow for the support of salmon habitat.	**0 to 4**
OTH	**Other**	Special assessments, experimental techniques, quantitative and spatial modeling or the application of new technology.	**0 to 4**
HABITAT AND BIOLOGY ADDRESSED (Score low to high for each)		**Category Description**	**Score Range**
HAB^{QLTY}	**Salmonid Habitat Quality**	Water quality, pool frequency, channel composition, LWD frequency positively affected or maintained by the project.	**0 to 4**
HAB^{QNTY}	**Salmonid Habitat Quantity**	Total improved stream length/estuary area etc. after project completion.	**0 to 4**

SLH	**Salmonid Life Histories**	Range of salmon life history stages addressed and positively affected by the project (e.g., spawning, rearing, migration).	**0 to 4**
SD^C	**Species Diversity (current)**	Number of runs positively affected.	**0 to 4**
RIP^H	**Riparian forest and native vegetation**	Are riparian areas healthy with native vegetation or will invasive species and/or restoration be addressed?	**0 to 4**
SED	**Sediment Control**	Anthropogenic or geomorphic- sediment issues and/or their restoration positively affected by the project.	**0 to 4**
CNCTY	**Salmonid habitat connectivity**	Improved connectivity to functional or high quality habitat.	**0 to 4**
LIKELIHOOD OF SUCCESS (Score low to high for each **based on track record and documented resources)**)		**Category Description**	**Score Range**
Spnsr	**Applicant is or has an appropriate project sponsor.**	How complete and balanced is the project team?	**0 to 4**
$LOFG_{rant}$	**Likelihood of satisfying the granting agency.**	How does this project address the funding requirements of the granting agency?	**0 to 4**
BUDGT	**Accuracy and completeness of budget.**	Are projected expenses realistic relative to documented costs and are they adequate?	**0 to 4**
URG	**Urgency for immediate implementation.**	Are there timing issues for this project's success that make it more important to move forward now?	**0 to 4**
QUAL	**Qualifications**	Qualifications / track record of sponsor/partners	**0 to 4**
COMM	**Local Community Support**	Is there endorsement (e.g., support letters) by affected landowners, support by economic sectors, community awareness and adequate buy-in?	**0 to 4**

1.2.1 Descriptions of Prioritization Categories:

A fuller description for each category in Table 1 is provided below to more thoroughly explain how ranking criteria for potential and proposed projects are being applied by the NPCLE review teams.

1.2.1.1 **Project Strategy** (The project is assessed first as to whether it is following one or more of the following strategies, and then scored as to how adequately it proposes to accomplish each strategy that is identified):

- **Preservation/Protection**: Obtains permanent protection from direct human impacts to habitat conditions through conservation easements or land purchase. The land should be high quality salmon habitat to begin with and/or include a long term management plan that restores it and allows it to be self-sustaining as high quality salmon habitat.
- **Assessment / monitoring to fill data gaps**: Conducts archival and empirical studies to document or ground truth information about current conditions prior to identifying specific restoration actions and to identify what and where restoration actions are most appropriate.
- **Restoration of Processes - Long term**: Undertakes actions that support natural processes to permanently recover habitat conditions. Actions primarily involving geomorphic or vegetation modifications that support or enhance existing natural conditions and require 10 + years for measurable effects.
- **Restoration of Physical Habitat - short term**: Undertakes engineered restoration of degraded habitat to immediately improve habitat conditions on a temporary basis. Projects are engineered to mimic or replace natural processes on a temporary basis in order to preserve critical conditions; usually with the hope, but not a high probability of incorporation into long term processes.
- **Reconnect Fragmented / Isolated Habitats**: Undertakes actions that repair physical corridors and restores functions of previously connected habitat areas. This includes any fish passage blockages between previously available spawning habitat as well as important juvenile foraging areas.

1.2.1.2 **Project Method** (The project is assessed first as to whether it is utilizing one or more of the following methods, and then scored as to how adequately it proposes to apply each method that is identified):

- **Acquisition/Easement**: Purchase and/or a contractual agreement for land in order to maintain or improve salmon habitat conditions.
- **Fish Passage**: Remove stream-crossing structures or restore, upgrade and replace stream-crossing structures to allow migration of all fish life history stages and the natural movement of streambed material and large woody material.
- **Road Decommissioning**: Elimination of existing road(s) for the reestablishment of natural channel configurations and natural habitat functions.
- **Drainage / Stabilization**: Increase water crossing structure sizes to better accommodate peak flows. Increase number of cross drains to avoid excess flow into any drainage, and remove side cast at segments in risk of failure.

- **Flood Plain & Wetland**: Remove, relocate and re-design road segments, dikes, bank armoring, revetments and approach fills that are specifically impacting floodplain or wetland function and hydrology.
- **Large Woody Debris Placement:** Design and place engineered woody debris accumulations and logjam structures to promote natural channel processes to provide cover; to route, segregate and stabilize spawning substrate; to trap and accumulate natural large woody debris; and/or to protect significant habitat features within flood plains for the maintenance of productive fish habitat.
- **Invasive species control**: Inventory, prioritize and remove invasive species within basins. Depending on the target species use appropriate methods for removal and control. Should also include restoration, planting and monitoring of the sites as an integral part of the projects.
- **Restore Riparian Processes**: Fence riparian areas to eliminate negative impacts from livestock, relocate parallel roads, dikes, bank protection, revetments and other infrastructure from riparian areas. Promote the appropriate age and species composition of riparian forests through thinning, planting, understory vegetation control, conversion of riparian areas to mixed stands.
- **Other:** Special assessments, quantitative and spatial modeling or the application of new technology.

1.2.1.3 **Habitat and Biology Addressed** (The proposed actions at the location of the project are assessed for each of the following ecological conditions and scored as to how the project improves conditions or maintains excellent conditions if they are in place to begin with):

- **Salmonid Habitat Quality:** Pool frequency, channel type and sediment composition, water quality, riparian cover, large woody debris frequency that are positively affected by the project or if conditions are maximally functional to begin with, how are they maintained by the project?
- **Salmonid Habitat Quantity:** Stream length/wetland/estuary area that is affected by the project. Is this a small postage stamp effect, or does the project affect a much larger area or system of habitats?
- **Salmonid Life Histories:** Range of salmon life history stages addressed and positively affected by the project (e.g., spawning, rearing, migration).
- **Species Diversity (current):** Currently recorded salmonid species in the system. Is it one stock or multiple stocks that will be affected by the project?
- **Riparian forest and native vegetation**: Are riparian areas healthy with native vegetation or will invasive species and/or restoration be addressed?
- **Sediment Control**: Are there anthropogenic or geomorphic sediment issues that the project addresses for an improvement in salmon

habitat? If there are not current sediment issues, will the project potentially affect sediment negatively or will sediment stability be maintained or improved?

- **Salmonid Habitat Connectivity:** Physical interconnection with functional or high quality habitat, or habitat that is already protected. Is this an isolated habitat or is it one that plays an important role in a larger system of habitats? Will the project positively improve or maintain connectivity?

1.2.1.4 **Likelihood of Success** (Assessed for the project proposal in terms of adequacy for each of the following):

- **Sponsor:** The applicant is or has teamed up with an appropriate project sponsor that provides a balanced and adequate project team.
- **Likelihood of satisfying the granting agency**: The project addresses the requirements for a successful award as identified by the granting agency in its application materials. The application is competitive and not lacking explanation in areas the granting agency has indicated are important?
- **Budget:** The budget is complete and projected expenses are realistic relative to documented costs; which are also adequate for successfully completing the project. The over-all cost of the project is also realistic relative to the amount funds available from the granting agency.
- **Urgency:** The project has a time-sensitive aspect that makes it more important to be implemented in the present grant cycle. The project is either in an important sequence of restoration actions that merits consideration, or is restricted to an opportunistic time window where the scope or scale of the project will otherwise be lost or diminished, because it is some sort of emergency.
- **Qualifications**: Training and experience of the sponsor and/or sub-contractors; their track record performing equivalent professional services, if any.
- **Community support:** Documented willingness of landowners to participate. Letters of support from affected economic sectors and tribes. Consideration for the level of community awareness about the project and the range of community response, if any.

1.3 Review Process (Project application procedure, form, and explanation of the evaluation process).

The project review process for the annual Salmon Recovery Funding Board (SRFB) rounds requires a pre-proposal application to the North Pacific Coast Lead Entity in the spring, prior to submission of the project to SRFB's late summer deadline; with the final award in December of the application year. Normally funds are then available for implementation of the project in the following Spring-Summer.

The full pre-application package for the current year can be found in Appendix A of this document, or online at **www.wcssp.org**.

Periodically NPCLE will also review projects for other funding sources independent of SRFB. Under circumstances where other funding agencies are involved the Technical and Citizen Committee reviewers will either use the funding organization's required criteria or employ the matrix in Table 1 and adapt it to any peculiarities specific to those funding requirements if necessary.

Many streams and rivers in the NPCLE area still do not have prioritized lists. To help applicants choose appropriate projects in these watersheds, NPCLE has chosen Roni et al. (2002) as its default prioritization guideline as outlined on pages 6-7 above in concert with the Prioritization criteria presented in Table 1.

For questions or assistance in developing a project in WRIA 20 the North Pacific Coast Lead Entity Coordinator working out of Clallam County and Olympic Natural Resources Center in Forks (Rich Osborne 360-417-2569, rosborne@co.clallam.wa.us) can help you get started by identifying potential sponsors, partners and sources for technical assistance.

1.4 Annual Project List:

The salmon habitat restoration projects that have been identified as needing attention in WRIA 20 are on a list that is annually reviewed by the Technical Committee for additions and subtractions. Additions to the list come from new habitat restoration projects recommended by stakeholders and Technical Committee members over the previous year, and subtractions from the list are made when projects are completed or conditions have changed so that the project is no longer relevant for further consideration. The list is generated independently for each of the five habitat regions in WRIA 20: the three primary watershed basins, the Independent Drainages and the Nearshore. The current list of 79 potential projects is presented in Appendix B and serves as a menu of potential restoration actions that have been locally identified and recommended as currently needed for salmon habitat restoration. From this list the NPCLE Technical Committee then identifies the top 3-6 priority projects for each basin, the Independent Drainages and the Nearshore and ranks them for that year's round of projects. These priority projects are identified as the first ranked projects on the list in Appendix B, and further described in more detail in the body of the strategy under any of the five habitat regions where they occur. However, any project can be put forward as a potential candidate and considered for full funding in any one year whether or not it is a priority project for that year or on the project list in Appendix B.

1.5 Eligibility for the Annual Project Round:

Any proposed project submitted on time for consideration in the advertised grant round under consideration can be fully funded independent of existing lists as

long as it scores high enough in the final proposal evaluation and ranking by both the NPCLE Technical Committee and Citizens Committee.

The annual SRFB project Pre-Proposal Review takes place in June and July for all projects officially submitted. These annually submitted projects are reviewed and ranked against each other using the criteria described in Table 1. In the final proposal review all the top projects for which there is enough funding are submitted. Projects for which there is not enough funding are potentially submitted as alternates at the discretion of the NPCLE Citizen's Committee. Alternates can then be considered for funding if a higher ranking project must be withdrawn for some reason, or additional funding becomes available before the grant round has officially ended.

Section 2: Priority Projects by Geographic Section

2.1 Hoh River Basin

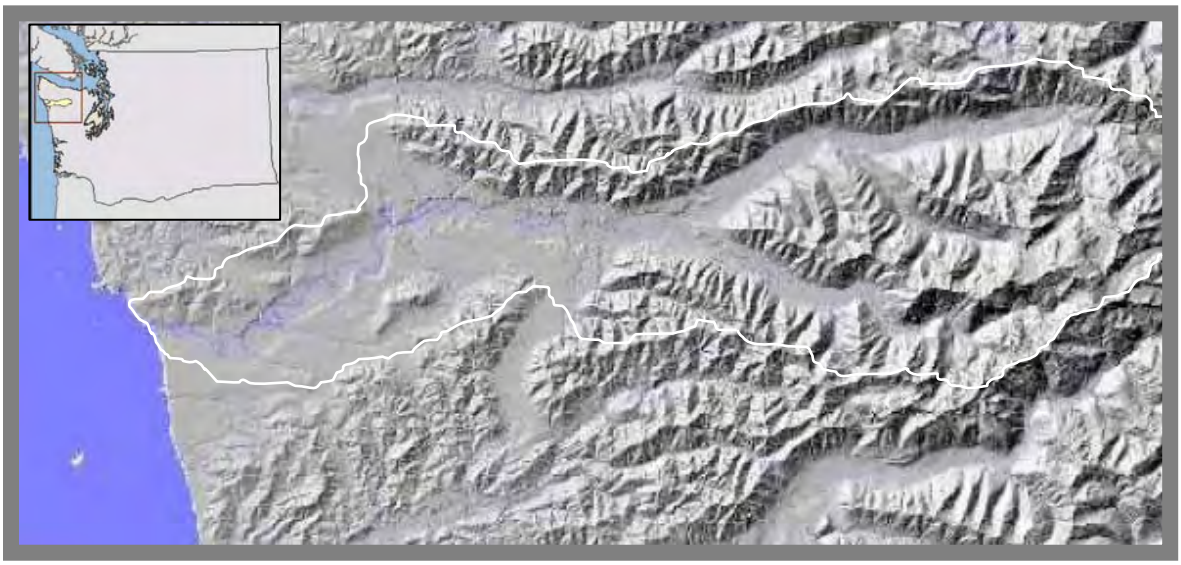


Figure 1. Relief Map of the Hoh River Basin

2.1.1 Hoh River Basin Background

The headwaters of the Hoh River basin are located on Mt. Olympus at an altitude of 2,425 meters (m), and the upper 65% of the basin, including the entire North Fork and majority of the South Fork Hoh Rivers, is protected within the Olympic National Park and is considered to be essentially in pristine condition (McHenry and Lichatowich, 1996; Smith, 2000) (Figure 1). The Hoh is a large (481 km^2), glacially influenced river with an extensive floodplain that contains a diverse array of lateral riverine habitats that are critical to rearing salmonids (Sedell et al., 1984; Smith, 2000; McHenry, 2001). Several major non-glacial tributaries to the Hoh also provide temperate rearing and spawning areas for salmonids (Sedell et al., 1982; McHenry, 2001). Most of the large tributaries are located on industrial forestlands outside the Park where land use practices have degraded salmon rearing and spawning habitat and altered the processes responsible for habitat formation (Smith, 2000; McHenry, 2001).

The wet, mild climate of the Hoh River is dominated by the influence of offshore marine air and is characterized by the highest precipitation levels in Washington State (U.S. Weather Bureau, 1965). Average annual precipitation ranges from about 225cm (90 inches) near the Pacific Coast to 600cm (240 inches) per year in the Olympic Mountains (U.S. Weather Bureau, 1965). Normal discharge fluctuations are bimodal with individual peak flows greatest during winter months (e.g., November to February) with average monthly discharges highest when

snowmelt runoff occurs in June and July (USGS, 1998). Recent years seem to indicate changes in the hydrograph with higher peak flows (generally rain-on-snow events) in the November to January period, a reduced spring runoff season and a lower summer flow (USGS, 2010).

The Hoh River supports a relatively healthy and diverse salmonid assemblage that includes five species of Pacific salmon, two species of trout, and one char species (McHenry and Lichatowich, 1996). That said, runs are still greatly reduced from the days when canneries operated on the Hoh (McHenry, 2001; Appendix C). The spring/summer and fall Chinook (*Oncorhynchus tshawytscha*), fall coho (*O. kisutch*), and winter steelhead (*O. mykiss*) are considered among the last remaining relatively healthy populations in the lower forty-eight (Nehlsen et al., 1991; Huntington et al., 1994; McHenry and Lichatowich, 1996). The Hoh River bull trout (*Salvelinus confluentus*) population is listed as threatened under the Endangered Species Act but is considered to be relatively healthy and abundant (Mongillo, 1992). The Hoh River also contains unstudied populations of coastal cutthroat trout (*O. clarki*), resident rainbow trout and summer steelhead (*O. mykiss*), in addition to a few chum salmon (*O. keta*), sockeye salmon (*O. nerka*), and pink salmon (*O. gorbuscha*) (McHenry, 2001).

Most salmon species utilize slightly different riverine habitats (Sedell et al., 1982; Sedell et al., 1984; McHenry, 2001) and out-migrate at different ages during their freshwater lifecycle (Roger Moseley, WDFW, personal communication, 2007; Jim Jorgensen, Hoh Tribe, personal communication, 2007). Over 95% of the spring/summer and fall Chinook out-migrate at as juveniles at age-0, which contrasts sharply with the tendency of the other species to remain in fresh water for at least a full year. Spring/summer Chinook spawn from mid-August through mid-October while fall Chinook and coho spawn from mid-October through January. Winter steelhead spawns from December through July. No information is available on the spawn timing of summer steelhead, which are believed to spawn in the NF and SF Hoh Rivers inside the ONP (McHenry, 2001). The juvenile and adult life histories, and ecology, of coastal cutthroat and resident rainbow trout are completely unstudied.

Bull trout are believed to spawn primarily in the Olympic National Park, in the mainstem river or in tributaries with active glaciers (Brenkman and Meyer, 1999). More recently, extensive research on bull trout has been conducted by ONP biologists to better understand life histories, morphology and migration patterns throughout the basin. Results indicate that there are three distinct life histories: 1) freshwater residency; 2) a single migration to sea; and 3) multiple migrations to sea (Brenkman and Corbett, 2005; Brenkman et al., 2007). Radio telemetry revealed that among fish that made multiple migrations to sea, some traveled to other coastal watersheds, including the Queets River, Quinault River and Kalaloch Creek before returning to the Hoh River (Brenkman and Corbett, 2005).

There is a wealth of peer reviewed and unpublished reports on salmonid populations and habitat in the Hoh basin, though data gaps remain. Key factors limiting salmonid productivity in the Hoh basin were identified by Smith (2000). WDNR conducted a partial watershed analysis, including a draft fish habitat module (McHenry, 2001) and a mass wasting module (Parks, 2001). Washington Department of Fish and Wildlife (WDFW) conducted a Level 1 Technical Assessment for WRIA 20 watersheds (Hook, 2004). US Department of Interior's Bureau of Reclamation (BOR) also did a study of the Hoh for the WRIA 20 process (Lieb and Perry, 2005). Other studies have been conducted in the basin by state agencies, NGOs, the Hoh Tribe, and the Northwest Indian Fisheries Commission (NWIFC). Technical reports by WDNR (Cederholm and Scarlett, 1997) and the Wild Salmon Center (WSC, 2008) examined habitat conditions in major tributaries to the Hoh. Over the last several years several geomorphic assessments have been done on channel migration, bank erosion and riparian conditions, particularly where infrastructure has been threatened. Identification of high quality refugia has been done by Western Rivers Conservancy and the Nature Conservancy.

Collectively, these technical reports conclude that while habitat remains healthy compared to other watersheds in the western U.S., major impacts on fish populations have occurred and the root causes are both technically complex and socially costly to restore. The Hoh basin, a dynamic watershed at the best of times, has suffered destructive mass wasting, rapid lateral channel migration, locally excessive sediment accumulation and repeated scour during spawning and egg incubation periods. These effects are aggravated by many causes. The causes include both rapid storm runoff from young commercial forestland at low elevations and rain-on-snow events originating in mid-elevation forests. The riparian buffers left along tributaries and the main channel have not been adequate to withstand windstorms and channel migration. The lack of large riparian timber reduces shading and limits the supply of large wood debris (LWD) to that which washes down from the Olympic National Park. Few LWD pieces are large enough to remain stable and embedded during normal peak flows, so most wash through the system to the beach unless caught in a minor channel. In tributaries, habitat has been isolated by fish passage blocking culverts along the mainstem corridor and in upland tributary habitat. Road systems, in various states of repair, enable rapid storm runoff, transferring fine sediment washed from road surfaces or debris from road failures into tributaries and the river. Cedar spalt dams have also reduced access to habitat and degraded water quality in many low elevation tributaries.

Valley side slopes, terrace edges, and inner gorge areas in the Hoh basin represent a high percentage of the land outside the ONP and have a naturally high erosion potential (Parks, 2001). A combination of sensitive soil types, precipitation intensity, mid-slope roads with side-cast construction, and extensive timber harvest have unnaturally increased surface erosion rates in these areas (McHenry, 2001). Although forest road systems are improving under present DNR Forest Practice regulations, the legacy of old roads has taken a toll in some areas (Smith, 2000). Unintended negative effects on salmonid habitat by County and Federal highway

systems, notably bank armoring, remains largely unmitigated. Mass wasting and debris flows have also resulted in channel incision which has disconnected floodplain habitat and exposed layers of clay sediment which continually erode and reduce water quality in both the mainstem Hoh and tributaries (Smith, 2000).

2.1.2 Hoh River Watershed Priority Projects:

The following four projects from the Hoh River system were ranked by the NPCLE Technical Committee as high priority projects for salmon recovery in 2011.

2.1.2.1 Title of project: Hoh Basin LiDAR.
Location: One mile width for the length of the channel, or wider to include most of the major tributaries.
Issue/Limiting Factor being addressed: addresses geomorphic info— and reduces cost of all other survey intensive projects. This is also a building block to support any project in the basin which requires either engineering, cross sections, topographic surveys or a point –in- time baseline. Site survey usually runs 20-30% of the cost of any instream project. This will reduce that. It is also essential for any major geomorphic study.
Action to be taken: Aerial infrared flights with LiDAR equipment (or equivalent high resolution satellite imagery or side scan radar). Signal processing and display production of data.
Stocks being affected: Hoh Spring Chinook, Hoh Fall Chinook, Hoh Fall Coho, Hoh Summer Steelhead, Hoh Winter Steelhead, cutthroat trout, bull trout.

2.1.2.2 Title of project: South Fork Hoh River Reach Assessment.
Location: From above the confluence with the South Fork of the Hoh down to Canyon Cr. Including pts. Of Sec 25 and 34 (T27N R11W), pts. Sec 29,30, 31(T27NR10W).
Issue/Limiting Factor being addressed: There is extreme channel instability throughout this reach, causing destruction of riparian forest and historically high quality side channels and mobilization of most natural LWD at every high flow event. Main channel habitat is simplified to a long, sunny, complex braided riffle. Very little deep pool habitat or protected spawning / egg incubation or high flow refuge sites remain in either main or side channels. Remaining forested side channels are at a high risk of avulsion and resultant scouring. Causes include local bank armoring (both on private, county road and ONP ownership) , up-stream hydrologic immaturity, a lack of key piece sized stable LWD, separation of high flows from the upland floodplain and at least one side slope instability (clay slide) . There are serious and long-term threats to private property and public roads in this reach. The public has been supportive of all efforts at habitat restoration here.
Action to be taken: Phased approach— first LiDAR , then a channel migration study with emphasis on where to add channel roughness and other best options for reach stability. Lastly, LWD placement and other options as

identified by study.
Stocks being affected: Hoh Spring Chinook, Hoh Fall Chinook, Hoh Fall Coho, Hoh Summer Steelhead, Hoh Winter Steelhead, cutthroat trout, bull trout.

2.1.2.3 Title of project: Allen's Marsh.
Location:
Issue/Limiting Factor being addressed: Consolidation of flow and off-channel habitat access.
Action to be taken: Culvert repair/replace, riparian and bank stabilization.
Stocks being affected: Hoh Spring Chinook, Hoh Fall Chinook, Hoh Fall Coho, cutthroat trout.

:

2.2 Quillayute River Complex

Figure 2. Relief Map of the Quillayute River Basin

2.2.1 Quillayute Basin Background:

The Quillayute River is the terminal mainstem of one of the largest and most productive river system networks on the Washington coast. Four major rivers combine to form the Quillayute system. The Bogachiel, Calawah, Sol Duc and Dickey Rivers drain the Northwest Olympic Peninsula westerly to the Pacific Ocean. The headwaters of these rivers generally originate in the Olympic National Park (ONP) from the Olympic Mountains, except the Dickey, which originates in lower elevations west of the Olympics. All of the rivers have extensive tributary systems with forestry activities common outside the Olympic National Park boundaries. The Dickey has significant wetlands and is largely a low-velocity, low-gradient system. The other rivers originate in the Olympic highlands with relatively steep terrain which becomes more gradual some 15 miles from the Pacific.

The Quillayute River has a very short mainstem of some 5.5 river miles. At river mile 5.5 the Bogachiel and Sol Duc River Systems combine to form the Quillayute. The Dickey River enters the Quillayute one mile from the Pacific, and shares a common but limited estuary. The Calawah River joins the Bogachiel at river mile 8.5 near Forks, Washington, 20 miles from the mouth of the Quillayute River at La Push. The Sitkum River joins the South Fork Calawah at river mile 16.2. The Quillayute River System alone drains over 825 square miles, or over 800,000 acres.

The Olympic National Park owns the largest percentage of the coastal lands and the very highest reaches of the Olympic Mountains. This includes the headwaters of the upper Sol Duc, Calawah, Sitkum and Bogachiel Rivers. The USFS manages the lands downstream of the Park (middle altitudes). Private timber

and state lands are downstream from the USFS holdings. Rayonier is the largest private timber landowner in the watershed. The City of Forks is the only incorporated city, but there are two small towns of Beaver and Sappho in the Sol Duc watershed.

Three watershed analyses (WSA) were completed between 1995 and 1999; Sol Duc, North Fork Calawah, and Sitkum-South Fork Calawah. The East/West Dickey WSA, performed in 1997-1998, was not officially completed (the process was no longer mandatory after the Forest and Fish Report of 1999 and subsequent law and regulations), but significant report information was developed. In 2000 the Washington Conservation Commission completed the report "Salmon and Steelhead Habitat Limiting Factors in the North Washington Rivers of WRIA 20". This report included a list of salmon restoration projects for the Quillayute basin and was significantly premised on the watershed analyses.

In 2000-2003 the Quileute Tribe assessed fish habitat in the Bogachiel (unpublished), using Washington Department of Natural Resources (WDNR) protocol. The Bogachiel mainstem was completed in 2000, lower tributaries in 2001, middle tributaries in 2002, and upper tributaries to the Park boundary in 2002. The Olympic National Park has assesses fish habitat for the Bogachiel watershed above the Park boundary.

In 2004 the Quileute Tribe assessed fish habitat in Coal Creek of the Dickey (unpublished) using WDNR protocol. Also in 2004 USFS completed a draft of aquatic and wildlife habitat conditions in the Pacific Region (for their lands only). They also finished a Draft Environmental Impact Statement (DEIS) on invasive weeds. Since the summer of 2003 the Quileute Tribe, funded by federal grants and in cooperation with Clallam County Noxious Weed Control Board and Olympic National Park, has been eradicating knotweed in the Quillayute Basin. The Dickey, Sol Duc, Calawah, and mouth of the Quillayute have been treated. The Quileute Tribe began working on the Bogachiel mainstem in 2008 and is expected to finish the project by 2012. By 2013 it will complete the Quillayute mainstem.

In 2005 the US DOI Bureau of Reclamation completed a Draft assessment of watershed conditions and seasonal variability for all of WRIA 20 (Lieb and Perry, 2005).Additionally, WDNR maintains comprehensive "Road Maintenance and Abandonment Plans" (RMAP) for their holdings, often in cooperation with timber company holdings. This is a valuable tool for culvert assessment and road management activities. WDNR approves and warehouses all RMAP's for those landowners large and small who are required to develop RMAP's.

Rayonier also maintains a comprehensive "Road Maintenance and Abandonment Plans" (RMAP) program for their holdings. These plans include all roads and culverts subdivided into categories such as Fish Passage, including Fish Barriers, Mass Wasting Activities, Mass Wasting Pipes, and Surface Erosion.

2.2.2 Quillayute Basin Prioritized Projects:

Prioritized projects for the Quillayute Basin in 2011 are primarily projects still needing funding that have been carried forward from the assessment procedures described above (Hunter 2006; NPCLE, 2007), or projects identified as part of the US Forest Service Calawah Focal Watershed Assessment undertaken in 2010.

2.2.2.1 Quillayute Main Stem Priority Projects:

No "High Priority" projects have been identified by the NPCLE Technical Committee in the Quillayute River main stem for 2011 (see appendix B), largely because the highest priorities are being handled by WDNR or the Quileute Tribe at this time (culvert or knotweed tasks).

2.2.2.2 Bogachiel River Watershed Priority Projects:

2.2.2.2.1 Title of project: Mill Creek Culvert Replacement (Significant Project in Quileute/stakeholder assessment of restoration needs; since 2006, problem has become worse.)
Location: Mill Creek where it crosses Russell Road about a ¼ mile from US 101 (1324 Russell Rd). Mill Creek is a tributary of the Bogachiel River. Quileute U&A, private landowners, City of Forks government.
Issue/Limiting Factor being addressed: During low flow periods, the jagged edges of the corroded pair of 48" culverts' bottoms act as a moving set of metal spiked fingers, limiting fish passage to existing spawning and rearing areas upstream (~21,000 feet of stream channel). This structure is facing imminent collapse, and the next winter storm may do it.
Action to be taken: Secure HPA permit. Design has been completed and a 3-sided concrete box culvert is recommended. Replace two failing 48" side-by-side culverts with recommended box culvert. Russell Rd. received moderate traffic load but is presently closed because of safety concerns from collapsed culverts. Monitor fish presence per SRFB requirement.
Stocks being affected: Bogachiel Fall Coho and Winter Steelhead, sea run cutthroat trout.

2.2.2.2.2 Title of Project: Fuhrman Creek Culvert Replacement.
Location: Located at MP 0.1 of Fuhrman Road in the NE 1/4 of Section 33 and the NW 1/4 of Section 34, T28N, R13W; Clallam County.
Issue/Limiting Factor being addressed: During low flow periods, the jagged edges of the corroded pair of 48" culverts' bottoms act as a moving set of metal spiked fingers, limiting fish passage to existing spawning and rearing areas upstream .

Action to be taken: Secure HPA permit. Replace a deteriorating, undersized culvert with a larger culvert fully passable to fish. This will allow salmonids access to approx. 2500' of habitat, including approx. 5 ac. of overwintering ponds.
Stocks being affected: Bogachiel Fall Coho and Winter Steelhead, sea run cutthroat trout.

2.2.2.3 Calawah River Watershed Priority Projects:

2.2.2.3.1 Title of project: Sitkum R.2900-072 Road Decommissioning (This project was determined to be priority after the Quileute Reach Assessment used in our strategy had been completed.)
Location: In the Sitkum drainage of the S Fork Calawah River Basin, T28N, R12W, Sec 11 and 12.-USFS landowner. Quileute U&A.
Issue/Limiting Factor being addressed: Deteriorating Culvert and lack of usage of road in that area. Eliminates potential mass wasting in response to undersized and non-maintained culverts and road segment.
Action to be taken: Forest Service has ongoing HPA through MOU with state. Remove culverts and decommission road segment in accordance with USFS guidelines and policies.
Stocks being affected: Calawah Fall Coho, Fall Chinook, Summer, and Winter Steelhead, cutthroat trout.

2.2.2.3.2 Title of project: FS 2912 and 2912-060 Road Decommissioning (top 8 priority in Quileute/stakeholder assessment of restoration needs)
Location: In the Sitkum sub-watershed of the Calawah River Basin, T29N, R11W, Sec 32. USFS landowner. Quileute U&A.
Issue/Limiting Factor being addressed: Deteriorating and undersized culverts, and side cast constructed roads on unstable geology, and a lack of funding for adequate road maintenance and culvert upgrades, increase the likelihood of road related mass wasting events which was identified as a limiting factor in the Sitkum drainage. Road decommissioning reduces the potential for massive inputs of fine and coarse sediment from road related mass wasting, which has a significant impact on fish habitat and productivity.
Action to be taken: USFS has ongoing MOU with state, for HPA work. Remove culverts, pullback and/or out-slope areas of unstable soils; restore natural drainage and decommission road segment in accordance with USFS guidelines and policies.
Stocks being affected: Calawah Fall Coho, Fall Chinook, Summer and Winter Steelhead, resident and anadromous cutthroat trout.

2.2.2.3.3 Title of project: NF Calawah Culvert Replacement
Location: North Fork Calawah FS 2922 Road.

Issue/Limiting Factor being addressed: The NF Calawah has experienced large and frequent land management related mass wasting events, which have contributed to degraded channel and fish habitat conditions. The Forest Service 2922 road system contains dozens of deteriorating culverts, none of which were sized to meet the Q100 year storm flows. The FS 2922 Milepost 2.3 culvert is deteriorating and was sized to meet Q25 year storm flows. The culvert is buried under 4000 c/y of fill, directly above anadromous fish habitat in the upper NF Calawah River mainstem.

Action to be taken:
Replacing the culvert at MP 2.3 on the FS 2922 road with a new culvert sized to meet and exceed the Q100 flows plus debris, will reduce the potential for road related mass wasting which would have a significant impact on fish habitat and productivity in the NF Calawah mainstem.

Stocks being affected: Calawah Fall Coho and Winter Steelhead, resident and anadromous cutthroat trout.

2.2.2.3.4 Title of project: FS 2923-015 Road Decommissioning. :
Location: FS 2923 road, in the Rainbow Creek drainage, Sitkum River sub watershed.
Issue/Limiting Factor being addressed:
Deteriorating and undersized culverts, and side cast constructed roads on unstable geology, and a lack of funding for adequate road maintenance and culvert upgrades, increase the likelihood of road related mass wasting events which was identified as a limiting factor in the Sitkum drainage. Road decommissioning reduces the potential for massive inputs of fine and coarse sediment from road related mass wasting, which has a significant impact on fish habitat and productivity.

Action to be taken: Remove culverts, pullback and / or outslope areas of unstable soils; restore natural drainage and decommission road segment in accordance with USFS guidelines

Stocks being affected: Calawah Fall Coho, Fall Chinook, Summer and Winter Steelhead, resident and anadromous cutthroat trout.

2.2.2.3.5 Title of project: NF Calawah LWD Assessment Project (In top 8 priority in Quileute/stakeholder assessment of restoration needs)
Location: drainage of the N Fork Calawah River Basin, south shore along fire area, Rayonier lands, Quileute U&A. T29N, R11W, Sec 16, 17, 19, and 20
Issue/Limiting Factor being addressed: Forks Fire and subsequent timber salvage activities along with a lack of conifer re-establishment

within the riparian zones have led to depletion of LWD in this sub-basin. Restoration will improve bank stabilization, stream temperatures, provide for sediment filtering and trapping, and channel morphology.
Action to be taken: Ongoing HPA permit. Design and implementation of LWD placement project. Monitor fish presence per SRFB requirements.
Stocks being affected: NF Calawah Fall Coho, Summer and Fall Chinook, and Winter Steelhead, cutthroat trout.

2.2.2.4 Sol Duc River Watershed Priority Projects:

2.2.2.4.1 Title of project: Gunderson Creek Culvert Replacement T29R.
Location: Tributary of Sol Duc River, where creek passes under D 2000 Road. T29N, R13W Sec. 20. Land ownership: Rayonier; Quileute U&A.
Issue/Limiting Factor being addressed: Fish passage, access to habitat. Originally Medium Priority project in Quileute/stakeholder assessment of restoration needs, ranked high by NPCLE Tech. Committee in 2011.
Action to be taken: HPA for instream work. Design and construction bids for culvert work (including removal of old and installing new). Monitor fish presence per SRFB requirements.
Stocks being affected: Sol Duc Fall Coho, Sol Duc Winter Steelhead, cutthroat trout.

2.2.2.4.2 Title of project: Sol Duc Trib # 20.0335 Culvert Replacement.
Location: River mile 4 of tributary 20.00335.
Issue/Limiting Factor being addressed: Fish passage.
Action to be taken: HPA for instream work. Design and construction bids for culvert work (including removal of old and installing new). Monitor fish presence per SRFB requirements.
Stocks being affected: Sol Duc Fall Coho, Fall Chinook, and Winter Steelhead, cutthroat trout.

2.2.2.4.3 Title of project: Gunderson Off-Channel Restoration
Location: Off-channel ponds at Gunderson Creek 20 0304.
Issue/Limiting Factor being addressed: Juvenile access, hydrologic storage and lack of overwintering habitat.
Action to be taken: Reconnect ponds and wetlands with Gunderson Creek.
Stocks being affected: Sol Duc Fall Coho, Sol Duc Winter Steelhead, cutthroat trout.

2.2.2.4.4 Title of project: Gunderson Culvert Repair
Location: River Mile 0.5 at East Fork of Gunderson Creek # 20 0304a.
Issue/Limiting Factor being addressed: Fish passage.
Action to be taken: HPA for instream work. Design and construction bids for culvert work (including removal of old and installing new). Monitor fish presence per SRFB requirements.
Stocks being affected: Sol Duc Fall Coho, Sol Duc Winter Steelhead, cutthroat trout.

2.2.2.5 Dickey River Watershed Priority Projects:

No "High Priority" projects have currently been identified by the NPCLE Technical Committee in the Dickey River for 2011, but eleven priority projects have been identified (see appendix B).

2.3 Lake Ozette Basin

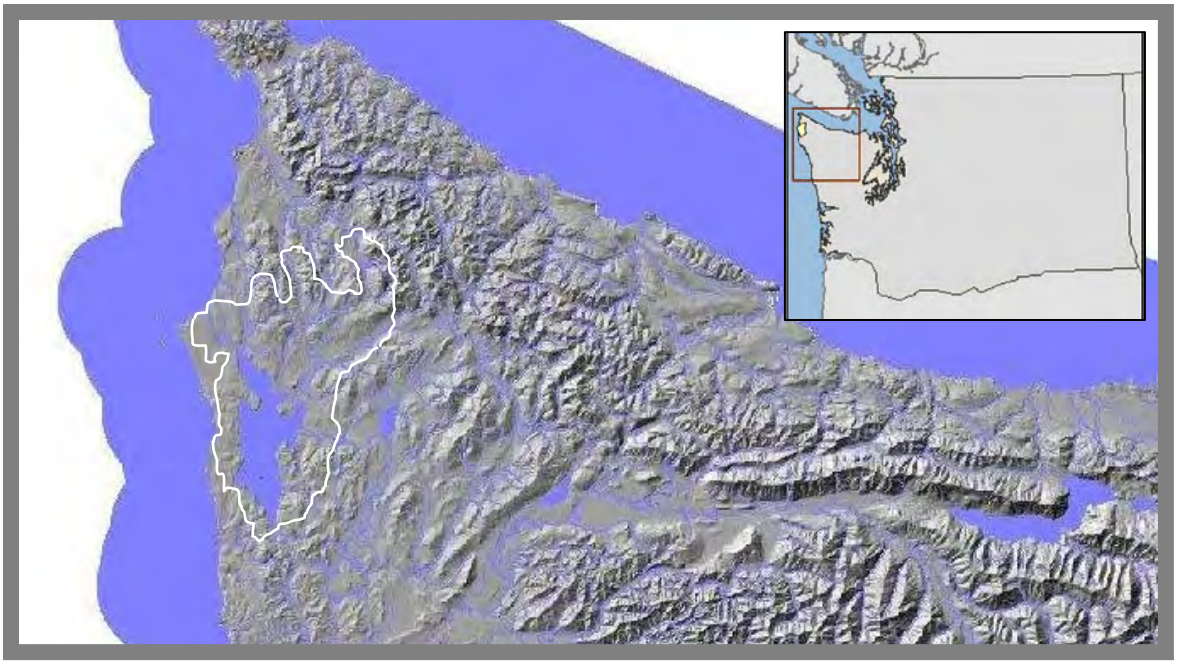


Figure 3. Relief Map of the Lake Ozette Basin

2.3.1 Ozette Watershed Background

Lake Ozette watershed is located along the northwest tip of the Olympic Peninsula in Washington State (Figure 1.1). Lake Ozette is situated on the coastal plain between the Pacific Ocean and the Olympic Mountains. The terrain of the Ozette watershed is slightly rolling to steep with a gradual increase in elevation from zero at sea level at the Ozette River mouth, to 40 feet at the Ozette Ranger Station, to just under 2000 feet at the watersheds highest point in the upper Big River watershed. Most of the watershed ranges from 200 to 800 feet elevation.

Lake Ozette is approximately 8 miles (12.9 km) from north to south and 2 miles (3.2 km) wide. The lake is irregularly shaped and contains 36.5 miles of shoreline (Ritchie, 2005). It includes several bays (North End, Deer, Umbrella, Swan, Ericson's, Boat, Allen's, and South End), distinct points (Deer, Eagle, Shafer's, Rocky, Cemetery, and Birkestol) and three islands (Garden, Tivoli, and Baby). With a surface area of 11.8 mi2 (30.6 km^2; 7,550 acres; 3,056 ha), Lake Ozette is the third largest natural lake in Washington State. The lake has a drainage basin area of 77 mi^2 (199.4 km^2), an average depth of approximately 130 feet (40 m), and a maximum depth of 320 feet (98 meters) (Dlugokenski et al., 1981). The average water surface elevation of the lake is 34 feet above mean sea level (10.4 meters; National Geodetic Vertical Datum of 1929 [NGVD 1929]). Extreme low and high water surface elevations of the lake range from 30.8 feet (9.4 m) to 41.5 feet (12.6 m) above mean sea level.

The Ozette River drains the lake from its north end, and there are no other outlet streams. The river travels approximately 5.3 miles (8.5 km) along a sinuous course to the Pacific Ocean. The total drainage area of the Ozette watershed at the confluence with the Pacific Ocean is 88.4 mi^2 (229 km^2). Coal Creek, which enters just downstream from the lake's outlet, is the largest tributary to the Ozette River. Several significant tributaries drain into Lake Ozette. The largest are Umbrella Creek, Big River, Crooked Creek, Siwash Creek, and South Creek (Table 1.1). Several smaller streams also feed the lake and include: Palmquist, Quinn, Elk, and Lost Net Creek, as well as several other unnamed streams.

The geology of the Ozette watershed (Figure 1.3) is an interesting mix of flat and gently sloping glacial and glacio-fluvial deposits situated between resistant knobs and small hills composed of Tertiary marine sedimentary rock units (mechanically weak silt and sandstones). Some glacial landforms extend for several square miles while others only occupy small valleys. Much of the land within the watershed is low-relief and contains numerous swamps, bogs, and wetlands. Other portions of the watershed (e.g., upper Big River) are steep and rugged and are underlain by Eocene age volcanic flows and breccias (Snavely et al., 1993).

Salmonid populations in the Lake Ozette watershed (in addition to the ESA-listed sockeye salmon) are kokanee (non-anadromous) salmon, coho salmon, chum salmon, Chinook salmon, steelhead, and coastal cutthroat trout. Coho salmon are native to the Ozette watershed and are sustained through wild production (WDF et al., 1994; WDFW, 2002), while Chinook and chum salmon are assumed to be critical, threatened, or potentially extirpated (Nehlsen et al.,1991; McHenry et al., 1996). Steelhead trout are native to the Ozette watershed and are sustained through wild production (WDF et al., 1994; McHenry et al., 1996; WDFW, 2002). Steelhead/rainbow trout primarily occur in the form of winter-run steelhead, but non-anadromous forms of the species may also be present. Winter-run steelhead in the Ozette watershed have been identified as a distinct stock in recent stock assessments conducted by WDFW (WDF et al., 1994; WDFW, 2002).

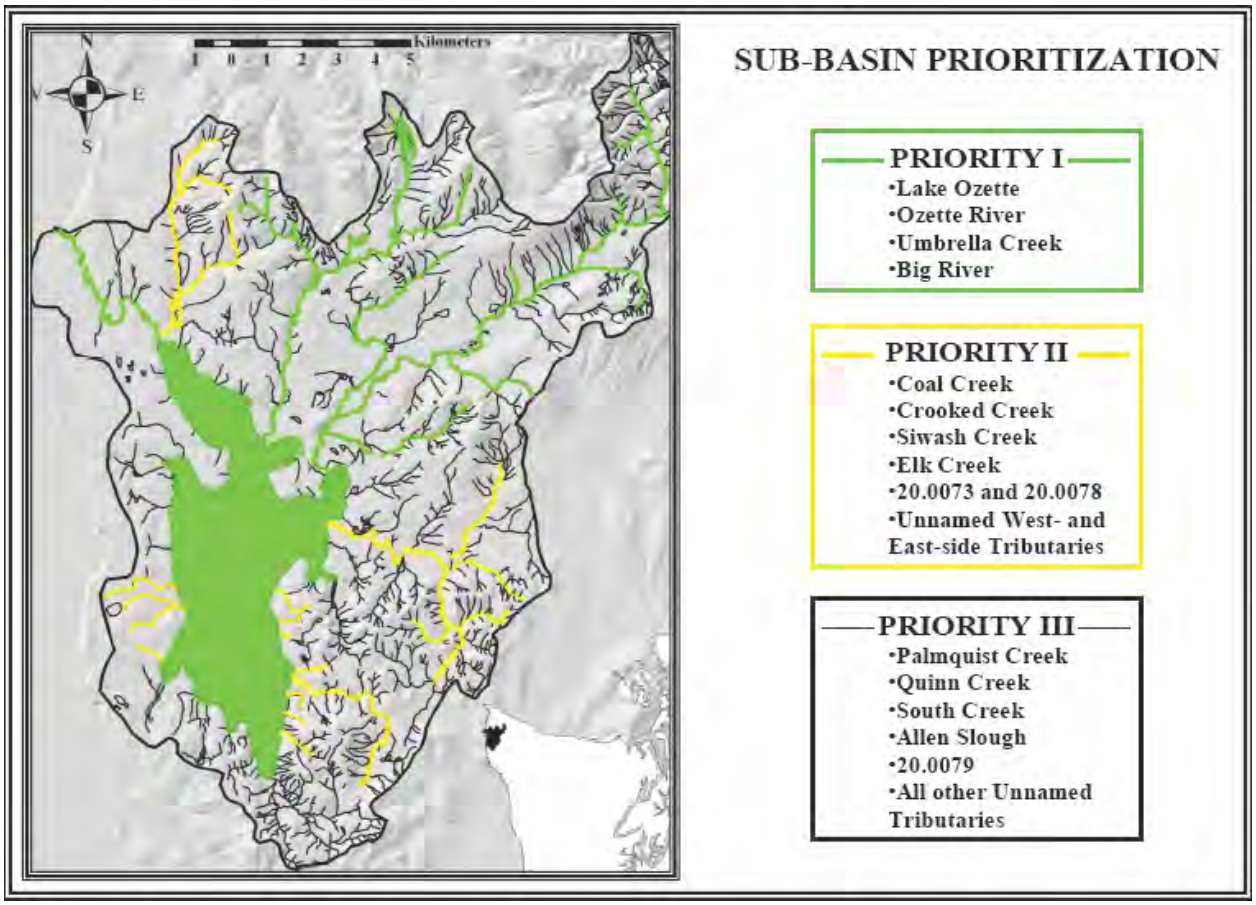
Currently the ESA-listed Lake Ozette sockeye salmon is sustained through both wild and hatchery-reared production (NMFS, 2009). An exhaustive review of current and historical population trends for the Lake Ozette sockeye can be found in the Lake Ozette Sockeye Recovery Plan and its associated technical document the Lake Ozette Sockeye Limiting Factors Analysis (NMFS, 2009; http://www.nwr.noaa.gov/Salmon-Recovery-Planning/Recovery-Domains/Puget-Sound/Lake-Ozette-Plan.cfm).

2.3.2 Ozette Watershed Project Prioritization

The Lake Ozette sockeye recovery strategy framework contains three key elements that can be used to inform which recovery actions are needed for salmon recovery in the Lake Ozette watershed. This framework used in the recovery plan can be generally applied to all species of concern within the Lake Ozette watershed

because it focuses on the critical processes, inputs, and habitat conditions that are fundamental to all salmonids during common life stages. Where these strategies are found to be inconsistent with recovery of other species of concern (e.g., subbasin prioritization, habitat prioritization by life stage), the prioritization scheme described in sections 1.2 and 1.3 is employed (following from Roni et al., 2002).

Figure 4. Lake Ozette Sockeye Recovery Plan Sub-Basin Prioritization



In the Lake Ozette sockeye recovery plan (NMFS, 2009; http://www.nwr.noaa.gov/Salmon-Recovery-Planning/Recovery-Domains/Puget-Sound/Lake-Ozette-Plan.cfm) 124 recovery actions have been identified and prioritized relative to the subbasin scheme in Figure 2.3.2.1. In 2010 the Lake Ozette Steering Committee initiated a process of ranking those actions in order to produce a 3-year implementation plan. For sockeye projects in the Ozette Basin prioritizations based upon this independent ranking will be used directly for selecting nominations to the annual NPCLE priority project list. For other salmonid stocks in the Ozette Basin, prioritization and ranking will be undertaken as described under sections 1.2 and 1.3. For the 2011 annual project list there were not any prioritized projects in this basin outside of those that might be proposed relative to the Lake Ozzette Sockeye Recovery Plan.

2.4 North Pacific Coast Independent Drainages:

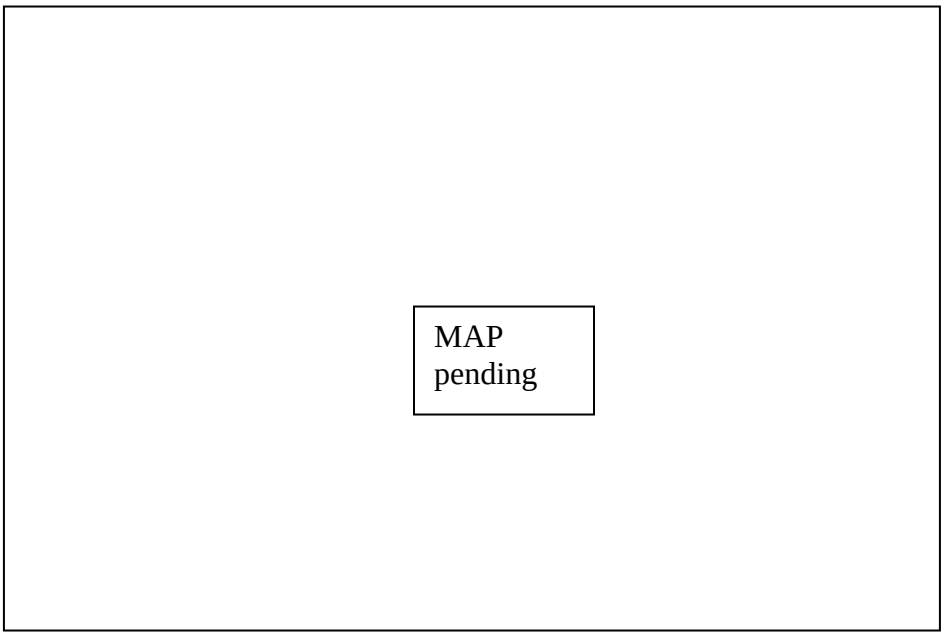


Figure 5. Relief Map of WRIA 20 Independent Drainages.

2.4.1 Independent Drainages Background:

The independent drainages of WRIA 20 are all relatively short, rain-fed watersheds that originate in the lower elevations of the coastal foothills and independently terminate in the ocean. The coastal interface of these drainages is at best a pocket estuary or a tidal marshland on an estuarine bay like the mouth of the Sooes/Tsoo-yess, but in some cases there is only a sub-surface seep through the surf zone. All of these drainages are under extreme tidal and coastal influence and in most cases provide limited access to anadromous fish. From their headwaters and along the majority of their course, until they enter the protected coastal strip of Olympic National Park and dump into the ocean, these independent drainages are all located within commercial timber production areas. Outside of the Sooes/Tsoo-yess and Waatch Rivers inside the Makah Reservation, systematically documented salmonid presence in these independent creeks and small rivers is limited, and only a few of the stocks are identified by WDFW in the SaSSI (WDFW, 2002) and Salmonscape (WDFW, 2010) data bases.

The Sooes/Tsoo-yess River (often identified as Sooes River in older literature) is the largest of the independent drainages with a watershed area of about 26,700 acres. The lower 5,000 acres are located within the exterior boundaries of the Reservation. Like the rest of the watershed, much of the land along the Sooes/Tsoo-yess mainstem is composed of gentle rolling topography, the result of a glacially carved valley. This landform typifies the western and southern portions of

the watershed. In particular, the lower mainstem and the largest tributary, Pilchuck Creek, which offers excellent spawning and rearing habitat because of the gentle topography, wetlands, side channels, and channel migration zones are frequent. The mainstem Sooes/Tsoo-yess wraps around the south and west side of the Crescent basalt formation as it leaves the Reservation. The Crescent basalt formation is composed of steep, landslide prone terrain. This composes much of the tributary drainage area on the right bank (east and north) side of the river, although the mainstem itself is relatively low gradient.

The mainstem Sooes/Tsoo-yess River from its mouth in Makah Bay to the reservation boundary is a low gradient floodplain river with a gravel and sand bed. Historically, the river contained numerous large LWD jams, some of which spanned the width of the channel. Due to the low gradient topography adjacent to the river and the complexity and roughness of instream wood, overbank flows and floodplain inundation were common events annually, which provided very diverse floodplain rearing habitat for salmonids. Tributaries entering the river either directly or through these river adjacent floodplain wetlands provided additional rearing habitat for salmonids and other aquatic species. Complex and connected floodplain habitat and pyrrhic zones, with numerous sources and sinks of water, have been identified both in the PNW (Peterson, 1982; Collin and Montgomery, 2002; Bramblett et al., 2002) and the world (Mertes, 1997, 2000; Hohausova et al., 2003; Wydoski and Wick, 2000) as essential to healthy river systems, the provision of refugia habitat at optimal times, and the production of freshwater fish species.

Past riparian timber harvesting and LWD removal from streams has dramatically reduced the amount of LWD and large complex jams in the lower Sooes/Tsoo-yess river. Historically, the Washington Department of Fish and Wildlife (WDFW) sanctioned LWD removal from rivers in this region by logging companies and occasionally initiated projects internally for wholesale wood removal (Kramer, 1953). Bulldozers, cable yarding systems, chainsaws, and dynamite were all used to remove wood from local stream channels. Furthermore, mainline road construction along the mainstem Sooes/Tsoo-yess River, which function as levees or dikes, isolated many tributaries and wetland complexes from flood inundation. These factors, along with increases in peak flows from land use action, have resulted in moderate channel incision along the lower mainstem Sooes/Tsoo-yess river.

The Sooes/Tsoo-yess basin contains runs of anadromous Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and chum salmon (*O. keta*), as well as anadromous and resident cutthroat (*O. clarki*) and steelhead/rainbow trout (*O. mykiss*). The U.S. Fish and Wildlife Service's Makah National Fish Hatchery (MNFH) began supplementation efforts in the lower Sooes/Tsoo-yess River in 1982, after a precipitous decline of Sooes/Tsoo-yess River Chinook. The hatchery prevented extirpation of this stock, and currently produces native Chinook and coho salmon as well as steelhead.

2.4.2 Independent Drainages Priority Projects:

None of the seven projects on the 2011 NPCLE Project List identified under Independent Drainages (Appendix B) were nominated to high priority status in this year's project review by the NPCLE Technical Committee.

In the Sooes/Tsoo-yess the Makah Tribe is currently in the process of developing a watershed assessment that will assist in developing a prioritization of potential recovery actions for the entire drainage. The assessment will identify specific habitats within the mainstem Sooes/Tsoo-yess River, as well as its three major tributaries, that require restorative actions due to degraded processes. Existing reach-level biological and chemical data will supplement the physical meso-habitat data collected to separate Sooes/Tsoo-yess river reaches by level of impairment.

2.5 North Pacific Coast Nearshore:

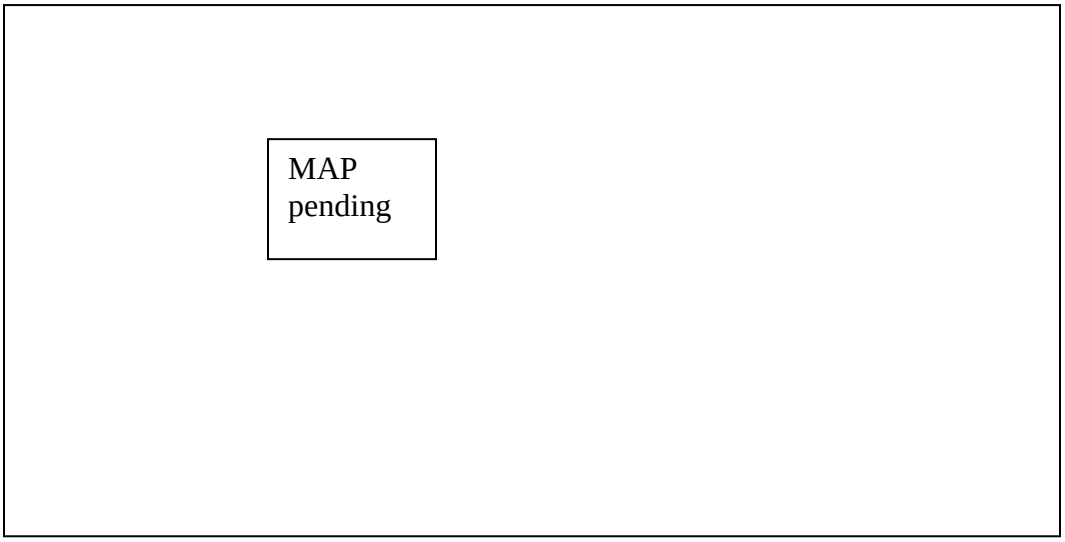


Figure 6. Relief Map of WRIA 20 Nearshore.

2.5.1 WRIA 20 Nearshore Background:

The nearshore component of WRIA 20 is a multi-jurisdictional area that is under the authority of tribal reservations, Usual and Accustomed Fishing and Hunting/Gathering tribal treaty jurisdiction, and/or federal ownership by Olympic National Park, the U.S. Fish and Wildlife Service, or the Olympic Coast National Marine Sanctuary. Given the overlapping tribal and federal regulation of this region, habitat protection and on-going monitoring of habitat conditions already occurs at multiple levels (Klinger et al, 2007). NPCLE salmon restoration activities within this zone have focused on promoting assessment studies of salmonid use of the nearshore for foraging and migration (Beechie et al, 2003), which up to this point in

time has not been systematically studied by any of the existing tribal or governmental authorities.

The WRIA 20 nearshore includes open coast, protected tidal areas inland of the numerous networks of offshore rocks and islands, and pocket estuaries fed by independent drainages. The limited estuaries include the mouth of the Hoh River, Makah Bay at the mouth of the Sooes/Tsoo-yess and Waatch Rivers, and a relatively extensive estuary at the mouth of the Quillayute River inshore of James Island and extending to the mouth of the Dickey River. Very little is presently known about how these regions serve as salmon habitat, so the first priority has been for baseline assessment. Relative to other coastal regions it is likely that the estuaries and protected tidal areas serve as foraging and holding areas for smolts and returning adult salmon, and may serve as a coastal migration zone for salmonids from both local and adjacent estuaries (Beechie et al, 2003; Shaffer, 2004a, 2004b).

2.5.2 Nearshore Priority Projects:

The following two priority salmon projects have been identified for the nearshore environment of WRIA 20 by the NPCLE technical Committee.

2.5.2.1 Title of project: WRIA 20 Nearshore Assessment of Salmonid presence.
Location: Makah Bay, mouth of the Quillayute River and mouth of the Hoh River.
Issue/Limiting Factor being addressed: Salmonid habitat use of nearshore estuaries and accompanying foraging resources.
Action to be taken: Beach seine sampling for salmonid adult and juvenile presence.
Stocks being affected: All anadromous stocks in WRIA 20 and any migrating adults or juveniles from adjacent systems.

2.5.2.2 Title of project: Nearshore Assessment of Salmonid genetic stocks.
Location: Makah Bay, mouth of the Quillayute River and mouth of the Hoh River.
Issue/Limiting Factor being addressed: Identification of salmonid stock ESUs utilizing the nearshore for migration and foraging.
Action to be taken: Sub-sample salmonid tissue from beach seines for genetic stock identification.
Stocks being affected: All anadromous stocks in WRIA 20 and any migrating adults or juveniles from adjacent systems.

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APPENDIX A

NPCLE 2011 PROJECT PRE-PROPOSAL APPLICATION FORMS

NORTH PACIFIC COAST (WRIA 20) SRFB Grant Round #12 2011 SALMON APPLICATION

The Salmon Recovery Funding Board (SRFB) has started its annual grant round. To submit a salmon habitat project application during this funding cycle you must contact your local Lead Entity for its application procedures and timelines

NOTE: All applications must be submitted through a Lead Entity.

PROJECT LOCATIONS:

North Pacific Coast Lead Entity (NPCLE) projects must be located within the geographic boundary of Water Resource Inventory Area 20 (WRIA 20), which includes the highlighted portions of western Clallam and Jefferson counties and their nearshore as illustrated in the map above.

North Pacific Coast
Lead Entity for Salmon Restoration

BASIC APPLICATION PROCEDURE FOR ROUND 12

(Spring/Summer 2011)

Applications are only available via PRISM:

- Applications must be submitted to the Salmon Recovery Funding Board (SRFB) through the Lead Entity by August 26th, 2011. It is an on-line application using the PRISM grant application program.
- To get started contact the North Pacific Coast (WRIA 20) Lead Entity Coordinator, Rich Osborne (360) 417-2569 rosborne@co.clallam.wa.us , 223 E 4th St., Suite 5, Port Angeles WA 98362 and UW Olympic Natural Resource Center, 1455 South Forks Ave., Office 6, Forks, WA 98331.
  and/or
- Go to the SRFB website grant application page: **http://www.rco.wa.gov/grants/grant_news.shtml**
  and/or
- Go to the SRFB website and download the program "PRISM" on to the computer you want to use to enter your proposal http://www.rco.wa.gov/prism/install.shtml.

General Instructions:

Fill out the NPCLE Proposed Project Interest form (pages 7-8 of this application package) and submit it to NPCLE coordinator Rich Osborne at any time throughout the year. Then go to the SRFB website and download the PRISM program on to your computer. Once the PRISM program starts you will be given the opportunity to obtain a *user name* and *password* allowing you to enter a new project.

To start entering the project information that is minimally necessary for a pre-proposal select "*Start a New Application.*" From here you begin entering information at the "Project Level" in PRISM, which will include the tabs of *Roles*, *Project Description*, *Funding Request*, and the primary *Salmon Species* affected. You will also need to insert four (4) PDF attachments: an initial budget of expenses, a project location map, a site or parcel map, and a preliminary sketch or illustration of the project design (if appropriate).

Please contact either Rich Osborne, 360-417-2569 (rosborne@co.clallam.wa.us) or Kathryn Moore, 360-902-0210 (Kathryn.Moore.@rco.wa.gov) for clarification or assistance in getting into PRISM.

Application Tips:

- Turn in a NPCLE "Proposed Project Interest Form" (pages 7-8 of this application package) to Rich Osborne, 360-417-2569 (rosborne@co.clallam.wa.us), 223 E 4th Street, Ste. 5, Port Angeles, WA.
- Consult the SRFB Manual 18 that is available on line: (**http://www.rco.wa.gov/documents/manuals&forms/Manual_18.pdf**)

North Pacific Coast Lead Entity
SRFB Round 12 Application Schedule

(Spring 2011)

SCHEDULED ITEM	DATE
Official Release of the NPCLE SRFB Application Package (Request for Pre-Proposals)	**April 3rd**
Pre-Proposals due to Lead Entity Coordinator and entered into PRISM.	**May 6th**
Pre-proposals to NPCLE Technical & Citizen Committee for review.	**May 9th**
Formal oral presentations of proposals to NPCLE Citizen and Technical Committees (Regular NPCLE meeting).	**May 17th**
SRFB Technical Review Panel site visit.	**June 16th**
Final Q & A between applicants and the Citizen and Technical Committees (Regular NPCLE meeting).	**July 19th**
Final Draft proposals submitted & sent out for final review.	**July 25th**
TC final project evaluation.	**August 9th**
CC/IG ranks and approves projects for submittal (Regular NPCLE meeting).	**August 16th**
WCSSP Regional Board meets to endorse lists from LEs.	**August 17th**
Ranked project list and final applications submitted to SRFB.	**August 26th**

The Salmon Recovery Funding Board (SRFB) also offers "Successful Applicant Workshops" that can be of great assistance in understanding the SRFB policies and project application and management procedures. ALL applicants and grant recipients are encouraged to attend workshops at least once every other year.

Successful Applicants:

Successful applicants contact the Lead Entity in the location of their proposed project as early as possible so that stakeholders have plenty of time to be informed and potential partners can collaborate. Lead Entity Technical Committee members can be especially helpful in the early stages of project development.

SRFB Manual 18 that is available on line: (http://www.rco.wa.gov/documents/manuals&forms/Manual_18.pdf) is the one-stop source for everything you need to know about the application process and future billing and reporting requirements. If your project is awarded funding, following grant awards, RCO staff will offer Go To meeting conference call Successful Applicant Workshops to review project contracts and billing. Contact RCO staff or visit the agency's grant news section of its Web site at: www.rco.wa.gov/grants/grant_news.shtml/ for the most current information.

SRFB Round 12 NPCLE Pre-Proposal Requirements

(Pre-proposals due May 6th, 2011)

PRE-PROPOSAL STEPS (DUE May 6th 2011):

Once On PRISM (begin entering your project):

1. Roles of the project team.
2. A project description (1-2 pages maximum- it can be a standard "abstract" of 1-2 paragraphs but should specifically address how it benefits salmon and whether it is a "priority project" identified in the NPCLE Salmon Restoration Strategy or the Lake Ozette Sockeye Recovery Plan, or some other publically reviewed restoration strategy).
3. Estimated budget including 15% match (totals entered into PRISM, but details attached as a separate budget of expenses presented in any format preferred by the project applicant; see below).
4. Identification of the target salmon species affected by the project (entered into PRISM).

Attach the following separate documents into the PRISM application (attaching a file in PRISM is accomplished by clicking on the "Attachments" tab at the top of the page):

5. Evidence that the project is part of a recovery plan or lead entity strategy (Identified on the NPCLE Form and/or "project description").
6. A project location map (Add as an attachment in PRISM).
7. A site or parcel map (Add as an attachment in PRISM).
8. A preliminary design plan or sketch for restoration projects (Add as an attachment in PRISM if appropriate to the type of project).
9. The print-out from PRISM of this information, along with the NPCLE Project Interest Form constitutes the full pre-application. If the pre-application is accepted, then the rest of the appropriate fields in PRISM must be completed by July 25th, 2011.

NPCLE APPLICATION REVIEW CRITERIA:

The general evaluation criteria used by the NPCLE Technical Committee and Citizen Committee in reviewing projects proposed for the 12th Round 2011 SRFB Grants includes considerations of:

Project Strategy
Project Method
Habitat Quality
Habitat Quantity
Salmonid Life Histories
Species Diversity (current)
Riparian forest and native vegetation
Local Community Support
Sediment Control
Connectivity
Applicant is or has a project sponsor.
Likelihood of satisfying the granting agency.
Accuracy of budget.
Urgency for immediate implementation.
Qualifications

(A copy of the form used by technical reviewers for proposal evaluation is presented on the next pages)

North Pacific Coast Lead Entity: PROJECT REVIEW FORM

PROJECT NAME / # : _____

CODE	CATEGORIES PROJECT STRATEGY (score only as many as appropriate)	Category Description	Score Range	SCORE (Reviewer)
P/P	Preservation/Protection.	Obtains permanent protection from direct human impacts to habitat conditions through conservation easements or land purchase.	0 to 10	
ASST	Assessment to define projects and/or to fill data gaps.	Conducts archival and empirical studies to document or ground truth current conditions prior to identifying specific restoration actions.	0 to 10	
RP_{long}	Restoration of Processes - Long term	Undertakes actions that support natural processes to permanently recover habitat conditions.	0 to 10	
RPH_{short}	Restoration of Physical Habitat - short term	Undertakes engineered restoration of degraded habitat to immediately improve habitat conditions on a temporary time scale.	0 to 5	
RFP	Reconnect Fragmented / Isolated Habitats	Undertakes actions that repair physical corridors and restores functions of previously connected habitat areas.	0 to 10	

PROJECT METHOD TYPE (score only as many as appropriate)		Category Description	Score Range	SCORE (Reviewer)
ACQ	Acquisition/Easement	Purchase and/or a contractual agreement to maintain or improve salmon habitat conditions.	0 to 4	
FPsg	Fish Passage	Remove stream-crossing structures or restore, upgrade and replace stream-crossing structures to allow migration of all fish life history stages and the natural movement of streambed material and large woody material.	0 to 4	
RD	Road Decommissioning	Elimination of existing road(s) and reestablishment of natural channel configuration and natural habitat functions.	0 to 4	
DRN	Drainage / Stabilization	Increase water crossing structure sizes to better accommodate peak flows. Increase number of cross drains to avoid excess flow into any drainage, and/or remove side cast at segments in risk of failure.	0 to 4	
FP&W	Flood Plain & Wetland	Remove, relocate and re-design road segments, dikes, bank armoring, revetments and approach fills that are specifically impacting floodplain or wetland function and hydrology.	0 to 4	
LWD	Large Woody Debris Placement	Design and place engineered woody debris accumulations and logjam structures to enhance channel stability, stabilize spawning substrate, accumulate natural wood, and/or to protect significant habitat features for the maintenance of productive fish habita	0 to 4	
INV	Invasive Species Control	Inventory and remove invasive species within basins using appropriate methods for removal and control. Should also include restoration, planting and monitoring plans.	0 to 4	
RIP^{M}	Riparian Planting	Fence riparian areas from livestock, relocate parallel roads and other infrastructure from riparian areas. Promote appropriate age and species composition of vegetation.	0 to 4	
$STRCT^{Remv}$	Instream structure removal / abandonment	Permanent removal of culverts, failed bridges, cedar spalts, and other anthropogenic instream blockages so that the channel returns to natural conditions.	0 to 4	
$STRCT^{Imp}$	Instream Structure Improvement/replacement	Improvement of existing culverts, bridges, or other failed instream structures so that the channel returns to adequate flow for the support of salmon habitat.	0 to 4	
OTH	Other	Special assessments, experimental techniques, quantitative and spatial modeling or the application of new technology.	0 to 4	

(continued)

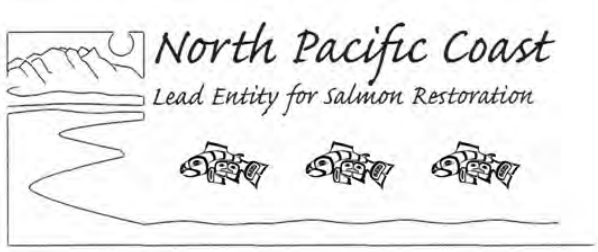
(continued on the next page)

(example Project Review Form continued from the previous page)

(continued from other side)

HABITAT AND BIOLOGY ADDRESSED (Score low to high for how it is improved or maintained in excellent condition)		Category Description	Score Range	SCORE (Reviewer)
HAB^{QLTY}	**Salmonid Habitat Quality**	Water quality, pool frequency, channel composition, LWD frequency positively affected by the project .	**0 to 4**	
HAB^{QNTY}	**Salmonid Habitat Quantity**	Total improved stream length/estuary area etc. after project completion.	**0 to 4**	
SLH	**Salmonid Life Histories**	Range of salmon life history stages addressed and positively affected by the project (e.g. spawning, rearing, migration).	**0 to 4**	
SD^{C}	**Species Diversity (current)**	Number of runs positively affected.	**0 to 4**	
RIP^{H}	**Riparian forest and native vegetation**	Are riparian areas healthy with native vegetation or will invasive species and/or restoration be addressed?	**0 to 4**	
SED	**Sediment Control**	Anthropogenic or geomorphic- sediment issues and/or their restoration positively affected by the project.	**0 to 4**	
CNCTY	**Salmonid habitat connectivity**	Improvement or maintenance of connectivity to functional or high quality habitat.	**0 to 4**	

LIKELIHOOD OF SUCCESS (Score low to high for each)		(score applicant based on track record and documented resources)	Score Range	SCORE (Reviewer)
Spnsr	**Applicant is or has an appropriate project sponsor.**	How complete and balanced is the project team?	**0 to 4**	
LOFG$_{rant}$	**Likelihood of satisfying the granting agency.**	How does this project address the funding requirements of the granting agency?	**0 to 4**	
BUDGT	**Accuracy and completeness of budget.**	Are projected expenses realistic relative to documented costs and are they adequate?	**0 to 4**	
URG	**Urgency for immediate implementation.**	Are there timing issues for this projects success that make it more important to move forward now?	**0 to 4**	
QUAL	**Qualifications**	Qualifications / track record of sponsor/partners	**0 to 4**	
COMM	**Local Community Support**	Is there endorsement (e.g support letters) of affected landowners, support by economic sectors, community awareness and adequate buy in?	**0 to 4**	
			TOTAL:	



PROPOSED PROJECT INTEREST FORM

- **Name of Project, Sponsor(s) and Total Estimated Cost:**_____

_____

_____ $ _____

- **Location of Project Site** (Describe &/or Lat./Long.)**:**_____

_____

_____

- **Project Description**: (A short 1-2 paragraph narrative description of the proposed project emphasizing how it will benefit salmon):

_____

_____

_____

_____

_____

_____

_____

_____

_____

NPCLE Project Interest Form (if desired use this page to show a figure or diagram)

REFERENCES:

McMillan, J.R. and J.C. Starr, 2008. Identification and prioritization of salmon tributaries for conservation in the Hoh River basin, Washington State. Wild Salmon Center, Portland, Oregon. (available on HWS: http://hws.ekosystem.us)

NOAA, 2009. Lake Ozette Sockeye ESA Recovery Plan. Final plan approved May 9th, 2009. http://www.nwr.noaa.gov/Salmon-Recovery-Planning/Recovery-Domains/Puget-Sound/Lake-Ozette-Plan.cfm).

North Pacific Coast Lead Entity (NPCLE), 2007. North Pacific Coast Lead Entity 2007 Initial Habitat Strategy for Salmonid Projects Considered within WRIA 20. Unpublished Report. NPCLE, Port Angeles, WA, 71 p. (available on HWS: http://hws.ekosystem.us)

North Pacific Coast Lead Entity (WRIA 20) 3rd Draft 2010 Salmon Restoration Strategy, April 12th, 2010. Unpublished Report. NPCLE, Port Angeles, WA, 68 p. (approved for use in SRFB Round 11 on April 20th; available on HWS: http://hws.ekosystem.us).

North Pacific Coast Lead Entity (WRIA 20) 2010 Salmon Restoration Strategy. NPCLE, Port Angeles, WA, 75+ p. (http://hws.ekosystem.us).

North Pacific Coast Lead Entity (WRIA 20) 2011 Salmon Restoration Strategy. NPCLE, Port Angeles & Forks WA, 75+ p. (http://hws.ekosystem.us).

Roni, P., T. J. Beechie, R. E. Bilby, F. E. Leonetti, M. M. Pollock, and G. R. Pess, 2002. A Review of Stream Restoration Techniques and a Hierarchical Strategy for Prioritizing Restoration in Pacific Northwest Watersheds. North American Journal of Fisheries Management 22:1–20.

Roni, P., T.J. Beechie, and G.R. Pess, 2003. Prioritizing potential restoration actions within watersheds. Pages 60 – 73 in Beechie, T.J., E.A. Steel, P. Roni, and E. Quimby (editors). Ecosystem recovery planning for listed salmon: an integrated assessment approach for salmon habitat. U.S. Dept. Commerce, NOAA Technical Memo. NMFS-NWFSC-58.

Smith, Carol J., 2000. Salmon and Steelhead Habitat Limiting Factors in the North Coastal Streams of WRIA 20. Washington State Conservation Commission, Lacey, Washington State. 147 p. (available on HWS: http://hws.ekosystem.us)

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Washington State Forest Practices Board (WFPB), 2001. Forest and Fish Plan. Washington Department of Natural Resources (WDNR), Olympia, WA. Available online: http://www.forestandfish.com.

Water Resource Inventory Area (WRIA) 20 Implementation Body, 2010. WRIA 20 Detailed Implementation Plan. Approved for public review on March 24th, 2010. Available on Clallam County website: www.clallam.net).

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* * *

APPENDIX B

NPCLE ANNUAL RESTORATION PROJECT LIST

NPCLE 2011 Restoration Project List

2011 Priority Project STATUS	BASIN	Project Name	Description	Targeted Limiting Factors
High	HOH	Hoh Basin LIDAR	LIDAR entire basin from the mouth to as far into ONP as financially allowed.	Geomorphology, hydrology of basin
High	HOH	S. Fork Reach Assessment	Main stem assessment for most effective salmon restoration projects.	Geomorphology, hydrology of reach
High	HOH	Lower Pole Creek- Phase 2	Flood plane rehab.	Fish passage access-culvert
High	HOH	Allen's Marsh	Consolidation of flow and off-channel habitat access	Fish passage access-culvert
High	BOGACHIEL	Mill Creek Culvert Replacement	Replace Mill Creek culvert on Russel Road with a bridge.	Fish passage access-culvert
High	BOGACHIEL	Furhman Creek Culvert Replacement	Culvert replacement on important Bogachiel tributary	Fish passage. Reconnection of habitat.
High	CALAWAH	Sitkum R. 2900-072 Road Decommissioning	Decommission convert to trail.	Sediment control
High	CALAWAH	FS 2912 and FS 2912-060 Road Decommisiioning	Decommission FS Road 2912 and 2912-060 on the Sitkcum R. watershed and convert to trail.	Sediment control
High	CALAWAH	NF Calawah Culvert Replacement 2922 Rd	Replace culvert at FS Road 2922, MP 2.3 (Latitude & Longitude:-124.103648 48.022074).	Access- culverts
High	CALAWAH	FS 2923-015 Road Decommissioning	Decommission FS Road 2923-015 on the Sitkcum R. watershed, South Fork Calawah *(un-prioritized "06)*	Sediment control
High	CALAWAH	NF Calawah LWD Assessment	Feasibility Study to determine the need for ELJ placement in mainstem @RM 0.0 - RM 10.	Sediment control - temperature, hydrology
High	SOL DUC	Gunderson Creek T29R 13W-8 Culvert Replacement	Replace culvert T29R 13W-8 on Sol Duc tributary Gunderson Creek (DNR) DNR has scheduled for 2011.	Fish passage access -culvert
High	SOL DUC	Sol Duc Trib # 20.0335 Culvert Replacement	Culvert replacement on Sol Duc tributary # 20.0335 at RM 0.4 (WRIA 20).	Fish passage acess-culvert
High	SOL DUC	Gunderson Off-Channel Restoration	Restore function of off-channel ponds on Sol Duc tributary Gunderson Cr. (20.0304) (PCSC)	Juvinile access - hydrology
High	SOL DUC	Gunderson Culvert Repair RM 0.5	Repair culvert on Sol Duc tributary at the East Fork of Gunderson Cr. @ RM 0.5 (20.0304a) (PCSC).	Fish passage acess-culvert
High	NEARSHORE	Nearshore Assessment of Salmonid presence	Beach Seine selected nearshore locations near river mouths for adult & juvinile presence.	Species and life history presence
High	NEARSHORE	Nearshore Assessment of Salmonid genetic stocks.	Sub-sample salmonids from beach seines for genetic stock identification.	Species and life history presence

(continued on the next page)

Med	HOH	**Cedar Spalt Assessment & Removal in the Lower Hoh Tribittaries, some Rayonier property.**	Winfield- 3 & 4, Braden Creek, Fullerton Tributary, Lost Creek	Fish passage and seasonal access.
Med	HOH	**Elk Creek tributary**	Eliminate culvert blockage(s)	Access - Culvert(s)
Med	HOH	**Noxious Weed Control**	Maintain elimination of Knot weed, consider implementing control measures on other invasive species.	Restore off-channel habitat quality
Med	HOH	**Recreational impact management**	Signage / outreach for Redd protection	Reproductive habitat disturbance
Med	HOH	**Hoh Springs Weirs**	Repair Fish-Way	Access
Med	BOGACHIEL	**Kitchel Property Bank Stabilization**	Stabilize bank erosion along Kitchel property-fish priority needs assessment	Sediment control
Med	CALAWAH	**FS 2900 A Road Stabilization (some being funded)**	Road Stabilization on FS 2900 "A" Road *(un-prioritized in 2006)*	Sediment control
Med	CALAWAH	**FS 2900-030 Road decommission**	Decommission road from MP 2.0 - MP 3.6	Sediment reduction
Med	SOL DUC	**Lower Lake Creek Restoration (assessment?)**	LWD, riparian planting	Riparian restoration
Med	SOL DUC	**Bear Creek LWD**	LWD assessment placement on Sol Duc tributary Bear Creek to RM 2.0 (USFS)	Sediment control - temperature, hydrology
Med	SOL DUC	**South Fork Sol Duc LWD**	LWD placement on South Fork Sol Duc @ RM 2.0 (USFS).	Sediment control - hydrology
Med	SOL DUC	**Wisen Creek Culvert Replacements**	Replace 3 culverts on Sol Duc tributary Wisen Creek (20.0336) (PCSC)	Fish passage
Med	DICKEY	**Coal Creek Culvert-to-Bridge**	Replace culvert with a bridge at the 5000 Line Road (Rayonier).	Fish passage acess-culvert
Med	DICKEY	**Gunderson Creek Culvert Replacements**	Replace culverts on E. Fork Dickey at Gunderson Creek Tributary (20.118) RM 0.1 and 1.4 (WRIA 20 report)	Fish passage acess-culvert
Med	DICKEY	**Coal Creek Fish Passage Culvert**	Repair culvert on West Fork Dickey tributary, Coal Cr. (CL012690) RM +1.0 (Rayonier)	Fish passage acess-culvert
Med	DICKEY	**Lower Dickey Culvert Replacement**	Replace culvert (Cl006896) on the Lower Dickey (Rayonier)	Fish passage acess-culvert
Med	DICKEY	**Sands Creek Culvert Replacement**	Replace culvert (CL000893) on the Dickey Lake tributary, Sands Creek (Rayonier)	Fish passage acess-culvert
Med	DICKEY	**West Fork Dickey RM 0.3 Culvert Replacement**	West Fork Dickey RM 0.3 Culvert Replacement	Fish passage acess-culvert
Med	DICKEY	**West Fork Dickey RM 0.9 Culvert Replacement**	West Fork Dickey RM 0.9 Culvert Replacement	Fish passage acess-culvert
Med	DICKEY	**Ponds Creek Culvert Replacement**	Ponds Creek Culvert Replacement	Fish passage acess-culvert
Med	DICKEY	**East Fork Dickey RM 1.5 Culvert Replacement**	East Fork Dickey RM 1.5 Culvert Replacement	Fish passage acess-culvert
Med	DICKEY	**Coal Creek Culvert Replacements QNR**	QNR identified culverts on Coal Cr.: (A-24,2), (A-23, 7), (A-29A,2), (A-42,6), (A-20,8)	Fish passage acess-culvert
Med	DICKEY	**Coal Creek Culvert Replacements Rayonier**	Rayonier identified culverts on Coal Cr.: CL009486 (and prioritized fish passage one above: CL012690).	Fish passage acess-culvert

(continued on the next page)

Med	Independent Drainages	Mosquito Creek Assessment	Mosquito Creek needs a full assessment of fish presence and habitat restoration needs.	Species and life history presence
Med	NEARSHORE	Forage fish assessment of primary river mouths.	Beach sample substrate for the presence of forage fish spawning sites.	Foraging habitat quality
Med	NEARSHORE	Forage fish genetic assessment .	Sub-sample eggs from beach samples & forage fish from beach seines for genetic stock identification.	Foraging habitat quality
Low	HOH	Middle Hoh (mp7.7)	LWD placement -Mitigatation for Upper Hoh Road Emergency Rip-Rap	Re-Connect Off-channel habitat
Low	HOH	Hoh Brandeberry Lots	LWD placement	Protect Existing Off-channel Habitat
Low	HOH	Lower Hoh mainstem/side ch.	LWD placement -Mitigatation for Oil City Road Emergency Rip-Rap	Restore off-channel habitat quality
Low	HOH	Hoh Reservation Slough	LWD placement -Mitigatation for Oil City Road Emergency Rip-Rap	Restore off-channel habitat quality
Low	HOH	Owl Creek	Road stabilization - mass wasting	Road maintenance
Low	HOH	Canyon Creek	Eliminate culvert blockage(s)	Access - culvert(s)
Low	HOH	Red Creek	Remove cedar spalt blockages	Access - culvert(s)
Low	HOH	Rock Creek	Eliminate culvert blockage(s) & weirs	Access - culvert(s)
Low	HOH	RB tributary to Iron Maiden ? LB	Eliminate culvert blockage(s)	Access - culvert(s)
Low	HOH	Hell Roaring Creek	Eliminate culvert blockage(s)	Access - culvert(s)
Low	HOH	Elk Creek -1	Tier 2 Priority Tributary for Habtiat Protection	Protect Intact Habitat/Processess
Low	HOH	Taft Pond (ONP)	Eliminate potential for stranding juviniles	Access
Low	HOH	Upper Hoh Rd. Realighnment	Allow Channel migration	Road mitigation
Low	HOH	East Twin Creek (ONP)	Culvert replacement	Access
Low	HOH	Boundary Pond	Main stem access	Access - fish passage
Low	QUILLAYUTE	Mora & Thunder Bank Stabilization : ONP low	LWD recruitment & riparian restoration along Thunder field and Mora campground w/native vegetation.	Riparian restoration
Low	DICKEY	Skunk Creek Culvert Repair	Replace with larger culverts on E. Dickey tributary Skunk Creek T30R 14W -9. RY-9000, 317+20 (DNR).	Access - culverts

Low	**Independent Drainages**	**Goodman LWD**	ELJ placement - The middle reaches of Goodman Creek have low levels of LWD.	Hydrology- temperature, cover
Low	**Independent Drainages**	**Mosquito Creek Culvert Blockages**	Eliminate 2 sequential culvert blockages: TRS26N13W10, G 3700 Rd.	Access - culverts
Low	**Independent Drainages**	**LB Tributary Goodman Cr. Culvert Blackage 1**	Eliminate culvert blockage: TRS 27N14W24, 3300 Rd.	Access - culverts
Low	**Independent Drainages**	**LB Tributary Goodman Cr. Culvert Blackages 2**	Eliminate culvert blockages: TRS 27N14W24, 3310 Rd.	Access - culverts
Low	**Independent Drainages**	**RB Trib. Goodman Cr. Culvert Blockages G2100 Rd.**	Eliminate 4 sequential culvert blockages: TRS27N2W16 toTRS27N16W16, G 2100 Rd.	Access - culverts
Low	**Independent Drainages**	**RB Trib. Goodman Cr. Culvert Blockages G2170 Rd.**	Eliminate 2 sequential culvert blockages: TRS27N13W16, G 2170 Rd.	Access - culverts
Need More Information	**HOH**	**Winfield-2**	Road maintenance - mass wasting	Sediment control
Need More Information	**HOH**	**RB Tributary to Hoh Riv-1**	Eliminate culvert blockage(s)	Access - culvert(s)
Need More Information	**HOH**	**Nolan Creek**	Remove cedar spalt blockages	Access - Spalts
Need More Information	**HOH**	**Nolan Creek-2**	Eliminate culvert blockage(s)	Access - culvert(s)
Need More Information	**HOH**	**RB Tributary to Hoh Riv-2**	Eliminate culvert blockage(s)	Access - culvert(s)
Need More Information	**HOH**	**RB Tributary to Hoh Riv-3**	Eliminate culvert blockage(s)	Access - culvert(s)
Need More Information	**HOH**	**RB Tributary to Hoh Riv-4**	Eliminate culvert blockage(s)	Access - culvert(s)
Need More Information	**HOH**	**RB Tributary to Hoh Riv-5**	Eliminate culvert blockage(s)	Access - culvert(s)
Need More Information	**CALAWAH**	**NF Calawah Revegetation**	NF Calawah, south shore above fire area, Alder to conifers (Rayonier land)	Water Temperature (riparian cover & LWD)
Need More Information	**SOL DUC**	**Camp Cr. Culvert Replacement & Bank Stabilization**	Culvert replacement & bank protection along Lee Roarke & Bloedel Timberland property (Rayonier)	Access - culvert(s)
Need More Information	**SOL DUC**	**Shuwah Creek LWD Placement**	Add LWD to Sol Duc tributary Shuwah Creek (0311) (PCSC)	Hydrology, temperature, cover
Need More Information	**SOL DUC**	**Lake Creek Culvert Repair**	Clean out & repair fish passage at culvert CL000729 at Lake Creek at Lake Pleasant (Rayonier land)	Fish Passage
Need More Information	**LAKE OZETTE**	**Not Available: See Lake Ozette Sockeye Recovery Plan.**	The Lake Ozette Sockeye Steering Committee is presently identifying priority salmon projects.	N.A.

* * *

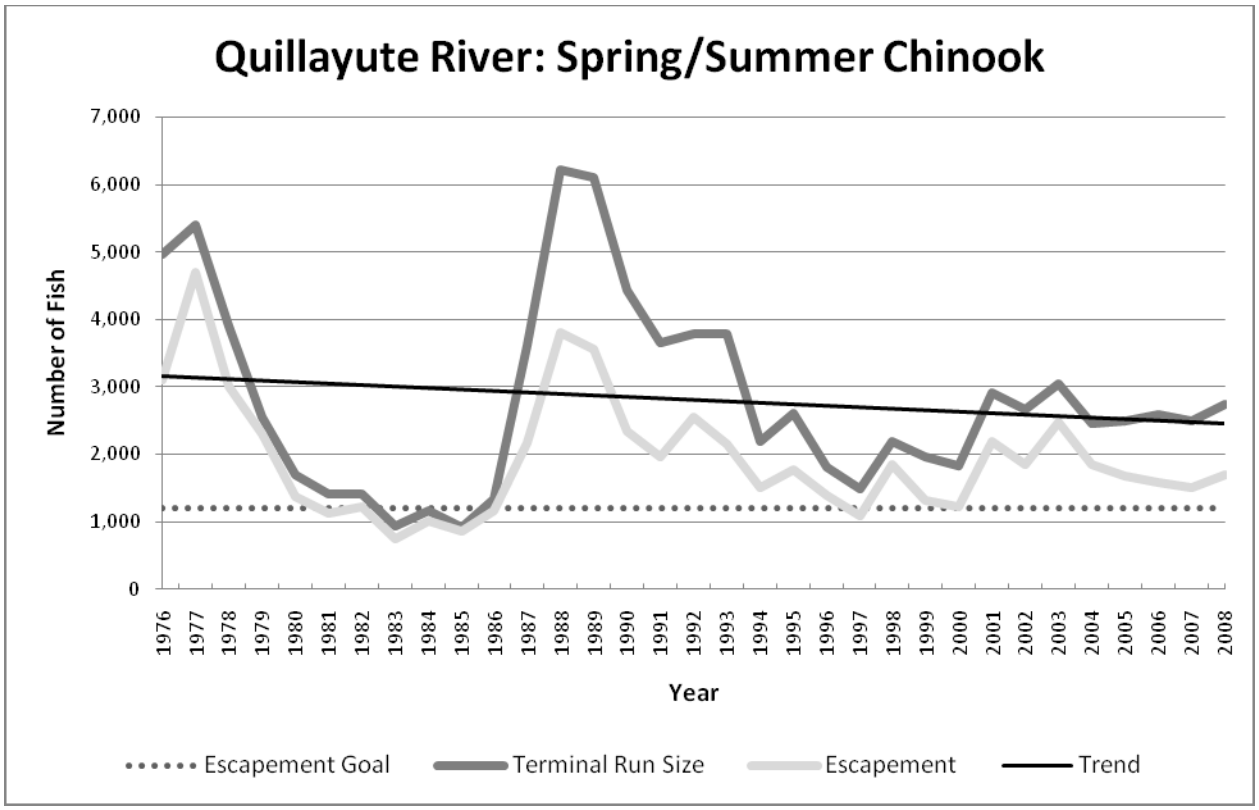
APPENDIX C

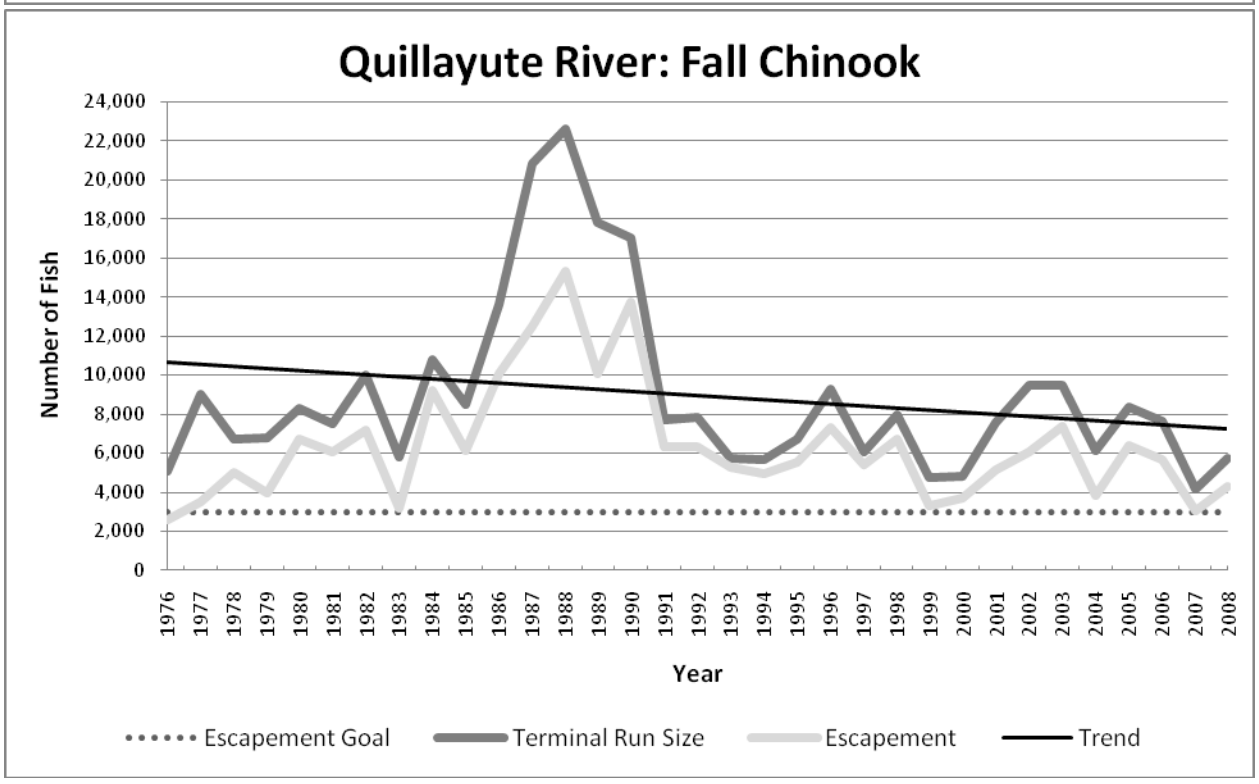
WRIA 20 SALMONID STOCK

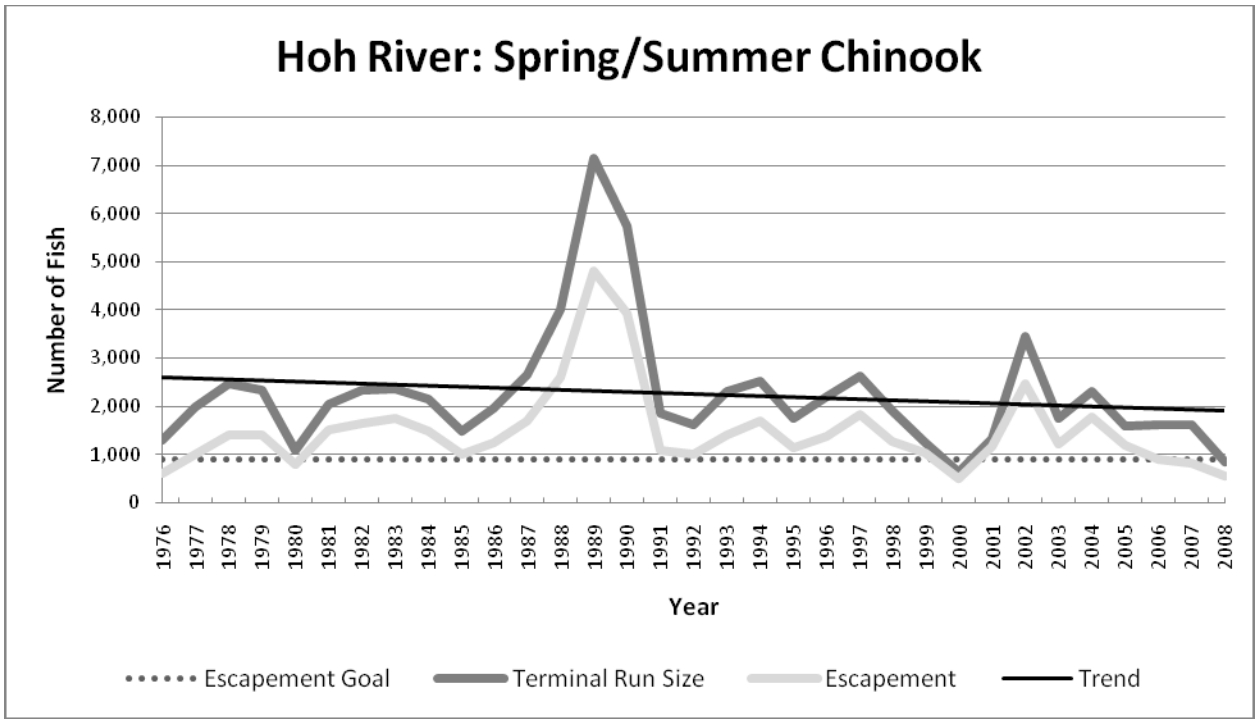
TREND GRAPHS

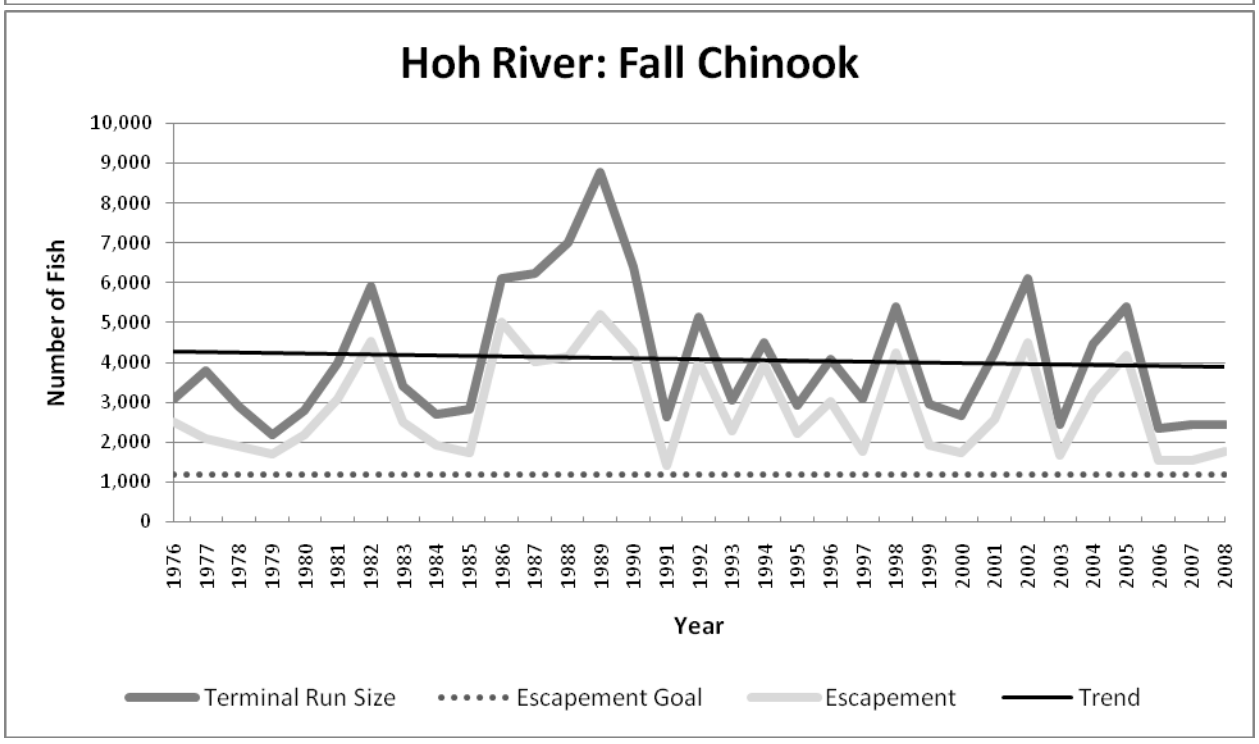
Chinook:

Major Rivers





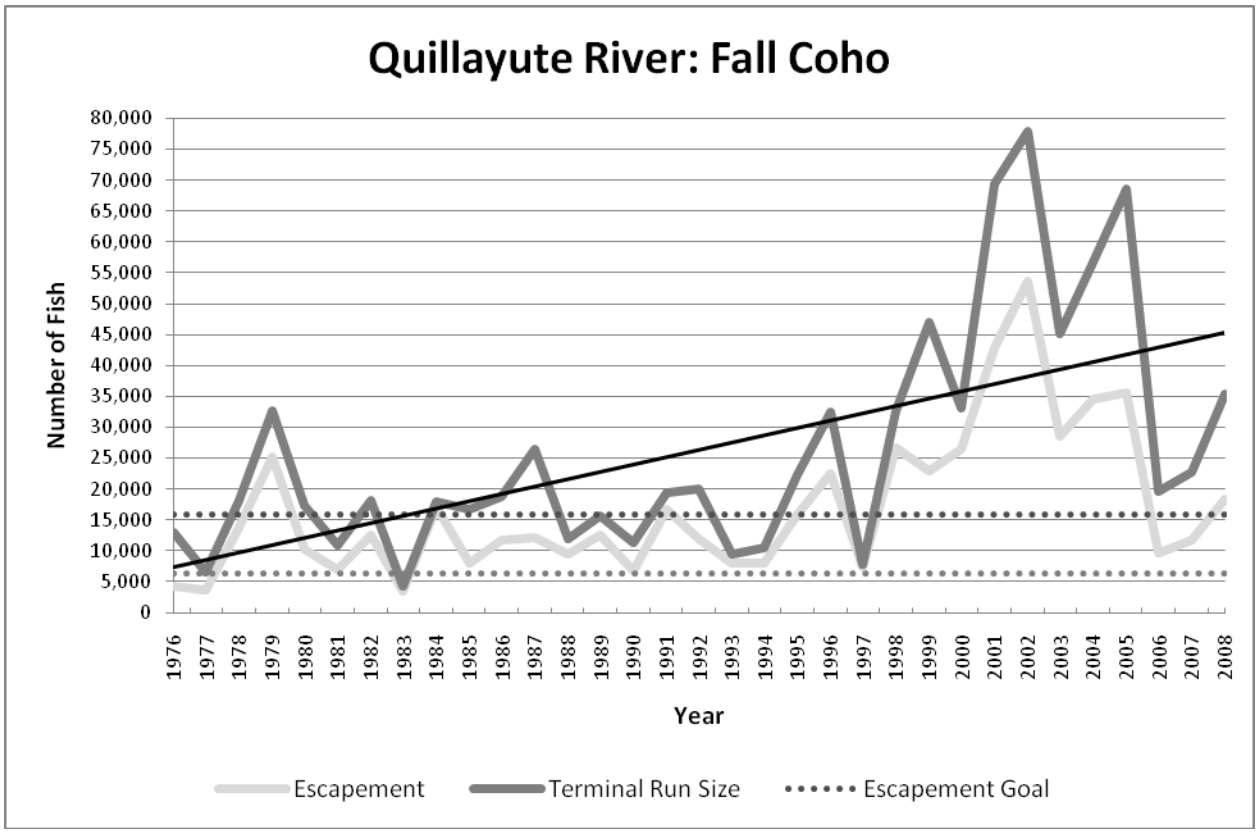


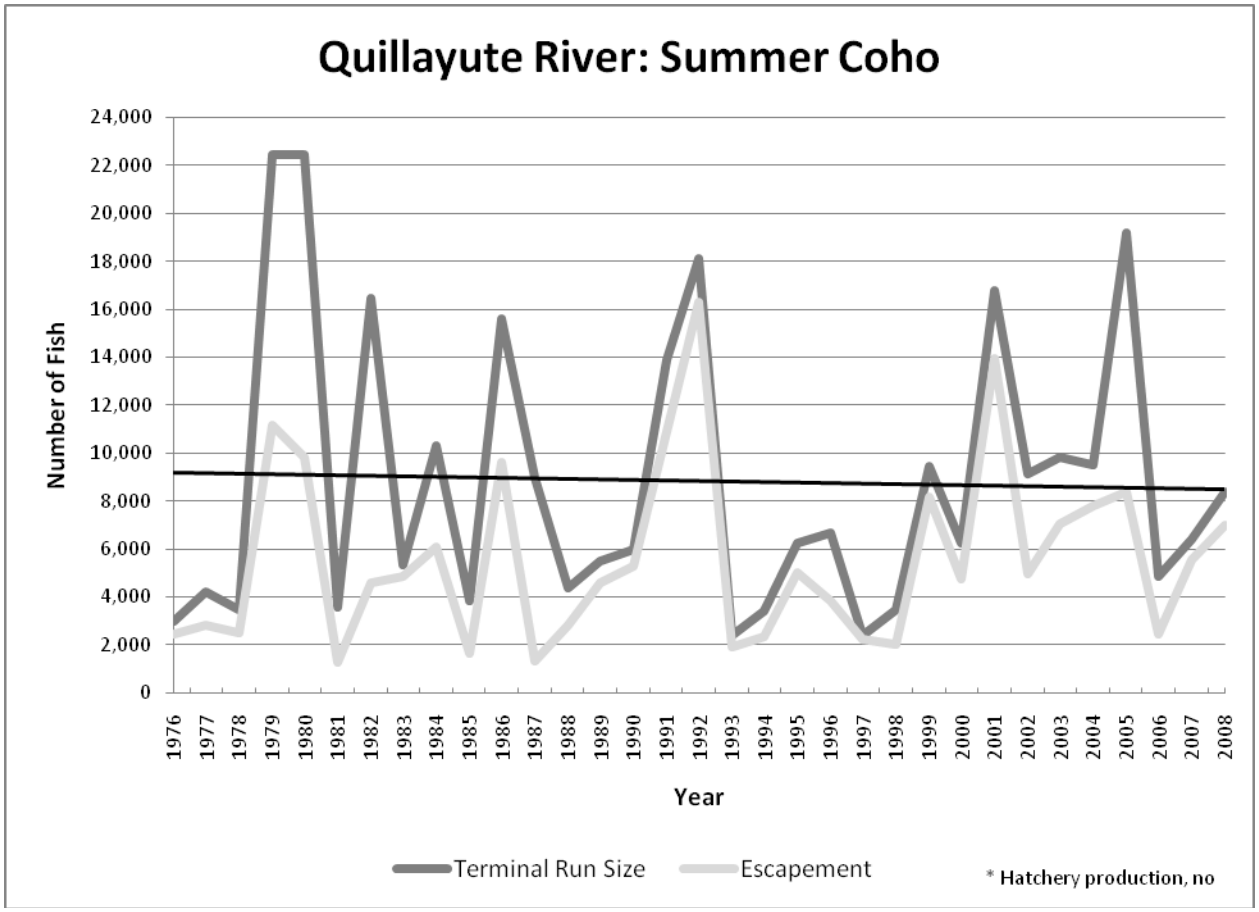


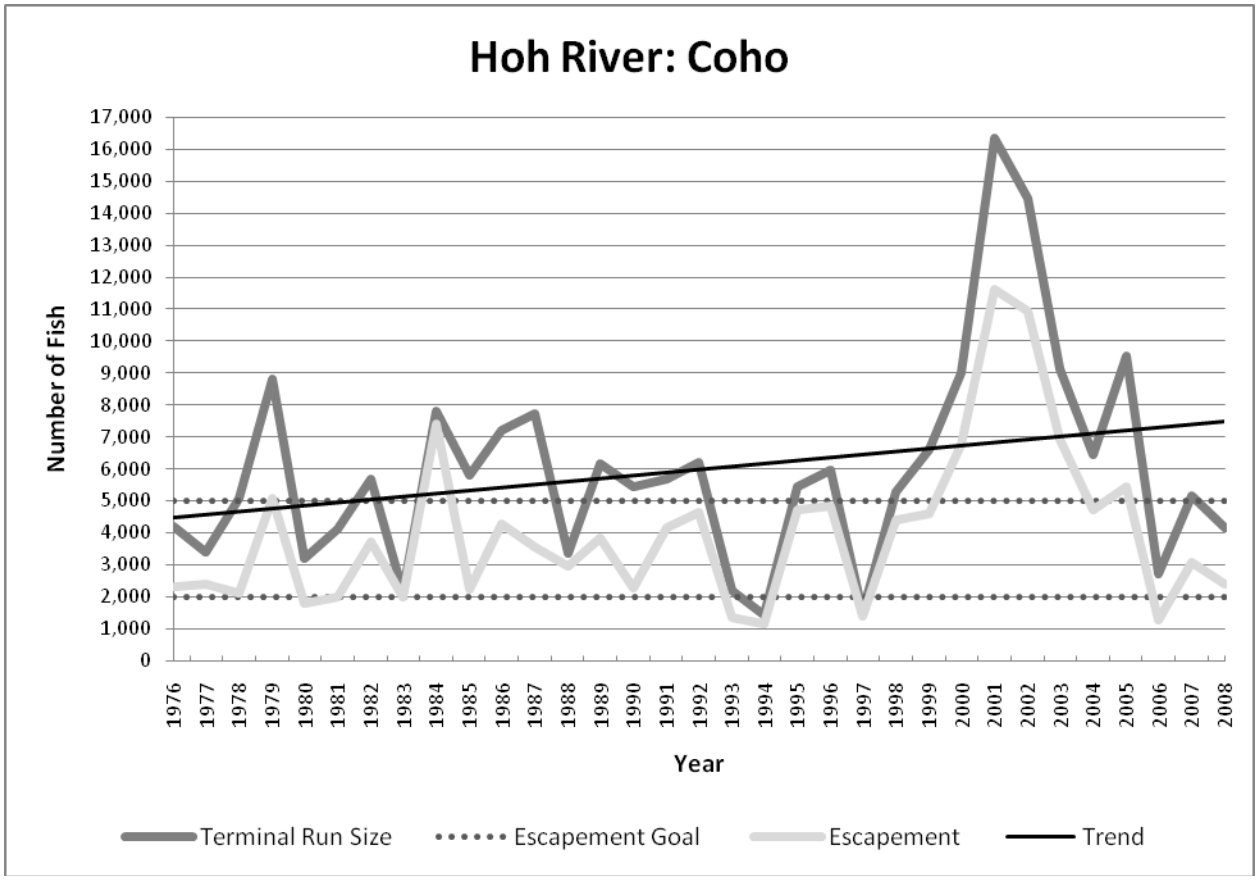
Independent Drainages **TBD**

Coho:

Major Rivers




Quillayute River: Summer Coho
Number of Fish
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008
Year
Terminal Run Size
Escapement
* Hatchery production, no



Independent Drainages **TBD**

Sockeye: **TBD**

Steelhead:

Major Rivers **TBD**

Independent Drainages **TBD**

Pink: (mostly unknown)

Major Rivers **TBD**

Independent Drainages **TBD**

Chum: (mostly unknown)

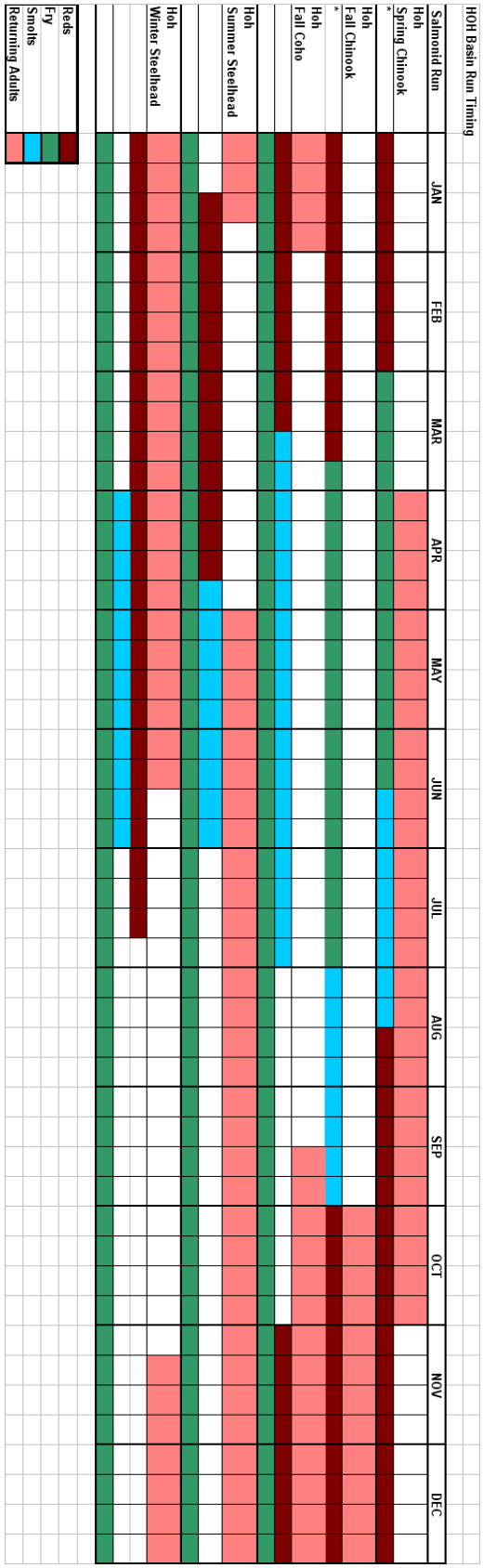
Major Rivers **TBD**

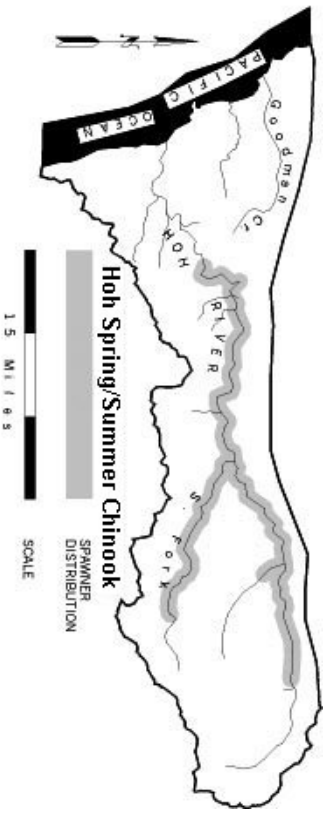
Independent Drainages **TBD**

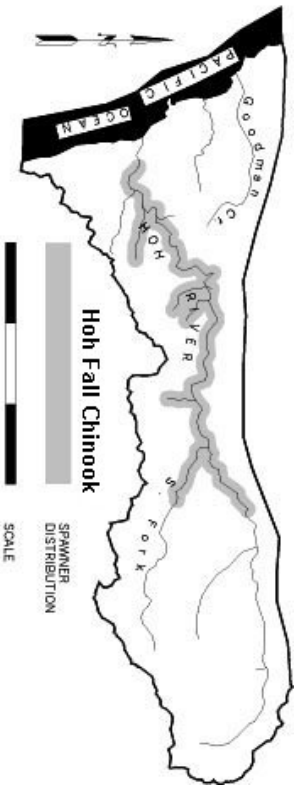
NOTE: Seven above charts compiled by Devona Ensmenger from the Wild Salmon Center on November 13, 2009 using data from the Pacific Fisheries Management Council's, Escapements to Inland Fisheries and Spawning Areas (*Review* Appendix B), located at http://www.pcouncil.org/salmon/salbluebook/salbluebook.html

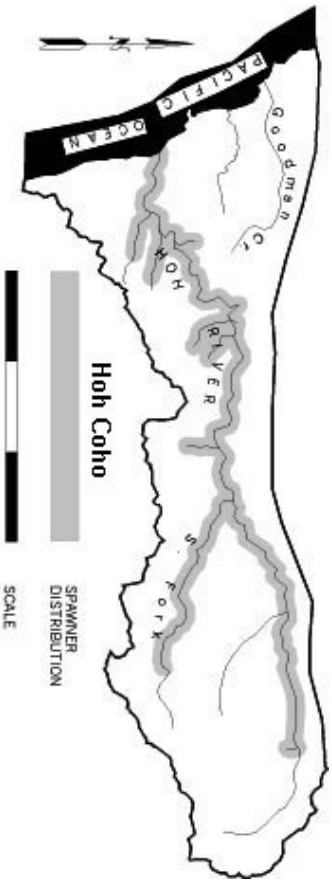
APPENDIX D

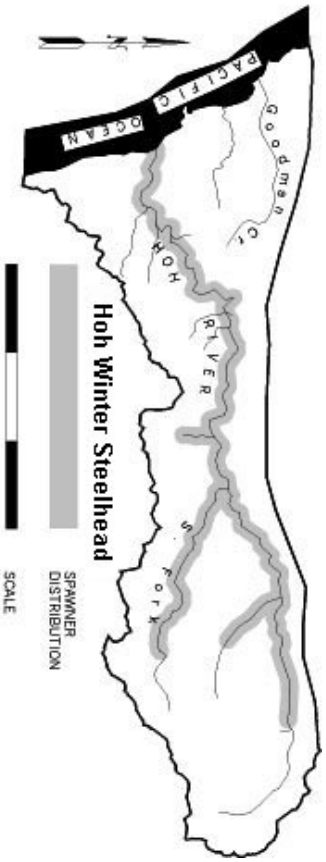
WRIA 20 SALMONID STOCK
RUN TIMING & SPAWNING DISTRIBUTION

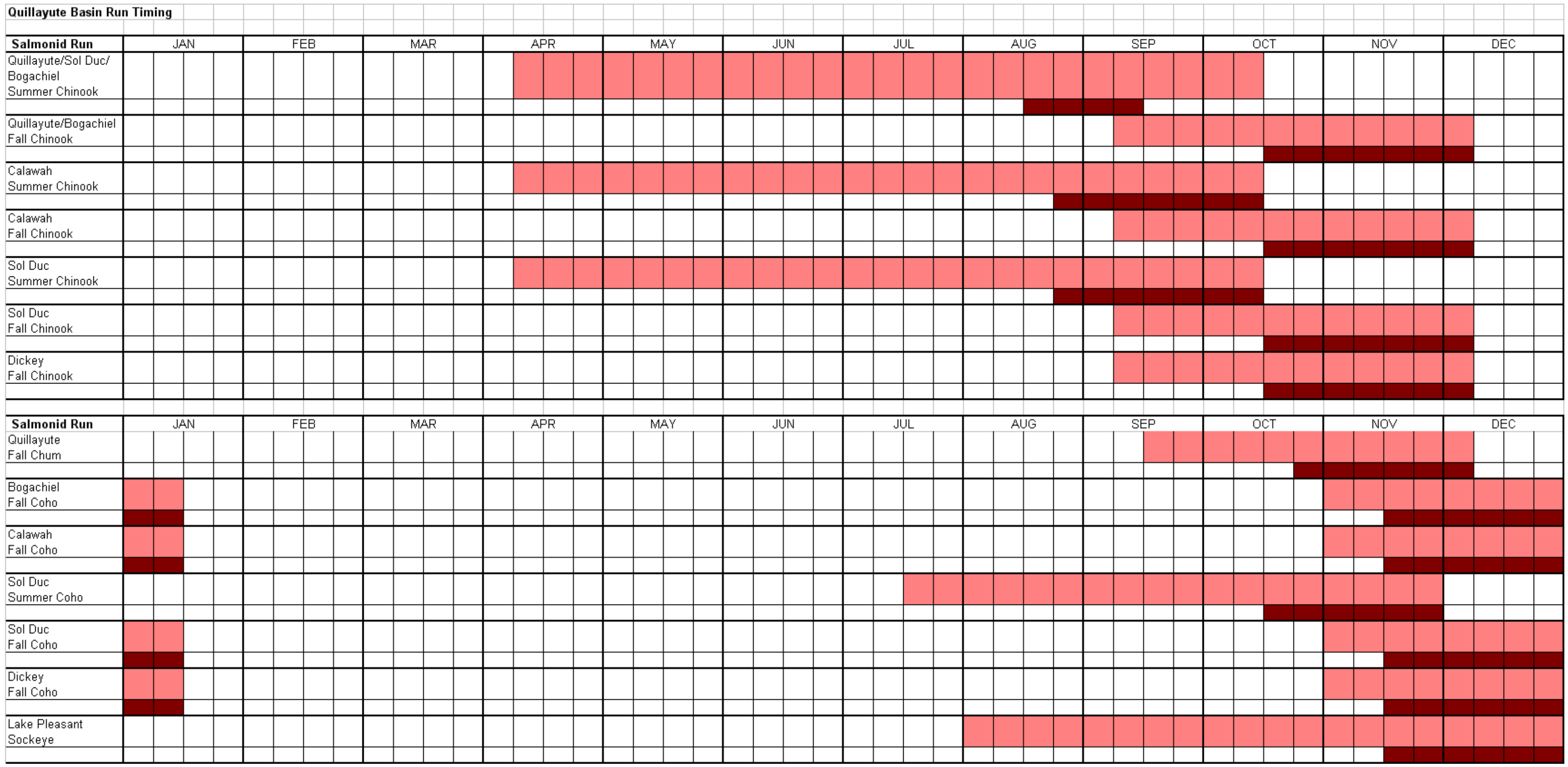

HOH Basin Run Timing
Salmonid Run
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Hoh Spring Chinook *
Hoh Fall Chinook *
Hoh Fall Coho
Hoh Summer Steelhead
Hoh Winter Steelhead
Reds
Fry
Smolts
Returning Adults


Hoh Spring/Summer Chinook
SPAWNER DISTRIBUTION
SCALE
15 Miles
Goodman C.
HOH
RIVER
S. Fork
PACIFIC OCEAN

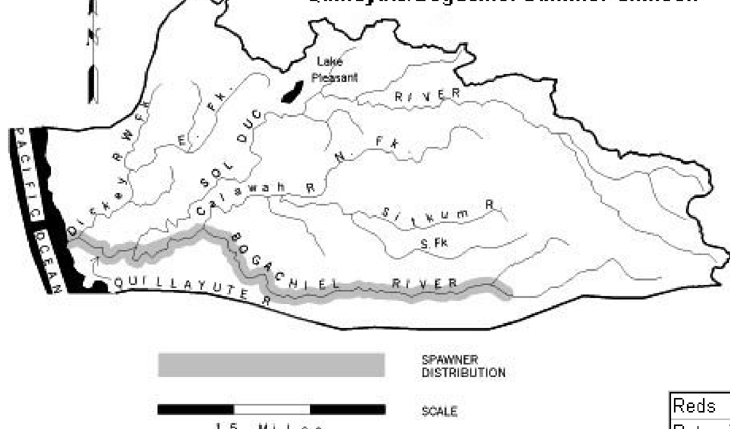

Hoh Fall Chinook
SPAWNER DISTRIBUTION
SCALE
15 Miles
Goodman C.
HOH
RIVER
S. Fork
PACIFIC OCEAN


Hoh Coho
SPAWNER DISTRIBUTION
SCALE
15 Miles
Goodman C.
HOH
RIVER
S. Fork
PACIFIC OCEAN


Hoh Winter Steelhead
SPAWNER DISTRIBUTION
SCALE
15 Miles
Goodman C.
HOH
RIVER
S. Fork
PACIFIC OCEAN

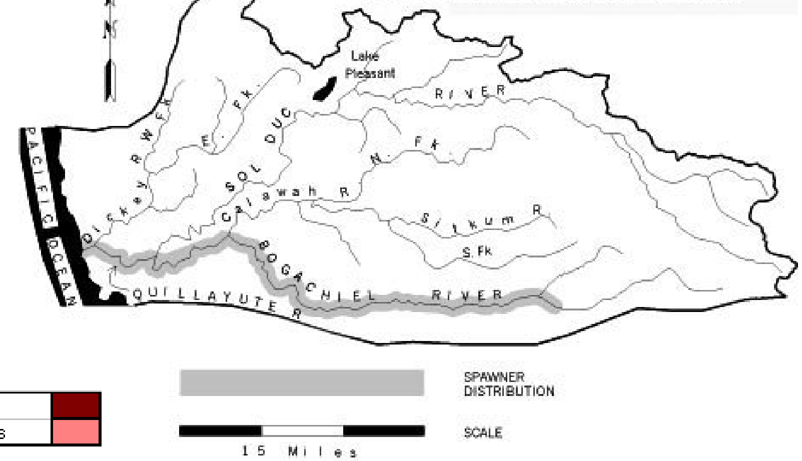


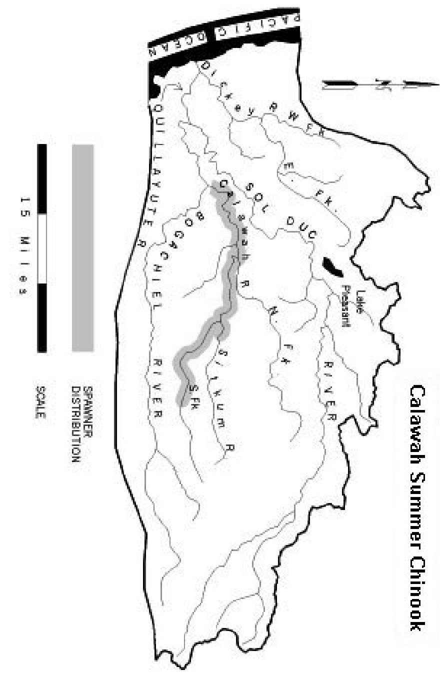
Quillayute/Bogachiel Summer Chinook

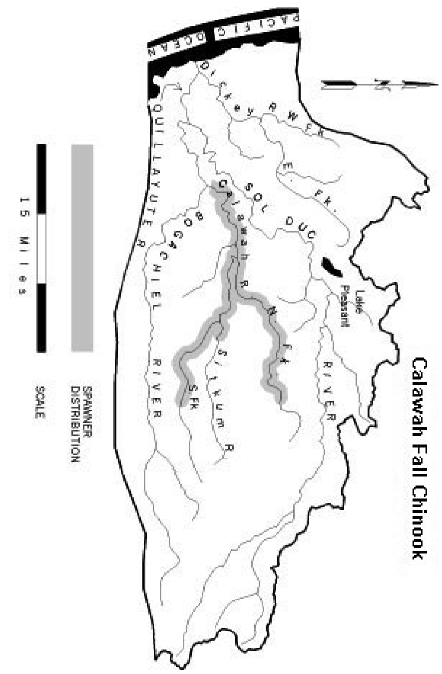


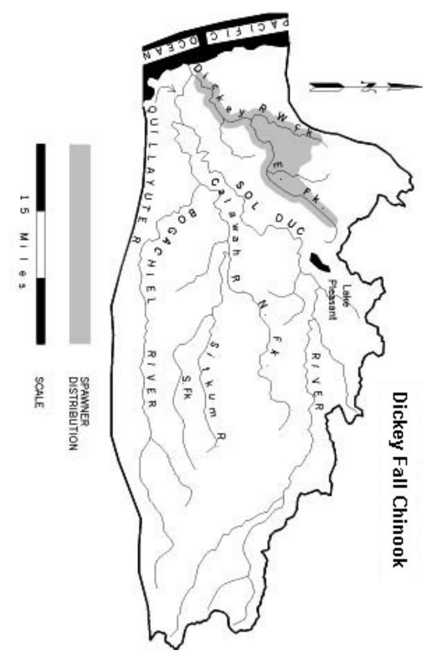
Reds	
Returning Adults	

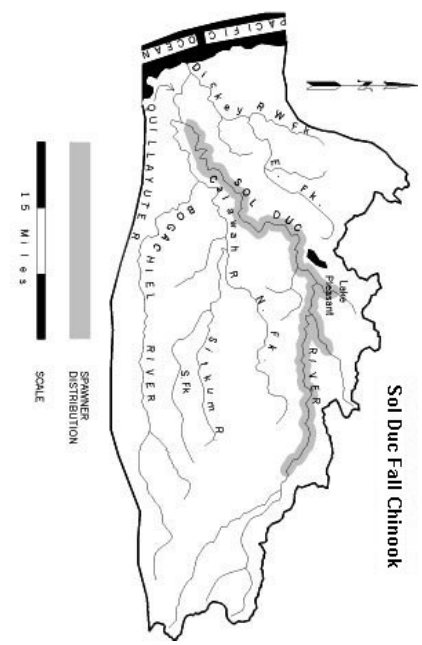
Quillayute/Bogachiel Fall Chinook

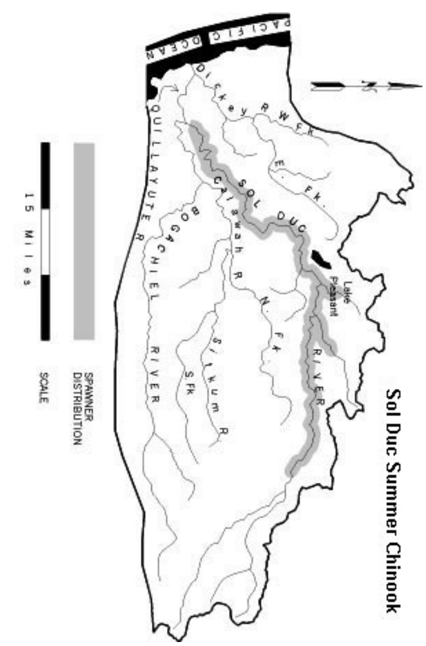



Calawah Summer Chinook
PACIFIC OCEAN
Dickey R
W. Fk.
E. Fk.
SOL DUC
Calawah R
Lake Pleasant
N. Fk.
RIVER
Sitkum R
S Fk
BOGACHIEL
RIVER
QUILLAYUTE R
SPAWNER DISTRIBUTION
15 Miles
SCALE

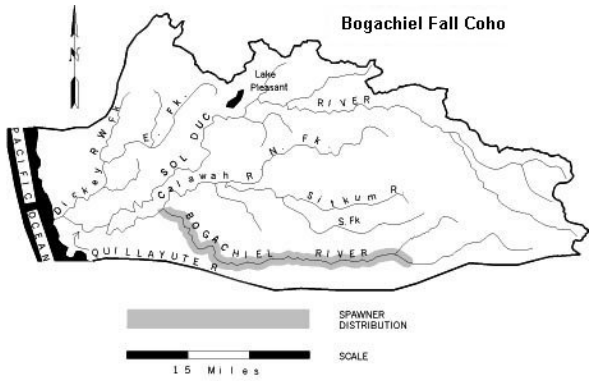

Calawah Fall Chinook
PACIFIC OCEAN
Dickey R
W. Fk.
E. Fk.
SOL DUC
Calawah R
Lake Pleasant
N. Fk.
RIVER
Sitkum R
S Fk
BOGACHIEL
RIVER
QUILLAYUTE R
SPAWNER DISTRIBUTION
15 Miles
SCALE

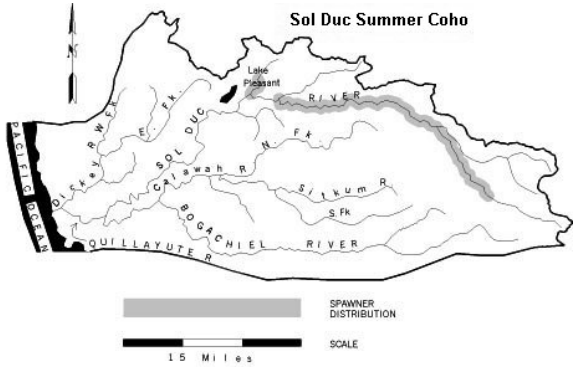

Dickey Fall Chinook
PACIFIC OCEAN
Dickey R
W. Fk.
E. Fk.
SOL DUC
Calawah R
Lake Pleasant
N. Fk.
RIVER
Sitkum R
S Fk
BOGACHIEL
RIVER
QUILLAYUTE R
SPAWNER DISTRIBUTION
15 Miles
SCALE

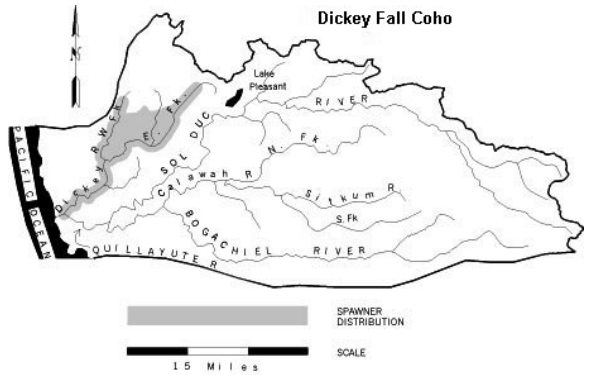

Sol Duc Fall Chinook
PACIFIC OCEAN
Dickey R
W. Fk.
E. Fk.
SOL DUC
Calawah R
Lake Pleasant
N. Fk.
RIVER
Sitkum R
S Fk
BOGACHIEL
RIVER
QUILLAYUTE R
SPAWNER DISTRIBUTION
15 Miles
SCALE

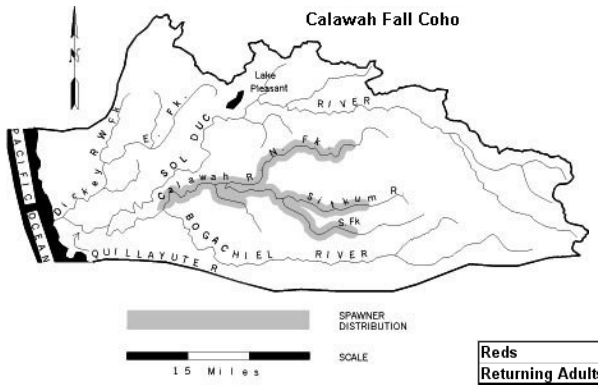

Sol Duc Summer Chinook
PACIFIC OCEAN
Dickey R
W. Fk.
E. Fk.
SOL DUC
Calawah R
Lake Pleasant
N. Fk.
RIVER
Sitkum R
S Fk
BOGACHIEL
RIVER
QUILLAYUTE R
SPAWNER DISTRIBUTION
15 Miles
SCALE

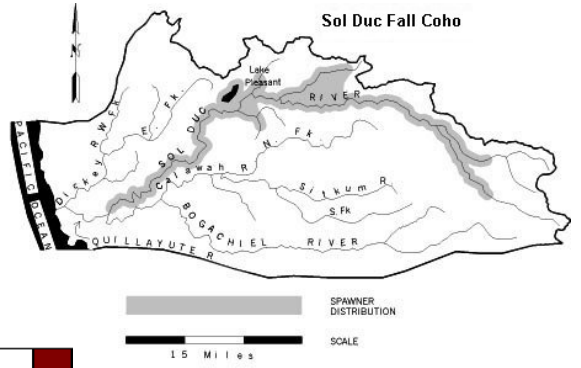
Salmonid Run	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Quillayute Fall Chum												
Bogachiel Fall Coho												
Calawah Fall Coho												
Sol Duc Summer Coho												
Sol Duc Fall Coho												
Dickey Fall Coho												
Lake Pleasant Sockeye												

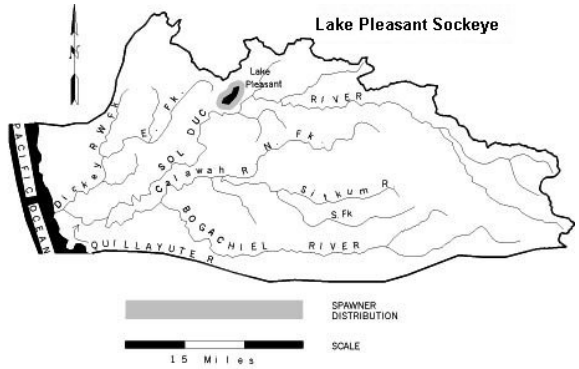




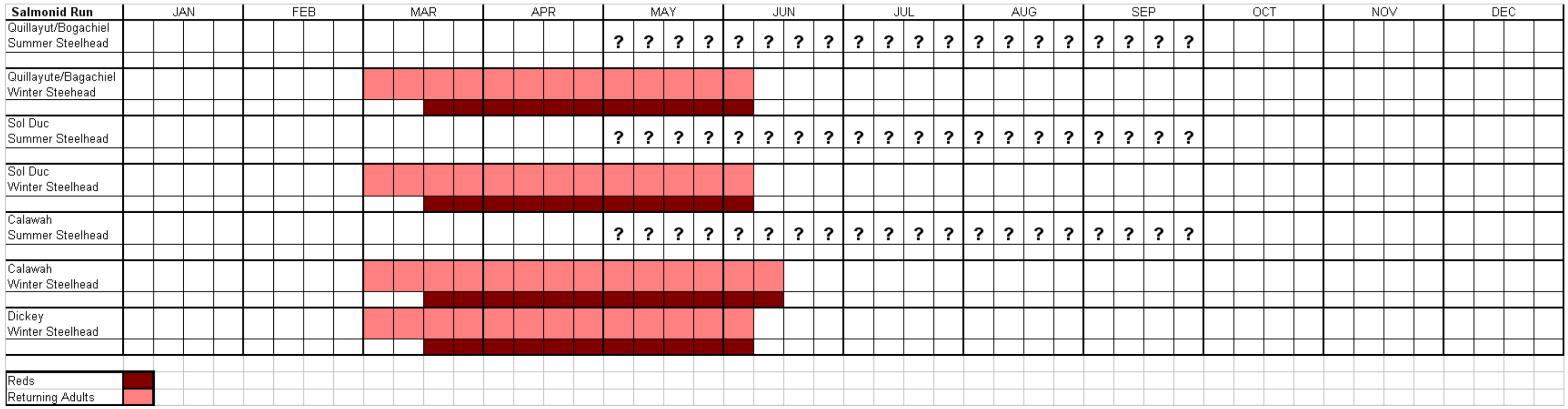


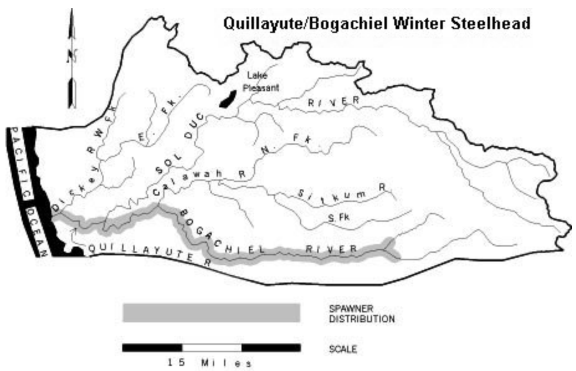


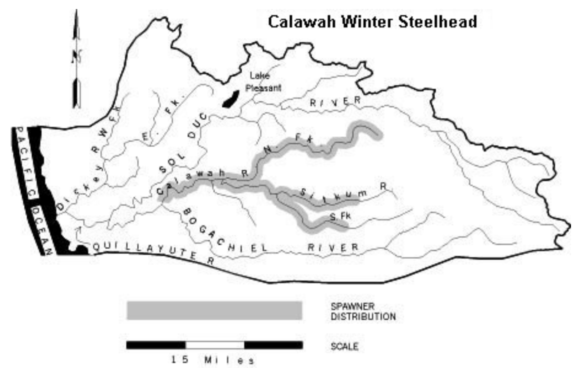


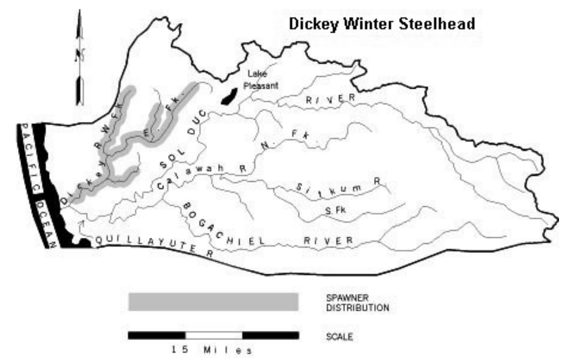


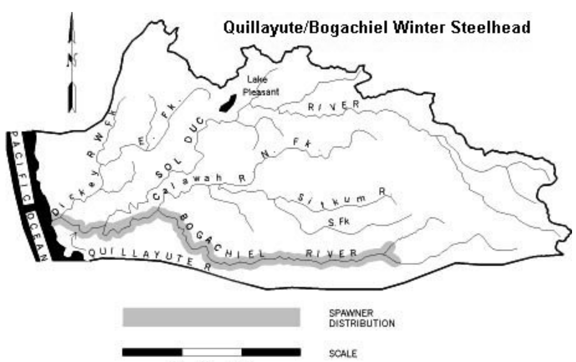
Reds
Returning Adults

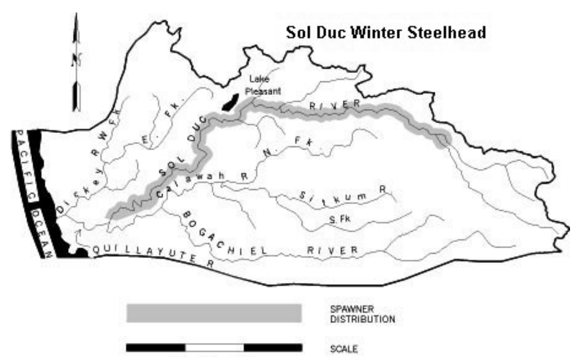

Salmonid Run
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Quillayut/Bogachiel Summer Steelhead
Quillayute/Bagachiel Winter Steehead
Sol Duc Summer Steelhead
Sol Duc Winter Steelhead
Calawah Summer Steelhead
Calawah Winter Steelhead
Dickey Winter Steelhead
Reds
Returning Adults

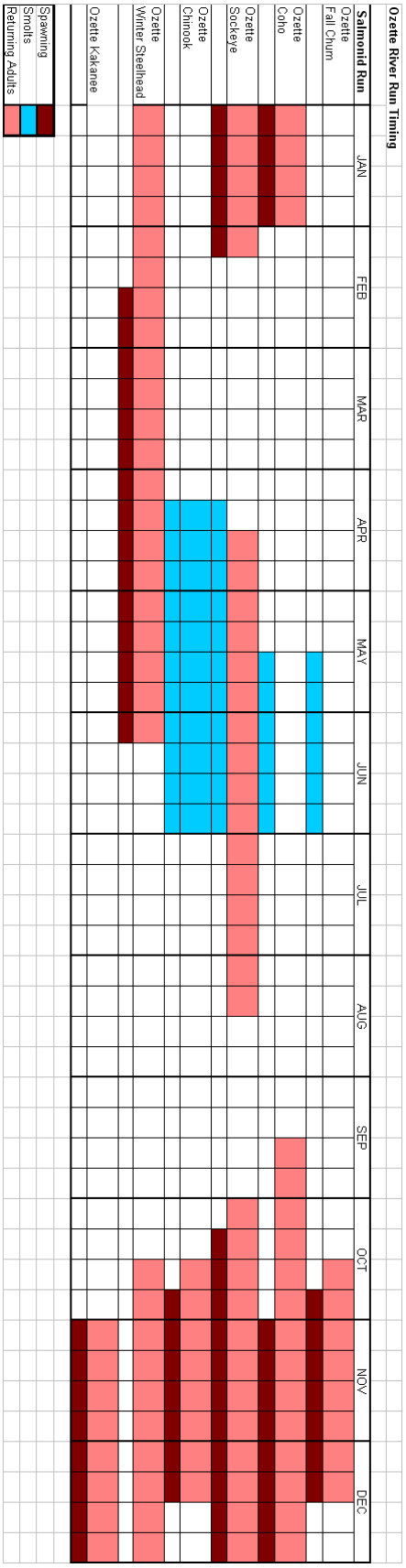

Quillayute/Bogachiel Winter Steelhead
SPAWNER DISTRIBUTION
SCALE
15 Miles

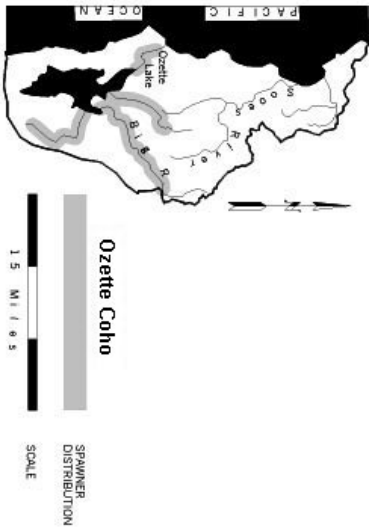

Calawah Winter Steelhead
SPAWNER DISTRIBUTION
SCALE
15 Miles

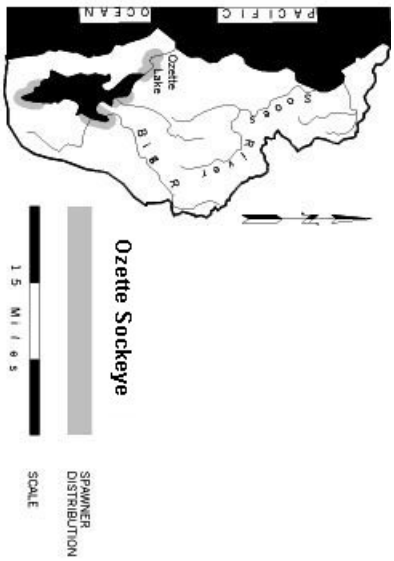

Dickey Winter Steelhead
SPAWNER DISTRIBUTION
SCALE
15 Miles

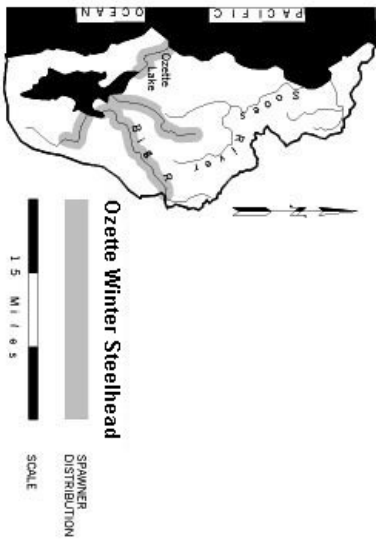

Quillayute/Bogachiel Winter Steelhead
SPAWNER DISTRIBUTION
SCALE
15 Miles

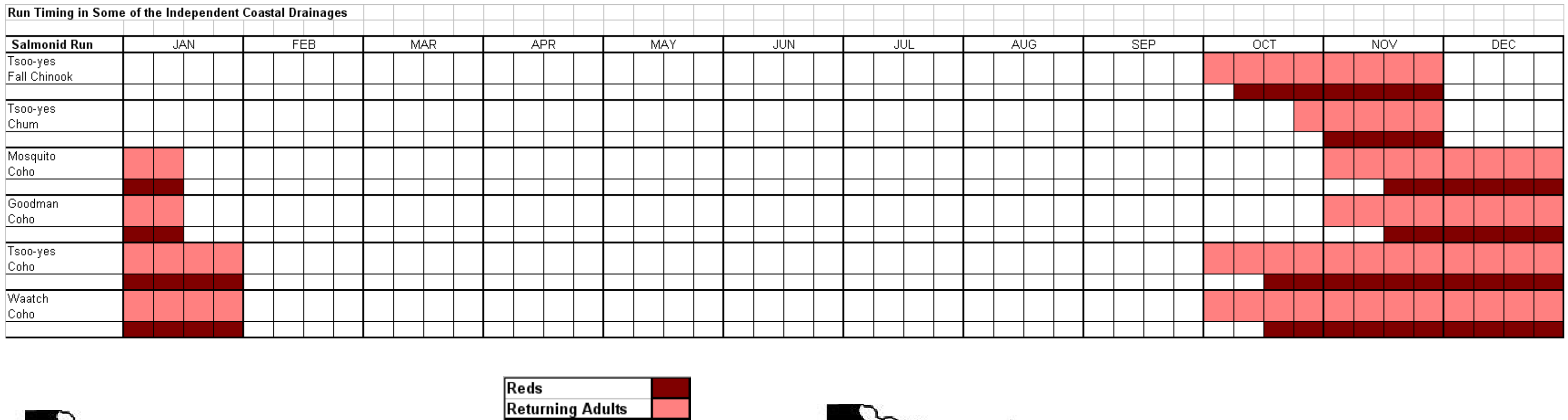

Sol Duc Winter Steelhead
SPAWNER DISTRIBUTION
SCALE
15 Miles

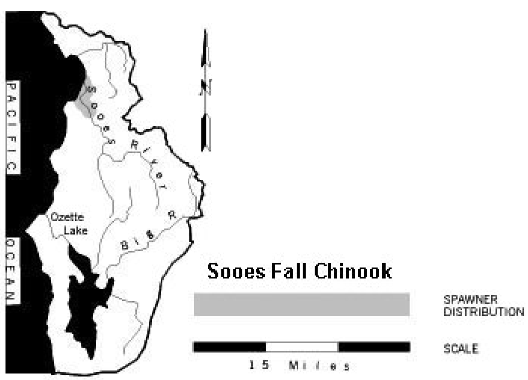

Ozette River Run Timing
Salmonid Run
Ozette Fall Chum
Ozette Coho
Ozette Sockeye
Ozette Chinook
Ozette Winter Steelhead
Ozette Kakanee
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Spawning
Smolts
Returning Adults

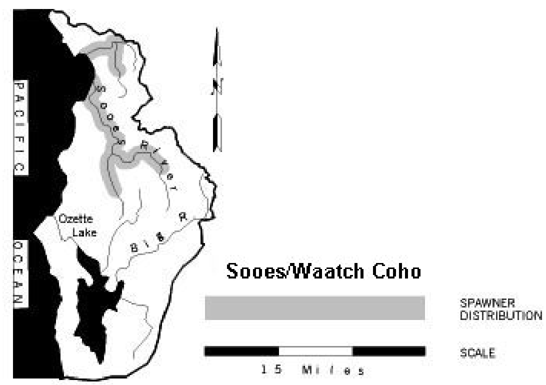

PACIFIC OCEAN
Ozette Lake
Sooes River
Big River
Ozette Coho
1 5 Miles
SPAWNER DISTRIBUTION
SCALE

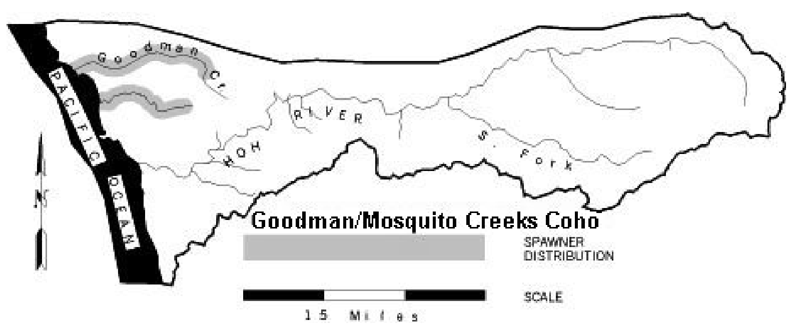

PACIFIC OCEAN
Ozette Lake
Sooes River
Big River
Ozette Sockeye
1 5 Miles
SPAWNER DISTRIBUTION
SCALE

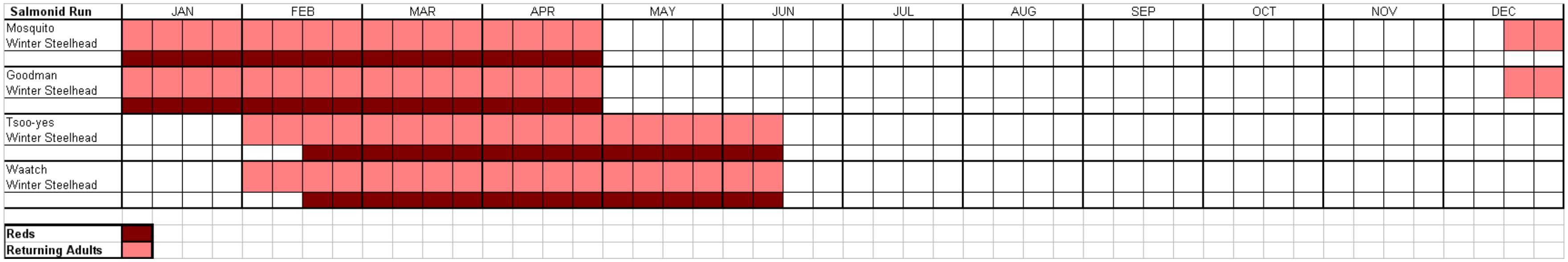

PACIFIC OCEAN
Ozette Lake
Sooes River
Big River
Ozette Winter Steelhead
1 5 Miles
SPAWNER DISTRIBUTION
SCALE

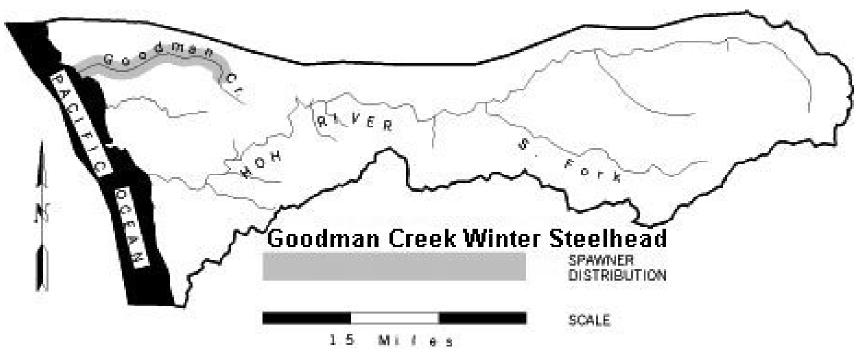

Run Timing in Some of the Independent Coastal Drainages
Salmonid Run
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Tsoo-yes Fall Chinook
Tsoo-yes Chum
Mosquito Coho
Goodman Coho
Tsoo-yes Coho
Waatch Coho
Reds
Returning Adults

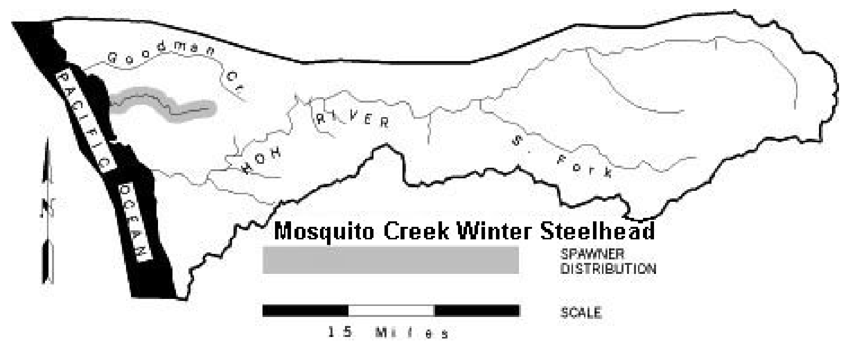

PACIFIC
OCEAN
Ozette Lake
Sooes River
Big R
Sooes Fall Chinook
SPAWNER DISTRIBUTION
SCALE
1 5 Miles

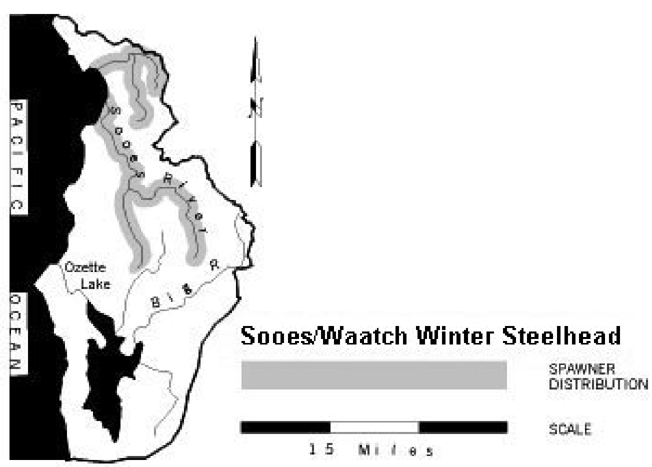

PACIFIC
OCEAN
Ozette Lake
Sooes River
Big R
Sooes/Waatch Coho
SPAWNER DISTRIBUTION
SCALE
1 5 Miles


Goodman Cr
PACIFIC
OCEAN
HOH
RIVER
S. Fork
Goodman/Mosquito Creeks Coho
SPAWNER DISTRIBUTION
SCALE
1 5 Miles


Salmonid Run
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Mosquito Winter Steelhead
Goodman Winter Steelhead
Tsoo-yes Winter Steelhead
Waatch Winter Steelhead
Reds
Returning Adults


Goodman Cr.
PACIFIC
OCEAN
HOH
RIVER
S. Fork
N
Goodman Creek Winter Steelhead
SPAWNER DISTRIBUTION
SCALE
15 Miles


Goodman Cr.
PACIFIC
OCEAN
HOH
RIVER
S. Fork
N
Mosquito Creek Winter Steelhead
SPAWNER DISTRIBUTION
SCALE
15 Miles


PACIFIC
OCEAN
Sooes River
Ozette Lake
Big R.
N
Sooes/Waatch Winter Steelhead
SPAWNER DISTRIBUTION
SCALE
15 Miles

APPENDIX E

NPCLE COMMITTEES MEMBERSHIP LIST

North Pacific Coast Lead Entity
(NPCLE) 2011 Membership

Initiating Government Representatives:

Hoh Tribe:	LE Rep – Steve Allison
Makah Tribe:	LE Rep –Jeremy Gilman
Quileute Tribe:	LE Rep – Katie Krueger
City of Forks:	LE Rep – Rod Fleck
Clallam County:	LE Rep – Cathy Lear
Jefferson County:	LE Rep – Tami Pokorny

Citizens of the Citizen-Initiating Government Committee:

Carl Chastain	Regional Fish Enhancement Group
Mike Hagen	(Non-governmental Organization, Hoh River Trust)
Jim Jacoby	Citizen-At-Large #1.
Ed Bowen	Citizen-At-Large #2.
Eric Carlsen	Citizen-At-Large #3

Technical Committee Members:

Steve Allison	Hoh Tribe
Eric Carlsen	DNR - Retired
Chris Byrnes	WDFW
Phil Decilis	USFS
Gary Dougherty	Clallam Conservation District
Devona Ensmenger	Wild Salmon Center
Jeremy Gilman	Makah Tribe
Mike Hagen	Hoh River Trust
Jim Jacoby	USFS - Retired
Dave King	WDFW
Katie Krueger	Quileute Tribe
Cathy Lear	Clallam County
Randy McIntosh	NOAA
Tami Pokorny	Jefferson County
John Richmond	City of Forks
Anne Shaffer	Coastal Watershed Institute
Brent Trim	Wild Fish Conservancy