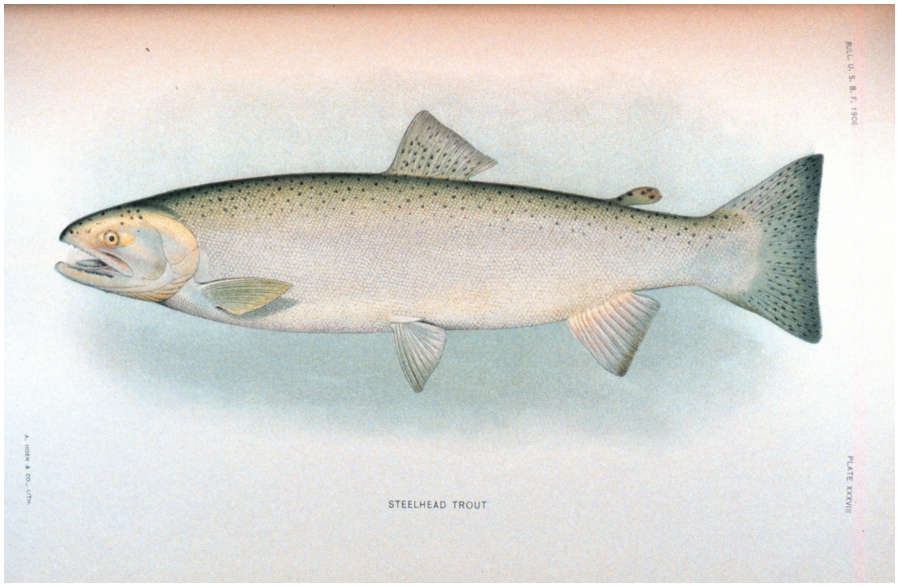


DRAFT

Environmental Impact Statement (DEIS) for the *Statewide Steelhead Management Plan (SSMP)*

LEAD AGENCY

Washington Department of Fish and Wildlife
Fish Management Program
Natural Resources Building, 6th Floor
1111 Washington Street East
Olympia, WA 98501-1091

August 1, 2007

FACT SHEET

Title: *Statewide Steelhead Management Plan (SSMP)* Draft Environmental Impact Statement (DEIS)

Proposed Action: This is a phased non-project review proposal. Phased review allows agencies and the public to focus on issues that are ready for decision and excludes from consideration issues already decided or not yet ready. The Department of Fish and Wildlife proposes implementation of a *SSMP* with a goal to provide a framework of policies, strategies, and actions that will be used to assure healthy stocks of Washington's wild steelhead by restoring and maintaining their abundance, distribution, diversity and long-term productivity in their natural habitats. The plan is designed to provide a framework for use by state steelhead managers to develop the Regional Management Plans (RMPs). It will also provide consistent overarching guidelines for co-manager development of the watershed plans with individual Tribes.
Supplemental to the *SSMP* the Department will develop and implement RMPs that identify the long-term goals, benchmarks for modifications to management actions, escapement objectives, and the expected trajectory for the diversity, spatial structure, productivity, and abundance of each wild stock. Future phased review will be conducted for the following seven RMPs: Puget Sound, Olympic Peninsula, Southwest Washington, Lower Columbia River, Mid-Columbia River, Upper Columbia River and Snake River Basin.

Location: Statewide

Proponent And Lead Agency: Washington Department of Fish and Wildlife, Fish Management Program. EIS Project Manager: Jim Buck, 360/ 902-2791

Responsible Official:
Teresa A. Eturaspe, SEPA/NEPA Coordinator
Habitat Division, Regulatory Section

SEPA Contact:
Washington Department of Fish and Wildlife
SEPA Desk
Natural Resources Building, 5th Floor
1111 Washington Street East
Olympia, WA 98501-1091
Phone: (360) 902-2575
Email: SEPAdesk2@dfw.wa.gov

Permits and Licenses Required: None required

Authors and Principle Contributors:
Jim Buck, WDFW Statewide Steelhead EIS Project Manager

WDFW staff: Heather Bartlett, Bob Gibbons, William T. Gill, Sara LaBorde, Bob Leland, and Amilee Wilson

Date Draft Environmental Impact Statement is Issued: August 1, 2007

Public meetings to be conducted:

Monday August 13, 2007 – 6:30PM
Guy Cole Convention Center, Carrie Blake Park
North Blake Avenue
Sequim, WA (Contact Karen Reese 360-683- 4139)

Tuesday August 14, 2007 – 6:30PM
Department of Natural Resources Building, RM 172
1111 Washington St East
Olympia, WA (Contact Jim Buck 360-902-2791)

Wednesday August 15, 2007 – 6:30PM
WDFW Region 5 Office, Conference Room
2108 Grand Blvd
Vancouver, WA (Contact Cindy Lefleur 360-906-6708)

Thursday August 16, 2007 – 7:00PM
WDFW Region 4 Office, Conference Room
16018 Mill Creek Blvd
Mill Creek, WA (Contact Anita Davis 425-775-1311

Monday August 20, 2007 – 6:30PM
Wenatchee Public Library
310 Douglas Street
Wenatchee, WA (Contact Katie Sessions 509-662-5021)

Tuesday August 21, 2007 – 6:30PM
Grant County FD#5 Training Center
12801 Road 2 NE
Moses Lake, WA (Contact Leonard Johnson 509-765-3175)

Wednesday August 22, 2007 – 6:30PM
Richland Public Library
955 North Gate Dr
Richland, WA (Contact Carol Larson 509-942-7450)

Comments Due: Comments are due by Thursday, August 30, 2007 at 5:00p.m.

Agencies, affected tribes and members of the public are invited to comment on this proposal.

When you send us your comments, please provide the name of proposal in your comment letter "**Statewide Steelhead Management Plan"**
And mail it to:

Responsible Official: Teresa A. Eturaspe
Position/Title: SEPA/NEPA Coordinator, Regulatory Services Section
Address:600 Capitol Way North, Olympia, WA 98501

You can also send you comments via fax to: (360) 902-2946.

Date Final Action is planned: The Final Environmental Impact Statement (FEIS) on the *SSMP* will be released Spring 2008.

Date of Next Action and Subsequent Environmental Reviews.
The Final Environmental Impact Statement (FEIS) is a phased non-project action. The *SSMP* will be provided to the Fish and Wildlife Commission (FWC) for action in spring 2008. Future phased agency actions are anticipated as the RMPs are developed for the Puget Sound, Olympic Peninsula, Southwest Washington, Lower Columbia River, Mid-Columbia River, Upper Columbia River and Snake River Basin Distinct Population Segments (DPSs). These RMPs will be reviewed under SEPA and become supplemental actions to this EIS. Some future actions related to this management plan may require rule making or other environmental processes.

Background Data and Materials Referenced in the DEIS are Available at:

Washington Department of Fish and Wildlife
Fish Management Program
Natural Resources Building, 6th Floor
1111 Washington Street East
Olympia, WA 98501-1091

Notice of Availability: The DEIS is available for review and download beginning August 1, 2007 on WDFWs website at**:** http://wdfw.wa.gov/hab/sepa/sepa.htm

Copies are available for review at WDFW headquarters and regional offices and the following libraries: Wenatchee Public Library and Richland Public Library. CD copies are also available by calling WDFW at (360) 902-2700 Written requests for a copy of the DEIS should be addressed to WDFW, Attention SEPA desk, Habitat, 600 Capitol Way N., Olympia, WA. 98501-1091, or via email at: SEPAdesk2@dfw.wa.gov.

Licenses Required: None required

Distribution List:
Notice of the availability of this DEIS is posted on the WDFW SEPA website:
http://wdfw.wa.gov/hab/sepa/sepa.htm
Copies have been sent to all local government planning departments (city and county); affected Tribes; all state and federal agencies with jurisdiction; selected environmental organizations; and interested parties.

Table of Contents

1. Executive Summary ***1***

1.1 State Environmental Policy Act Process Overview 1

1.1.1 Introduction 1

1.1.2 Alternatives 2

1.1.3 Non-Project Proposal 4

1.1.4 Scoping 4

1.1.5 Next Steps 5

1.2 Purpose and Need for the Non-Project Action 5

1.2.1 Purpose 5

1.2.2 Need 5

1.2.3 Plan Objectives 6

1.3 Issues Identified Through Scoping 6

1.3.1 Steelhead Program Operations 7

1.3.2 Steelhead Program Administration 7

1.4 Summary Table of Alternatives and Strategies by Policy Subject Area 7

1.4.1 Key Relationships 11

1.5 Significant Issues and Environmental Choices Among the Alternatives 12

1.5.1 Major Conclusions 12

1.5.2. Unavoidable Measures 13

1.6 Phased Review 13

1.7 Alternatives Considered, But Not Analyzed 13

2. Background ***15***

2.1 Historical Background 15

2.2 Environmental Setting – Distinct Population Segments, Evolutionarily Significant Units and Water Resource Inventory Areas. 17

Habitat Degradation and Alteration 17

Federally Managed Lands 18

Puget Sound DPS 20

Olympic Peninsula DPS 22

Southwest Washington DPS 24

Lower Columbia DPS 26

Middle Columbia DPS 28

Upper Columbia DPS 30

Snake River Basin DPS 32

3. Alternatives and Analysis ***34***

3.1 Operational Policies Category 37

3.1.1 Natural Production 37

Introduction 37

Affected Environment 37

Natural Production Alternatives 38

Significant Impacts and Mitigation Measures 39

Cumulative Impacts 39

3.1.2 Habitat Protection and Restoration 40

Introduction 40

Affected Environment 42

Habitat Protection and Restoration Alternatives 42

Significant Impacts and Mitigation Measures 44
Cumulative Impacts 44
3.1.3 Fisheries Management 45
Introduction 45
Affected Environment 46
Fisheries Management Alternatives 46
Significant Impacts and Mitigation Measures 47
Cumulative Impacts 48
3.1.4 Artificial Production 49
Introduction 49
Affected Environment 50
Artificial Production Alternatives 50
Significant Impacts and Mitigation Measures 51
Cumulative Impacts 52
3.2 Administrative Policy Direction 53
3.2.1 Regulatory Compliance 53
Introduction 53
Affected Environment 56
Regulatory Compliance Alternatives 56
Significant Impacts and Mitigation Measures 57
Cumulative Impacts 57
3.2.2 Monitoring, Evaluation and Adaptive Management (ME&AM) 58
Introduction 58
Affected Environment 59
Monitoring, Evaluation, and Adaptive Management Alternatives 59
Significant Impacts and Mitigation Measures 60
Cumulative Impacts 60
3.2.3 Research 60
Introduction 60
Affected Environment 61
Research Alternatives 61
Significant Impacts and Mitigation Measures 62
Cumulative Impacts 62
3.2.4 Outreach and Education 62
Introduction 62
Affected Environment 62
Outreach and Education Alternatives 63
Significant Impacts and Mitigation Measures 63
Cumulative Impacts 64
Definitions 65
List of Acronyms and Abbreviations 71
Literature Cited 72
Appendix A. Statewide Steelhead Management Plan 73
Appendix B. Statewide Steelhead Management Plan Response to Comments. 75
Appendix C. Summary of Initial Environmental Impact Potential Review for the SSMP Non-project Action 85

1. Executive Summary

1.1 State Environmental Policy Act Process Overview

1.1.1 Introduction

The Washington Department of Fish and Wildlife (the Department, WDFW) recognizes the importance of the State Environmental Policy Act (SEPA) in the process of adopting the *SSMP*. The environmental impact statement (EIS) process provides opportunities for other agencies, stakeholders, the Tribes and the public to participate in developing and analyzing information. This process, as detailed in chapter 197-11 WAC, ensures that the Department and the Fish and Wildlife Commission (FWC) understand the environmental consequences of decisions and considers mitigation of probable significant adverse environmental impacts when making decisions. The EIS process includes:

- Scoping
- Preparing a DEIS, which analyzes the probable impacts of a proposal and reasonable alternatives;
- Issuing a DEIS for review and public comment;
- Preparing a FEIS, which includes analyzing and responding to comments received on the DEIS;
- Issuing a FEIS; and
- Using the FEIS in decision-making.

The Department made a concerted effort to involve the public from the earliest stages of the plan. It developed an Ad Hoc Steelhead Stakeholder Group comprised of representatives from the Steelhead and Cutthroat Policy Advisory Group (SCPAG), and conducted monthly stakeholder meetings starting in July of 2006. Throughout the public meetings from July 2006 through April 2007 additional interested stakeholders were included in the steelhead stakeholder group. The Ad Hoc Steelhead Stakeholder Group was developed to receive regular input as the draft *SSMP* was developed. During the monthly steelhead meetings with departmental staff, stakeholders were authorized and encouraged to give presentations, suggest pertinent agenda topics, provide materials for departmental review, and set future meeting dates. All public comments received during the scoping process were reviewed by a departmental steelhead team and incorporated, where appropriate, in the *SSMP*. Their input is reflected in the Draft of the Statewide Steelhead Plan, Statewide Policies, Strategies and Actions dated July 23, 2007 (see Appendix A). All policy issues and most frequent concerns were grouped by themes and included in a memo "Statewide Steelhead Management Plan Response to Comments" (see Appendix B) released April 3, 2007 by the Department.

The Department also developed a steelhead website for stakeholders and interested public. The website includes information on the statewide steelhead planning process, public releases, the SEPA process, and stakeholder meetings. All documents and presentations during the monthly stakeholder meetings are included on the website. The *SSMP* and the DEIS can be accessed at: http://wdfw.wa.gov/fish/steelhead/index.htm.

The State Environmental Policy Act processes have been used to ensure public input into policy development. Key steps in the policy development process have been:

1. A scoping notice was sent to more than 110 individuals and interested groups in August and December 2006.

2. A Draft Scoping Paper for the Statewide Steelhead Management Plan *(SSMP)* was distributed to citizens and groups.

3. Public meetings to hear citizen comments were held in August and September 2006 in the following locations: Port Angeles, Olympia, Vancouver, Tukwila, Mount Vernon and Ellensburg, Washington. Written comments were also received. Information from the public meetings and comments were available to guide state policy leaders. In May 2007, a draft alternatives table presented five possible options for public review. These alternatives were crafted from comments received during the initial scoping and monthly stakeholder meetings.

1.1.2 Alternatives

Considering the current and anticipated factors affecting the steelhead resource, the *SSMP* will consist of a set of strategies for balancing policy to address the dual Agency mandate to conserve wild steelhead populations and provide utilization opportunity. The focus of this DEIS is to analyze a range of reasonable alternatives, to assess their risk of possible significant impacts to elements of the environment while identifying mitigation measures to avoid or minimize related adverse environmental impacts. While this document addresses these impacts at the over-arching statewide level, it is recognized that further consideration, and possibly additional impact specifics, will emerge as strategy implementation details are proposed in individual watershed plans.

Alternative strategies are one of the required components of an EIS. They present meaningful options for the Department to address management of steelhead in Washington State. Policy proposals to be considered by WDFW are presented in the set of reasonable alternatives described section 1.4 of this DEIS, and categorized in Table 1. These alternatives present different policy choices that are consistent with the purpose and need of the *SSMP* as described in section 1.2, and relate each to the environmental impacts identified in this DEIS in Chapter 3. **A summary of the potential environmental impact identification process is provided in Appendix C.** This process utilized the environmental checklist called for in WAC 197-11- 444 and provided in WAC 197-11-960 as the basis for determining any potential environmental impacts resulting from the approval and implementation of the *SSMP* non-project action.

The alternatives incorporate information gathered and issues raised through the SEPA scoping process. The specific alternatives discussed under the eight *SSMP* policy subject areas in section 1.4 can be grouped, across a spectrum from most conservative for wild steelhead to least conservative, into four generalized alternatives (Table 1):

1) The **most conservative** alternative to maximize wild steelhead protection
2) The **preferred** alternative to provide increased wild steelhead protection

3) The **status quo** (no action) alternative to maintain our current approach and program emphasis
4) The **least conservative** alternative to provide increased fishing opportunity to the public

A summary of each generalized alternative, across all eight of the policy categories is provided in the following paragraphs. The status quo alternative (Alternative 3) is described first to allow comparison of the other alternatives to the current management policy emphasis. Additional details on the alternatives and related environmental impacts are provided for each subject area in Chapter 3.

The **status quo** alternative (Alternative 3) represents the current approach to steelhead management, which attempts to find the balance between wild fish conservation and recreation opportunity by using a wild fish management strategy based on maximum sustainable harvest (MSH). Hatchery fish are produced to meet current harvest objectives within wild fish management restrictions. Fisheries are managed for minimum MSH escapement and to limit impacts on wild steelhead to a maximum of 10% incidental mortality on under-escaped wild fish runs. Currently, WDFW habitat protection efforts revolve around the HPA process and a support focus on maintaining involvement in State and Federal protection and restoration processes. With the existing limited ability of WDFW to control adverse habitat impacts, the MSH based approach is vulnerable to the cumulative effects of habitat degradation. Fisheries management, regulatory compliance, research, monitoring and outreach efforts are affected by current Department resource constraints, as is the ability to proactively implement adaptive management strategies.

The **preferred** alternative (Alternative 2) is designed to address the current and anticipated challenges related to management of wild and hatchery steelhead. The major emphasis shift of **Alternative 2** is to establish steelhead stock conservation goals in terms of all four viable salmonid population (VSP) parameters (abundance, productivity, diversity and spatial structure) instead of MSH-related abundance. Acknowledging the existing constraints on the ability of WDFW to control habitat impacts, this alternative instructs the Department to emphasize a higher level of involvement within existing authority and increase participation in effective external conservation processes. Fisheries are to be managed to meet VSP objectives and to further reduce incidental mortality on wild stocks to levels significantly below the current 10% guideline for MSH management. This could result in some additional restrictions on harvest opportunity. Artificial production program changes will focus on identifying and reducing the adverse impacts on wild salmonids and establishing a network of wild stock gene banks. Potential recreation impacts on harvest opportunity may result in some watersheds from these program change strategies. Regulatory compliance, monitoring, research and outreach initiatives will need to be adopted and supported with an increased resource commitment to adaptively manage steelhead stock conservation and recovery in this VSP context.

The **most conservative** alternative (Alternative 1) seeks to manage natural production for maximum returning abundance levels with the goal of reaching the carrying capacity of the system. Intrinsic to this strategy would be the need to establish the existing limits to productive habitat for each steelhead life stage in each system in order to achieve the overall productive habitat increases that would gradually raise carrying capacity levels to the natural limit of the

system. This would require a significant increase in WDFW participation, jurisdiction and authority over habitat actions with the goal to achieve a no net loss of existing habitat and an increase in productive habitat. This also would, with possibly a few emergency conservation program exceptions, essentially eliminate most steelhead hatchery programs and in the short term, have an extremely significant impact on steelhead annual harvest, which at this scale, would probably translate into an adverse impact on recreation. Considerable resource commitment to increased regulatory compliance and monitoring would be essential to achieve success. Effective adaptive management would be predicated on greatly enhanced research, particularly in the areas of increasing human population pressures and global warming. Finally, outreach and education efforts explaining these initiatives would be needed to garner broader public program support and to foster sustainable lifestyle changes needed to protect wild fish and their habitats to this degree.

The **least conservative** alternative (Alternative 4) presents the feasibility of attempting to increase recreational utilization opportunity while preserving or possibly enhancing wild stocks, or at least minimizing adverse impacts on wild fish to some unavoidable but acceptable levels. The increased utilization concept in Alternative 4 is based on strategies to increase hatchery production and manage for wild conservation at MSH abundance levels. Initially, the first would likely be accomplished by an increase in the scale of properly segregated programs, while integrated programs would carefully be developed to offset increased impacts to wild stocks. The departmental role in habitat protection and restoration would essentially be unchanged from the status quo. Regulatory compliance and outreach efforts would focus on harvest and hatchery issues. Additional monitoring and research should be prioritized on determining and evaluating critical thresholds for perpetuation of wild stocks.

1.1.3 Non-Project Proposal

The *SSMP* is a "non-project action" under SEPA. Non-project (also called programmatic) actions include the adoption of plans, policies, programs or regulations that contain standards controlling the use of the environment or standards that will guide future actions. Future site-specific steelhead management decisions will be guided by the policies developed during this process. The probable significant adverse environmental impacts analyzed in a non-project EIS are those impacts foreseeable at this stage, before specific project actions are planned.

Some regions and watersheds in the state have already been evaluated during the development of currently functioning plans. An analysis of this will be included in the roll-up of the watershed plans into the respective RMP supplements to the *SSMP* and will be addressed during the next SEPA phase.

1.1.4 Scoping

Scoping initiates public involvement in the SEPA process. It has three purposes: 1) to narrow the focus of the EIS to significant environmental issues; 2) to eliminate issues that would have insignificant impacts or that are not directly related to the proposal; and 3) to help identify reasonable alternatives, consistent with the purpose and need of the proposed action, to be analyzed in the EIS. The scoping process alerts the public, the project proponent and the lead agency to areas of concern and potential controversy early in the process. Here, the Department is both the project proponent and the lead agency. The SEPA process for the *SSMP* update was

formally initiated with the scoping notice published on August 22, 2006 and then again on December 22, 2006. The formal SEPA scoping period ended on January 22, 2007. Many interested individuals and stakeholders attended the public meetings and provided oral testimony. In addition to comments received at these public meetings that were held at eight key sites throughout the state, the Department received written scoping comment letters and met with several key stakeholders. Testimony was augmented by a series of monthly meetings the Department held between July 2006 and April 2007 with an Ad Hoc Stakeholder Group.

1.1.5 Next Steps

After this DEIS has been issued, the Department will hold a series of seven public meetings in Sequim, Olympia, Vancouver, Mill Creek, Wenatchee, Moses Lake and Richland, Washington. The public meetings are scheduled for August 13 - 22, 2007. It is anticipated that many interested individuals and stakeholders will attend these public meetings and provide comments to the Department on the DEIS. Those comments will be reviewed and responded to in the FEIS, expected to be released in November 2007. The FEIS will provide necessary information that the FWC will use in deciding which policies will be adopted in the *SSMP*. Upon the FWC's approval of the *SSMP*, the Department will have an updated set of working policies to guide management of steelhead statewide.

1.2 Purpose and Need for the Non-Project Action

1.2.1 Purpose

Consistent with the Scoping Document of December 22, 2006, the purpose of the *SSMP* will be to develop policies and strategies to improve abundance, productivity, diversity and spatial structure of Washington's steelhead through the examination of WDFW hatchery, harvest, enforcement, habitat, research/monitoring, and outreach and education programs.

1.2.2 Need

The statewide steelhead plan proposal is needed in order to restore and protect the diversity and long-term productivity of Washington's steelhead stocks and their habitats. WDFW will accomplish this goal within the guidance of the agency's mission statement, strategic goals and objectives. Goals may include supporting hatchery programs that provide maximum recreational opportunities compatible with healthy diverse fish and wildlife populations. WDFW will work with tribal governments to ensure fish and wildlife management objectives are met including sustaining ceremonial, subsistence, commercial and recreational fisheries; non-consumptive fish benefits; and other related cultural and ecological values.

There are increasing expectations for fish managers to balance varied public needs to maintain and restore natural stocks, provide tribal and recreational fishing opportunities, and support additional important social-cultural and environmental values. WDFW will develop a *SSMP* to guide the evaluation and development of WDFWs hatchery, harvest, enforcement, habitat and outreach & education programs to aid in the conservation and restoration of natural steelhead stocks and provide harvest opportunity consistent with natural stock restoration objectives. The Department must also identify information gaps pertaining to natural steelhead stocks and develop research and monitoring programs to improve resource management decisions.

1.2.3 Plan Objectives

The objectives for the *SSMP* are as follows:

1. Provide a framework of policies, strategies, and actions that will be used to assure healthy stocks of Washington's wild steelhead by restoring and maintaining their abundance, distribution, diversity and long-term productivity in their natural habitats.
2. In a manner consistent with this primary goal, the Department will seek to protect and restore steelhead to achieve cultural, economic, and ecosystem benefits for current and future residents of Washington State.
3. Meet all federal and state laws, including the treaty obligations.
4. Ensure policies are succinct, relevant and easily understood by the public and Department employees.
5. Seek productive partnerships that help the Department achieve policy objectives.
6. Use professional judgment, best available science and sound fisheries management to achieve excellence in public stewardship.
7. Pursue outcome-based management within a flexible framework.
8. Promote active, innovative and sustainable stewardship on as much steelhead habitat as possible.
9. Monitor and periodically report to the FWC on the implementation and outcomes of Commission-approved policies.

1.3 Issues Identified Through Scoping

The Department has identified two probable key environmental impacts for the *SSMP: animals and recreation* (see Appendix C). Future phased agency actions are anticipated as the RMPs are developed for the Puget Sound, Olympic Peninsula, Southwest Washington, Lower Columbia River, Mid-Columbia River, Upper Columbia River and Snake River Basin DPSs and concurrent watershed planning with respective Tribes. Environmental impacts of these RMPs will be reviewed under SEPA as the plans are completed and they will become supplemental actions to this EIS. Future actions related to this management plan may affect other environmental factors in addition to *animals and recreation* and require rule making or other environmental processes at a later date.

The comments received during scoping from the many interested individuals and stakeholders captured diverse issues, ideas and opinions. These comments and the Department's responses were prepared in a summary (see Appendix B). These comments led to the development of the *SSMP* policy alternatives, which are addressed in the following two major policy categories and subsequent eight policy subject areas (see Table 1):

Steelhead Program Operations	**Steelhead Program Administration**
Natural Production	Regulatory Compliance
Habitat Protection & Restoration	Monitoring, Evaluation & Adaptive Management
Fisheries Management	Research
Artificial Production	Outreach and Education

The eight-policy subject areas in the *SSMP* are analyzed individually in this DEIS, due to the importance of each of these topics, but they are not all independent of each other. As such, it is

imperative to understand the relationships between key policy areas and the connections between the plan alternatives.

1.3.1 Steelhead Program Operations

The first four policy subject areas in the Alternatives Summary Table make up the Steelhead Program Operations major policy category. This category deals with policy decisions that can directly affect steelhead and their habitats and are strongly interrelated (see section 1.4.1 for a discussion on some of these key relationships). These policy subject areas will inform the Department on decisions that directly affect natural production, habitat protection and restoration, artificial production, and fisheries management. The alternatives span levels of risk for the operational strategies that the FWC will be considering in the *SSMP*.

1.3.2 Steelhead Program Administration

The remaining four policy subject areas make up the Steelhead Program Administration major policy category. This category deals with policy decisions affecting the administration of Operations programs that directly relate to steelhead and their habitats. These policy subject areas will provide guidance to the Department for decisions affecting regulatory compliance, monitoring, evaluation and adaptive management, research and outreach & education programs. The alternatives span levels of risk and resource commitment for the administrative strategies the FWC is to consider in its *SSMP*, however, these policies, being administrative in nature at this statewide plan level, pose no risk of significant adverse environmental impact. Their implementation will increase the probability of success for the endorsed *SSMP* operations policies. It is also recognized that at the watershed level, the specifics of implementing some strategies, monitoring, enforcement and possibly research for example, could reveal the need for additional for potential adverse environmental impact analysis as part of the watershed plan development.

1.4 Summary Table of Alternatives and Strategies by Policy Subject Area

The four generalized alternatives introduced in section 1.1.2 have been expanded to address the specifics for each of eight policy subject areas or categories detailed in the SSMP (see section 1.3 above). This DEIS includes a detailed alternative strategy for each policy subject area, making a total of 32 alternative strategies in all. Recommended alternatives have been developed based on meeting the multiple Plan Objectives (see Section 1.2.3), while avoiding or minimizing significant adverse environmental impacts. While most subject areas help achieve several plan objectives, none of the subject areas alone address all of these objectives. However, all of the alternatives were determined to meet the purpose and need of the *SSMP*, but to different degrees and with variable specific emphases. The primary plan objectives addressed by policy subject area are identified within each chapter of the *SSMP* and relevant potential impacts are addressed in the alternatives discussions in this DEIS. Comments received from interested individuals and stakeholders during scoping were considered as the policy subject areas, strategies and alternatives were developed.

The thirty-two alternative strategies are presented on the Alternatives Summary Table. The eight policy subject areas, which correspond to the chapter breakout in the *SSMP*, have been grouped into two major policy categories: Steelhead Program Operations and Steelhead Program Administration. The approved policies will ultimately provide the framework of strategies and actions to achieve the goals of the *SSMP*.

Table 1 Statewide Steelhead Management Plan (SSMP) DEIS Alternatives – Table of Category-Specific Strategies

Description of approach	**Most Conservative**	**Preferred Alternative**	**Status Quo No Change in Program**	**Least Conservative**
Operational Categories:	Alternative 1 Maximize wild protection	Alternative 2 Increase wild protection	Alternative 3 Current Approach	Alternative 4 Increase fishing opportunity
Natural Production	Manage for carrying capacity	Manage for viable salmonid population (VSP) abundance.	Manage for at least maximum sustainable harvest (MSH) abundance or mitigation goal	Manage abundance at MSH
Habitat Protection and Restoration	Seek legislation to gain jurisdiction over habitat actions and implement those actions to achieve a no-net loss of existing habitat and an increase in productive habitat	Fully implement and enforce current authorities, and increase participation in effective external conservation processes. Encourage other agencies/entities to follow suit	Protect habitat through the current HPA process, and maintain involvement in State and Federal protection and restoration processes	Protect habitat through the current HPA process, and maintain involvement in State and Federal protection and restoration processes
Fisheries Management	Manage fisheries for average steelhead carrying capacity	Manage fisheries for VSP to ensure: abundance, productivity, spatial structure and life history diversity objectives are achieved	Manage fisheries for minimum MSH escapement goal to ensure objectives are achieved	Manage fisheries for MSH escapement goal
Artificial Production	Eliminate hatchery competition with wild populations within Washington. Initiate conservation programs where required to maintain or increase wild populations and their habitats	Improve and modify current hatchery programs to reduce impacts on wild fish, including habitat related actions. Reduce outplants in places where programs are inconsistent with strategies. Establish a network of wild stock gene banks	Produce fish to meet current harvest objectives	Increase (segregated) hatchery production; add integrated to offset increased impact on wild

Description of approach	Most Conservative	Preferred Alternative	No Change in Program Emphasis Status Quo	Least Conservative
Administrative Categories:	Alternative 1 Maximize wild protection	Alternative 2 Increased wild protection	Alternative 3 Current Approach	Alternative 4 Increased fishing opportunity
Regulatory Compliance	Implement compliance regulations. Increase departmental hatchery, harvest, and hydro regulatory compliance monitoring through actively seeking new legislation.	Implement compliance regulations. Prioritize departmental hatchery, harvest, and hydro compliance monitoring.	Use current voluntary and regulatory compliance programs. As funds are available in the Capitol Budget, bring hatchery programs into compliance	Hatchery and harvest compliance emphasis
Monitoring, Evaluation and Adaptive Management	Develop and implement monitoring plans for all wild stocks so effects of the SSMP can be evaluated and actions adapted to support its goals	Develop and implement monitoring plans for key indicator wild stocks so effects of the SSMP can be evaluated and actions adapted to support its goals	Maintain current monitoring and evaluation activities to inform decision makers regarding SSMP impact on wild stocks. Support existing habitat monitoring and evaluation programs	Monitor and evaluate wild stocks to ensure they remain above critical thresholds
Research	Seek funding to implement conservation research to achieve an increase in productive steelhead populations and their habitats, especially in light of increasing human population pressures and global warming.	Prioritize, fund, and implement critical research to support VSP parameters	Prioritize and conduct research on integrated hatchery programs	Focus research on determining critical thresholds for perpetuation of wild stocks
Outreach and Education	Develop and implement a plan to provide opportunities for the public to maintain and restore wild steelhead populations. Provide opportunities to form partnerships with the public on steelhead efforts	Develop and implement a plan to provide opportunities for the public to maintain and restore wild steelhead populations. Provide opportunities to form partnerships with the public on steelhead efforts	Maintain current limited outreach and education on steelhead	Develop materials to display fishing opportunities, techniques, and proper catch and release (C&R)

1.4.1 Key Relationships

Natural Production, Habitat and Artificial Production

The foundation and goal of the *SSMP* is to restore and maintain the abundance, distribution, diversity and long-term productivity of Washington's wild steelhead and their habitats to assure healthy stocks and do so in a manner that will seek to protect and restore steelhead to achieve cultural, economic, and ecosystem benefits for current and future residents of Washington State. The focus is on wild fish and their sustaining habitat. It is possible to temporarily have more returning wild fish than the existing freshwater habitat can sustain. In this case, it would be desirable to improve and restore habitat so the stock can expand its spatial structure. This situation illustrates some of the key inter-relationships between the four-steelhead program operations categories. Similarly, if the habitat cannot sustain the stock, there are artificial production alternatives that may permit the run to be perpetuated while the habitat recovers. The Hatchery Reform Scientific Group (HRSG) has found that some hatchery practices can adversely impact the health of wild stocks. The analysis of impacts aims to give the Department the widest latitude for proposing strategies to minimize or avoid significant adverse impacts to the environment. As a result of the extreme life history variability exhibited by *O. mykiss*, the impact analysis will be most significant at the regional or watershed levels, and will be thoroughly treated and summarized in the RMPs for each DPS.

Natural Production, Artificial Production and Fisheries Management

The placement of the highest priority on the protection of wild steelhead and restoration of those stocks to healthy levels creates a strong interconnection between natural production, artificial production and fisheries management. Fisheries management is essential to set harvest levels so steelhead can return to utilize the spawning habitat. This directly influences the time, place and manner in which steelhead fishing will be conducted in Washington. Fisheries management must also work with hatchery management to insure broodstock management and hatchery releases do not negatively interfere with natural production objectives. A combination of policy direction provided to the Department in this DEIS and the use of adaptive fishery management and hatchery management strategies is expected to mitigate the risk of significant adverse impacts to wild salmonids and recreation opportunity. Alternatives explore changing artificial production practices such as those that caused some populations to exist only near the threshold level. Changes in artificial production will change how harvest strategy is implemented and may result in closure of some areas in the future.

Steelhead Program Operations and Program Administration

The performance of steelhead program operations strategies must be carefully monitored to insure that the actions are measurably restoring and maintaining abundance, distribution, diversity and long-term productivity to steelhead and their habitats. This requires close coordination between staff in the field that monitors steelhead stocks, interacts with the public and conducts in-stream research, and those in the office that evaluates data, and provides managers with timely, science-based results and recommendations. The managers use this technical information to make adaptive management decisions or planning requests for additional monitoring or research if needed. This iterative process of monitoring, evaluation, adaptive management and coordinated research, being similarly used in habitat conservation

plans, salmon recovery and implementation of the Forest and Fish Agreement, is intended to mitigate the risk of significant adverse environmental impacts.

The administration category items have been distinguished as being supportive of the program operations category functions that collectively may have direct favorable or adverse impacts to steelhead and other species or recreational impacts to the public. As such, these support recommendations are not expected to address these potential impacts by themselves. In the cases where actions proposed in the *SSMP* under the Administrative categories call for a physical presence in the environment, such as a new research project, smolt monitoring and abundance data or increased enforcement, those actions would have their own impact analysis. In some cases the activity would be added to the list of current projects with established protocols before being implemented.

1.5 Significant Issues and Environmental Choices Among the Alternatives

1.5.1 Major Conclusions

During the preparation of this DEIS for the statewide plan, an environmental checklist was used as an aid in determining the potential significant adverse impacts identified at the beginning of Chapter 3. Having established a three-tiered document structure to develop the *SSMP* at the 1) statewide over-arching guideline; 2) DPS based RMP; and 3) watershed co-manager plan levels, potential impact categories were assessed accordingly. Consistent with the dual goals of the *SSMP* to conserve wild steelhead populations and balance that with the mandate to provide utilization opportunity to the public, the Department has determined this statewide DEIS should address the potential impacts to animals and to recreation (see Appendix C for the analysis summary).

As the level of scrutiny progresses from statewide to the DPS and finally the individual watershed level, it is conceivable that additional impact categories may come under consideration. An adopted *SSMP* recommendation for additional or improved monitoring could ultimately result in a proposed physical action that may have potential impacts in a particular watershed. For example, a stream survey may be required to obtain needed abundance data, but the impact-related issues would be different if it were by weir, over flight, snorkel or stream wading. These issues would be dealt with much more effectively at the smaller, detailed plan level.

It should be noted that recreational impacts as treated in this DEIS relate to recreational opportunity (fishing, observation, photography, etc) and not things like noise, transportation, energy use, etc., that would be related to correlative changes in boat or other vehicle activity. Impacts of that nature should have been considered previously, for example, when evaluating existing road, infrastructure, and boat access ramp construction projects.

In a similar vein, proposed actions that would be implemented under approved policies and protocols would not routinely undergo another SEPA analysis.

1.5.2. Unavoidable Measures

No unavoidable significant adverse environmental impacts have been identified during this DEIS preparation. However, it is possible that minor but potential cumulative impacts may be uncovered during the co-manager development of the Phase 2 RMPs and Phase 3 individual watershed plans.

1.6 Phased Review

SEPA review is required on proposals for project and non-project actions, such as the *SSMP*. The Department will be proposing future project and non-project actions related to this *SSMP*. Those actions will range from planning to site-specific proposals for management activities, such as the changes to hatchery operations and harvest regulations. RMPS will be developed for the Puget Sound, Olympic Peninsula, Southwest Washington, Lower Columbia River, Mid-Columbia River, Upper Columbia River and Snake River Basin DPSs and concurrent watershed planning with respective Tribes. Additionally, the Department recognizes that other departmental policies and procedures will need to be reviewed as a result of the FWCs adoption of the *SSMP*. Once the FWC has adopted these policies, other implementation guidance will be reviewed and amended, created or cancelled where necessary. Procedures and policies that simply expand activities covered under project lists with approved protocols and don't establish new direction or standards resulting in impacts outside the scope of those evaluated in this DEIS, will not require a separate SEPA review. The RMP and the co-manager developed individual watershed plans will include details beyond what is set forth in this DEIS. These plans, as completed, will go through their own SEPA review. Appendix C will serve to provide initial guidance for identifying and assessing the potential environmental impacts of these anticipated actions.

1.7 Alternatives Considered, But Not Analyzed

Under SEPA, a "reasonable alternative" is defined as "an action that could feasibly attain or approximate a proposal's objectives, but at a lower environmental cost or decreased level of environmental degradation. Reasonable alternatives may be those over which an agency with jurisdiction has authority to control impacts, either directly or indirectly through requirement of mitigation measures" (WAC 197-11-786). For some policy subject areas, alternatives were considered, but not included in the detailed analysis, because they did not fully address the stated purpose and need of the *SSMP* and, therefore, were determined not to be "reasonable."

The development of the *SSMP* alternatives originated from the primary goals statement of the *SSMP*. The dual nature of the Fish and Wildlife Agency's mandate requires the Department to seek and achieve a balance between restoring and maintaining " the abundance, distribution, diversity, and long-term productivity of Washington's wild steelhead and their habitats to assure healthy stocks" with a secondary directive which states "in a manner consistent with this primary goal, the Department will seek to protect and restore steelhead to achieve cultural, economic, and ecosystem benefits for current and future residents of Washington State." The four generalized alternatives were developed across a spectrum between these two goals. A fifth alternative was

considered while developing the range of feasible or reasonable alternatives, however, it was eliminated from further consideration because it did not meet the *SSMP* goals.

At one end, a maximization of harvest opportunity on both hatchery and wild steelhead was seen to have significant adverse impacts on wild steelhead populations statewide, although it would favorably impact recreation, at least in the short term. At the other end, closing all hatcheries to avoid adverse interactions with wild steelhead may maximize wild protection and restoration (for non-critical populations at least), but it would obviously significantly impact recreation opportunity for anglers in that about 95% of the current steelhead harvest is on hatchery fish. As indicated in section 3.1.4, this would result in the loss of nearly $100 million annually to the communities and organizations in the state that support steelhead fishing activities.

2. Background

2.1 Historical Background

Steelhead are an icon of the Pacific Northwest. The species has been a source of important cultural and economic benefits throughout the region's history. It is so valued that commercial harvest of the species was banned in 1936 and the Legislature named it the State Fish in 1969. In 1985 WDFW (then the Department of Game), in response to diminishing numbers of wild steelhead began mass marking (removal of the adipose-fin) of hatchery steelhead. The fin-clipping, to identify hatchery and wild steelhead, allowed the Department to structure recreational fisheries allowing the harvest of marked/hatchery steelhead only, thus reducing impacts to wild fish. By 1996 the FWC had mandated the release of wild steelhead in most Washington rivers. The Legislature included provisions for wild steelhead recovery in the Salmon Recovery Act of 1998 and has approved agency proposals that have limited harvest to only healthy runs and approved fishing closures that protect wild steelhead from incidental mortality impacts.

There are a number of factors contributing to the decline of Washington's wild steelhead stocks. These include the loss of freshwater habitat, poor ocean survival, hatchery practices, hydroelectric operations and harvest management. A comparable state of decline exists between Puget Sound steelhead stocks and those in the adjoining waters of the Strait of Georgia in Canada. This geography, referred to as the Salish Sea, has only two migration corridors to the open Pacific, one on either side of Vancouver Island. The surrounding land is host to the major populations of Vancouver, Victoria, and the Greater Seattle-Tacoma metroplex, which collectively have doubled in size since 1960. Although the Canadian steelhead stocks exhibit some biological variance from U.S. steelhead, they historically have also been subject to composite management strategies that were significantly different in many respects.

The varied status of wild steelhead stocks statewide, in conjunction with the public's expectations for the Department managers to balance conservation, tribal and non-tribal fisheries, economic stability as well as other social, cultural and environmental values, motivated the development of this *Statewide Steelhead Management Plan*.

The Department, with the help of the Ad Hoc Steelhead Stakeholder group, initiated a multi-step process to develop the plan. A prior step in this process was to establish the scientific foundation on which to build improved steelhead management. Drawing on decades of research and new analyses, a comprehensive review of steelhead stocks and their status in Washington was published in the draft report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"*. Review of this report is crucial to understanding how current *O. mykiss* science drives future plans for management of steelhead in the state. Each chapter in the science paper concludes with numerous findings and recommendations to guide future management.

The second step, development of the *SSMP*, builds on the scientific foundation to provide a framework of steelhead management policies, strategies, and actions throughout the state. The

Washington Department of Fish and Wildlife recognizes the important role our stakeholders play in the success of long-term management. In July 2006, WDFW established a small Ad Hoc Steelhead Stakeholder group consisting of members from the Steelhead and Cutthroat Policy Advisory Group (SCPAG) as well as other conservation interest groups. This ad hoc stakeholder group further expanded to include other interested parties such as representatives from the Wild Fish Conservancy (formerly Washington Trout), the Hatchery Scientific Review Group (HSRG), and the Northwest Indian Fisheries Commission (NWIFC). Stakeholders typically met monthly to review and provide input on the developing policy framework and strategies.

Substantial variation exists across the state between the status of stocks, habitat conditions, and the role of tribal, local, and federal authorities. One approach will not fit all cases, so the *SSMP* will provide the Department with overarching guidance for development of the third step, RMPs tailored to meet recovery and sustainability goals for the DPS, ecosystem conditions and governing authorities in each region.

Seven RMPs will be developed, from watershed plans created by local entities with input from the respective Tribes, simultaneously during the next 24 to 36 months. These RMPs include the Puget Sound, Olympic Peninsula, Southwest Washington, Lower Columbia River, Mid-Columbia River, Upper Columbia River and Snake River Basin Distinct Population Segments. Upon completion of the phased SEPA reviews, the final *SSMP* will provide the collection of individual watershed plans and RMPs.

In 1998, the Legislature recognized the importance of maintaining state control of its fisheries resource in the face of ESA listings and established programs to plan for and support salmon and steelhead recovery on a watershed-by-watershed basis. [RCW 77.85.005] While some salmon recovery activities may not have been designed or proposed to benefit steelhead explicitly, many are sufficiently beneficial to be included in steelhead regional plans. The Department will carefully consider these local initiatives and strategies and use them to fine-tune the *SSMP* strategies during the development of the RMPs for steelhead.

Many of the RMPs will be developed with appropriate Indian tribes. The U.S. Government recognizes twenty-five tribes as parties of the Stevens-Palmer Treaties. Twenty-four tribes have usual and accustomed fishing places within the boundaries of the State of Washington. In addition, there are nine federally recognized tribes that are not party to the Stevens-Palmer Treaties. The tribes' and state's fishery jurisdictions and authorities significantly overlap. To promote effective and efficient management of fisheries resources and to minimize potential conflict, the Department and tribes have developed a cooperative management approach to exercise their respective authorities and to achieve shared conservation objectives. This co-management arrangement will be reflected in each RMP as the various tribes contribute their knowledge and expertise to support rebuilding of wild populations.

The Department is issuing this DEIS to inform the public of a range of strategies that may be included in the *SSMP*. Beginning with the status quo, this draft presents the strategies with a discussion of the comparative risks and benefits for each. These are provided so the public can engage in a meaningful debate over the best way for the Department to proceed. When the debate is concluded, the record of comments will be included in a FEIS. The FWC will examine

the FEIS and consider the public's comments and recommendations. It will then adopt the policy it deems will best restore and protect our esteemed state fish for future generations.

2.2 Environmental Setting – Distinct Population Segments, Evolutionarily Significant Units and Water Resource Inventory Areas.

National Marine Fisheries Service announced in the Federal Register on November 4, 2005 it would consider Washington steelhead Distinct Population Segments (DPS) to be contained within the same geographic boundaries as the previously established steelhead Evolutionarily Significant Units (ESUs). *O mykiss* has a detailed discussion on the interchangeability of the ESU and DPS terminology. The DPSs are genetically similar steelhead stocks, which live in groups of adjacent watersheds. Although the steelhead in a given DPS do not physically occupy the entire watershed, it is convenient to geographically equate the DPS with the appropriate watershed ecosystem boundaries. The Water Resources Act of 1971, Revised Code of Washington (RCW) 90.54, named watersheds Water Resource Inventory Areas (WRIA). The Act authorized the Department of Ecology to develop and manage these administrative and planning boundaries. The boundaries are codified under Administrative Code (WAC) 173-500-040. The original WRIA boundary agreements and judgments were reached jointly by Washington's natural resource agencies Ecology, Natural Resources, and Fish and Wildlife in 1970. These boundaries represent the administrative under pinning of the state's Fisheries Management and Salmon Recovery efforts in Washington. The attached maps and explanatory text, modified from the *O mykiss*, describe the current distribution of naturally spawning summer and winter steelhead in the Washington State portions of the seven DPSs.

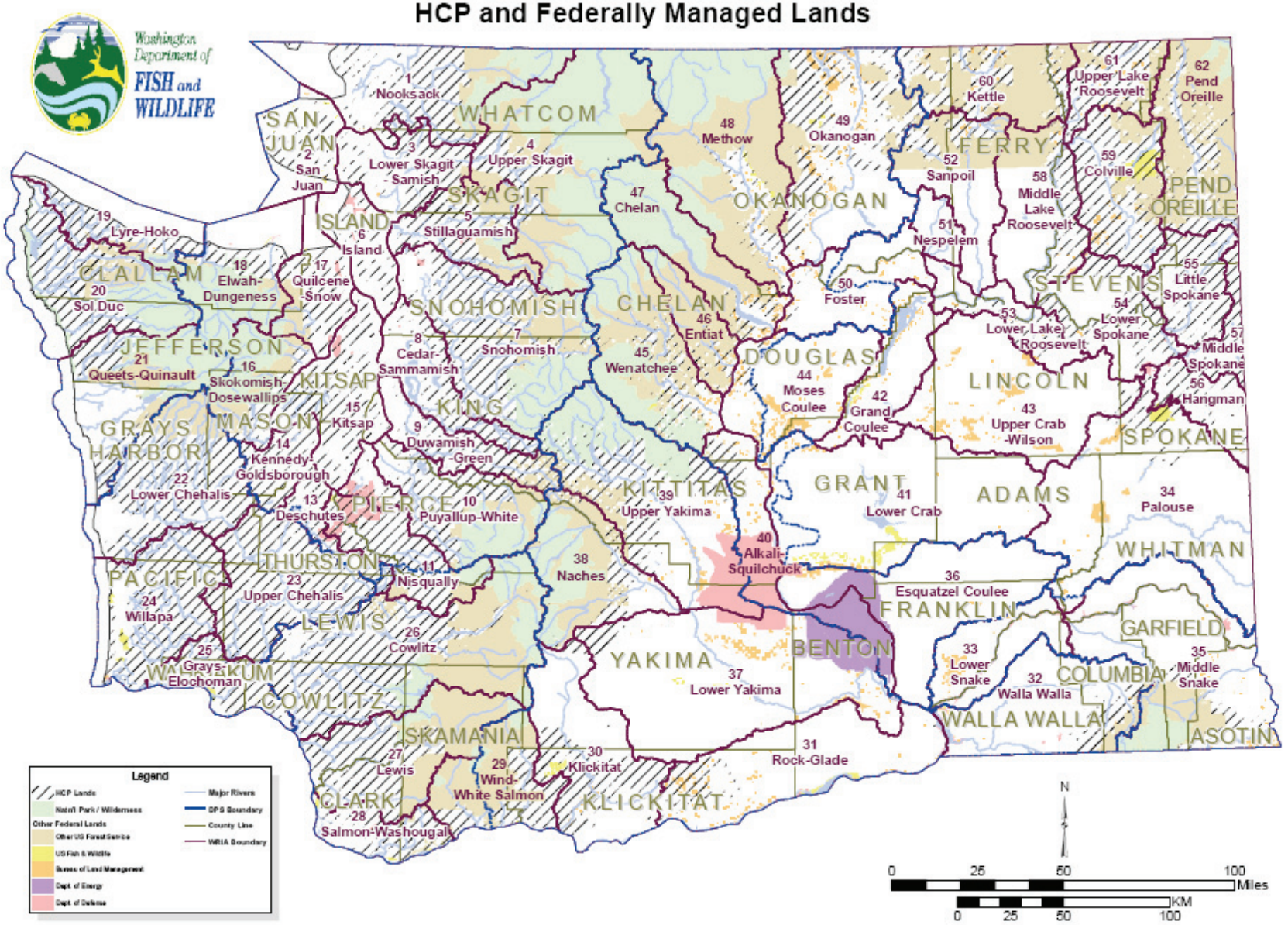
Habitat Degradation and Alteration

Major disturbance events, both natural and human-caused, have defined the current condition of Washington ecosystems. Natural disasters such as floods, landslides and volcanic eruptions can alter local landscapes. The cumulative effects of individual habitat alterations can have significant impact on flow regimes at both the local and watershed scales. Waterfront development has armored many shorelines in Puget Sound and along streams statewide. Urban and rural development has paved or roofed the surface area of many lowland localities resulting in enhanced storm runoff into streams. Most of the lowlands and mid elevation old growth forests have been logged and reforested over the years. Road and culvert installations have impacted fish access to habitat. The Clean Water Act and numerous local anti-pollution initiatives have helped stem degradation but have not eliminated it. Farming practices in streamside environments may impact shoreline areas and introduce sediment and fertilizer residuals into the water. Nutrient concentrations in some systems have deteriorated from the natural levels that have been most healthy for steelhead and other species. Numerous rivers have dams that create fish passage barriers and impoundments over spawning and rearing habitat. The Forest and Fish Act, the Northwest Forest Plan and the DNR Habitat Conservation Plan provide buffer protection that will eventually provide shade, woody debris and other stream ecological benefits that were not present prior to 1999.

Federally Managed Lands

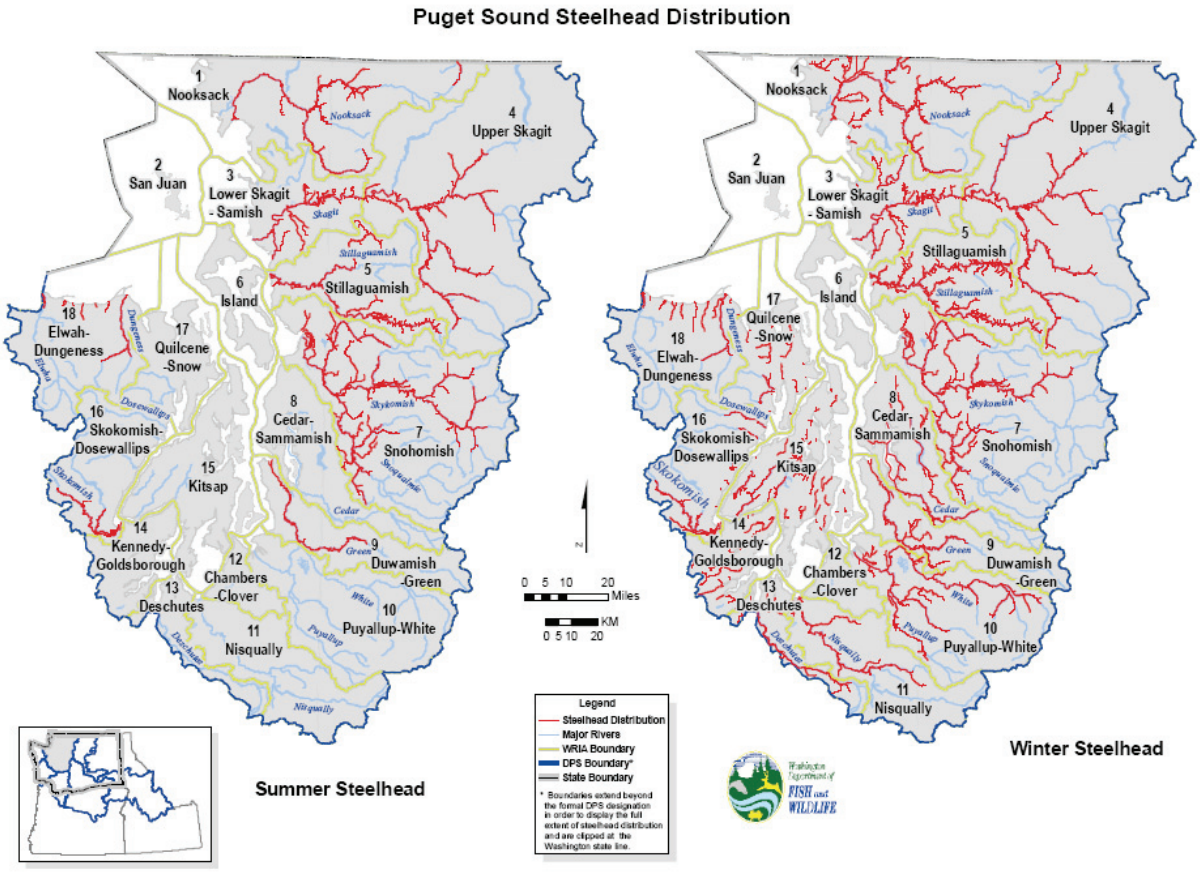
With the existing limited ability of WDFW to directly control habitat degradation, the Department is currently working with other agencies to support initiatives that would be beneficial to steelhead and other salmonids. As indicated in the attached map, nearly all steelhead freshwater habitats fall under the jurisdiction of various Federal programs and agreements.

HCP and Federally Managed Lands



Puget Sound DPS

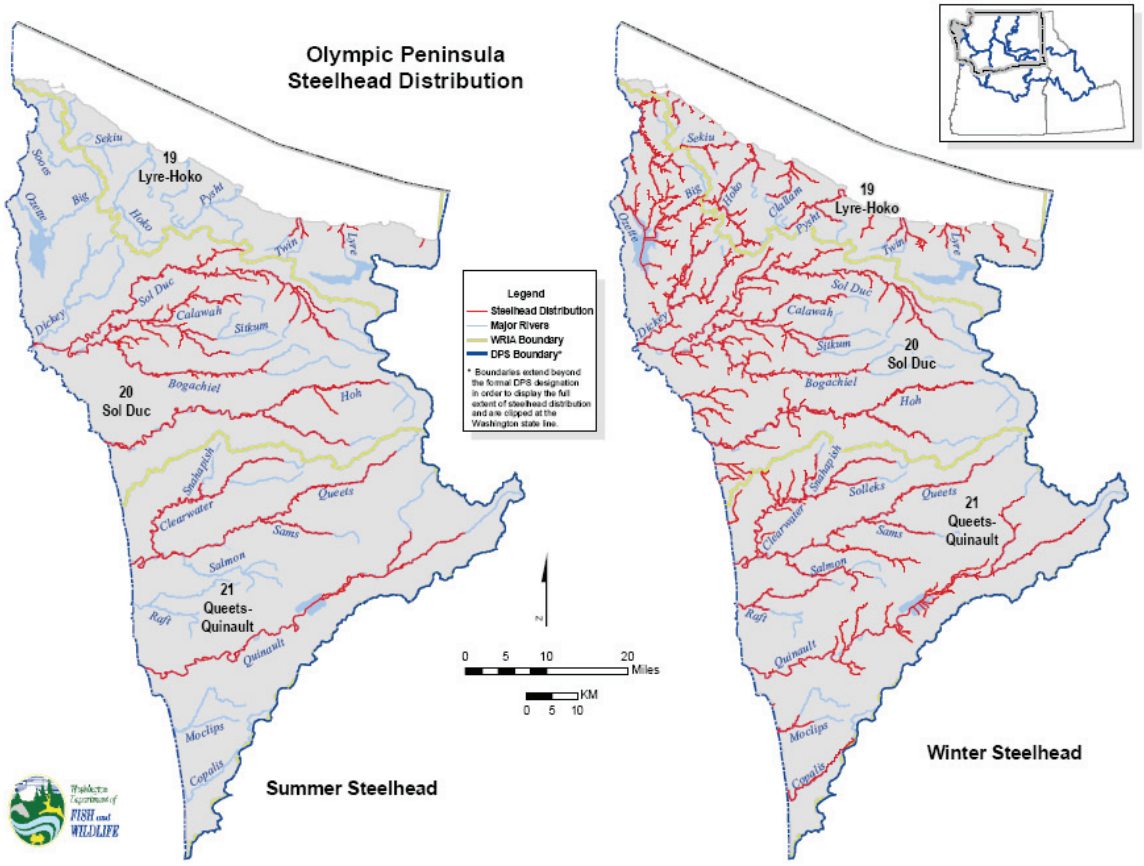
The land within the boundaries of WRIAs 1 through 18 is the area included in the Puget Sound Distinct Population Segment.



The following description of the Puget Sound DPS is primarily a summary of information from Busby et al. (1996). The Puget Sound DPS includes streams ranging from the Canadian border (Nooksack River basin), south through Puget Sound and Hood Canal, north and west to the Elwha River, which empties into the eastern Strait of Juan de Fuca. The region lies in the rain shadow of the Olympic Mountains and is significantly drier than the Olympic Peninsula to the west. The relatively protected marine environment of Puget Sound provides an opportunity for both juvenile and adult residence time that is not available to high seas migrating steelhead in the other DPSs. The elongate geometry of the marine basins and embayments also provides for broad variations in tidal currents, sub-basin flushing capacity, and relative stagnation. This can subsequently be expressed as a vulnerability to pollutant concentration that generally increases toward the South Sound region and into the Hood Canal fjord. Populations in British Columbia were excluded on a biological basis because they tend to migrate to marine waters at age three, whereas those in Washington tend to migrate at age two.

Genetic samples have been taken from steelhead collected at 40 locations within the geographic extent of the Puget Sound DPS and allozyme analysis conducted for 56 polymorphic loci (Phelps et al. 1997). Many of the samples were from juveniles and in some cases may have included a mixture of summer steelhead, winter steelhead, and resident *O. mykiss*. In the absence of informative genetic analysis, we generally relied on the populations identified in WDF et al. (1993). Identification of these populations was based on the geographic isolation of spawning areas and/or the apparent non-overlap of spawn timing (WDF et al. 1993).

Olympic Peninsula DPS
The land within the boundaries of WRIAs 19 through 21 is the area included in the Olympic Peninsula Distinct Population Segment.

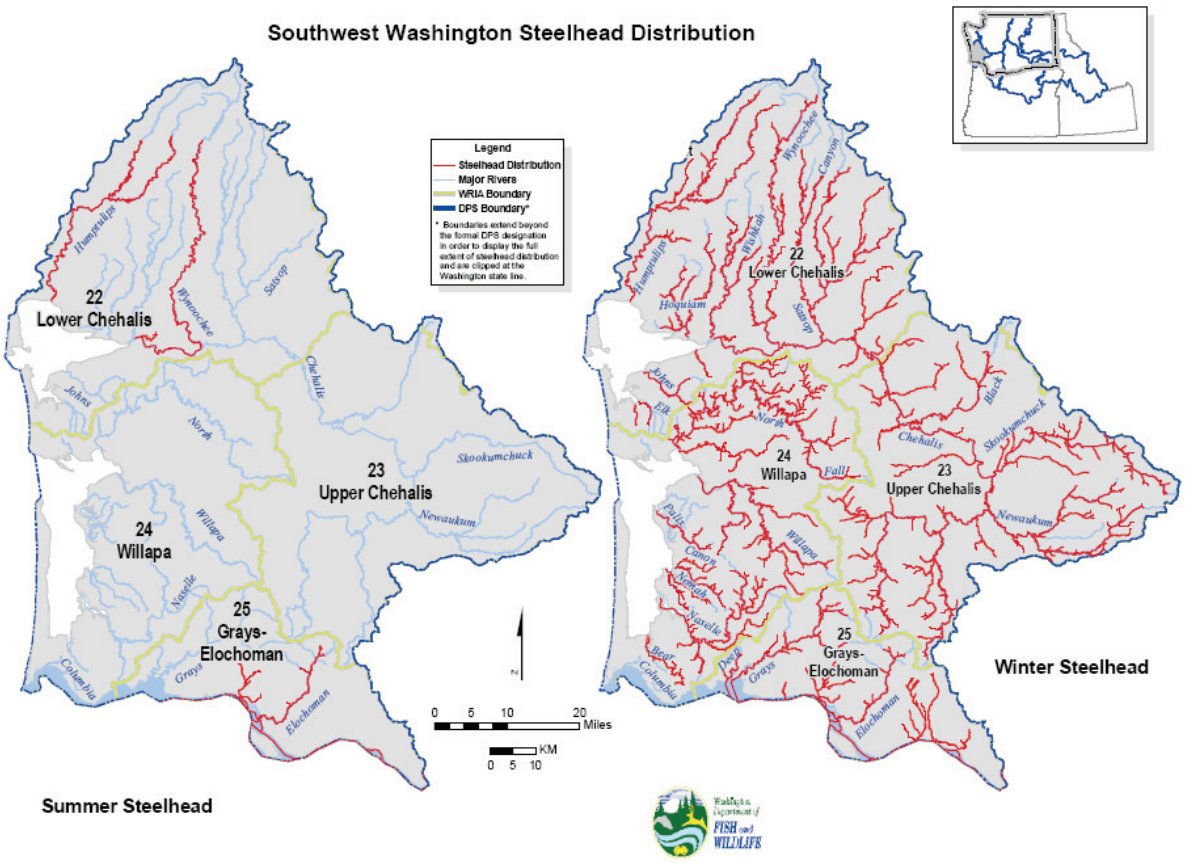


The following description of the Olympic Peninsula DPS is primarily a summary of information from Busby et al. (1996). The Olympic Peninsula DPS includes the western Strait of Juan de Fuca and the Olympic Peninsula from west of the Elwha River, around Cape Flattery, and south to include all streams that drain into the Pacific Ocean North of Grays Harbor. A rare, temperate rain forest ecosystem dominates the western slopes of the thrust-cored Olympic Mountains. Very high annual precipitation rates, restricted land use and access, along with favorable gradient and bedload combinations have produced the most robust wild steelhead stocks in the state. These physical and climatic differences were considered to contribute to the biological distinctiveness of steelhead in the DPS. Genetic analyses by WDFW indicates that populations in the western Strait of Juan de Fuca and the North Coast of Washington are similar to one another, yet distinct from those in other regions of western Washington. Also, the coast region north of Grays Harbor and the Chehalis basin contains fish and amphibians not found on the

south coast (presumably reflecting the glacial history of the north coast). This observation provided the Biological Review Team (BRT) with additional evidence that the western Olympic Peninsula should be considered ecologically distinct from other coastal areas.

Genetic samples have been taken from steelhead collected at 15 locations within the geographic extent of the Olympic Peninsula DPS and allozyme analysis conducted for 56 polymorphic loci (Phelps et al. 1997). Many of the samples were from juveniles and in some cases may have included a mixture of summer steelhead, winter steelhead, and resident *O. mykiss*. In the absence of informative genetic analysis, we generally relied on the populations identified in WDF et al. (1993). Identification of these populations was based on the geographic isolation of spawning areas and spawn timing (WDF et al. 1993).

Southwest Washington DPS
The land within the boundaries of WRIAs 22 through 25 is the area included in the Southwest Washington Distinct Population Segment.



The following description of the Southwest Washington DPS is primarily a summary of information from Busby et al. (1996). The range of this DPS includes all rivers draining into the major embayments of Grays Harbor, Willapa Bay, and the Columbia River up to (but not including) the Cowlitz River. The geomorphology is characterized by the large estuarine environments developed by littoral sediment transport from the Columbia northward along the Pacific Coast. Some streams drain the temperate rain forest terrains of the Olympic Peninsula, but the apparently overriding feature is the large embayment environment common to all stocks in this DPS. Stream hydrology factors, such as gradient, presence of gravels, pools and riffles, and flow conditions are highly variable. The DPS is based on genetic data indicating that steelhead from the South Coast of Washington are distinct from those of the Olympic Peninsula. Relationships with other lower Columbia steelhead stocks were not clear at the time that the DPS was designated. Fish species in the Chehalis basin and the lowest portion of the Columbia River

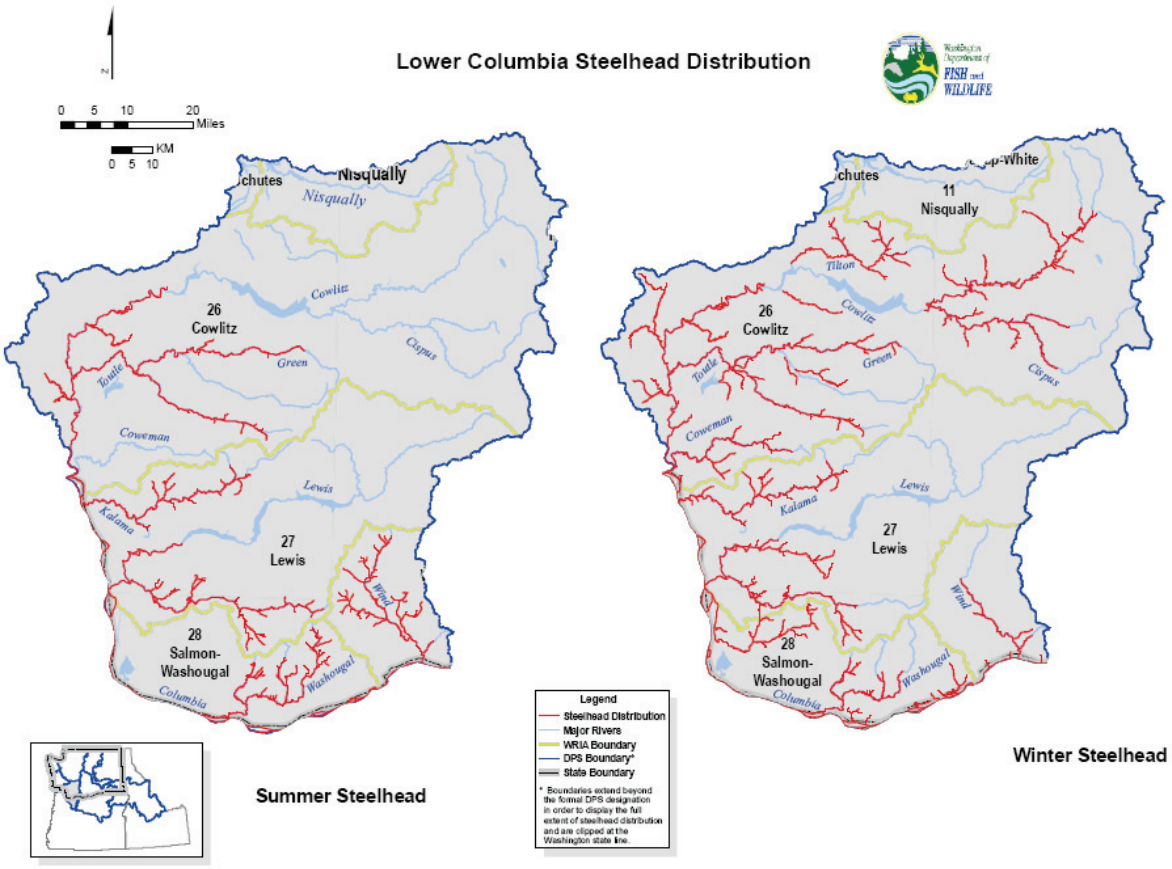
are similar, and sediments from the Columbia are known to be transported to Willapa Bay and Grays Harbor. This information provided the BRT with evidence of an ecological link between the South Coast of Washington and the lowest portion of the Columbia River basin.

We have further subdivided the Southwest Washington DPS into three components, Grays Harbor, Willapa, and Columbia Mouth, in recognition of the significant biological variation within the DPS and the size of the Chehalis Basin. The Chehalis River has the largest drainage area of any river in western Washington and includes the only summer steelhead populations in the DPS.

Genetic samples have been taken from steelhead collected at 15 locations within the geographic extent of the Southwest Washington DPS and allozyme analysis conducted for 56 polymorphic loci (Phelps et al. 1997). Many of the samples were from juveniles and in some cases may have included a mixture of summer steelhead, winter steelhead, and resident *O. mykiss*.

Lower Columbia DPS

The land within the boundaries of WRIAs 26 through 28 and part of 29 is the area included in the Lower Columbia Distinct Population Segment.



The following description of the Lower Columbia River DPS is primarily a summary of information from Busby et al. (1996). The Lower Columbia DPS includes the Columbia River and its tributaries from the Cowlitz River up to and including the Wind River on the Washington side of the Columbia River, and from the lower Willamette River (below Willamette Falls) through the Hood River (inclusive) in Oregon. The Washington portion is currently dominated by the major habitat disruption and recovery following the 1980 Mt. St. Helens eruption, and the influences of habitat alterations associated with urbanization and construction of Bonneville Dam. Genetic analyses available to the BRT indicated that lower Columbia steelhead were different from those in coastal streams of Oregon and Washington and from those in the upper Willamette River (above Willamette Falls). Steelhead from the Washougal, Wind and Big White Salmon rivers were genetically distinct from those originating from the south coast of

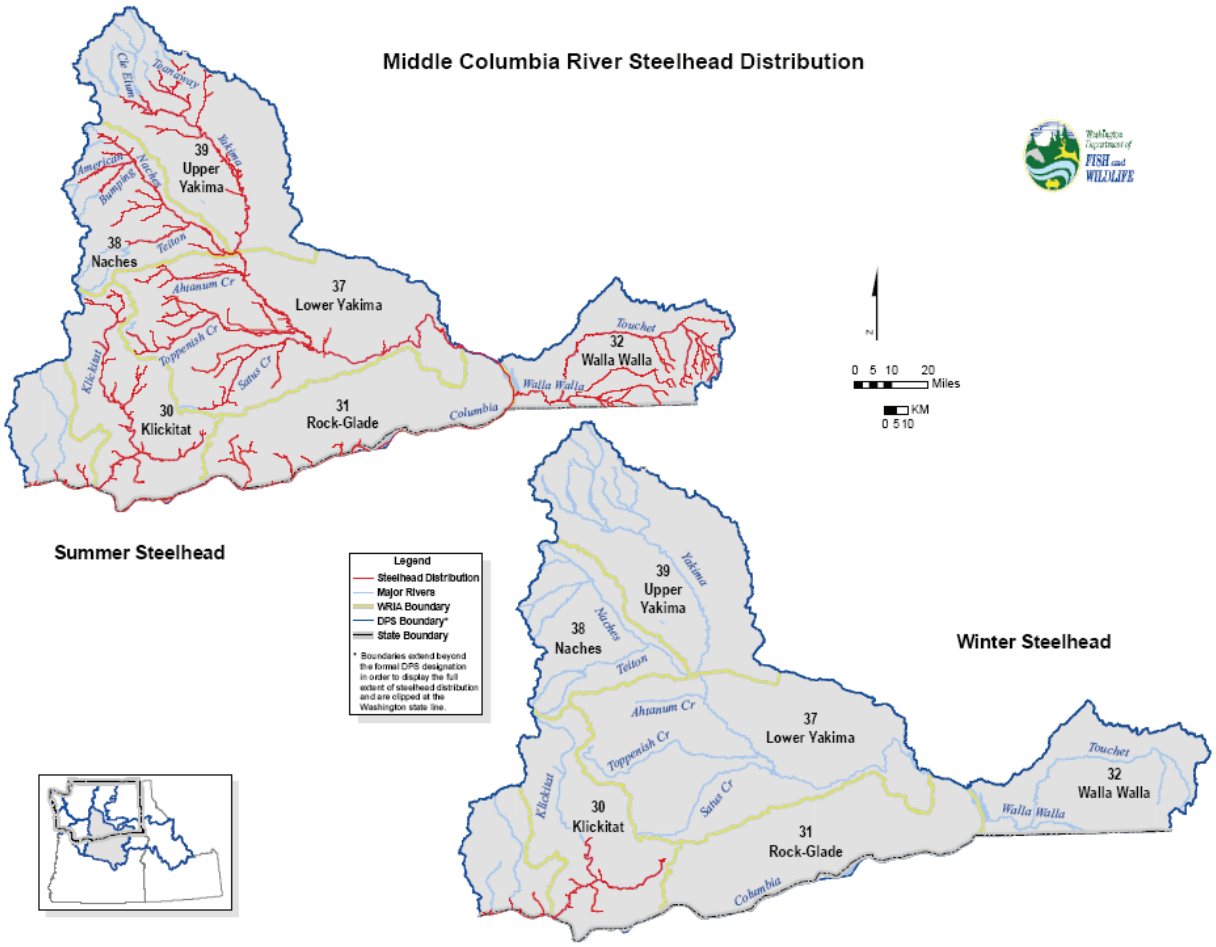
Washington. Streams in this DPS drain the western Cascades from the southwestern flanks of Mt. Rainier to Mt. Hood.

The WLCTRT (Myers et al. 2004) identified 19 historical populations of steelhead in the Washington component of the Lower Columbia DPS. Of these, 14 populations are believed to be currently extant. Four populations of winter steelhead on the Cowlitz River (Cispus, Tilton, Upper Cowlitz, Lower Cowlitz) are believed to have existed historically. However, construction of the Mayfield Dam in 1968 eliminated access to spawning habitat for these populations. Returning adults were taken to the Cowlitz Trout Hatchery to maintain the populations and initiate a late-winter steelhead artificial production program. The resultant late-winter population spawning in the lower Cowlitz River likely includes genetic representation from each of the four historical populations. The North Fork Lewis summer population was likely extirpated after construction of 3 dams on the North Fork Lewis River eliminated access to 80% of historical spawning and rearing habitat (Myers et al. 2004).

Introgression with hatchery fish of Chambers Creek hatchery origin may have occurred in several of the populations.

Middle Columbia DPS

The land within the boundaries of part of WRIA 29 and WRIAs 30, 31, 32, 37,38 and 39 is the area included in the Middle Columbia Distinct Population Segment.

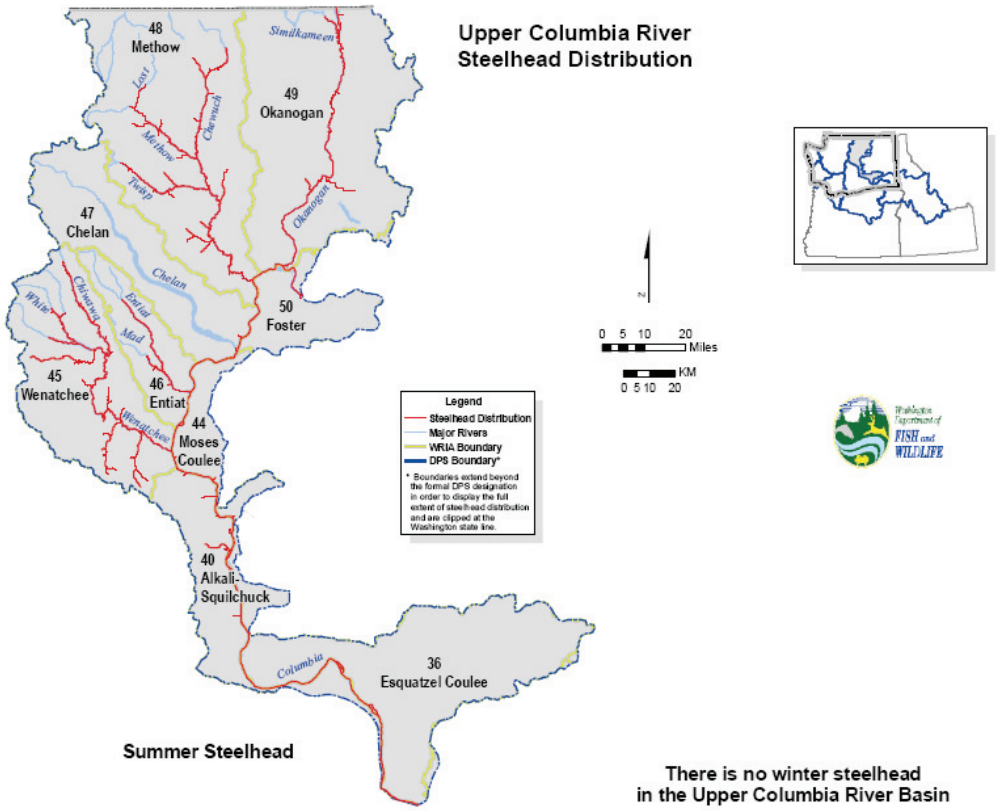


The following description of the Middle Columbia River DPS is primarily a summary of information from Busby et al. (1996). The Middle Columbia River DPS extends upstream from the Wind River through the Yakima River in Washington (excluding the Snake River System) and includes tributaries to the Columbia River originating in Oregon up through the Walla Walla River. This intermontane area of Columbia plateau basalts is characterized by much drier weather and harsh seasonal temperature extremes, with little moderation from the shrub-dominated vegetation cover. Steelhead in the DPS are considered part of an inland genetic lineage. Genetic analyses available to the ICRT showed that steelhead from middle Columbia streams are distinct from Snake River populations. Analyses of naturally spawning steelhead from the upper Columbia were not available to the BRT for comparison with middle Columbia stocks; however Wells Hatchery steelhead (upper Columbia basin) are known to be distinct from middle Columbia steelhead. Inclusion of Klickitat and Yakima steelhead in this DPS was

debated. The Klickitat has native summer and winter steelhead like the larger systems in the Lower Columbia DPS. No winter steelhead are seen upstream from the Klickitat. Klickitat steelhead were ultimately included in the Middle Columbia DPS based on their genetic similarity to other Middle Columbia stocks. Similarly, although Yakima steelhead were considered for inclusion in the Upper Columbia DPS, they were ultimately placed in the Middle Columbia DPS due to their genetic similarity to Klickitat steelhead and because of similarities to Middle Columbia life history and habitat features.

Nine historical populations have been identified in the Washington component of the Middle Columbia River DPS (ICTRT 2003). Eight of the nine populations are extant. The White Salmon Summer population was extirpated after construction of the Condit Dam blocked access to spawning habitat in 1913.

Upper Columbia DPS
The land within the boundaries of WRIAs 40, 41, 44, 45, 46, 48, 49 and 50 is the area included in the Upper Columbia Distinct Population Segment.



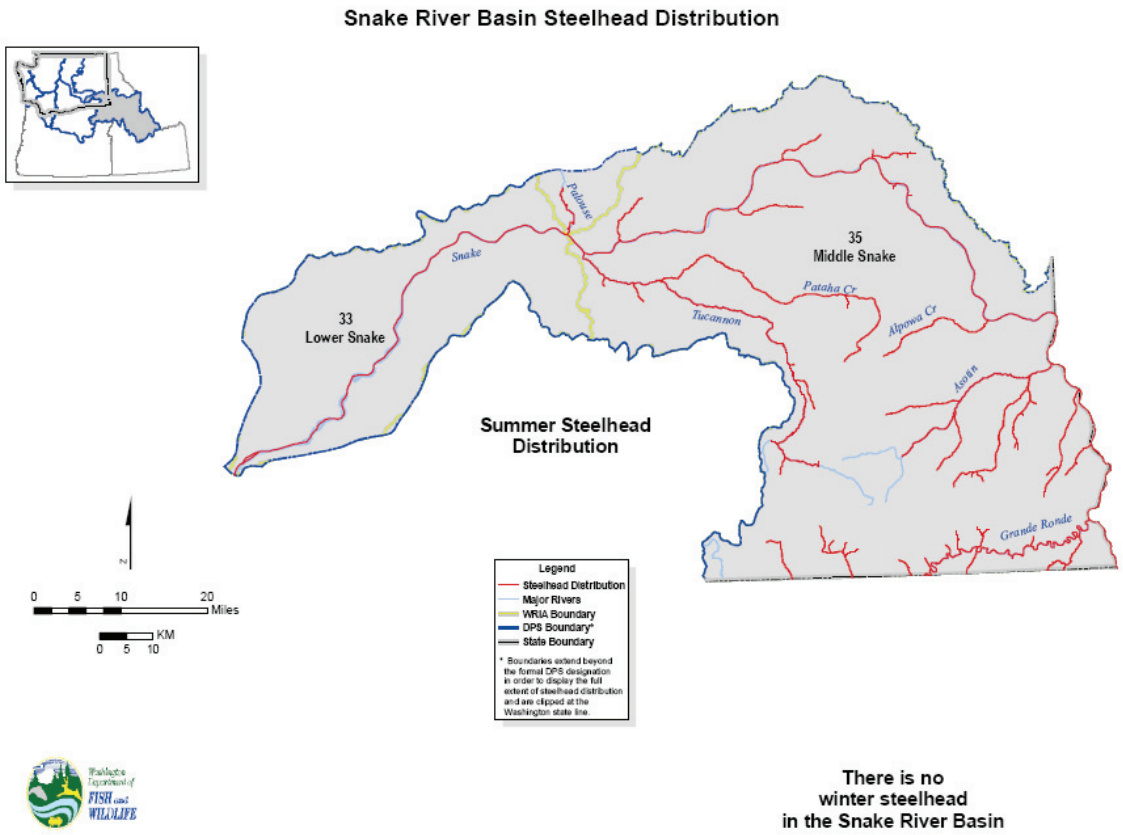
The following description of the Upper Columbia River DPS is primarily a summary of information from Busby et al. (1996). The Upper Columbia River DPS encompasses the Columbia River System upstream of the Yakima River to the U.S.-Canada border. Passage up the Columbia River itself is blocked at Chief Joseph Dam. The rivers in this DPS drain the Northern Cascades and the Okanogan Highlands physiographic provinces, which feature a complex geology that includes glacial, volcanic and marine terrains. These have been deeply incised to produce generally low gradient streams beyond the headwaters. Extremes in temperature, precipitation and snowpack accumulation produce erratic cold water temperatures and stream flows which tend to extend growth and maturation periods beyond those typical of the coastal rivers of the Pacific Northwest. Life histories of Upper Columbia steelhead are similar to those of other inland populations in that after returning from saltwater, most hold in freshwater for nearly a year before spawning. Although most steelhead smolt at age two (Wenatchee 66%; Methow and Okanogan 78%) in the Upper Columbia region, smolting can take

place as late as age seven (Mullan et al. 1992). This prolonged juvenile freshwater residence is probably the result of very cold stream temperatures. Wenatchee steelhead appear to return to freshwater after 1-2 years in saltwater, while those in the Methow return predominately after one year (64%) in salt water. Due to a lack of trapping facilities, little is known about steelhead destined for the Entiat River.

Eleven populations are believed to have existed in this DPS historically (ICTRT 2003). Six of the populations (Sanpoil, Kettle/Colville, Pend Oreille, Kootenay, Spokane, and Hangman) were extirpated after construction of the Grand Coulee Dam in 1939 blocked access to more than 50% of the river miles previously accessible to steelhead originating from this DPS (NRC 1996). The status of the Okanogan and Crab Creek populations is uncertain. Although analysis suggests that sufficient habitat was present historically to support independent populations, limited surveys have revealed small numbers of natural-origin fish using Omak Creek in recent years (ICTRT 2003).

Genetic analysis on three of the extant populations (Wenatchee, Entiat, and Methow) has been difficult for three reasons: 1) the Grand Coulee Fish Maintenance Project (Fish and Hanavan 1948) probably resulted in the mixing of steelhead from all areas upstream of Rock Island Dam; 2) artificial production programs released juvenile steelhead that originated from broodstock of unknown origin collected at Wells Dam or Priest Rapids Dam; and 3) genetic samples were limited and collected from juvenile fish (Chapman et al. 1994; Ford et al. 2001). However, the general conclusion was that introgression of steelhead of Skamania-origin has not occurred (Chapman et al.)

Snake River Basin DPS
The land within the boundaries of WRIAs 33 and 35 is the area included in the Snake River basin Distinct Population Segment.



The following description of the Snake River Basin DPS is primarily a summary of information from Busby et al. (1996). The Snake River DPS extends from the Snake River mouth in SE Washington into Oregon and much of Idaho. Streams originate in the area of mature, eroded landscape dominated by the exposed granitic terrains of the large Idaho Batholith. This results in rivers draining extensive, open, low relief areas in a warmer and more alkaline setting than the other geographic regions. Subbasins in the Washington component of the DPS differs in that the streams arise from the relatively low elevation, basalt dominated Blue Mountains. This DPS also has migration distances and spawning elevations that are generally greater than the other populations in the state. Most of these populations are thought to be fairly well isolated from populations outside the Snake basin. Genetic and meristic data available to the BRT both indicated that Snake basin steelhead are distinct from those outside the basin. Inland steelhead have been divided into A-run and B-run fish. A-run steelhead are smaller, on average have a

shorter freshwater and ocean residence, and apparently their upriver migration occurs earlier in the year (ICTRT 2003).

The ICTRT identified 40 populations of steelhead that historically existed in the Snake River Basin DPS (McClure and Cooney, pers. comm.). Only four of those populations have spawning areas located at least partially in Washington: 1) Tucannon; 2) Asotin Creek; 3) Lower Grande Ronde; and 4) Joseph Creek. Additional small aggregations of spawning steelhead utilize small streams that enter the Snake between the Tucannon River and the Oregon state boundary. These groups do not meet the criteria for a population as defined by the ICTRT, and are therefore assigned to the next downstream tributary population (e.g. Alpowa Creek and Tenmile Creek steelhead were both assigned to Asotin steelhead population) in the Snake River Salmon Recovery Plan for SE WA.

3. Alternatives and Analysis

Overview

WAC 197-11-444 provides a comprehensive list of subjects that must be considered in this analysis with the caveat that the EIS must only study the elements that apply to this proposal. This proposal will provide guidance for the creation of watershed plans and RMPs. Those plans will include projects that will affect some of the elements on the environmental checklist and those plans will be subject to supplemental SEPA review as they are proposed. The alternatives introduced in section 1.1.2 of this Programmatic DEIS for the Statewide Steelhead Management Plan have been examined and found not to have a likely significant adverse impact to the environment on the following elements:

(1) Natural environment
- (a) Earth
  - (i) Geology
  - (ii) Soils
  - (iii) Topography
  - (iv) Unique physical features
  - (v) Erosion/enlargement of land area (accretion)
- (b) Air
  - (i) Air quality
  - (ii) Odor
  - (iii) Climate
- (c) Water
  - (i) Surface water movement/quantity/quality
  - (ii) Runoff/absorption
  - (iii) Floods
  - (iv) Ground water movement/quantity/quality
  - (v) Public water supplies
- (d) Plants and animals
  - (i) Habitat for and numbers or diversity of species of plants, fish, or other wildlife
  - (ii) Unique species
  - (iii) Fish or wildlife migration routes
- (e) Energy and natural resources
  - (i) Amount required/rate of use/efficiency
  - (ii) Source/availability
  - (iii) Nonrenewable resources
  - (iv) Conservation and renewable resources
  - (v) Scenic resources

(2) Built environment
- (a) Environmental health
  - (i) Noise
  - (ii) Risk of explosion
  - (iii) Releases or potential releases to the environment affecting public health, such as toxic or hazardous materials
- (b) Land and shoreline use

(i) Land and shoreline use
(ii) Housing
(iii) Light and glare
(iv) Aesthetics
(v) Recreation
(vi) Historic and cultural preservation
(vii) Agricultural crops

(c) Transportation
(i) Transportation systems
(ii) Vehicular traffic
(iii) Waterborne, rail, and air traffic
(iv) Parking
(v) Movement/circulation of people or goods
(vi) Traffic hazards

(d) Public services and utilities
(i) Fire
(ii) Police
(iii) Schools
(iv) Parks and other recreational facilities
(v) Maintenance
(vi) Communications
(vii) Water/storm water
(viii) Sewer/solid waste
(ix) Other governmental services or utilities

Appendix C provides additional information from the Environmental Checklist called for by WAC 197-11-444 on these and other possible environmental elements that might come under further consideration as the more detailed RMPs and watershed plans are prepared. In section 1.4 a summary discussion of alternatives and strategies by policy subject area was supported by the introduction of Table 1. This chapter provides further detail by analyzing how the alternatives address potential impacts for each of the eight policy areas found in the *SSMP*. Similar to the presentation in section 1.1.2, the discussion of the status quo (Alternative 3) will be first in order to facilitate comparison of the other alternatives with the current management approach. These sections will also identify region or watershed specific issues that might justify an alternative that is more, or possibly in some cases less, conservative that Alternative 2 when those plans are developed.

The *SSMP* is intended to set statewide policy guidelines for wild steelhead management. It will affect decisions about animals and recreation. The following SEPA elements will be analyzed for all of the alternatives:

1) Plants and Animals - Habitat for and numbers or diversity of species of plants, fish, or other wildlife, unique species and fish or wildlife migration routes
2) Land and Shorelines Use – Recreation

3.1 Operational Policies Category

Four policy subject areas make up the Steelhead Program Operations major policy category. This category deals with policy decisions that directly affect steelhead and their habitats and are significantly interrelated (see section 1.4.1). These policy subject areas will provide direction to the Department for decisions that affect natural and artificial production, habitat protection and restoration and fisheries management. The alternatives span levels of risk for strategies that the FWC is considering using in its *SSMP*.

3.1.1 Natural Production

Introduction

The goal of the *SSMP* to restore and maintain the abundance, distribution, diversity and long-term productivity of Washington's wild steelhead and their habitats to assure healthy stocks speaks specifically of restoration and maintenance of wild steelhead stocks. Wild steelhead are defined as naturally produced fish from a locally adapted stock regardless of parentage. Healthy stocks are defined as having sufficient abundance, productivity, diversity and spatial structure to be resilient through environmental fluctuations, to perform natural ecological functions in freshwater and marine systems, provide related cultural values to society, and sustain tribal and recreational fisheries.

The natural production operations policies for the *SSMP* set the foundation for the rest of the plan. Selection of an effective policy is proportionally dependent on the certainty of our understanding of stock population dynamics, the condition of the habitat, and the status of the stock. It must fit in with an ecosystem approach that protects and restores salmonid stocks and other indigenous aquatic species to levels that sustain healthy ecosystem processes. The policy must identify factors that limit the health of each stock so modifications to fishery, hatchery, and habitat management can be tailored to the situation. Finally, it must provide a long-term goal with measurable benchmarks that provides sufficient diversity and abundance of wild spawning steelhead to achieve VSP parameters consistent with a healthy wild stock.

Four alternative approaches for managing wild steelhead natural production are presented in this section. Each presents a different level of commitment to natural production. Detailed technical information about the key elements of the science behind the alternatives is presented in draft report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs" (Draft July 21, 2006).*

Affected Environment

The affected environment for the Natural Production section is the mainstem and tributaries habitat where steelhead spawn and rear. It may include locations where natural spawning and rearing takes place or it may include areas where integrated hatchery program actions occur. This affected environment includes marine outmigration and juvenile to adult growth.

Natural Production Alternatives

- **Alternative 3 – Current approach (Status Quo Alternative) - Manage for at least maximum sustainable harvest (MSH) abundance or mitigation goal.**

All wild steelhead populations would be managed to consistently achieve MSH abundance levels. The affect on fishing opportunity is discussed in section 3.1.3 in this DEIS and summarized in Table 1 of the *SSMP* document. For the Columbia River basin DPSs in the eastern side of the state, many populations are managed for compliance with current mitigation agreements and goals. In many of these situations, the status quo approach will continue to be preferred. However, research will be recommended to support or alter mitigation goals as necessary. Current levels of impact to salmonids could be reduced slightly via the adaptive management decision process. Habitat impacts to wild fish caused by continued population growth increases the likelihood of cumulative effects resulting from cyclical productivity variations. Recreational harvest, which is dependent on hatchery fish, would remain unchanged.

- **Alternative 2 – Increased wild protection (Preferred Alternative) - Manage for viable salmonid population (VSP) abundance.**

Escapement would be managed to ensure wild steelhead abundance, productivity, spatial structure, and life history diversity VSP objectives are achieved. The shift in emphasis from an abundance to a broader population viability focus will improve wild steelhead management by expanding the utilization of agency databases to better inform management decisions. According to the current SaSI data, there is insufficient abundance information to determine the status of nearly half of the steelhead stocks. This alternative places less emphasis on full carrying capacity utilization than Alternative 1 and would accept some impacts on wild steelhead as long as they do not significantly impact other salmonid stocks or ecosystem health. In general, this alternative favors escapement above MSH goals in order to provide a buffer for cyclical downturns, and as such may impact recreational harvest opportunity in order to protect wild populations although to a lesser degree than Alternative 1.

- **Alternative 1 – Maximize wild protection (Most Conservative alternative) - Manage for carrying capacity.**

This alternative places the greatest emphasis on protection of wild steelhead stock health. It emphasizes wild steelhead stock protection and production over a primary consideration of potential negative impacts on other salmonid stocks or ecosystem health. In some eastern Washington watersheds, existing mitigation agreements along with the assessment that this steelhead management strategy will have little significant adverse environmental impact to other salmonids have made this the preferred management approach. In extreme cases, for some other watersheds in the state, this alternative may greatly limit recreational harvest opportunity by restricting hatchery programs to eliminate related ecosystem impacts in future analysis.

- **Alternative 4 – Increased Fishing Opportunity (Least Conservative Alternative) - Manage abundance at MSH.**

All wild steelhead populations would be managed to achieve MSH as often as possible while still enhancing or encouraging harvest of hatchery steelhead or other fish. The cumulative effects on wild steelhead and salmon stocks would intensify as recreational harvest opportunity is enhanced. This alternative poses a significant adverse impact to wild fish particularly in the case of at-risk populations.

Significant Impacts and Mitigation Measures

Alternatives 1 and 2 (Preferred Alternative) provide policy guidance aimed at protecting and restoring wild steelhead to healthy populations in the Washington DPSs. The expected outcome of this would be additional steelhead occupying their niches in the ecosystems. A significant adverse environmental impact to habitat for other species of plants, fish or wildlife, unique species and fish and wildlife migration routes is unlikely if either of these alternatives is adopted. A decrease in fishing opportunity could cause a decrease in some recreation activity along with a corresponding decrease in vehicular and boating traffic if either of these alternatives is adopted but this is unlikely to cause a significant adverse environmental impact. A possible, though probably insignificant, impact might be a slight shift in recreational fishing pressure on healthy populations.

Policy actions for Alternatives 3 (Status Quo) and 4 are feasible and meet the purpose and need of this impact statement but they do not fulfill the policy objectives because steelhead populations could continue to be at a cumulative impact risk if they were adopted.

Cumulative Impacts

Adoption of alternatives 3 and 4 could seriously hinder the successful achievement of the proposed *SSMP*. All considered alternatives must support the plan. Failure to select the appropriate natural production alternative means the alternatives for other aspects of the plan may not be adequate to achieve the goals of the plan and adoption of those alternatives would not meet the policy objectives. It is likely that any short-term benefits realized from Alternatives 3 or 4 would be offset by the long-term cumulative degeneration of the wild steelhead resource.

3.1.2 Habitat Protection and Restoration

Introduction

The *SSMP* states that a healthy wild stock is defined as having sufficient abundance, productivity, diversity and spatial structure to be resilient through environmental fluctuations, to perform natural ecological functions in freshwater and marine systems, provide related cultural values to society, and sustain tribal and recreational fisheries. Successful achievement of that standard is heavily dependent on healthy habitat.

Existing properly functioning habitat needs to be protected and the habitat lost, if possible needs to be restored. This means protecting and restoring habitat important for all life stages of not just steelhead but all anadromous fish, including, but not limited to, spawning and incubation, juvenile rearing and adult residence, juvenile and kelt out migration, and adult migration upstream to spawning areas. Habitat protection and restoration measures in this plan are based on the best available science relevant to stream flows, water quality and temperature, spawning substrates, in stream structural diversity, migratory access, estuary and near shore marine habitat quality and riparian habitat quality.

For the purposes of this plan, habitat protection analysis can be divided into preservation, water quality and restoration. Responsibility for habitat protection and restoration in Washington is shared among many agencies. The Department of Fish and Wildlife is responsible for protecting fish life from hydraulic projects that may affect the bed or flow of the state's waters. The Departments of Ecology and Health regulate activities that impact water quality. The Forest and Fish Act or the DNR Habitat Conservation Plan covers activities on state and private timberlands. The Northwest Forest Plan addresses protections in federal forests. The state has numerous programs in place to preserve and restore habitat. Major capital expenditures have been made over the last 15 years to acquire, protect and restore critical habitat.

The Shorelines Management Act, Growth Management Act and State Environmental Policy Act govern habitat protections on state lands but not on federal land or Tribal reservations. The Department of Ecology and local governments administer these laws. The legislature intended these laws to be tools to be used by agencies and the public to protect and restore wildlife and fisheries habitat including water quality, riparian and near shore environmental impacts.

> **The Shorelines Management Act** (SMA) says "It is the policy of the state to provide for the management of the shorelines of the state by planning for and fostering all reasonable and appropriate uses. This policy is designed to insure the development of these shorelines in a manner that, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest. This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life, while generally protecting public rights of navigation and corollary rights incidental thereto." The Act tells cities and counties that "Permitted uses in the shorelines of the state shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water."

The Growth Management Act (GMA) requires cities and counties to examine their Shorelines Master Plans to ensure they conform to GMA's requirements to protect critical areas through Critical Areas Ordinances (CAO). GMA says, "When developing policies and regulations to designate and protect critical areas, cities and counties should give "special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries."

WAC 365-195-920 (3) says "Conservation or protection measures necessary to preserve or enhance anadromous fisheries include measures that protect habitat important for all life stages of anadromous fish, including, but not limited to, spawning and incubation, juvenile rearing and adult residence, juvenile migration downstream to the sea, and adult migration upstream to spawning areas. Special consideration should be given to habitat protection measures based on the best available science relevant to stream flows, water quality and temperature, spawning substrates, in stream structural diversity, migratory access, estuary and near shore marine habitat quality, and the maintenance of salmon prey species. Conservation or protection measures can include the adoption of interim actions and long-term strategies to protect and enhance fisheries resources."

The State Environmental Policy Act (SEPA) RCW 43.21C.030 (1) "requires an environmental impact statement (the detailed statement required by RCW 43.21C.030(2)(c)) shall be prepared on proposals for legislation and other major actions having a probable significant, adverse environmental impact." This would include any regulation or project that could affect steelhead habitat.

The legislature put these tools in place so that citizens, interested groups and agencies would have public processes to examine projects and comment on potential impacts. These impacts could then be avoided or mitigated.

RCW 43.21C.031 "authorizes and directs that, to the fullest extent possible: (1) The policies, regulations, and laws of the state of Washington shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all branches of government of this state, including state agencies, municipal and public corporations, and counties shall:
(a) Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment."

The point of quoting all of these rules and regulations is to show that although the Department has a limited role in habitat protection, there are plenty of tools available for agencies and the public to use in habitat protection. Citizens and other agencies have the same ability as the Department to examine a Shoreline Master Plan, Critical Areas Ordinance or SEPA proposal to see if it adequately protects steelhead habitat.

The Department has more flexibility in dealing with habitat restoration activities then it does with habitat protection. RCW 77.85 governs Salmon Recovery in Washington. While the management of the salmon recovery effort is tasked to the Governor's Salmon Office, a great

deal of the responsibility for dealing with lead entities, Regional Fisheries Enhancement Groups and watershed restoration groups falls to the habitat biologists and field workers of the Department. The Department has the ability to expedite permits for habitat restoration projects and often does so.

Department strategies to improve habitat protection and restoration include facilitating access to habitat information and providing technical expertise to local citizens, concerned groups, the tribes, and state, local and federal agencies so they can identify problems and develop and implement local solutions. It can seek to enhance the effectiveness of the Hydraulic Project Approval process, implement a hierarchy of protection and mitigation for projects with unavoidable impacts, develop guidance and promote funding of habitat restoration programs, and improve fish passage and nutrient enhancement strategies.

Four alternatives for WDFW policy regarding wild steelhead habitat are presented in this section. Each presents a different level of commitment to habitat restoration and protection. Detailed technical information about the key elements of the science behind the alternatives is presented in draft report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"(Draft July21, 2006).*

Affected Environment

The affected environment for the Habitat Protection and Restoration section is the watersheds, riparian, near shore and marine habitats where steelhead spend any part of their life cycle. This includes all areas of the watershed regulated by the state or federal government that could affect steelhead health (see the Federally Managed Lands map in section 2.2).

Habitat Protection and Restoration Alternatives

- **Alternative 3 – Current Approach (Status Quo Alternative) - Protect habitat through the current HPA process, and maintain involvement in State and Federal protection and restoration processes.**

This alternative emphasizes protection and restoration of wild steelhead habitat using existing federal statutes and programs. It does not require the Department to increase participation in SMA SEPA, GMA, SEPA and external conservation processes to ensure habitat is protected and maintains existing participation in habitat recovery through the Salmon Recovery Act. Not as pro-active as Alternatives 1 and 2, this status quo alternative is essentially neutral with respect to habitat impact on either other species or recreation opportunity. But as such, it does not add to the competition for funding and staff resources to reduce impacts in the other seven policy subject areas of the *SSMP*. Currently, the Department provides technical assistance to salmon recovery groups, local governments, and hydraulic project proponents as work load allows.

- **Alternative 2 – Increased Wild Protection (Preferred Alternative) - Fully implement and enforce current authorities, and increase participation in effective external conservation processes. Encourage other agencies/entities to follow suit.**

This alternative emphasizes protection and restoration of wild steelhead habitat using existing statutes and programs. It requires the Department to increase participation in SMA, GMA, SEPA, HPA and external conservation processes to ensure laws are enforced and habitat is protected and to increase participation in habitat recovery through the Salmon Recovery Act and meets ESA requirements. As with Alternative 1, the focus on steelhead habitat requirements is also likely to benefit less demanding species as well. Department actions resulting from the selection of this alternative may include increased efforts to track local government permitting decisions more thoroughly, and to maximize the agency's expertise in the development and review of those decisions. Additionally, the Department may apply greater resources to appealing or challenging land and water use decisions that are inconsistent with the applicable laws and best available science related to steelhead habitat requirements. Under current HPA authority, the Department may apply greater administrative and political effort in the prosecution of hydraulic violations under RCW 77.55.

- **Alternative 1 – Maximize Wild Protection (Most Conservative Alternative) - Seek legislation to gain jurisdiction over habitat actions and implement those actions to achieve a no-net loss of existing habitat and an increase in productive habitat.**

This alternative places the greatest emphasis on protection and restoration of wild steelhead habitat with the least impact to wild populations. With steelhead often being considered a water quality index species, it is unlikely that enhancing habitat to meet steelhead needs would be detrimental to other species that have less stringent tolerances. This alternative assumes the Department will get additional authority for habitat protection from the Legislature. Department actions resulting from the selection of this alternative may include tracking local government permitting decisions more thoroughly, and to maximize the agency's expertise in the development and review of those decisions. Additionally, the Department may apply greater resources into appealing and challenging land and water use decisions that are inconsistent with the applicable laws and best available science related to steelhead habitat requirements. Lastly, the Department will seek legislative authorities consistent with the outcome of the HPA Habitat Conservation Plan (HCP) under development.

- **Alternative 4 – Increased Fishing Opportunity (Least Conservative Alternative) - Protect habitat through the current HPA process, and maintain involvement in State and Federal protection processes.**

This alternative emphasizes protection of wild steelhead habitat using existing federal statutes and programs. It does not require the Department to increase participation in SEPA, SMA, GMA, SEPA and external conservation processes and does not require additional participation in habitat recovery through the Salmon Recovery Act. From the habitat protection standpoint,

Alternatives 3 and 4 are identical and essentially impact neutral.

Significant Impacts and Mitigation Measures

Alternatives 1 and 2 (Preferred Alternative) provide policy guidance, which in itself does not have associated direct environmental impacts, aimed at protecting and restoring habitat for wild steelhead. If the WDFW Habitat Program followed this guidance, the expected outcome would be an increased amount of steelhead habitat and additional steelhead occupying their niches in the ecosystems. A significant adverse environmental impact for other species of plants, fish or wildlife, unique species and fish and wildlife migration routes is unlikely if either of these alternatives is adopted. Both alternatives call for the Department to increase its focus on enforcement of all laws affecting habitat or that could affect land and shoreline use, existing land use plans, recreational activities, vehicular traffic, waterborne traffic and parks and recreational facilities. It is therefore not anticipated that this would result in significant adverse environmental impacts.

Policy actions for Alternatives 3 (Status Quo) and 4 are feasible and meet the purpose and need of this impact statement but do not meet the plan objective because steelhead habitat could continue to be at risk if they were adopted. Without the shift in focus to VSP management, adequate risk identification and evaluation will continue to be elusive.

Cumulative Impacts

Adoption of alternatives 3 and 4 could hinder the success of efforts to maintain and restore natural production by allowing cumulative minor impacts to eventually reduce the amount of spatial structure in which natural production can increase.

3.1.3 Fisheries Management

Introduction

The natural production and habitat alternatives focused the on defining the role natural production plays in restoring steelhead stocks throughout their habitats and how to protect and restore those habitats. The job of fisheries management is to coordinate how this can be done and still "achieve cultural, economic and ecosystem benefits for the current and future residents of Washington." Fisheries management is necessary to ensure sufficient abundance; diversity and spatial distribution are maintained to preserve the wild steelhead stocks.

This means State and Tribal fishery managers must have knowledge of the abundance and timing of the stocks and the spatial structure of the populations in the available habitat so they can coordinate actions to support the VSP-based natural production strategies within the available habitat.

Fisheries management relating to wild steelhead is more than just setting an opening and closing date for a harvest. The Department must work with the Tribal co-managers to agree on the pre-season runsize abundance to compare to the escapement goal so the number of fish to be harvested can be determined. The number of Tribes fishing on a run, the condition of the many different habitats and stocks, and the fact that summer and winter stocks can be in the same habitat at the same time complicates this greatly. Once the escapement goal and allowable harvest is set, the co-managers must be sure that harvest efforts are adjusted so they do not impact ESA listed species. Only then should seasons and limits be set for each stream.

The *SSMP* seeks to reduce mortality on under-escaped wild steelhead stocks. This goal can be met while allowing for limited retention or catch and release fisheries of wild steelhead in rivers with healthy wild stocks. The plan also provides a tool for fisheries managers to know when harvest of hatchery fish must be closed to prevent excess incidental mortality to wild fish.

Fishery management must also be coordinated with hatchery and habitat managers. Fishery managers must walk a fine line when setting fishing seasons to be sure they maximize the harvest of hatchery fish without over harvesting the wild stock. Impact on wild stocks can occur in several ways. First, a poorly timed hatchery release could put hatchery steelhead in direct competition with wild steelhead for the limited food and refuge resources in a stream. Second, spawning between hatchery fish and wild fish can harm the long term genetic vigor of wild fish by introducing genes from stocks that are less adapted to a particular stream. Finally, fishery management of steelhead must take into account a stock's role in its ecosystem. Fishery managers cannot manage a fishery solely for the benefit of wild steelhead when other ESA listed species inhabit the same space. Fish managers have to plan activities to make sure each listed wild stock, whether it be steelhead, bulltrout or salmon, has sufficient abundance, productivity, diversity and spatial structure to be resilient through environmental fluctuations, and to perform natural ecological functions in freshwater and marine systems.

Steelhead fishery management strategies include adaptively managing fisheries to support natural production strategies within a comprehensive All-H context. The strategies seek to identify sources of fishery related mortality so these can be considered when creating a long-term

plan with measurable benchmarks for each stock. These strategies seek to fulfill cultural and ecological needs as well as provide fishing and harvest opportunities for the many different interests in the recreational community while still meeting harvest needs of the Tribal co-managers.

Four alternatives for managing wild steelhead fisheries are presented in this chapter. Detailed technical information about the key elements of the science behind the alternatives is presented in draft report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"(Draft July 21, 2006).*

Affected Environment

The affected environment for the Fisheries Management section is the mainstem, tributaries, riparian, near shore and marine habitats where steelhead spend any part of their life cycle as well as the hatchery environments.

Fisheries Management Alternatives

- **Alternative 3 – Current Approach (Status Quo Alternative) - Manage fisheries for minimum MSH escapement goal to ensure objectives are achieved.**

Guidelines for managing recreational fisheries with known wild and hatchery abundance are summarized in Table 1 in the *SSMP.* This alternative accepts slower recovery of wild steelhead stocks, is vulnerable to the cumulative effects of unidentified and unevaluated habitat degradation, and consequently risks over fishing of some wild stocks in return for greater fishing opportunity as long as fisheries do not impact the majority of under escaped stocks by more than 10%. Wild stock retention could be permitted on stocks that meet the current fishery management guidelines as presented in the *SSMP.* This strategy has successfully met fisheries management objectives in some watersheds, particularly those in which minimal habitat degradation has occurred and the stocks are self-sustaining, however it is not applicable in cases, such as those where escapement data are lacking or active mitigation agreements are in place. The potential for significant recreational impact is adequately mitigated with current policy and existing infrastructure, and this should be assured via the adaptive management policy.

- **Alternative 2 – Increased Wild Protection (Preferred Alternative) - Manage fisheries for VSP to ensure: abundance, productivity, spatial structure and life history diversity objectives are achieved.**

This alternative would manage fisheries to achieve wild steelhead abundance, productivity, spatial structure, and life history diversity VSP objectives and to further reduce incidental mortality on wild stocks to levels significantly below the current 10% guideline for MSH fishery management. Alternative 2 would promote faster recovery of wild steelhead stocks at the expense of reduced recreational harvest opportunity. Wild stock retention could be permitted on stocks that meet the VSP goals. Although an allowable impact on wild steelhead is defined and addressed, there could also be a collateral decline in incidental impacts on other species coincident with a reduced recreational fishing opportunity. Due to an anticipated harvest

decrease, there is potential for some other impacts arising from a displaced angler. This is an example of the greater detail of analysis that will occur at the subsequent watershed and RMP level plan development.

- **Alternative 1 – Maximize Wild Protection (Most Conservative Alternative) - Manage fisheries for average steelhead carrying capacity.**

This alternative places the greatest emphasis on fisheries management protection of wild steelhead stock health. It would probably achieve wild steelhead abundance, productivity, spatial structure, and life history diversity VSP objectives more quickly than the other alternatives. Alternative 1 would eliminate non-Indian harvest of wild steelhead and curtail harvest of hatchery steelhead while attempting to minimize incidental mortality of wild steelhead, generally making no provision for fishing opportunity on stocks that meet VSP goals because protection goals are carrying capacity focused. A fisheries management strategy very similar to this is currently being applied to the ESA-listed stocks in Eastern Washington to strongly support ongoing recovery efforts in those watersheds. The guidelines set out in the *SSMP* are flexible enough to encourage the use of this most conservative fisheries management strategy for these steelhead stocks.

- **Alternative 4 – Increased Fishing Opportunity (Least Conservative Alternative) - Manage fisheries for MSH escapement goal.**

This alternative would manage fisheries to increase harvest programs to the maximum rates that the current MSH management guidelines would allow. Alternative 4 would probably jeopardize recovery of wild steelhead stocks and risk over fishing of many wild stocks in return for greater fishing opportunity as long as fisheries management does not impact all under escaped stocks by over 10%. Even for abundant stocks in healthy ecosystems, long-term success with this strategy would be dependent upon a significant increase in functional knowledge of both properly segregated and properly integrated hatchery programs. Recreational impacts could increase with overall increased angler effort.

Significant Impacts and Mitigation Measures

Alternatives 1 and 2 (Preferred Alternative) provide policy guidance for managing steelhead fisheries to increase abundance of wild stocks throughout their habitat. The expected outcome of this would be additional steelhead occupying their life-stage niches in the ecosystems. A significant adverse environmental impact is unlikely if either of these alternatives is adopted. Additional steelhead in the ecosystem could favorably or adversely affect habitat for, and numbers or diversity of, other species of plants, fish, or wildlife; fish and wildlife migration routes; and unique species. However, these impacts should be mitigated by the plan's All H, ecosystem planning and adaptive management strategies and no significant adverse environmental impact should result. Changes in fishing seasons and harvest strategies could result in some environmental health impacts by decreasing or increasing fishing activity in some places.

Policy actions for Alternatives 3 (Status Quo) and 4 are feasible and meet the purpose and need of this impact statement. However, they do not meet the policy objectives because without the benefits of VSP based management, the long-term abundance levels of steelhead populations could continue to be at risk if they were adopted. The implementation of timely adaptive management can be expected to mitigate some of the abundance trend decline, but reversal would likely be dependent upon preferred alternative adoption in many of the other seven plan areas.

Cumulative Impacts

Adoption of alternatives 3 and 4 could hinder the success of efforts to maintain and restore natural production by allowing unidentified and unevaluated cumulative impact effects to eventually reduce the abundance and subsequent productivity of wild steelhead populations. Success of adaptive fisheries management would be overly contingent upon the ability to accurately predict pre-season and in-season returns.

3.1.4 Artificial Production

Introduction

Artificial production is the rearing and release of fish from an artificial culture setting such as a hatchery, remote site incubator, spawning channel or other non-natural situation. In the past hatcheries have been viewed as a replacement for habitat. The Hatchery Reform Project has shown that this is no longer prudent. Hatcheries should be considered an integral part of the watershed in which they operate. They should be structured and operated to meet the goals for conservation and recovery in a watershed and ecosystem context and balanced to provide harvest benefits for sustainable fisheries now and in the future. As indicated in the key relationships section 1.4.1, this means the artificial production strategy must be coordinated with the harvest and habitat strategies to create the right combination of actions to restore and maintain healthy wild steelhead stocks as the *SSMP* primary objective.

Depending on program type, the primary objectives of hatchery programs are to enhance harvest opportunities or to provide wild stock recovery, or conservation benefits. Hatchery origin steelhead provides substantial recreational and economic benefits to Washington residents. Recreational anglers have harvested an average of 99,300 steelhead per year since 1995. The vast majority of these were hatchery fish. It is estimated that during that time, steelhead anglers spent $99 million per year or almost $1,000 per fish in Washington communities (Scott, et. al., 2006). It would be unlikely that the Department could meet its *SSMP* goal and legislative mandate by closing down all hatchery operations.

At the same time, hatcheries are popular with the public. A hatchery tour is a valuable learning experience for people of all ages. Legislative efforts to cut hatchery programs are almost always met with criticism by the public. There are approximately 70 State, cooperative, Federal and Tribal facilities raising steelhead in Washington.

Finally, hatcheries have been built in some places to mitigate the loss of habitat. Examples of these are the Mitchell Act hatcheries. The Mitchell Act was passed in 1938 to mitigate the loss of salmon spawning habitat in the Columbia River after Congress made the policy decision to build the hydroelectric system in the basin. In April of 1938, Congressman Wallgren wrote in his report on the Mitchell Act:

> *"It is established that the inroads by progress, man's work, and waste, have combined to destroy the most valuable of the natural spawning grounds of the Columbia River Basin. The only way to maintain the salmon supply is through artificial propagation and the construction and maintenance of stations for this purpose after a survey has been made."*

Fisheries science has come a long way since 1938 and it has been found that some hatchery practices can harm wild stocks. The *SSMP* seeks to avoid these problems while still providing fishery-related benefits by implementing artificial production programs with the following characteristics:

- Conservation Programs. Artificial programs implemented with a conservation objective shall have a net aggregate benefit for the diversity, spatial structure, productivity, and abundance of the target wild stock.

- Harvest Programs. Artificial production programs implemented to enhance harvest opportunities shall provide fishery benefits while allowing watershed-specific goals for the diversity, spatial structure, productivity, and abundance of wild stocks to be met.

Steelhead artificial production strategies include adaptively managing hatcheries to support conservation and harvest programs within a comprehensive All-H and ecosystem management context. Strategies to do this include marking or tagging all steelhead released from artificial production programs, implementing rescue programs for at-risk stocks and establishing a network of wild stock gene banks across the state.

Four alternative strategy proposals for managing wild steelhead Artificial Production are presented in this section. Detailed technical information about the key elements of the science behind the alternatives is presented in draft report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"(Draft July 21, 2006).*

Affected Environment

The affected environment for the Artificial Production section is the mainstem, tributaries, riparian, near shore and marine habitats where steelhead spend any part of their life cycle as well as the hatchery environments.

Artificial Production Alternatives

- **Alternative 3 – Current Approach (Status Quo Alternative) - Produce fish to meet current harvest objectives.**

Current hatchery operations are generally managed to meet production and recreational harvest goals and are somewhat indifferent to wild harvest management that is based on return abundance with respect to MSH escapement goals. However, within existing budget constraints, current research, monitoring and adaptive management efforts are beginning to focus on hatchery and wild fish interactions with efforts to achieve an improved understanding and implementation of properly segregated and properly integrated programs in the context of wild steelhead abundance, productivity, spatial structure, and life history-diversity VSP management objectives.

- **Alternative 2 – Increased Wild Protection (Preferred Alternative) - Improve and modify current hatchery programs to reduce impacts on wild fish, including habitat related actions. Reduce outplants in places where programs are inconsistent with alternatives. Establish a network of wild stock gene banks.**

This alternative would manage hatcheries and programs to help ensure wild steelhead abundance, productivity, spatial structure, and life history-diversity VSP objectives are achieved by limiting adverse interactions between hatchery and wild stocks. It places greater emphasis on protection of wild steelhead stocks than Alternative 3 and would accept some negative impacts as long as they are not significantly adverse to wild steelhead stocks or ecosystem health. The

implementation of the wild stock gene bank program would initially be flexible enough to adapt to the specific management conditions of the host watersheds. Individual watershed plans would collectively be designed to meet the gene bank needs presented in the regional management plans for each DPS. Alternative 2 also allows for the opportunity to adaptively monitor and manage integrated recovery and conservation programs for the purpose of stabilizing at-risk wild stocks, and properly segregated harvest programs to enhance recreational fishing for the public.

- **Alternative 1 – Maximize Wild Protection (Most Conservative Alternative) - Eliminate hatchery competition with wild populations within Washington. Initiate conservation programs where required to maintain or increase wild populations and their habitats.**

This alternative places the greatest emphasis on protection of wild steelhead stock health. Eliminating competition with hatchery fish could reduce VSP abundance for some integrated hatchery programs aimed at wild stock recovery. Wild and hatchery produced steelhead compete in common areas for most of their life cycles and elimination of hatchery competition with wild populations could mean elimination of many hatchery releases. This alternative emphasizes wild steelhead stock protection without regard to negative impacts on local economies by loss of recreational harvest opportunity for hatchery fish.

- **Alternative 4 – Increased Fishing Opportunity (Least Conservative Alternative) - Increase (segregated) hatchery production; add integrated to offset increased impact on wild.**

This alternative calls for additional integrated and segregated hatchery production. It offsets unavoidable increased impacts of additional segregated hatchery programs on wild steelhead populations by selectively increasing integrated hatchery production. The degree of wild stock protection would be extremely dependent upon the ability to properly integrate and segregate the respective hatchery production programs. Although an increase in recreational opportunity would be realized, the risk of adverse impact to wild stocks would probably be disproportionately high.

Significant Impacts and Mitigation Measures

Alternatives 1and 2 (Preferred) provide artificial production policy guidance aimed at protecting and restoring wild steelhead to healthy VSP population levels in the seven Washington DPSs. The expected outcome of this would be additional steelhead eventually reoccupying their respective niches in the ecosystems. However, alternative 1 eliminates competition between hatchery and wild stocks in a way that could hinder the use of artificial production for stock recovery and fails to meet the *SSMP* objectives if stock health continued to decline without intervention. A significant adverse environmental impact is unlikely if either of these alternatives is adopted. Both would likely reduce artificial production and emplacement of steelhead into the watersheds but a combination of ecosystem, All-H and adaptive management actions should avoid or mitigate these impacts. Changes in hatchery release strategies could result in some environmental health impacts by decreasing or increasing recreational fishing activity in some places, but these changes are not likely to be significantly adverse.

Policy actions for Alternatives 3 (Status Quo) and 4 are feasible and meet the purpose and need of this impact statement but fail to meet the dual *SSMP* goals because even though recreational opportunity would increase, wild steelhead populations could continue to be at risk of diversity and productivity loss if they were adopted. Without the benefit of a VSP-based adaptive management strategy, the timely evaluation of these risk factors may be compromised.

Cumulative Impacts

For the case of either Alternative 1 or the Preferred Alternative 2, ecosystem planning combined with adaptive management of a coordinated All-H watershed recovery program should identify and avoid cumulative impacts that could result in a significant adverse environmental impact. It is currently uncertain whether this can arrest and eventually reverse the effects of cumulative impacts for the Status Quo Alternative 3. In the case of Alternative 4, the extreme need to achieve properly run integrated and segregated programs will probably work against avoiding adverse cumulative impacts, which would place smaller populations at a disproportional increased risk.

3.2 Administrative Policy Direction

Four policy subject areas make up the Steelhead Program Administration major policy category. This category deals with policy decisions that directly affect the administration of programs that relate to steelhead and their habitats. These policy subject areas will provide direction to the Department for decisions that affect regulatory compliance, monitoring, evaluation and adaptive management, research and outreach and education programs. The alternatives span levels of risk for strategies that the FWC is considering using in its *SSMP*.

3.2.1 Regulatory Compliance

Introduction

The alternatives presented in Section 1.1.2 provide a carefully considered plan of action to maintain and restore steelhead VSP throughout Washington. There are many state and federal rules and regulations designed to protect the fish and their habitats that can help the plan. Gaining compliance with the regulations is essential to protecting and maintaining important habitat functions as well as ensuring that fishery protection strategies are followed. Since VSP applies to the entire life cycle of wild steelhead, successful regulatory compliance efforts must apply to the full range of habitat, hatchery, harvest and hydro rules and regulations that apply to them.

WDFW will utilize both voluntary (such as technical assistance, public outreach, cooperative partnerships, consultation with Federal and Tribal governments) and regulatory approaches (enforcement and legal action) to improve compliance with habitat, harvest, hatchery and hydro regulations.

Section 3.1.2 addresses Department plans for increasing emphasis on regulatory compliance for habitat. This section discusses alternatives that the Department can use to increase emphasis on hatchery, harvest and hydro compliance.

Table 2 Complexity of Achieving Regulatory Compliance

VSP Category	Habitat	Hatchery	Harvest	Hydro
Abundance of wild steelhead	See Chapter 3.1.2	**Federal**, **State and Tribes** – Cooperatively apply SSMP to co-manage broodstocking and release of hatchery fish to support VSP goals	**Federal** – Monitor fisheries beyond 3 mile limit **Tribes & State** – Co-manage wild escapement **Tribes –** Enforce Tribal fishing regulations **State –** Enforce non-Tribal fishing regulations. Monitor Federal and Tribal actions.	**Federal –** Conduct FERC relicensing. **State –** Participate in FERC relicensing actions. Monitor and see that relicensing agreements are carried out
Productivity of wild steelhead	See Chapter 3.1.2	**Federal**, **State and Tribes** – Cooperatively apply SSMP to co-manage broodstocking and release of hatchery fish to support VSP goals	**State and Tribes –** cooperatively co-manage wild escapement to support SSMP VSP goals	**Federal–** Encourage actions to pass smolts/kelts downstream and adults up stream at all FERC facilities **State –** Aggressively pursue fish passage barrier removal and intake screening. Monitor and see that relicensing agreements are carried out.
Diversity of wild steelhead	See Chapter 3.1.2	**Federal**, **State and Tribes** – Cooperatively apply SSMP to co-manage release times, stocks, locations and numbers to support VSP goals	**Federal**– Monitor fisheries beyond 3 mile limit **State and Tribes** – Cooperatively apply SSMP to co-manage steelhead season openers, lengths and locations to support VSP goals. Coordinate other fisheries regulations to avoid bycatch.	**Federal -** Monitor FERC activities to support SSMP run timing for VSP **State -** Aggressively pursue fish passage barrier removal and intake screening. Monitor and see that relicensing agreements are carried out.
Spatial Structure of wild steelhead	See Chapter 3.1.2	**Federal**, **State and Tribes** – Cooperatively apply SSMP to co-manage release times, stocks, locations and numbers to support VSP goals	**State and Tribes –** Cooperatively co-manage escapement to support VSP goals	**Federal –** Encourage actions to pass smolts/kelts downstream and adults up stream at FERC facilities. **State –** Aggressively pursue fish passage barrier removal and intake screening.

Hatchery regulations - Responsibility for hatchery operations is shared between the Department, the Federal Government and the Tribes. The Federal Government and Tribes are subject to Federal laws governing the Mitchell Act, water diversions and pollution. The Department is subject to state and Federal laws governing water diversions, pollution and Endangered Species. The State and the Tribes have a co-management responsibility for hatcheries. The hatchery policy selected to be part of this *SSMP* is not subject to rule or regulation by the state. It does, however, have to face scrutiny by the public, FWC and the Legislature.

Harvest regulations - Responsibility for harvest operations is shared between the Department, the Federal Government and the Tribes. The Federal Government is responsible for enforcement of fishing regulations outside of the 3-mile limit in U.S. territorial waters and compliance with international treaties on the high seas where steelhead spend most of their lives. The State and Tribes share co-management authority over harvest in Washington Waters. The US v Washington and US v Oregon decisions gives the Tribes the ability to manage Tribal fishing on reservations and Tribal members fishing in each Tribe's Usual and Accustomed area (UAs). They also give the state authority to manage non-Indian fishing in Washington waters.

Washington elected to ban non-Indian commercial fishing for steelhead in 1936. It has also elected to release wild steelhead on all but a few rivers in Washington by the late 90s. The state is mandated by law to "*conserve the ... game fish ... resources in a manner that does not impair the resource"* while maintaining *"the economic well being and stability of the fishing industry in the state" and promoting "orderly fisheries"* while enhancing and improving *"recreational ... fishing in this state."* Current fishing regulations are designed to accomplish that legislative mandate. Draft report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"(Draft July 21, 2006)* discusses the challenges of providing fishing opportunity on rivers that contain multiple stocks of fish listed by the Endangered Species Act.

Hydro – Hydro is generally understood to apply to hydroelectric dams but it would be better applied to hydraulic barriers to fish passage. This breaks the issue into 2 categories. The first is dam relicensing and the second is removal of fish passage barriers and screening of hydraulic intakes. The Department has the ability to request improvements in smolt, kelt and adult return passage during the periodic FERC relicensing process. However, it has no enforcement authority to force the owner of a relicensed facility to actually complete the improvements. State law gives the Department the ability to force removal of non-permitted fish passage barriers and installation of screens on water intakes.

Four alternative strategies for managing wild steelhead natural production are presented in this chapter. Each presents a different level of commitment to encouraging regulatory compliance by the Department. The success of regulatory compliance in all areas of the steelhead life cycle will influence the success of the overall management plan. Being supportive of the four operations categories in nature, this administrative category alternative will not directly source significant adverse impact. It only seeks to increase implementation and monitoring compliance with approved regulations that have been analyzed and reviewed with regard to the species and recreational impacts under consideration in this document.

Affected Environment

The affected environment for the Regulatory Compliance section is the watersheds, riparian, near shore and marine habitats where steelhead spend any part of their life cycle. This includes all areas of the watershed regulated by the state or federal government that could affect steelhead health.

Regulatory Compliance Alternatives

- **Alternative 3 – Current Approach (Status Quo Alternative) – Use current voluntary and regulatory compliance programs. As funds are available in the capitol budget, bring hatchery programs into compliance.**

This alternative continues status quo compliance monitoring of hatchery, harvest and hydro issues. The Department will address problem compliance issues as needed. Hatchery operations will be brought into compliance as funding becomes available. Although additional enforcement funding has not been drawn out specifically, the actions listed in the *SSMP* contain, as an aspect of the adaptive management process, the intent to re-establish quarterly regional meetings and increase communication to enhance in-field effectiveness. This would directly support efforts to conserve wild stocks and also remove some of the uncertainty in assessing recreation impacts with the tighter adherence to policy and regulation strategies.

- **Alternative 2 – Increased Wild Protection (Preferred Alternative) - Implement compliance regulations. Prioritize Departmental hatchery, harvest and hydro compliance monitoring.**

This alternative supports the *SSMP* by monitoring compliance with Federal, State and Tribal laws governing all aspects of the steelhead life cycle. The Department will address problem compliance issues as needed. Similar to Alternative 1 in purpose, this Preferred Alternative recognizes the probability that WDFW will not be afforded additional regulatory authority via legislative action, although it still pursues additional funding to achieve *SSMP* monitoring and enforcement support goals. It also recognizes the value of prioritizing existing resources to support strategies to increase in-field effectiveness of both habitat-related and harvest-related enforcement monitoring.

- **Alternative 1 – Maximize Wild Protection (Most Conservative Alternative) - Implement compliance regulations. Increase Departmental hatchery, harvest, and hydro regulatory compliance monitoring through actively seeking new legislation to improve compliance.**

This alternative supports the *SSMP* by monitoring of compliance with Federal, State and Tribal laws governing all phases of the wild steelhead life cycle. This alternative emphasizes compliance with laws protecting only steelhead stocks. It assumes the Department will get additional authority for hatchery, harvest and hydro protection from the Legislature.

- **Alternative 4 – Increased Fishing Opportunity (Least Conservative Alternative) - Harvest and hatchery compliance emphasis.**

This alternative would place an emphasis on Department regulatory compliance for its hatchery operations and increased enforcement of fishing regulations. This primary focus would be on minimizing potential adverse impacts on wild populations resulting from an increase in recreational fishing activity.

Significant Impacts and Mitigation Measures

Alternatives 1 and 2 (Preferred Alternative) provide regulatory compliance policy guidance aimed at increasing compliance with rules and regulations dealing with hatchery, harvest and hydro operations. The policy proposals are administrative in nature and support the expected outcome of additional steelhead occupying their respective niches in the ecosystems. A significant adverse environmental impact is unlikely if either of these alternatives is adopted. Policy actions for Alternatives 3 (Status Quo) and 4 continue status quo efforts or limit regulatory compliance efforts to harvest and hatchery operations only. Although these alternatives are feasible they do not support the plan as well in that they are more passive or less pro-active than 1 or 2 and would weaken the operations proposals accordingly.

Cumulative Impacts

Administrative and financial support for increased compliance of existing regulations is not a direct source of regulatory-related favorable or adverse environmental impact. Indirectly, or possibly cumulatively, impacts to regulated species or the recreational issues associated with them are not expected to be adverse, assuming the regulations themselves are soundly derived.

3.2.2 Monitoring, Evaluation and Adaptive Management (ME&AM)

Introduction

The previous alternatives established the wild stock foundation and the habitat, fisheries management, artificial production and regulatory compliance framework for the *SSMP*. This chapter adds a program to monitor the effect those policies, strategies, and actions have on wild stocks, evaluate the results and recommend adaptive management solutions when course changes are needed. This is consistent with strategies mentioned in previous alternatives that call out adaptive management as part of their recovery and maintenance strategies.

The previous alternatives have been carefully considered and chosen because the Department believes they will lead to actions that successfully protect and restore the wild stocks. Against the possibility that some of the actions may not work as well as expected or science may suggest new actions that work better, it is prudent to monitor the implementation of these recommendations to be sure the resulting actions do the job and modify those actions if they do not.

A process called adaptive management is used to modify the actions. According to RCW 77.85.010, adaptive management means "reliance on scientific methods to test the results of actions taken so that the management and related policy can be changed promptly and appropriately." Monitoring, evaluation and adaptive management are critical components to informed decision making because they support a learning-by-doing concept. Continued review, evaluation, and modification of actions that directly influence natural production are essential to assure that economic and cultural benefits are maximized while maintaining acceptable risks to natural populations. Adaptive management is a process that allows managers to make good decisions while operating in the face of uncertainty about future circumstances and consequences. It is likely to be most effective if it is driven by clearly defined intermediate and long-term goals and objectives, performance measures are identified and monitored, and results are readily available, communicated, and evaluated in a defined decision making framework that also should provide an adaptive management capability.

Strategies to support this section include setting up steelhead adult and smolt monitoring programs and fishery/escapement data management systems so data can be evaluated and used for adaptive management decisions that are linked to regional recovery plans. Efforts will include opportunities for the public to assist in monitoring and increased opportunity for agency staff to take part in monitoring and evaluation of habitat enhancements. Particular attention however would have to be paid to insure that volunteer assistance is properly trained in established monitoring protocols that minimize adverse environmental impacts.

This is another of the four policy subject areas that make up the Steelhead Program Administration major policy category. As such, there are no direct adverse impacts associated with these alternatives. This category deals with policy decisions that affect the administration of programs that relate to steelhead and their habitats. This policy subject area will provide direction to the Department for decisions that affect monitoring, evaluation and adaptive management as applied to the four operations categories.

Four alternative strategies for monitoring, evaluation and adaptive management of steelhead are presented in the chapter. Detailed technical information about the key elements of the science behind the alternatives is presented in draft report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"(Draft July 21, 2006).*

Affected Environment

The affected environment for the Monitoring, Evaluation and Adaptive Management section is the mainstem, tributaries, riparian, near shore and marine habitats where steelhead spend any part of their life cycle as well as the hatchery environments. It is conceivable that All-H issues throughout the state could be subject to monitoring, evaluation and adaptive management as well.

Monitoring, Evaluation, and Adaptive Management Alternatives

- **Alternative 3 – Current Approach (Status Quo Alternative) - Maintain current agency monitoring and evaluation activities to inform decision makers regarding *SSMP* impact on wild stocks. Support existing habitat monitoring and evaluation programs.**

This alternative supports the *SSMP* by continuing current agency monitoring and evaluation programs. It is the status quo alternative but still allows for program addition and modification as resources permit. The current program scope limits the ability to develop effective adaptive management protocols and procedures at the statewide level.

- **Alternative 2 – Increased Wild Protection (Preferred Alternative) - Develop and implement monitoring plans for key indicator wild stocks so effects of the *SSMP* can be evaluated and actions adapted to support its goals.**

This alternative supports the *SSMP* by developing and implementing VSP-based monitoring and evaluation plans for key regional indicator populations. The acquisition and evaluation of VSP data will significantly enhance the adaptive management process as MSH abundance data is supplemented with ecosystem related data to improve management decisions. An important initial management decision will be to prioritize and select the key steelhead stocks to be the focus of the *SSMP* restoration effort. Impacts on recreation could be significant as there is no harvest on populations exhibiting low runsize abundance.

- **Alternative 1 – Maximize Wild Protection (Most Conservative Alternative) - Develop and implement monitoring plans for all wild stocks so effects of the *SSMP* can be evaluated and actions adapted to support its goals.**

This alternative supports the *SSMP* by developing and implementing monitoring plans for all wild steelhead stocks so data on each can be evaluated and adaptive management decisions made as needed. Obtaining the maximum data VSP on steelhead stocks statewide would correspondingly provide the greatest potential for the *SSMP* adaptive management process to

successfully protect and restore wild steelhead populations. This alternative would require a significant commitment of funds and Department staff for an extended period of time.

- **Alternative 4 – Increased Fishing Opportunity (Least Conservative Alternative) - Monitor and evaluate wild stocks to ensure they remain above critical thresholds.**

This alternative supports efforts to monitor wild stocks for their critical threshold abundance. Without the benefits of VSP information, determining these critical abundance levels or the cause of detected declines may be problematic. Although not a direct adverse impact, adaptive management delay risk could be too high. The timely acquisition of data to demonstrate properly run integrated and segregated programs can be especially important for evaluating and restoring at-risk wild stocks.

Significant Impacts and Mitigation Measures

Alternatives 1 and 2 (Preferred Alternative) are administrative actions and support the plan and elements of fisheries management and artificial production strategies without likelihood of a significant adverse environmental impact. There would be a requirement for increased Department presence in streamside, riparian, near-shore and ocean habitats during monitoring operations but if approved protocols are adhered to, this should not result in a significant adverse environmental impact to plants and animals or recreational fishing opportunity. Without the enhancement of VSP analysis, Alternatives 3 (Status Quo) and 4 provide significantly less information than the first two and, although feasible, they do not support the plan as well due to possible information deficiency or delay.

Cumulative Impacts

Administrative and financial support for increased monitoring, evaluation and adaptive management is not a direct source of monitoring-related favorable or adverse environmental impact. Indirectly, or possibly cumulatively, in-stream impacts to species being monitored or the recreational issues associated with monitoring are not expected to be adverse, assuming the proper monitoring protocols are adhered to. However, it can be extremely important to detect and evaluate minor but cumulative impacts as quickly as possible when dealing with at-risk wild stocks.

3.2.3 Research

Introduction

Adaptive management relies on scientific methods to test the results of a plan's actions and modify those actions after considering best science if necessary. Some scientific knowledge is within the experience of the Department and need only be recalled from scientific papers. Draft report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"(Draft July21, 2006)* is the scientific basis for the plan. However, new discoveries in fisheries science are made every day and a mechanism is needed to include these new discoveries in the plan. Scientific research is needed to provide scientific data for the *SSMP's* adaptive management decisions and to incorporate new scientific discoveries into the plan when necessary.

Four alternatives for are presented in this section. Detailed technical information about the key elements of the science behind the alternatives is presented in draft report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"(Draft July 21, 2006).* These administrative category alternatives present a range of strategies to obtain information to subsequently guide actions for the four operations categories. As such, they are not expected to source any significant adverse environmental impacts directly. However it is feasible that as a result of these strategy recommendations, research that may impact the environment could be authorized. In that case, the proposed research operations would have to undergo SEPA scrutiny on their own merits.

Affected Environment

The affected environment for the Research section is the mainstem, tributaries, riparian, near shore and marine habitats where steelhead spend any part of their life cycle as well as the Department hatchery environments and laboratories.

Research Alternatives

- **Alternative 3 – Current Approach (Status Quo Alternative) - Prioritize and conduct research on integrated hatchery programs.**

This alternative continues current research efforts on steelhead and assumes no change in available resource allocation. The current effort is focused principally on integrated hatchery programs applications.

- **Alternative 2 – Increased Wild Protection (Preferred Alternative) - Prioritize, fund and implement critical research to establish VSP parameters.**

This alternative implements research on specific issues that affect key wild stocks to assist in achieving VSP and includes literature search and review, seminar and conference participation and SSP development.

- **Alternative 1 – Maximize Wild Protection (Most Conservative Alternative) - Seek funding to implement conservation research to achieve an increase in productive steelhead populations and their habitats, especially in light of increasing human population pressures and global warming.**

This alternative supports the *SSMP* by seeking research on all wild stocks to support abundance, productivity, diversity and spatial distribution. An expected focus will be to address anticipated human population increase and global warming impacts.

- **Alternative 4 – Increased Fishing Opportunity (Least Conservative Alternative) - Focus research on determining critical thresholds for perpetuation of wild stocks.**

This alternative only provides research on establishing population thresholds that would indicate if wild steelhead stocks are at risk.

Significant Impacts and Mitigation Measures

Alternatives 1 and 2 (Preferred Alternative) are administrative actions to support the plan without the likelihood of a significant adverse environmental impact. There could be a requirement for increased Department presence in streamside, riparian, near-shore and ocean habitats during certain research activities but this should not result in a significant adverse environmental impact to plants and animals, shoreline use, transportation or recreation if proper SEPA compatible protocols are followed. Alternatives 3 (Status Quo) and 4 are feasible but do not support the plan as well due to the need to limit the degree of focus.

Cumulative Impacts

For research projects that involve outdoor actions, it is likely that a separate impact assessment may be required based on the specifics and merit of the proposed action. An evaluation of direct and cumulative impacts for each project alternative may be necessary.

3.2.4 Outreach and Education

Introduction

The protection and restoration of wild steelhead is not a project for a small group of anglers who fish for a colorful fish. Success will require an effort from everyone in the state too strong and quite possibly some changes in lifestyle. Some of these changes such as the use of lawn fertilizer or proper disposal of wastes can be done by everyone while others such as proper methods for catch and release of wild fish will apply to only a few.

Steelhead trout are not salmon. They have a life cycle similar to a salmon in that their eggs are raised in fresh water and they generally go to sea for most of their life cycle. They usually return to their natal streams to spawn. Unlike salmon, they may survive spawning to return to the ocean multiple times. Usually and generally are common words when discussing this animal because its life cycle is unique. It may or may not go to sea. It may stay for 3 years or may come back in 1 or 4. It might return to the same river and than again it might not or it might the first time and not the second. It can spawn with resident rainbow trout and produce young. Some of the young may go to sea and some may become resident rainbow trout. The exception is the rule when considering steelhead and that is why management of the creature is complicated and often impacts other fisheries such as those for rainbow trout, salmon and bulltrout. The public needs to understand wild steelhead to know why the maintenance and recovery of this wonderful fish is important to everyone in Washington.

That is why the final step in the *SSMP* offers alternatives to establish an Outreach and Education Program to enlist the help of the people of Washington in saving wild steelhead. This chapter provides four alternatives that will explain why the plan has been developed, the objectives of the plan and an explanation of what each part of the plan means to them.

Affected Environment

State of Washington.

Outreach and Education Alternatives

- **Alternative 3 – Current Approach (Status Quo) - Maintain current limited outreach and education on steelhead.**

This alternative is the status quo alternative and is limited to information displayed in the Fishing Regulations.

- **Alternative 2 – Increase Wild Protection (Preferred Alternative) - Develop and implement a plan to provide opportunities for the public to maintain and restore wild steelhead populations. Provide opportunities to form partnerships with the public on steelhead efforts.**

This alternative supports the *SSMP* by setting up an outreach and education program to explain why the *SSMP* is important to the state of Washington. It will explain the life cycle of wild fish, their relationship to hatchery steelhead and other species, the importance of habitat and how they can help protect and restore the stocks.

- **Alternative 1 – Maximize Wild Protection (Most Conservative Alternative) - Develop and implement a plan to provide opportunities for the public to maintain and restore wild steelhead populations. Provide opportunities to form partnerships with the public on steelhead efforts.**

This alternative supports the *SSMP* by setting up an outreach and education program to explain why the *SSMP* is important to the state of Washington. It will explain the life cycle of wild fish, their relationship to hatchery steelhead and other species, the importance of habitat and how they can help protect and restore the stocks.

- **Alternative 4 – Increased Fishing Opportunity (Most Conservative Alternative) - Develop materials to display fishing opportunities, techniques, and proper catch and release (C&R).**

This alternative provides a limited outreach and education program only to steelhead anglers focusing on how and where to fish and how to release wild fish without damaging them.

Significant Impacts and Mitigation Measures

Alternatives 1 and 2 (Preferred Alternative) are administrative actions and support the plan without likelihood of a significant adverse environmental impact. There would be a requirement for increased Department presence at Department steelhead education activities but this should not result in a significant adverse environmental impact to plants and animals or public recreation. Alternatives 3 (Status Quo) and 4 are feasible but do not support the plan as well as the others.

Cumulative Impacts

As in the case for possible research alternatives, identified projects may need to undergo separate SEPA assessment if they feature outdoor activity that might impact plants and animals or recreational opportunity. It is anticipated that most outreach and education projects would source only minor, but possibly cumulative impacts.

Definitions

The following are definitions of terms as used in the WDFW Steelhead Management Plan. They are presented here to prevent confusion with how these or similar terms are used in other efforts.

Abundance: the size of a salmonid population or of a component of the population expressed as numbers of fish. For anadromous populations, this number is normally expressed in terms of spawners.

Adaptive Management: Periodic, usually annual, review of performance against measurable benchmarks and goals as well as a response towards achieving these goals.

All-H Planning: Developing and implementing comprehensive hatchery, habitat, hydro, and harvest management plans that ensure the artificial production program compliments the strategies for other Hs.

Allocation Unit: A management unit or group of management units for which harvest shares are calculated. Prior court orders specify that an allocation unit comprises the steelhead returning to a single river system flowing into saltwater. The parties may, by agreement specify different allocation units if necessary.

Anadromous fish: Fish that hatch in fresh water, mature in salt water, and return to fresh water to spawn.

Artificial Production: The rearing and release of fish from an artificial culture setting such as a hatchery, remote site incubator, spawning channel or other non-natural situation.

At-Risk Stocks: Fish populations having an unacceptably high risk of extinction within a specified time horizon. Such populations are often listed as critical in the SaSI database, and may be listed or under consideration for listing under the Endangered Species Act.

Carrying Capacity – The maximum number of individuals or biomass of a given species or complex of species of fishes that a limited and specific aquatic habitat may support during a stated interval of time.

Catch: The number of fish retained by a fisher.

Catch-and-Release: A non-retention hook-and-line fishery.

Condition Factor: A measure of the condition of a fish based on comparison of length and weight. The more robust the fish, the higher the condition factor.

Conservation: The use of artificial propagation to conserve genetic resources of a fish population at extremely low population abundance, and potential for extinction, using methods such as captive propagation and cryopreservation.

Critical Population Threshold: An abundance level for a population below which: depensatory processes are likely to reduce it below replacement; short-term effects of inbreeding depression or loss of rare alleles cannot be avoided; and productivity variation due to demographic stochasticity becomes a substantial source of risk.

Critical Stock: A stock of fish experiencing production levels that are so low that loss of genetic diversity is likely or has already occurred.

Depressed Stock: A stock of fish whose status is neither Critical nor Healthy.

Diversity: Variation among individuals in physical, life history, or genetic characteristics.

Escapement Goal: A numerical threshold for the portion of a stock or group of stocks that is protected from harvest and allowed to spawn to meet management objectives and perpetuate the stock.

Evolutionarily Significant Unit (ESU): The smallest biological unit that can be considered to be a species under the Endangered Species Act as administered by the National Marine Fisheries Service (NMFS). A population or population group is considered to be an ESU if 1) it is substantially reproductively isolated from other conspecific population units, and 2) it represents an important component in the evolutionary legacy of the species. USFWS uses a similar term and concept called the distinct population segment (DPS), which is the wording used in the ESA itself. Thus, the ESU is the NMFS' interpretation of a DPS.

Exploitation Rate: The fishery-related mortality of fish expressed as a percentage of the estimated total run size.

Fishery Resource Manager: A tribe or the State of Washington, represented by the Department of Fish and Wildlife, with authority and responsibility over the management of harvest and hatchery programs affecting steelhead.

Gene Flow: The rate at which genetic material flows from one population, population component, or group of populations to another. Gene flow is an important concept in maintenance of among-population genetic diversity and in the linkage of hatchery and natural components of an integrated population. Gene flow is often inferred from stray rates, but such estimates are likely to be overestimates.

Genetic Conservation: Protection of long-term sustainability of wild stocks/runs by conserving genetic diversity.

Genetic Diversity: Genetically determined differences among individuals, local breeding, populations, or groups of populations.

Hatchery-Origin: Fish that have been incubated, hatched or reared in a hatchery or other artificial production facility regardless of parentage.

Hatchery Production: Fish that are reared and released from artificial culture in a hatchery situation.

Healthy and Harvestable: A self-sustaining naturally produced stock that has attained a status that will support meaningful retention and non-retention fisheries on an annual basis.

Healthy Stock: A stock that has sufficient abundance, productivity, diversity and spatial structure to be resilient through environmental fluctuations, to perform natural ecological functions in freshwater and marine systems, provide related cultural values to society, and sustain tribal and recreational fisheries.

Induced Fishing Mortality: Fish mortality above and beyond that which would occur in the absence of fishing activities (e.g. hooking mortality, net drop out and marine mammal take), and which is not reflected in landed catch records.

Integrated Hatchery Program: The term describes the intended reproductive relationship of a hatchery population relative to the local, naturally spawning population between which gene flow occurs. The principle goal of an Integrated Hatchery Program is to manage the broodstock as an artificially propagated component of a naturally spawning population wherein the natural environment drives adaptation and fitness of a composite population of fish that spawns both in a hatchery and in the wild.

Integrated Hatchery Strategy: A broodstock management alternative where the intent is for returning adults of wild- and hatchery-origin to be reproductively connected to form a single, composite stock. This requires wild-origin adults in the hatchery broodstock, and hatchery-origin adults may spawn naturally.

Locally Adapted: A population is said to be locally adapted if natural selection has made the population be more productive in the environment it occupies than other populations would be if they were introduced into that environment. Because of the large amount of data supporting the concept of local adaptation in salmonids, native populations are typically assumed to be locally adapted, even if they may have had considerable gene flow from nonnative populations. Nonnative populations introduced into an environment may become locally adapted after several generations.

Long Term Goal: A multi-generation performance target.

Major Population Group: A group of populations within a larger conservation unit such as a DPS or ESU that share genetic, life-history, or ecological characteristics that are sufficiently distinct from those of other groups of populations to make conservation or recovery of the group essential for the conservation or recovery of the larger conservation unit. The specific term was developed by the Interior Columbia Technical Recovery Team (TRT), but the basic concept is used by all three TRTs working on Washington salmon and steelhead. A major population group can be as small as one population.

Management Period: The time interval during which regulatory actions are taken to meet the escapement requirements for a management unit or the allocation requirements for an allocation unit, taking into account catches of the units made outside the management period. Management periods are specific to each management unit (or aggregate of management units) and to each fishing area through which the unit(s) pass.

Management Unit (MU): A stock or a group of stocks, which are aggregated for the purpose of achieving a desired spawning escapement objective.

Mark Selective Fishery: A fishery requiring the release of fish lacking an adipose fin.

Maximum Sustained Harvest (MSH) Level: A biological reference point representing the stock size that will support the largest level of harvest mortality that can be maintained indefinitely without diminishing the productive capacity of the resource, given current conditions of habitat and environmental fluctuations.

Maximum Sustained Harvest Escapement Goal (MSH Escapement Goal): The specific escapement for a stock that will allow the maximum number of fish to be harvested on a sustained basis.

Mitigation (mitigation hatchery): The use of artificial propagation to produce fish to replace or compensate for loss of fish or fish production capacity resulting from the permanent blockage or alteration of habitat by human activities.

Native-origin: An indigenous stock of fish that has not been substantially impacted by genetic interactions with non-native stocks or by other factors (such as artificial selection) and is still present in all or part of its original range.

Natural-Origin: Fish that are produced by spawning and rearing in the natural habitat, regardless of parentage.

Natural Production: Fish that spawn or rear entirely in the natural environment. These fish may be the offspring of natural or hatchery production.

Natural Stock: Fish that are produced by spawning and rearing in the natural habitat, regardless of parentage.

Natural Stock Reserve: A network of wild stock populations across the state where stocks are not planted with hatchery steelhead and are largely protected from the effects of hatchery programs (i.e. gene bank).

Non-native: With respect to a particular location, fish populations that exist, either because of migration or introduction, that were not historically present.

Non-Treaty: All fishers except those with reserved rights identified in the Stevens-Palmer treaties.

Population (Major Population Group): A group of interbreeding salmonids of the same species of hatchery, wild, or unknown parentage that have developed a unique gene pool, that breed in approximately the same place and time, and whose progeny tend to return and breed in approximately the same place and time. They often, but not always, can be separated from another population by genotypic or demographic characteristics. This term is synonymous with stock.

Productivity: A stock's intrinsic rate of increase. The higher the productivity, the better the population will fill the habitat and the more resilient it will be to harvest and to survive other sources of mortality.

pHOS: Proportion of spawners consisting of hatchery-origin fish.

pNOS: Proportion of spawners consisting of natural-origin fish.

pHOB: Proportion of broodstock consisting of hatchery-origin fish.

pNOB: Proportion of broodstock consisting of natural-origin fish.

Proportionate Natural Influence (PNI): In an integrated hatchery program, a mathematical relationship between gene flow from the hatchery to the natural component and from the natural to the hatchery component, that determines the degree to which natural selective forces direct the expression of a trait. Mathematically, PNI = pNOB/(pHOS + pNOB). The HSRG guideline for properly integrated populations is that PNI should exceed 0.5. For stocks of moderate or high biological significance and viability, PNI should exceed 0.7, be at least 0.1 to avoid divergence of the hatchery population from the natural component, even when pHOS is zero (HSRG, WDFW, and NWIFC 2004).

Run: The sum of stocks of a single salmonid species, which migrate to a particular region, river or stream of origin at a particular season.

Segregated Hatchery Program: The intended reproductive relationship of a hatchery population relative to a naturally spawning population, which are reproductively isolated from one another. The principal intent is to propagate a genetically segregated hatchery stock that is adapted to perform more optimally in artificial culture than in the wild, irrespective of the ability of returning adults to reproduce naturally or confer any benefits to naturally spawning populations.

Segregated Hatchery Strategy: A broodstock management strategy where the intent is for the hatchery stock to have no reproductive interactions with wild stocks. Also referred to as an Isolated Hatchery Strategy.

Selective Fishery: A fishery with time, area, gear, or retention regulations designed to reduced impacts on non-target species or stocks.

Selective Gear Rules: No bait, and only unscented flies or lures with a single barbless hook may be used.

Short Term Goal/Benchmark: An intermediate performance target that is basic to the adaptive management evaluation process.

Mark Selective Fishery. A fishery requiring the release of fish lacking an adipose fin.

Stock: A group of fish within a species, which is substantially reproductively isolated from other groups of the same species.

Viable: Negligible risk of extinction over a specified time period (McElhany et al. 2000). For the purposes of this plan, a viable steelhead population is one that has a less than 5% probability of extinction over at least 100 years.

Viable Salmonid Population (VSP) Parameters: Parameters that are used to evaluate the status of a given stock. The four parameters are abundance (A), productivity (P), diversity (D), and spatial structure (S) (McElhany et al. 2000).

Viability Stressors: Habitat, harvest, or hatchery actions that affect population VSP attributes (abundance, productivity, diversity, and spatial structure) in a way that currently results in a significant reduction in the viability of a population.

Wild (see natural stock): Naturally produced fish from a locally adapted stock regardless of origin or parentage. Still used in harvest record keeping Catch Record Cards (CRC) to indicate steelhead with adipose fins intact (not marked at the hatchery for harvest).

Wild Fish: A naturally produced fish from a locally adapted stock regardless of parentage.

Wild-Origin: The progeny of fish that were spawned naturally from a locally adapted stock regardless of parentage.

Wild Steelhead Release (WSR): A hook-and-line fishery that requires wild steelhead (defined by not having fin clips) to be released. Hatchery steelhead (defined by having fin clips) may be retained.

List of Acronyms and Abbreviations

BRAP	Benefit-Risk Assessment Program
BRP	Biological Reference Point
CWT	coded-wire tag
ER	Exploitation Rate
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FWC	Fish and Wildlife Commission
FMEP	Fisheries Management and Evaluation Plan
HSRG	Hatchery Scientific Review Group
IHOT	Integrated Hatchery Operations Team
ISBM	individual stock-based management
MSH	maximum sustainable harvest
MSY	maximum sustainable yield
NA	not available
NMFS	National Marine Fisheries Service
NWIFC	Northwest Indian Fisheries Commission
pHOS	Proportion of hatchery origin spawners
pNOS	Proportion of natural origin spawners
pHOB	Proportion of hatchery origin broodstock
pNOB	Proportion of natural origin broodstock
PNI	Proportionate natural influence
PUD	Public Utilities Department
RER	rebuilding exploitation rate
R/S	Recruit per spawner
SaSI	Salmonid Stock Inventory
TRT	Technical Review Team
VSP	Viable Salmonid Population
WDF	Washington Department of Fisheries
WDFW	Washington Department of Fish and Wildlife
WWTIT	Western Washington Treaty Indian Tribes

Literature Cited

Hatchery Scientific Review Group, Washington Department of Fish and Wildlife, and Northwest Indian Fisheries Commission (HSRG, WDFW, and NWIFC). 2004. HSRG/WDFW/NWIFC Technical Discussion Paper #1: Integrated Hatchery Programs.

Interior Columbia Basin Technical Recovery Team (ICTRT). 2004. Preliminary guidelines for population-level abundance, productivity, spatial structure, and diversity supporting viable salmonid populations. Unpublished report of the National Marine Fisheries Service available at http://www.nwfsc.noaa.gov/trt/trt_viability.htm.

Interior Columbia Technical Recovery Team (ICTRT). 2003. Independent populations of Chinook, steelhead, and sockeye for listed evolutionarily significant units within the Interior Columbia River Domain. IC-TRT Report. NOAA Fisheries, Northwest Fisheries Science Center, Seattle, WA. Report available at http://www.nwfsc.noaa.gov/trt/trt_columbia.htm.

McElhany, P., M.H. Ruckelshaus, M.J. Ford, T.C. Wainwright, and P. Bjorkstedt. 2000. Viable salmonid populations and the recovery of evolutionarily significant units. U.S. Department of Commerce, NOAA Tech. Memo. NMFS-NWFSC-42.

Scott, et al. Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs. Washington Department of Fish and Wildlife. Olympia, Washington.

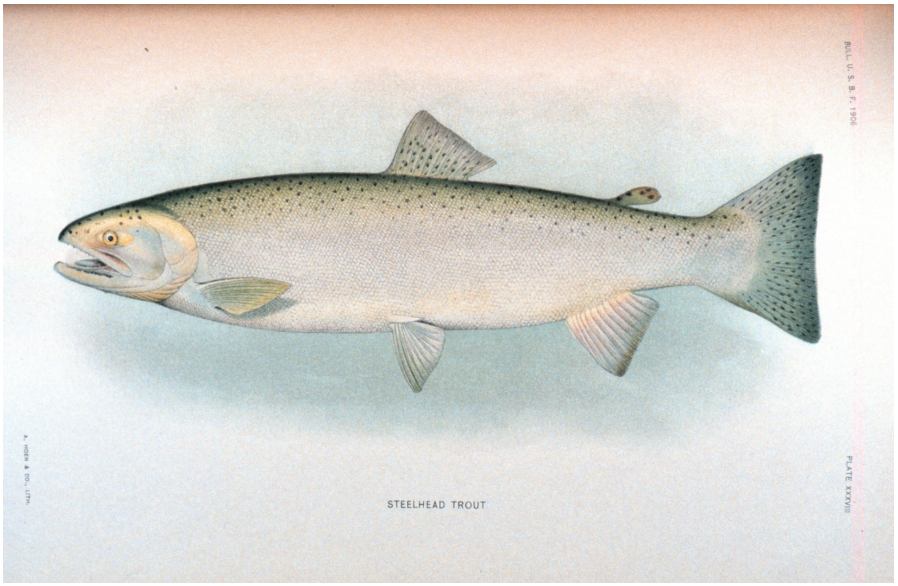
Washington State Legislature, 1990. Growth Management Act, Chapter 36.70A RCW.

Washington State Legislature, 1998. Salmon Recovery Act, Chapter 77.85 RCW.

Washington State Legislature, 1971. Shorelines Management Act, Chapter 90.58 RCW.

Washington State Legislature, 1983. State Environmental Policy Act, Chapter 43.21C RCW.

Appendix A. Statewide Steelhead Management Plan



Washington Department of Fish and Wildlife

Statewide Steelhead Management Plan:

Statewide Policies, Strategies, and Actions

July 23, 2007
DRAFT

EXECUTIVE SUMMARY

[To be completed upon finalization of the DEIS]

Table of Contents

Page

EXECUTIVE SUMMARY ..... *i*
INTRODUCTION *1*
GOAL AND POLICIES *3*
NATURAL PRODUCTION *5*
HABITAT PROTECTION AND RESTORATION *8*
FISHERY MANAGEMENT *12*
ARTIFICIAL PRODUCTION *18*
REGULATORY COMPLIANCE *22*
MONITORING, EVALUATION, AND ADAPTIVE MANAGEMENT *24*
RESEARCH *28*
OUTREACH AND EDUCATION *30*
DEFINITIONS *32*
LIST OF ACRONYMS AND ABBREVIATIONS *38*
REFERENCES/LITERATURE CITED *39*
Appendix 1. Agency Legislative Mandate and Strategic Plan *41*

INTRODUCTION

Steelhead, the Washington State fish, is an icon of the Pacific Northwest and has been a source of important cultural and economic benefits throughout the region's history. Although once abundant throughout much of the state, substantial variation now exists among the status of steelhead stocks. Five of the seven Distinct Population Segments (DPSs) within the State of Washington are listed under the federal Endangered Species Act (ESA), the most recent federal listing being the Puget Sound Distinct Population Segment (May 11, 2007; 72 FR 26722). The varied status of wild steelhead stocks statewide, in conjunction with the increased expectations for resource managers to balance public interests towards conservation, tribal and non-tribal fisheries, economic stability as well as other social-cultural and environmental values, motivated the development of a statewide steelhead plan.

To restore and preserve this important resource, the Washington Department of Fish and Wildlife (the Department) initiated a multi-step process to improve the management and status of steelhead in Washington. The first step in this process was to lay the scientific foundation for the subsequent development of improved management plans. Drawing on decades of research and new analyses, a comprehensive review of steelhead stocks and their status in Washington was published in the report "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"*. Review of this report is crucial to understanding the subsequent foundation laid in this document for future management of steelhead in the state. Each chapter in the Science Paper concluded with numerous findings and recommendations to guide future management.

Building on the science foundation, this second step, the Statewide Steelhead Management Plan (SSMP), provides a framework of policies, strategies, and actions for application throughout the state in steelhead management. Recognizing that substantial variation exists in the status of stocks, habitat conditions, and that tribal, local, and federal authorities vary across the state the objective for this document is to guide the Department in the development of the third and final step. For many of these regions, recovery plans have been developed and will compliment the statewide plan to serve as primary guidance for detailed strategies and actions identified within the regional management plans. Regional Management Plans (RMPs) will be developed simultaneously during the next 24 to 36 months for the following regions:

Puget Sound DPS
Olympic Peninsula DPS
Southwest Washington DPS
Lower Columbia River DPS
Mid-Columbia River DPS
Upper Columbia River DPS
Snake River Basin DPS

The statewide plan is guidance for WDFW employees in managing the steelhead resource. Many of the regional plans will be developed with appropriate Indian tribes. The U.S. Government recognizes twenty-five tribes as parties of the Stevens-Palmer Treaties. Twenty-four tribes have usual and accustomed fishing places within the boundaries of the State of Washington. In addition, there are nine federally recognized tribes that are not party to one of the Stevens-Palmer treaties. The overlapping nature of the tribes and state jurisdictions and authorities creates a co-

management relationship because the WDFW and the respective tribes have certain authorities that potentially pertain to the fisheries resource. As a result, there is a need for the state and the tribes to cooperate in the discharge of their respective authorities. To minimize potential conflict, and to promote effective and efficient management of fisheries resources that are subject to both state and tribal management, the Department and tribes have developed a cooperative management approach to exercise their respective authorities and to achieve our shared conservation objectives. This cooperative management will be reflected in the individual regional resource management and watershed level plans, with the respective tribes.

GOAL AND POLICIES

The purpose of this document is to provide a framework of policies, strategies, and actions that will lead to achievement of the following goal for the steelhead stocks and fisheries of Washington:

> **Restore and maintain the abundance, distribution, diversity, and long-term productivity of Washington's wild steelhead and their habitats to assure healthy stocks[1]. In a manner consistent with this primary goal, the Department will seek to protect and restore steelhead to achieve cultural, economic, and ecosystem benefits for current and future residents of Washington State.**

The WDFW will seek to achieve this goal through implementation of the following policies:

- ***Natural Production:*** Steelhead management shall place the highest priority on the protection of wild steelhead stocks to maintain and restore stocks to healthy levels.

- ***Habitat Protection and Restoration:*** Protect and restore the quality, quantity, and productivity of freshwater and marine habitat necessary to sustain and restore healthy steelhead stocks.

- ***Fishery Management:*** Promote achievement of region-wide conservation and recovery goals through the protection and restoration of the diversity, spatial structure, abundance, and productivity of wild steelhead stocks through fisheries management. The Department shall implement a cooperative management approach for fishery resources subject to both state and tribal management, with the state and tribes exercising their respective authorities. Within the constraints of the natural production policy and tribal harvest-sharing obligations, the Department shall strive to provide diverse recreational fishing opportunities.

- ***Artificial Production:*** Promote the achievement of the natural production policy and provide fishery-related benefits by implementing artificial production programs with the following characteristics:
    - *Conservation Programs*. Artificial programs implemented with a conservation objective shall have a net aggregate benefit to the diversity, spatial structure, productivity, and abundance of the target wild stock.
    - *Harvest Programs*. Artificial production programs implemented to enhance harvest opportunities shall provide fishery benefits while allowing watershed-specific goals for the diversity[2], spatial structure, productivity, and abundance of wild stocks to be met.

[1]Diversity is variation among individuals in physical, genetic, or life history characteristics.

- ***Regulatory Compliance:*** Improve compliance with state and federal regulations applicable to hatchery operations, habitat conservation, hydro operation, and fisheries.

- ***Monitoring, Evaluation, and Adaptive Management:*** Implement monitoring, evaluation and adaptive management to influence management decisions to protect the abundance, diversity and productivity of wild steelhead stocks and the habitats they rely on.

- ***Research:*** Implement steelhead research to inform the agency and the Commission on critical steelhead management issues.

- ***Outreach and Education:*** Implement outreach and education programs to ensure Washington's citizens value, support and have the information and opportunities necessary to participate in the restoration and protection of steelhead and their habitats.

NATURAL PRODUCTION

Policy Statement

Steelhead management shall place the highest priority on the protection of wild steelhead stocks to maintain and restore stocks to healthy levels.

The long term persistence of steelhead requires viable, locally-adapted, diverse populations with the plasticity to endure and rebound throughout the natural perturbations they experience in fresh and saltwater. Abundance and productivity are therefore the cornerstone to healthy, self-sustaining wild steelhead production. Strategies that focus on ensuring the long term abundance, spatial structure, diversity, and productivity of wild steelhead will provide the highest likelihood for achieving the goal of maintaining and restoring stocks to healthy levels.

Strategies

A healthy wild stock has sufficient viable salmonid parameters (VSP): abundance, productivity, diversity and spatial structure to be resilient through environmental fluctuations, to perform natural ecological functions in freshwater and marine systems, provide related cultural values to society, and sustain tribal and recreational fisheries.

1) ***Protect and Restore the Diversity of Wild Stocks*.** Evaluate and modify management actions to promote local adaptation, increase and maintain the diversity within and among stocks, and sustain and maximize the long-term productivity of wild stocks.

2) ***Provide Sufficient Wild Steelhead Spawners*.** Provide sufficient diversity and numbers of wild spawning steelhead to promote levels of diversity, spatial structure, productivity, and abundance consistent with a healthy stock.

   Selection of an effective strategy for implementing the natural production policy and identifying escapement objectives depends on the certainty of our understanding of stock population dynamics, the condition of the habitat, and the status of the stock. An escapement objective greater than the number of spawners associated with the Maximum Sustained Harvest (MSH) may be necessary to sustain populations over the long term, achieve diversity and spatial structure objectives, address uncertainties in management, or to test assumptions about stock productivity and habitat.

   Escapement strategies will be based on the following guidelines:

   a. SaSI Status is Unknown. Apply a precautionary strategy by implementing low-risk fishery and hatchery management regimes.
   b. SaSI Status is Depressed or Critical, or ESA-Listed. Promote a trend of increasing numbers of wild steelhead spawning by implementing an escapement strategy with a series of interim, variable escapement objectives for wild fish.
   c. SaSI Status Healthy. Implement a strategy that promotes maintenance of healthy stocks, with an escapement objective at least, if not more than, the number of wild steelhead spawners associated with MSH.

3) ***Manage from Ecosystem Perspective.*** Protect and restore salmonid stocks and other indigenous aquatic species to levels that sustain healthy ecosystem processes, including food web links to wild stocks of steelhead.

4) ***Describe Path with Measurable Benchmarks to Long-term Goals.*** Identify the long-term goal and the factors limiting the health of each stock. Describe a path to the long-term goal with measurable benchmarks for modifications to fishery, hatchery, and habitat management and the expected performance of each stock. Recognition that pre-settlement abundances were likely much higher than initially estimated will influence the selection of both intermediate and long-term goals for steelhead.

Actions

1) Prevent the loss of wild steelhead stocks through diligent monitoring of at-risk stocks and implementation of improved harvest, hatchery, and habitat management strategies.
    a. Provide a report on at-risk stocks of wild steelhead to the Director and Fish & Wildlife Commission at the time this policy is approved and subsequently at 5-year intervals. Include in the report a summary of limiting factors and recommended management actions. Recommend and implement new actions to address limiting factors and, if warranted, initiate "rescue programs" like kelt reconditioning, natural stream channel rearing, or hatchery supplementation to conserve wild stocks until limiting factors are resolved.
    b. Annually monitor and review the status of wild steelhead stocks at risk, identify limiting factors, and assess the effectiveness of management actions.
    c. Develop a hatchery conservation reference document that discusses the conditions under which a hatchery conservation program may be warranted to maintain or restore at-risk wild stocks and the key questions that should be addressed in an implementation plan.

2) Develop and implement regional management plans that identify the long-term goal, benchmarks for modifications to management actions, escapement objectives, and the expected trajectory for the diversity, spatial structure, productivity, and abundance of each wild stock (based on TRT viability analyses and productivity graphs where applicable). Complete this action within two years of the adoption of this policy for stocks that are listed under the Endangered Species Act or have a SaSI status of Critical. Complete this action for the remainder of stocks within five years of the adoption of this policy.

3) Implement consistent procedures with watershed planning groups to review changes in habitat resulting from restoration projects or other factors and adjust escapement objectives.

4) Support programs that restore balanced ecological functions and reduce predation impacts to critical steelhead. Opportunistic predation by marine mammals and birds due to manmade structures, can lead to elevated mortality rates that can impact the short and long term health of wild anadromous fish runs:

a. Identify structures that allow high rates of unnatural predatory opportunity to occur.
b. Address nuisance seal and sea lion predation by pursuing authorization from the National Marine Fisheries Service to use hazing and/or lethal means to protect endangered and threatened salmon and steelhead when necessary.
c. Identify bird species that take an unusually large number of juveniles or out migrating smolts. Identify whether these bird species numbers have risen in response to hatchery releases of salmonids.
d. Identify the predator attraction impact on wild steelhead juveniles and smolts due to hatchery salmonid smolt releases.

HABITAT PROTECTION AND RESTORATION

Policy Statement

Protect and restore the quality, quantity, and productivity of freshwater and marine habitat necessary to sustain and restore healthy steelhead stocks.

Habitat is used in its broadest sense and includes the functions provided by freshwater, estuarine, and marine environments, water quality and quantity, marine-derived nutrients, and forage fish. Access to suitable and sufficient habitat is a critical requirement for maintaining healthy wild steelhead stocks.

WDFW does not have significant regulatory authority in the protection of habitat. WDFW will advance the protection and restoration of functional habitat through technical assistance, implementation of the hydraulic permit program and state passage law, and by exercising our authority under the Federal Power Act.

Strategies

1) ***Encourage Local Problem Solving***. Encourage local problem solving with participation by local citizens, concerned groups, the tribes, and state, local, and federal agencies in the development or implementation of improved strategies for habitat protection and restoration.

2) ***Provide Technical Expertise***. Ensure that technical expertise is available to local planning and fish recovery groups, and governments to assist in the identification of the habitat factors limiting the health of steelhead stocks and actions to achieve desired protection and restoration outcomes.

3) ***Facilitate Access to Information.*** Promote effective steelhead protection and restoration by providing web access to a cohesive set of tabular and map-based habitat information, including watershed utilization by steelhead and priorities for protection and restoration.

4) ***Promote Comprehensive Ecosystem Based Approach and an All-H Strategy***. Develop and implement comprehensive hatchery, habitat, hydro, and harvest management plans that link all strategies within an "All-H" context. Identify the long-term goal and the factors limiting the health of each stock. Describe a path to the long-term goal with measurable benchmarks for modifications to habitat management and the expected performance of each stock.

5) ***Enhance Effectiveness of WDFW's Hydraulic Project Approval (HPA).*** Work with stakeholders and staff to evaluate the effectiveness of the HPA program and develop strategies to improve where necessary. Continue to streamline HPA's for habitat restoration projects, and implement an effective analysis for HPA projects.

6) ***Implement Hierarchy of Protection and Mitigation Approaches***. Recognizing that at some times the needs of society will result in habitat degradation, the agency will pursue the following hierarchy of approaches to minimize the effects to steelhead stocks:
    a. Avoiding the impact altogether by not taking a certain action or parts of an action.
    b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
    c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
    d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
    e. Compensating for the impact by replacing or providing substitute resources or environments.
    f. Monitoring the impact and taking appropriate corrective measures to achieve the identified goal.

7) ***Develop Guidance for the Lead Entity and Regional Fisheries Enhancement Group (RFEG) Programs to Assist in Habitat Restoration for Steelhead.*** Identification of important steelhead habitat characteristics and limiting factors can assist in developing and prioritizing habitat restoration projects that will benefit steelhead in freshwater and in marine systems.

8) ***Promote Funding of Habitat Protection and Restoration.*** With local governments, Salmon Recovery Funding Board, Governor's office, Congressional representatives, and state legislators, secure federal, state, and local funding to continue protection and restoration of freshwater and marine habitat for steelhead.

9) ***Implement Nutrient Enhancement where it Will Enhance Stock Productivity.*** Promote nutrient enhancement in streams that display nutrient deficiency from historical levels and to compliment VSP identified in watershed goals.

10) ***Develop a Climate Change Response Plan.*** Participate in national and international fishery forums that quantify and assess impacts of climate change.

11) ***Enhance Fish Passage Strategies.*** Maximize opportunities to eliminate fish passage barriers. Develop and encourage progressive fish passage strategies around hydro facilities with other state and federal agencies.

12) ***Mitigate for Wild Steelhead Habitat Loss.*** Allow for mitigation with hatchery fish when wild fish habitat is irreparably lost. Entities that are allowed to cause irreparable loss need to be accountable and mitigate for their actions.

Actions

1) Enhance the ability of local planning groups to effectively pursue new funding opportunities and efficiently use existing fund sources by developing a web application that identifies a schedule of priority habitat protection areas and restoration projects based on Subbasin plans, Limiting Factors Analysis Reports, and regional recovery planning or other watershed planning efforts.

2) Assure lead entities and RFEG's have sufficient information to identify and prioritize projects that provide a benefit to steelhead.

3) Use the Federal Energy Regulatory Commission (FERC) as a vehicle to negotiate with power project owners at the watershed level to assess, protect, and restore habitat, and implement research, monitoring, and evaluation of steelhead management objectives.

4) Negotiate with action agencies to improve upstream and downstream survival of steelhead, including kelts, through hydro facilities.

5) Through a recently initiated project to evaluate the feasibility of developing habitat conservation plans for the Hydraulic Project Approval (HPA) program, and for WDFW owned and managed wildlife areas, assess the potential impacts of WDFW land management activities on steelhead:
    a. Assess the potential impacts of HPA-permitted activities on steelhead.
    b. Evaluate potential conservation measures to fully mitigate for adverse impacts resulting from HPA-permitted activities.
    c. Identify HPA-permitted activities that will require new research or monitoring efforts to assess impacts and potential mitigation measures.
    d. Develop tools and strategies to facilitate the monitoring, tracking, and adaptive management of HPA-permitted activities.

6) Promote coordination between state and local agencies as well as interested organizations to develop innovative approaches in securing materials from timber blow down, road clearing, and other site preparation for use in stream restoration projects.

7) Encourage local government participation to improve efforts to correctly identify fish bearing streams prior to approving land use decisions.

8) Seek funds, provide technical and engineering guidance on projects, and provide permit assistance to maximize the opportunity to increase fish passage at road crossings and other structures.

9) Work with local and regional habitat managers and fish recovery groups at the watershed level to assess, protect, and restore habitat using a comprehensive, ecosystem based approach that recognizes the continuum that extends throughout the watershed, its estuary, and near shore marine waters.

10) Work with stakeholders and staff to evaluate the effectiveness of the HPA program and develop strategies to improve where necessary. Continue to streamline HPA's for habitat restoration projects, and implement an effective analysis for HPA projects.

11) Develop a plan that describes the projected impacts of climate change on steelhead habitat, provides hypotheses on effects on steelhead populations, and identifies actions to promote perpetuation of steelhead.

12) Place the highest priority for mitigating unavoidable wild steelhead loss through in-river habitat enhancement and replacement with equivalent wild production. In areas where

habitat has been permanently lost, or restoration is presently unfeasible, artificial propagation for mitigation may be used to establish and maintain fisheries and/or conserve genetic characteristics of native wild steelhead stocks.

FISHERY MANAGEMENT

Policy Statement

Promote achievement of region-wide conservation and recovery goals through the protection and restoration of the diversity, spatial structure, abundance, and productivity of wild steelhead stocks through fisheries management. The Department shall implement a cooperative management approach for fishery resources subject to both state and tribal management, with the state and tribes exercising their respective authorities. Within the constraints of the natural production policy and tribal harvest-sharing obligations, the Department shall strive to provide diverse recreational fishing opportunities.

The Department promotes the effective and efficient management of steelhead resources subject to state and tribal management and authority through joint planning, explicit definition of fishery objectives, and maintenance of consistent stock assessment and catch information for use by the Department, the affected Indian tribes, other states, and the National Oceanographic and Atmospheric Administration (NOAA).

The Department recognizes that there are inherent differences and values between hatchery steelhead and wild fish to recreational fishers. They have different run timing, management objectives, escapement requirements, and economic and cultural values. The Department will address these differences and fisheries benefits when designing annual fishery management plans to meet management objectives. In general, non-treaty fishers should have an opportunity to utilize a portion of both the hatchery and wild fish that are available for harvest unless otherwise agreed by the Department and the affected Indian tribes.

Strategies

1) ***Manage Fisheries Consistent with Natural Production Strategies.*** Design, implement, and evaluate fishery management to assure consistency with the natural production policy and strategies in this plan.

2) ***Promote Selective Harvest.*** Reduce impacts to non-target stocks and species.
    a. Steelhead Fisheries. Promote the use of fishing methods and regulations that focus harvest on hatchery-origin steelhead and provide for the conservation of wild steelhead.
    b. Other Fisheries. Develop and promote the implementation of fishing methods and regulations that maximize the harvest of the target species while maintaining impacts to non-target species within allowable limits.

3) ***Develop Comprehensive All-H Strategy***. Develop and implement comprehensive hatchery, habitat, hydro, and harvest management plans that link fishery management strategies within an "All-H" context.

4) ***Account for all Sources of Fishery Related Mortality***. Incorporate all sources of fishing related mortality in fishery management.

5) ***Describe Path with Measurable Benchmarks to Long-term Goals***. Evaluate the current benefits and risks of the current fishery management regime relative to the long-term goals for each stock. Describe a path to the long-term goal with measurable benchmarks for modifications to fishery, hatchery, and habitat management and the expected performance of each stock. For fishery management affecting wild stocks important for recovery and conservation, escapement objectives will be established based on the following guidelines:
    a. SaSI Status is Unknown. Apply a precautionary strategy by implementing low-risk fishery and hatchery management regimes.
    b. SaSI Status is Depressed or Critical, or ESA-Listed. Promote a trend of increasing numbers of wild steelhead spawning by implementing an escapement strategy with a series of interim, increasing escapement objectives for wild fish.
    c. SaSI Status Healthy. Implement a strategy that promotes maintenance of healthy stocks, with an escapement objective at least, if not more than, the number of wild steelhead spawners associated with the MSH.

6) ***Provide Diverse Fishing Opportunities.*** Assure that the diverse interests of the recreational fishing community are addressed, including catch and release, retention, accommodations for disabled anglers, access, and multiple gear type opportunities.

7) ***Adaptively Manage Fisheries***. Adaptively manage fisheries to assure that fishery plans are responsive to variable productivity, region-wide conservation and recovery goals are achieved, and fishing-related economic and cultural benefits are maximized.

Actions

1) In fisheries where steelhead are captured incidentally to the harvest of other species, implement regulations/selective fishing techniques that protect the wild stocks.
    a. Protect juvenile steelhead and resident rainbow trout by closing fisheries during the spring smolt migration period and/or through the use of minimum fish size, gear restrictions and bag limits, or area closures during periods when the fisheries are open.
    b. Develop methods for improving the selective harvest of salmonids in commercial fisheries.

2) Compute the total fishery related mortality in fisheries impacting steelhead. As a precautionary measure, assume and apply an overall mortality rate no higher than 10% for steelhead caught and released in recreational fisheries or as directed per ESA permit. The 10% mortality factor incorporates immediate mortality of fish caught and released, delayed mortality, potential mortality of fish that are hooked but not landed, potential reductions in reproductive success, potential effects of multiple encounters, and uncertainty in the number of encounters. For commercial fisheries, the department will use a site-specific mortality rate.

3) Recreational Fishery Management Guidelines – Abundance and Escapement Known. Where abundance and escapement are known, guidelines for managing recreational

steelhead fisheries are described in tables 1 (ESA-listed and SaSI status Critical stocks) and 2 (not ESA-listed and not SaSI status Critical). Wild steelhead release (WSR), selective gear rules, closed seasons or closed areas will be implemented as appropriate to regulate the recreational fishery.

4) Recreational Fishery Management Guidelines – Abundance or Escapement Not Known. Manage the recreational fishery with the following precautionary measures where the abundance or escapement of a wild stock is not known.
    a. Streams with Wild Steelhead but No Hatchery-Origin Steelhead. No recreational fishing for steelhead will be authorized.
    b. Streams with Wild Steelhead and Hatchery-Origin Steelhead. A recreational fishery with wild steelhead release may occur. If a difference exists between the run timing of the hatchery and wild steelhead, no recreational fishing for steelhead will be authorized beyond the time and area that hatchery fish are reasonably available.

5) Work with the affected Indian tribes, on a watershed by watershed basis, to obtain annual state-tribal harvest management plan agreements that include shared conservation, hatchery production, and harvest sharing objectives for state and tribal fisheries.

Table 1. Guidelines for managing recreational steelhead fisheries with known abundance, stock in ESA-listed DPS, or one or more of stocks in management unit have a SaSI stock status of Critical.

Abundance of Wild Management Unit (MU)	Abundance of Hatchery Management Unit (MU)	
	Less than the Hatchery MU escapement objective	**Greater than** the Hatchery MU escapement objective
Abundance Less than Wild MU escapement objective	• Close all recreational steelhead fisheries.	• If the abundance of wild steelhead is less than the critical threshold, no fisheries directed at steelhead. • If wild abundance is less than the escapement objective, in no case exceed a 10% impact from all fisheries *or* the ESA fishery permit limit(s).
Abundance Greater than Wild MU escapement objective	• Assure wild MU escapement objective is achieved. • Minimize mortality impacts on hatchery fish to provide sufficient broodstock.	• Assure wild and hatchery MU escapement objectives are achieved. • Provide recreational fishery opportunities for both hatchery and wild fish.

Table 2. Guidelines for managing recreational steelhead fisheries with known abundance, stock not in ESA-listed DPS, and SaSI stock status not Critical.

Abundance of Wild Management Unit (MU)	Abundance of Hatchery Management Unit (MU)	
	Less than the Hatchery MU escapement objective	**Greater than** the Hatchery MU escapement objective
Abundance Less than Wild MU escapement objective	• Close all recreational steelhead fisheries.	• Minimize mortality to wild stock(s); in no case exceed a 10% impact from all fisheries *or* the ESA fishery permit limit(s).
Abundance Greater than Wild MU escapement objective	• Assure wild MU escapement objective is achieved. • Minimize mortality impacts on hatchery fish to provide sufficient broodstock.	• Assure wild and hatchery MU escapement objectives are achieved. • Provide recreational fishery opportunities for both hatchery and wild fish.

6) Develop and implement regional management plans that identify the long-term goal, benchmarks for modifications to management actions, escapement objectives, and the expected trajectory for the diversity, spatial structure, productivity, and abundance of each wild stock. Complete this action within two years of the adoption of this policy for stocks that are listed under the Endangered Species Act or have a SaSI status of Critical. Complete this action for the remainder of stocks within five years of the adoption of this policy.

   The regional RMPs and/or Fisheries Management and Evaluation Plans (FMEPs) will include the following elements.

   a. Fishery Assessment. Assess the current benefits and risks of each fishery relative to the potential effects on the diversity and spatial structure, and abundance and productivity of wild stocks. Several key risk factors to consider are discussed below.
      - *Diversity and Spatial Structure*. Evaluate the potential selective effects on wild stocks of fisheries that target hatchery stocks, particularly those with a different run timing or spatial distribution. Modify the timing of fisheries, gear types, or fishery characteristics to enhance diversity and spatial structure consistent with watershed goals.
      - *Abundance and Productivity*. Evaluate the effects of harvest rates established for management units on the abundance and productivity of the constituent stocks. Reduce fishing harvest rates if the projected abundance of a stock is inconsistent with the wild production goal. Assure that harvest rates on wild stocks during periods targeting hatchery fish are responsive to changes in productivity and are consistent with the path to achieving benchmarks and long-term goals.
   b. Fishery Management. Describe the harvest rate, escapement goal or other management strategy that will be used, the expected short and long-term effects of the fishery, measurable benchmarks on the diversity, spatial structure, productivity, and abundance of the wild stock, and other necessary metrics to determine whether the fishery management program is meeting its objectives.
   c. Monitoring, Evaluation, and Adaptive Management. Document the monitoring and evaluation plan for each fishery and the process for making revisions (adaptive management) to the program.

7) Provide recreational fishers with two general types of fishing opportunities on adult steelhead:
   a. *Retention*: Retention fisheries will allow the opportunity to catch and retain hatchery and/or naturally produced fish that are more abundant than the escapement objective.
   b. *Catch-and-Release*: Catch-and-release fisheries will be used to maximize the opportunity to catch and release steelhead (or catch rate) and provide extended fishing periods for hatchery and/or naturally produced fish that are more abundant than the escapement objective. Catch-and-release fisheries can be targeted on hatchery or wild fish but they must be consistent with wild fish protection guidelines.

- "Selective Gear Rules", as described in the fishing pamphlet, will apply to catch and release fisheries that target wild steelhead in excess of the escapement objectives.

8) Distribute recreational opportunities among retention and catch-and-release fisheries based upon testimony received at Fish & Wildlife Commission meetings, letters to the Department, angler preference surveys, and other methods for determining the preferences of the recreational fishing community. Angler preference surveys should be conducted at least every five years.

9) Evaluate and report results from the fishery management monitoring and evaluation plan (FMEP) requirements on an annual basis with an initial summary in five years and every five years there after.

10) Develop (web based access) central repository for reporting total harvest of steelhead through direct and indirect fisheries.

ARTIFICIAL PRODUCTION

Policy Statement

Promote the achievement of the natural production policy and provide fishery-related benefits by implementing artificial production programs with the following characteristics:

Conservation Programs. Artificial production programs implemented with a conservation objective shall have a net aggregate benefit for the diversity, spatial structure, productivity, and abundance of the target wild stock.

Harvest Programs. Artificial production programs implemented to enhance harvest opportunities shall provide fishery benefits while allowing watershed-specific goals for the diversity, spatial structure, productivity, and abundance of wild stocks to be met.

Washington's hatchery system represents a tremendous investment by its citizens. Hatchery origin steelhead provide a substantial recreational and economic benefit to Washington State residents and comprise the vast majority of the recreational fishery harvest of steelhead (96% of recreational fishery harvest in 2003-2004). However, the federal Endangered Species Act (ESA) listings for several of the steelhead populations within the state have identified hatcheries as contributors to the natural population declines. There has been a fundamental paradigm shift in how hatcheries are viewed. Hatcheries are no longer a replacement of habitat, but rather an integral part of the watershed in which they operate. Rather than focus on an unproductive debate over whether hatcheries are inherently good or bad, the department began with a premise that hatcheries are an important tool. The Hatchery Reform Project is a systematic science-driven redesign of our hatchery system to achieve two new goals: 1) Conserve naturally spawning populations and 2) Support sustainable fisheries. The Hatchery Reform Project, when coupled with the recently completed Steelhead Science Paper: "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs"*, lays the foundation for how we manage steelhead into the future to ensure healthy natural populations and healthy fisheries.

Strategies

1) ***Establish Network of Wild Stock Gene Banks***. Establish a network of wild stock gene banks across the state where wild stocks are largely protected from the effects of hatchery programs. At least one wild stock gene bank will be established for each major population group in each steelhead DPS. Each gene bank established will have the following characteristics and management:
    a. Each stock selected for inclusion in the gene bank must be sufficiently abundant and productive to be self-sustaining in the future.
    b. No releases of hatchery-origin steelhead will occur in streams where spawning of the stock occurs, or in streams used exclusively by that stock for rearing.
    c. Fisheries can be conducted if wild steelhead management objectives are met as well as any necessary federal ESA determinations.

2) ***Mark all Artificial Production***. Mark or tag all steelhead released from artificial production programs to evaluate program risks and benefits and facilitate selective fisheries.

3) ***Develop Comprehensive All-H Strategy***. Develop and implement comprehensive hatchery, habitat, hydro, and harvest management plans that ensure the artificial production program compliments the strategies for other Hs (i.e., "All-H" context).

4) ***Manage from Ecosystem Perspective***. Design, operate, and evaluate artificial production programs from an ecosystem perspective, rather than with a focus only on fish production, and assess genetic, demographic, and ecological risk factors.

5) ***Describe Path with Measurable Benchmarks to Long-term Goals***. Evaluate the current benefits and risks of the current relative to the long-term goals for each stock. Describe a path to the long-term goals with measurable benchmarks for modifications to fishery, hatchery, and habitat management and the expected performance of each stock. For programs affecting the wild stocks of importance for conservation and recovery, the long-term goal will include the following elements:

    a. Integrated programs implemented to enhance harvest opportunities (i.e. integrated harvest program) will achieve a proportionate of natural influence (PNI) equal to or greater than 0.70 on average, use hatchery practices that reduce the risks of domestication, and use broodstock that is indigenous to the watershed.

    b. Segregated programs implemented to enhance harvest opportunities (i.e. segregated harvest program) will result in an average gene flow of less than 2% from the hatchery to the wild stock. Use broodstock that originated from releases of juveniles in that watershed unless no hatchery or trapping facility exists.

    c. Integrated conservation programs implemented to preserve and recover depleted wild stocks to minimize potential genetic divergence between the hatchery broodstock and the wild populations. PNI will be determined by the status of the natural population, based on the goal of PNI being as high as practical.

    d. Segregated conservation programs implemented to maintain the hatchery population as a distinct, or genetically segregated population in order to preserve and recover depleted wild stocks. PNI will be determined by the status of the natural population, based on the goal of PNI being as low as practical.

6) ***Implement Rescue Programs for At-Risk Stocks***. Maintain at-risk wild stocks until limiting factors are addressed by implementing programs such as kelt reconditioning and hatchery conservation programs.

7) ***Adaptively Manage Programs***. Adaptively manage artificial production programs to assure that current programs are responsive to variable productivity, region-wide conservation and recovery goals are achieved, and fishing-related economic and cultural benefits are maximized.

Actions

1) Protect wild steelhead stocks from potential interactions with hatchery-origin rainbow trout:
    a. Hatchery-origin rainbow trout shall not be released in anadromous waters.
    b. Hatchery-origin rainbow trout shall not be released in lakes if the release would result in a significant negative impact to wild steelhead.

2) Ensure compliance of WDFW facilities with environmental regulations (e.g. water quality, fish passage, and screening). Identify facilities currently not in compliance and develop a capital budget plan to bring facilities into compliance.

3) Protect wild steelhead stocks from the importation, dissemination, and amplification of pathogens by adhering to the "Salmonid Disease Control Policy of the Fisheries Co-managers of Washington State".

4) Select either an integrated or segregated reproductive strategy for the operation of each hatchery program based upon watershed goals, program objectives (harvest, conservation, research, or education), facility capabilities, and a scientific assessment of the potential risks and benefits of an integrated or a segregated strategy.

5) Assess the current risks and benefits, including economic benefits, of each artificial production program relative to genetic, demographic, and ecological risk factors. Key factors to include in the risk assessment for each type or program are discussed below.

Segregated Programs. Key risks associated with segregated programs are a potential loss of diversity (within and between stocks), loss of fitness, and competition.

    a. Manage the collection of broodstock for Chambers Winter and Skamania Summer programs to maintain or increase the difference in spawn timing with wild steelhead stocks by establishing a spawn timing cutoff date for each hatchery program.
    b. Evaluate the potential range of gene flow from returning adults of hatchery-origin to wild-origin stocks in all watersheds where Chambers Winter or Skamania Summer steelhead stocks are released, or where a segregated program has been in place for three or more generations.
    c. Evaluate the potential effects of competition of hatchery-origin juveniles, adults, and the progeny of naturally spawning hatchery adults with wild-origin stocks. Place a priority evaluation for all wild stocks that are listed under the ESA, or have a SaSI status of Critical or Depressed.
    d. Where risks are inconsistent with watershed goals, implement one or more of the following actions: 1) release steelhead juveniles from segregated programs only at locations where returning adults can be captured; 2) adjust the timing of broodstock collection and spawning, program size, release location, harvest rate in all fisheries, rearing practices affecting the rate of residualism or other factor to achieve an acceptable rate of gene flow; 3) eliminate the program; or 4) replace the segregated program with an integrated program with risks that are consistent with watershed goals.

Integrated Programs. Three key risk factors associated with integrated programs are a loss of diversity, loss of fitness, and a reduction in the number of wild spawners.

e. Use broodstock that originated from the stock that inhabits the area of the watershed in which the juveniles will be released or, if the wild stock has been extirpated, a stock with morphological, life history, and genetic characteristics similar to the extirpated stock.
f. Collect broodstock from the wild stock that is representative of their abundance, diversity, distribution, and run timing.
g. Evaluate the PNI, potential range of changes in productivity of wild spawners, and demographic risks and benefits. Where risks are shown to be inconsistent with watershed goals, modify the size, fish culture practices, release strategy, or other characteristics of the program, reduce fishery harvest rates on wild-origin steelhead and increase fishery harvest rates on hatchery-origin steelhead, and/or enhance the productivity of the natural habitat.

6) Develop and implement regional management plans that identify the long-term goal, benchmarks for modifications to management actions, escapement objectives, and the expected trajectory for the diversity, spatial structure, productivity, and abundance of each wild stock. Complete this action within two years of the adoption of this policy for stocks that are not listed under the Endangered Species Act or have a SaSI status of Critical. Complete this action for the remainder of stocks within five years of the adoption of this policy. Develop an implementation plan for establishing a network of wild stock gene banks.

   The regional plans will include the following elements.

   a. Artificial Production Program Assessment. Assess the current benefits and risks of each program relative to the potential effects on the diversity, spatial structure, abundance, and productivity of wild stocks.
   b. Describe each artificial production program with an operational plan (i.e. Hatchery Genetic Management Plan (HGMP) that documents the program objectives, performance objectives, indicators, specific operational components, risk control measures, and benchmarks for the program modifications necessary to achieve the long-term goal.
   c. Monitoring, Evaluation, and Adaptive Management. Document the monitoring and evaluation plan for each artificial production program and the process for making revisions (adaptive management) to the program.

7) Evaluate and report results from the artificial production monitoring and evaluation plan on an annual basis with an initial summary in five years and every five years there after.

REGULATORY COMPLIANCE

Policy Statement

Improve compliance with state and federal regulations applicable to hatchery operations, habitat conservation, hydro operation, and fisheries.

Gaining compliance with existing and future regulations is essential in protecting and maintaining important habitat functions as well as ensuring that fishery protection strategies are followed. WDFW will utilize both voluntary (such as technical assistance, public outreach, cooperative partnerships) and regulatory approaches to improve compliance with habitat, hydro, hatcheries, and fishery regulations.

Strategies

1) ***Improve Enforcement of Existing Habitat Regulations***. Rigorously enforce current regulations to protect salmonid habitat:
    a. Prioritize enforcement of habitat protection measures.
    b. Work to increase the accountability of government entities for the enforcement of state and local habitat protection laws.
    c. Establish partnerships in enforcing laws needed to protect salmon habitat.

2) ***Improve Understanding of Priority Enforcement Issues***. Improve coordination of fishery managers, habitat managers, and enforcement staff to identify and prioritize enforcement activities.

3) ***Increase Enforcement Presence in Fishery Areas with ESA Listed Fish as well as populations of special concern***. Ensure fishery compliance through increased officer focus on areas containing ESA-listed fish or species of concern.

4) ***Actively Pursue Funding Opportunities.*** Pursue funding for regulatory compliance from a variety of sources, such as state funding, federal grants, contracts, non-governmental organizations and the Bonneville Power Administration.

5) ***Increase Penalties Associated with Noncompliance***. Increase the consequences associated with noncompliance by requesting increased penalties for illegal actions through legislative process.

6) ***Implement Improved Compliance Strategies***. Improve compliance with existing regulations through the development, testing, and implementation of innovative techniques.

Actions

1) Seek legislation to change the Hydraulic Project Approval (HPA) Program to provide an expansion in civil authority, that includes infractions, fines, stop work and remediation orders to increase the effectiveness of HPA compliance.

2) Regional Fish Program staff will meet at least quarterly with corresponding Enforcement Program Captain and Sergeants to discuss areas needing specific enforcement emphasis for the protection of the steelhead resource.

3) Fish and Wildlife enforcement staff will monitor compliance with priority HPAs.

4) Fish and Wildlife enforcement staff will conduct routine and emphasis patrols on fisheries that directly or indirectly impact ESA listed stocks.

5) WDFW will seek legislation that increases the penalties and fines associated with the illegal take of unmarked steelhead.

6) Develop and track performance measures associated with fishery and habitat compliance.

7) Develop and implement a statewide "Stream Watch" program that puts volunteer observers on rivers to increase the awareness of regulations and accountability of fishers.

8) Develop and implement innovative techniques to improve compliance such as wild fish tags, outreach programs, signage, and law enforcement emphasis patrols.

9) Conduct pilot review of performance and outcome of the HPA Program.

10) Provide adequate resources to implement regulatory compliance.

MONITORING, EVALUATION, AND ADAPTIVE MANAGEMENT

Policy Statement

Implement monitoring, evaluation and adaptive management to influence management decisions to protect the abundance, diversity and productivity of wild steelhead stocks and the habitats they rely on.

Fishery management and artificial production both have direct and indirect influence on the overall abundance, spatial structure, diversity,, and productivity of wild steelhead. Informed decision-making is an important aspect to active management of a natural resource that is also influenced by natural perturbations both in freshwater and the marine environment. Monitoring, evaluation, and adaptive management are critical components to informed decision making because they support "a learning by doing" concept. Continued review, evaluation, and modification of actions that directly influence natural production is essential to assure that economic and cultural benefits are maximized while maintaining acceptable risks to natural populations. Adaptive management is a process that allows managers to make good decisions while operating in the face of uncertainty about future circumstances and consequences. It is likely to be most effective if it is driven by clearly defined goals and objectives, performance measures identified and monitored, and results readily available, communicated, and evaluated in a defined decision making framework.

Strategies

1) ***Actively Pursue Funding Opportunities.*** Pursue funding for monitoring, evaluation, and adaptive management from a variety of sources, such as state funding, federal grants, contracts, non-governmental organizations, and the Bonneville Power Administration.

2) ***Establish Fishery/Escapement Data Management System.*** Monitor the effectiveness of management actions in achieving watershed based wild stock and hatchery escapement goals by establishing and maintaining an accurate data system with age-specific estimates of abundance, escapement, harvest, fishery, other related mortality, etc. of each SaSI stock.

3) ***Establish an adaptive management system (feedback loop) to evaluate and implement appropriate actions to support progress towards achieving the identified goals within the Plan's chapters.***
    a. Regional adaptive management systems will be developed in concert with regional recovery plans;
    b. Or, developed in those regions without a recovery plan.

4) ***Develop Comprehensive Steelhead Adult and Smolt Monitoring Program.*** Develop juvenile and adult abundance and productivity estimates for all steelhead populations consistent with the Governor's Monitoring Forum, regional salmon recovery plans, sub-basin plans, watershed and other local or regional plans.

5) ***Link Recovery Plan Actions with Status and Trends of Steelhead Distinct Population Segments (DPSs).*** Actions and monitoring and evaluation programs identified in regional recovery plans directed at other species can also be beneficial for steelhead and identification of these links will be important.

6) ***Ensure the Department's habitat staff are involved in and part of the development of monitoring and evaluation plans associated with habitat enhancement.*** Work with habitat staff to address steelhead habitat enhancement needs.

7) ***Enhance Public Participation in Monitoring***. Increase monitoring effectiveness through enhanced public participation in the collection of data where appropriate.

8) ***Expand Life History Studies.*** Early marine survival as well as ocean distribution and survival are important for understanding and quantifying status and trend changes.

Actions

Stock Structure, Diversity, and Abundance

1) Evaluate the stock structure of steelhead in the Puget Sound, Olympic Peninsula, and Southwest Washington regions. Evaluate assumptions of the 1992 co-manager analysis and, building on the tools developed by the Puget Sound, Willamette/Lower Columbia, and Interior Columbia technical recovery teams, define and implement a consistent procedure for evaluating stock structure. Collect samples for analysis with methods that assure run timing and life history types are known.
2) Increase the percentage of wild stocks with escapement assessed on a regular basis through prioritization of monitoring, soliciting funding, developing alternative estimation methods and sample designs, and enlisting the assistance of other organizations and the public.
3) Periodically evaluate genetic conservation guidelines to ensure steelhead genetic diversity is conserved.
4) Include British Columbia, Oregon and Idaho hatcheries within a broad scale monitoring and evaluation plan that assesses the productivity of wild stocks relative to the presence or absence of integrated or segregated hatchery programs.
5) Monitor and evaluate juvenile and adult abundance and productivity for all stocks with a priority towards SaSI critical and federally-listed steelhead.
6) Design and implement a program to monitor the genetic and life history characteristics of steelhead stocks and a management structure for analysis and reporting. Prioritize the collection of samples from reference stocks and from watersheds with both a hatchery program and a significant wild stock.
7) Assess the gene flow rate between the non-local segregated hatchery stocks and wild stocks in conjunction with the stock assessment work.
8) Establish a web-accessible database with age-specific estimates of the abundance, escapement, harvest, fishery and other related mortality of both wild and hatchery steelhead stocks.
9) Seek funding to support the additional monitoring and evaluation components that will address unknown mortality factors.

Stock Status

10) Assess the status of all populations in Washington on a 4 to 8 year cycle to assure that opportunities for early action are not missed. Use population viability analysis (PVA) to evaluate spawner abundance and, for populations identified to have a potential conservation concern, broaden the analysis to evaluate the contribution of rainbow trout to population viability, the previous performance of the population, and factors affecting population status.
11) Annually monitor and review the status of populations at risk, identify limiting factors, and assess the effectiveness of management actions. Recommend new programs to address limiting factors, and potentially initiate "rescue programs" like kelt reconditioning, natural stream channel rearing, or hatchery supplementation to conserve wild populations until limiting factors are resolved.

Fishery Management

12) Produce an annual report of smolts stocked by river for management and informational purposes (web-accessible).
13) Produce an annual recreational and tribal harvest report.
14) Monitor recreational, commercial and tribal harvest and encounter rates through creel censuses, catch record cards, enforcement, commercial fish buyer's receiving tickets, onboard observers, and tribal reporting.
15) Improve the precision and accuracy of estimates for direct and indirect harvest related mortalities.

Habitat Monitoring

16) Develop and implement a consistent method for using remote sensing data to monitor the status and trends of steelhead habitat.
17) Enhance Geographic Information System (GIS) capabilities by creating spatial data layers that identify barriers to fish passage, by incorporating additional variables into models that predict fish distribution, and by annually mapping the distribution of spawner redds.
18) Assess long-term planning acts (GMA, SMA, SRA) to determine whether they maintain or increase the amount of mature riparian forest as designed.
19) Delineate or model the past, current, and likely future distributions of steelhead populations to facilitate the identification of conservation and restoration priorities as expected changes to habitat occur through climate change and management influences.
20) Develop tools that allow us to better predict the effects of water management (quantity and quality) practices under different climate, weather, and management scenarios.

Artificial Production

21) Implement hatchery evaluation studies on selected facilities to compare replacement rate (recruits per spawner) of wild steelhead in the absence of artificial production with wild populations influenced by artificial production.
22) Implement hatchery monitoring and evaluation program(s) to determine if artificial production strategy (integrated or segregated) are achieving the identified program goals for proportion of natural influence and stray rate.
23) Develop broodstock management plans for all steelhead programs and provide summary of hatchery replacement rate every five years.
24) Seek funding to bring hatchery facilities into compliance with federal and state standards.

Verification and Accountability

25) Develop and implement a web-based reporting system for monitoring and evaluating the effectiveness of policy, actions, and stock performance. Include SaSI stock status assessments, priority actions and performance measures for harvest, hatchery, hydro, and habitat management.
    a. Annually collect, record and update the web-based reporting system.
    b. Every five years a report will be compiled and provided to the Director and Fish and Wildlife Commission articulating results and progress towards wild production goals, including agency compliance with statewide policies and guidelines.
26) Upon completion of the statewide management plan, WDFW will conduct an assessment to evaluate all current programs in order to develop a baseline to determine which programs are in compliance and which programs are not in compliance. For those programs not currently in compliance with the statewide management plan, WDFW will then develop objectives toward reaching our goal.

RESEARCH

Policy Statement

Implement steelhead research to inform the agency and the Commission on critical steelhead management issues.

Adaptive management relies on scientific methods to test the results of a plan's actions. Some scientific knowledge is within the experience of the Department and need only be recalled from scientific papers. However, new discoveries are made in fisheries science every day and a mechanism is needed to include these new discoveries in the plan. Scientific research is needed to provide scientific data for the statewide steelhead management plan adaptive management decisions and to incorporate new scientific discoveries into the plan when necessary.

Strategies

1) ***Identify and Prioritize Research***. Annually convene key agency staff and stakeholders to review steelhead studies and prioritize research needs throughout the state.

2) ***Actively Pursue Funding Opportunities.*** Pursue funding for research from a variety of sources, such as state funding, federal grants, contracts, non-governmental organizations and the Bonneville Power Administration.

3) ***Collaborate with External Agencies and Organizations.*** Pursue enhanced collaboration with universities, the tribes, other agencies, and organizations.

4) ***Promote Interest in Steelhead Research.*** Promote increased interest and funding of steelhead research by presenting study results to scientific and general audiences, developing a web page highlighting research findings, and publishing research findings in peer review publications.

Actions

1) Assess the fishery related mortality caused by steelhead fisheries, including catch and release fisheries, through mark recapture or tagging studies.

2) Expand and support research to define the relationship between steelhead productivity and habitat, both freshwater and marine.

3) Assess migration pathways, rates and use of estuary, nearshore, and marine habitat by juvenile steelhead. Develop a long-term acoustic tagging study designed to increase understanding of early marine survival.

4) Establish a multi-agency, international study that would incorporate acoustic tagging and genetic baseline information to understand ocean migration patterns.

5) Develop improved tools that relate environmental factors (e.g., climate, water temperature, stream flow) and the physiological status (e.g., length, growth rate, life

history pathways) of juvenile *O. mykiss* to the diversity, spatial structure, abundance, and productivity of steelhead stocks.

6) Support and expand research to link changes in genetic markers to the abundance and productivity of populations (e.g. quantitative traits).

7) Build on studies in the Cedar River, Yakima River, and other locations to develop a better understanding of the relationship of resident and anadromous *O. mykiss*. From these studies, develop improved tools to assess the potential effects of management actions and enhanced management strategies that effectively address resident and anadromous life history forms.

8) Determine the statistical requirements to provide reliable estimates of escapement and harvest. Determine the number of coded-wire tags and other marks needed in relation to the number of recoveries expected in all geographical areas and at large and small scales.

9) Conduct study to determine effects of integrated artificial programs on diversity and productivity of wild stocks.

10) Establish a series of representative reference streams and steelhead populations (coordinating with recovery actions identified by the Technical Review Teams (TRTs)) against which recovery actions taken in other systems and habitat and the population's responses can be measured.

OUTREACH AND EDUCATION

Policy Statement

Implement outreach and education programs to ensure Washington's citizens value, support and have the information and opportunities necessary to participate in the restoration and protection of steelhead and their habitats.

Involving and educating the public in steelhead restoration and natural resource issues is critical to successfully meeting the goal of healthy, self-sustaining steelhead stocks. When people understand the needs and value of steelhead they are able to make informed decisions about changes necessary to restore and maintain healthy watersheds and healthy wild stocks. A mobilized public that has ownership will work in support of steelhead restoration, contribute resources toward steelhead restoration, and change current practices and behaviors to support restoration.

Strategies

1) ***Develop Comprehensive Approach to Reach Out to a Broad Base of Citizens***. Work with public and private partners such as: Public Utilities Departments (PUDs), counties, Regional Fisheries Enhancement Groups (RFEGs), to develop short and long-term strategies for outreach messages and products which focus on user groups, service organizations, landowners and environmental organizations and classroom-oriented education. Messages should address the economic, cultural and ecological values of steelhead to Washington.

2) ***Involve Citizens in all Phases of Restoring and Conserving Natural Steelhead Stocks***. Work with partners to develop opportunities for citizens to help with data collection and monitoring and stream-watch activities, improving understanding of fishery management techniques, habitat restoration, and protection activities.

3) ***Capitalize on Existing Programs***. Work with existing programs to identify ways we can partner to increase protection and restoration of steelhead stocks: Steelhead/Cutthroat Policy Advisory Group, Regional Fisheries Enhancement Groups, Lead Entities, Salmon Recovery groups, Salmon in the Classroom (830 schools), Wild About Washington (WDFW television program), Eyes in the Woods-Stream Watch, and Washington State University (WSU) Cooperative Extension.

4) ***Promote Historical Significance of Steelhead and Designate Fish and Wildlife Viewing Destinations.***

Actions

1) Develop an Outreach and Education plan – evaluate current programs and partnerships and develop ways to involve citizens in steelhead protection and restoration.

2) Develop a media plan to share the steelhead plan, and to develop methods to communicate important steelhead messages.

3) Develop messages, classes, events, and methods of delivery to communicate the importance of healthy steelhead stocks.

4) Create a speakers bureau (not just brochures/fliers/information) to provide information on steelhead local user groups. Chapters of TU, Puget Sound Anglers, Cowlitz Game and Anglers, Vancouver Wildlife League, etc.

5) Continue outreach and education to improve understanding of fishery management techniques.

6) Develop information to assist salmon recovery efforts to create complementary activities to address steelhead conservation as well as salmon conservation.

7) Develop brochures and materials that describe the important characteristics of steelhead habitat to assist habitat restoration groups.

8) Work with WDFW's Salmon in the Classroom Program, currently in more than 830 schools statewide, to describe healthy ecosystems and their value to steelhead populations.

9) Work with the Eyes in the Woods to expand the Stream Watch program.

10) Develop and provide recreational anglers and others with information related to artificial production and harvest through various methods including public forums, web-based steelhead information site, etc.

11) Maintain citizen advisory groups such as the Steelhead and Cutthroat Policy Advisory Group and the Regional Fisheries Enhancement Advisory Board to advise Department on policy issues related to steelhead. Establish ad hoc advisory groups to assist the Department in addressing emerging issues.

12) Develop talking points for interaction with landowners to help them understand how healthy steelhead stocks could benefit them.

13) Develop the infrastructure that supports fish and wildlife viewing destinations such as fish migration corridors in the upper Skagit River watershed.

14) At hatchery facilities that implement kelt-reconditioning programs, develop the infrastructure for convenient public access to bridge people with fish and provide the opportunity to view wild adult steelhead.

15) Develop market campaign that highlights the value of natural resources and the need to conserve irreplaceable assets.

DEFINITIONS

The following are definitions of terms as used in the WDFW Steelhead Management Plan. They are presented here to prevent confusion with how these or similar terms are used in other planning efforts.

Abundance: the size of a salmonid population or of a component of the population expressed as numbers of fish. For anadromous populations, this number is normally expressed in terms of spawners.

Adaptive Management: Periodic, usually annual, review of performance against measurable benchmarks and goals as well as a response towards achieving these goals.

All-H Planning: Developing and implementing comprehensive hatchery, habitat, hydro, and harvest management plans that ensure the artificial production program compliments the strategies for other Hs.

Allocation Unit: A management unit or group of management units for which harvest shares are calculated. Prior court orders specify that an allocation unit comprises the steelhead returning to a single river system flowing into saltwater. The parties may, by agreement specify different allocation units if necessary.

Anadromous fish: Fish that hatch in fresh water, mature in salt water, and return to fresh water to spawn.

Artificial Production: The rearing and release of fish from an artificial culture setting such as a hatchery, remote site incubator, spawning channel or other non-natural situation.

At-Risk Stocks: Fish populations having an unacceptably high risk of extinction within a specified time horizon. Such populations are often listed as critical in the SaSI database, and may be listed or under consideration for listing under the Endangered Species Act.

Catch: The number of fish retained by a fisher.

Catch-and-Release: A non-retention hook-and-line fishery.

Condition Factor: A measure of the condition of a fish based on comparison of length and weight (i.e. the more robust the fish, the higher the condition factor).

Conservation Hatchery Program: The use of artificial propagation to conserve genetic resources of a fish population at extremely low population abundance, and potential for extinction, using methods such as captive propagation and cryopreservation.

Critical Threshold (or Critical Population Threshold): An abundance level for a population below which: depensatory processes are likely to reduce it below replacement; short-term effects of inbreeding depression or loss of rare alleles cannot be avoided; and productivity variation due to demographic stochasticity becomes a substantial source of risk.

Critical Stock: A stock of fish experiencing production levels that are so low that loss of genetic diversity is likely or has already occurred.

Depressed Stock: A stock of fish whose status is neither Critical nor Healthy.

Diversity: Variation among individuals in physical, life history, or genetic characteristics.

Escapement Goal: A numerical threshold for the portion of a stock or group of stocks that is protected from harvest and allowed to spawn to meet management objectives and perpetuate the stock.

Evolutionarily Significant Unit (ESU): The smallest biological unit that can be considered to be a species under the Endangered Species Act as administered by the National Marine Fisheries Service (NMFS). A population or population group is considered to be an ESU if 1) it is substantially reproductively isolated from other conspecific population units, and 2) it represents an important component in the evolutionary legacy of the species. USFWS uses a similar term and concept called the distinct population segment (DPS), which is the wording used in the ESA itself. Thus, the ESU is the NMFS' interpretation of a DPS.

Exploitation Rate: The fishery-related mortality of fish expressed as a percentage of the estimated total run size.

Fishery Resource Manager: A tribe or the State of Washington, represented by the Department of Fish and Wildlife, with authority and responsibility over the management of harvest and hatchery programs affecting steelhead.

Gene Flow: The rate at which genetic material flows from one population, population component, or group of populations to another. Gene flow is an important concept in maintenance of among-population genetic diversity and in the linkage of hatchery and natural components of an integrated population. Gene flow is often inferred from stray rates, but such estimates are likely to be overestimates.

Genetic Conservation: Protection of long-term sustainability of wild stocks/runs by conserving genetic diversity.

Genetic Diversity: Genetically determined differences among individuals, local breeding, populations, or groups of populations.

Hatchery-Origin: Fish that have been incubated, hatched or reared in a hatchery or other artificial production facility regardless of parentage.

Hatchery Production: Fish that are reared and released from artificial culture in a hatchery situation.

Healthy and Harvestable: A self-sustaining naturally produced stock that has attained a status that will support meaningful retention and non-retention fisheries on an annual basis.

Healthy Stock: A wild stock that has sufficient viable salmonid parameters (VSP): abundance, productivity, diversity and spatial structure to be resilient through environmental fluctuations, to perform natural ecological functions in freshwater and marine systems, provide related cultural values to society, and sustain tribal and recreational fisheries.

Induced Fishing Mortality: Fish mortality above and beyond that which would occur in the absence of fishing activities (e.g. hooking mortality, net drop out, and marine mammal take), and which is not reflected in landed catch records.

Integrated Hatchery Program: The term describes the intended reproductive relationship of a hatchery population relative to the local, naturally spawning population between which gene flow occurs. The principle goal of an Integrated Hatchery Program is to manage the broodstock as an artificially propagated component of a naturally spawning population wherein the natural environment drives adaptation and fitness of a composite population of fish that spawns both in a hatchery and in the wild.

Integrated Hatchery Strategy: A broodstock management strategy where the intent is for returning adults of wild- and hatchery-origin to be reproductively connected to form a single, composite stock. This requires wild-origin adults in the hatchery broodstock, and hatchery-origin adults may spawn naturally.

Locally Adapted: A population is said to be locally adapted if natural selection has made the population be more productive in the environment it occupies than other populations would be if they were introduced into that environment. Because of the large amount of data supporting the concept of local adaptation in salmonids, native populations are typically assumed to be locally adapted, even if they may have had considerable gene flow from nonnative populations. Nonnative populations introduced into an environment may become locally adapted after several generations.

Long Term Goal: A multi-generation performance target.

Major Population Group: A group of populations within a larger conservation unit such as a DPS or ESU that share genetic, life-history, or ecological characteristics that are sufficiently distinct from those of other groups of populations to make conservation or recovery of the group essential for the conservation or recovery of the larger conservation unit. The specific term was developed by the Interior Columbia Technical Recovery Team (TRT), but the basic concept is used by all three TRTs working on Washington salmon and steelhead. A major population group can be as small as one population.

Management Period: The time interval during which regulatory actions are taken to meet the escapement requirements for a management unit or the allocation requirements for an allocation unit, taking into account catches of the units made outside the management period. Management periods are specific to each management unit (or aggregate of management units) and to each fishing area through which the unit(s) pass.

Management Unit (MU): A stock or a group of stocks which are aggregated for the purpose of achieving a desired spawning escapement objective.

Mark Selective Fishery: A fishery requiring the release of fish lacking an adipose fin.

Maximum Sustained Harvest (MSH) Level: A biological reference point representing the stock size that will support the largest level of harvest mortality that can be maintained indefinitely without diminishing the productive capacity of the resource, given current conditions of habitat and environmental fluctuations.

Maximum Sustained Harvest Escapement Goal (MSH Escapement Goal): The specific escapement for a stock that will allow the maximum number of fish to be harvested on a sustained basis.

Mitigation (mitigation hatchery): The use of artificial propagation to produce fish to replace or compensate for loss of fish or fish production capacity resulting from the permanent blockage or alteration of habitat by human activities.

Mortality: See Induced Fishing Mortality.

Native-origin: An indigenous stock of fish that has not been substantially impacted by genetic interactions with non-native stocks or by other factors (such as artificial selection) and is still present in all or part of its original range. See also Wild-origin.

Natural-origin: Fish that are produced by spawning and rearing in the natural habitat, regardless of parentage. See also Wild-origin.

Natural Production: Fish that spawn or rear entirely in the natural environment. These fish may be the offspring of natural or hatchery production.

Natural Stock: Fish that are produced by spawning and rearing in the natural habitat, regardless of parentage. See also Wild Fish.

Natural Stock Reserve: A network of wild stock populations across the state where stocks are not planted with hatchery steelhead and are largely protected from the effects of hatchery programs (i.e. gene bank). See also Wild Stock Gene Bank.

Non-native: With respect to a particular location, fish populations that exist, either because of migration or introduction, which were not historically present.

Non-Treaty: All fishers except those with reserved rights identified in the Stevens-Palmer treaties.

Population: A group of interbreeding salmonids of the same species of hatchery, wild, or unknown parentage that have developed a unique gene pool, that breed in approximately the same place and time, and whose progeny tend to return and breed in approximately the same place and time. They often, but not always, can be separated from another population by genotypic or demographic characteristics.

Productivity: A stock's intrinsic rate of increase. The higher the productivity, the better the population will fill the habitat and the more resilient it will be to harvest and to survive other sources of mortality.

pHOS: Proportion of spawners consisting of hatchery-origin fish.

pNOS: Proportion of spawners consisting of natural-origin fish.

pHOB: Proportion of broodstock consisting of hatchery-origin fish.

pNOB: Proportion of broodstock consisting of natural-origin fish.

Proportionate Natural Influence (PNI): In an integrated hatchery program, a mathematical relationship between gene flow from the hatchery to the natural component and from the natural to the hatchery component, that determines the degree to which natural selective forces direct the expression of a trait. Mathematically, PNI = pNOB/(pHOS + pNOB). The HSRG guideline for properly integrated populations is that PNI should exceed 0.5. For stocks of moderate or high biological significance and viability, PNI should exceed 0.7, be at least 0.1 to avoid divergence of the hatchery population from the natural component, even when pHOS is zero (HSR, WDFW, and NWIFC 2004).

Run: The sum of stocks of a single salmonid species which migrate to a particular region, river or stream of origin at a particular season.

Segregated Hatchery Program: The intended reproductive relationship of a hatchery population relative to a naturally spawning population, which are reproductively isolated from one another. The principal intent is to propagate a genetically segregated hatchery stock that is adapted to perform more optimally in artificial culture than in the wild, irrespective of the ability of returning adults to reproduce naturally or confer any benefits to naturally spawning populations.

Segregated Hatchery Strategy: A broodstock management strategy where the intent is for the hatchery stock to have no reproductive interactions with wild stocks. Also referred to as an Isolated Hatchery Strategy.

Selective Fishery: A fishery with time, area, gear, or retention regulations designed to reduced impacts on non-target species or stocks.

Selective Gear Rules: No bait, and only unscented flies or lures with a single barbless hook may be used.

Short Term Goal/Benchmark: An intermediate performance target that is basic to the adaptive management evaluation process.

Mark Selective Fishery. A fishery requiring the release of fish lacking an adipose fin.

Stock: A group of fish within a species, which is substantially reproductively isolated from other groups of the same species.

Viable: Negligible risk of extinction over a specified time period (McElhany et al. 2000). For the purposes of this plan, a viable steelhead population is one that has a less than 5% probability of extinction over at least 100 years.

Viable Salmonid Population (VSP) Parameters: Parameters that are used to evaluate the health of a given stock. The four parameters are abundance (A), productivity (P), diversity (D), and spatial structure (S) (McElhany et al. 2000).

Viability Stressors: Habitat, harvest, or hatchery actions that affect population VSP attributes (abundance, productivity, diversity, and spatial structure) in a way that currently results in a significant reduction in the viability of a population.

Wild: Naturally produced fish from a locally adapted stock regardless of origin or parentage. Still used in harvest record keeping Catch Record Cards (CRC) to indicate steelhead with adipose fins intact (not marked at the hatchery for harvest). See also Natural Stock.

Wild Fish: A naturally produced fish from a locally adapted stock regardless of parentage.

Wild-origin: The progeny of fish that were spawned naturally from a locally adapted stock regardless of parentage.

Wild Steelhead Release (WSR): A hook-and-line fishery that requires wild steelhead (defined by not having fin clips) to be released. Hatchery steelhead (defined by having fin clips) may be retained.

Wild Stock Gene Bank: One area within each steelhead DPS where the wild stock is largely protected from the effects of hatchery programs. Each stock selected must be sufficiently abundant and productive in order to be self-sustaining in the future. No releases of hatchery steelhead will occur in streams where spawning occurs or where rearing takes place. Fisheries can be conducted in these areas if wild steelhead management objectives are met.

LIST OF ACRONYMS AND ABBREVIATIONS

BRAP	Benefit-Risk Assessment Program
BRP	Biological Reference Point
CWT	coded-wire tag
ER	Exploitation Rate
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FMP	fishery management plan
FMEP	Fisheries Management and Evaluation Plan
GMA	Growth Management Act
HGMP	Hatchery Genetic Management Plan
HSRG	Hatchery Scientific Review Group
IHOT	Integrated Hatchery Operations Team
ISBM	individual stock-based management
MSH	maximum sustainable harvest
MSY	maximum sustainable yield
NA	not available
NMFS	National Marine Fisheries Service
NWIFC	Northwest Indian Fisheries Commission
pHOS	Proportionate of hatchery origin spawners
pNOS	Proportionate of natural origin spawners
pHOB	Proportionate of hatchery origin broodstock
pNOB	Proportionate of natural origin broodstock
PNI	Proportionate of natural influence
PUD	Public Utilities Department
R/S	Recruit per spawner
RER	rebuilding exploitation rate
RMP	resource management plan
SaSI	Salmonid Stock Inventory
SMA	Shoreline Management Act
SRA	Stream Restoration Act
TRT	Technical Review Team
VSP	Viable Salmonid Population
WDF	Washington Department of Fisheries
WDFW	Washington Department of Fish and Wildlife
WWTIT	Western Washington Treaty Indian Tribes

REFERENCES/LITERATURE CITED

Busby, P. J., T.C. Wainwright, G.J. Bryant, L. Lierheimer, R.S. Waples, F.W. Waknitz and I.V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. U.S. Department of Commerce, NOAA Tech. Memo. NMFS-NWFSC-27.

Gibbons, R.G., P.K. Hahn, and T.H. Johnson. 1985. Methodology for determining MSH steelhead spawning escapement requirements. Washington Department of Game. Olympia, Washington.

Good, T.P., R.S. Waples, and P. Adams (editors). 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Department of Commerce, NOAA Tech. Memo. NMFS-NWFSC-66.

Graves, G. 1990. Puget Sound steelhead management plan – re-draft of working document. Northwest Indian Fisheries Commission Memo. NWIFC and Steelhead Management Plan Technical Committee. Olympia, Washington.

Hatchery Scientific Review Group (HSRG). 2006. Hatchery reform: report to Congress. Long Live the Kings, Seattle, Washington. Report available at www.hatcheryreform.org.

Hatchery Scientific Review Group, Washington Department of Fish and Wildlife, and Northwest Indian Fisheries Commission (HSRG, WDFW, and NWIFC). 2004. HSRG/WDFW/NWIFC Technical Discussion Paper #1: Integrated Hatchery Programs. Unpublished report available from the Washington Department of Fish and Wildlife, Olympia, Washington.

Hatchery Scientific Review Group, Washington Department of Fish and Wildlife, and Northwest Indian Fisheries Commission (HSRG, WDFW, and NWIFC). 2004. HSRG/WDFW/NWIFC Technical Discussion Paper #2: Integrated Hatchery Programs. Unpublished report available from the Washington Department of Fish and Wildlife, Olympia, Washington.

Interior Columbia Basin Technical Recovery Team (ICTRT). 2004. Preliminary guidelines for population-level abundance, productivity, spatial structure, and diversity supporting viable salmonid populations. Unpublished report of the National Marine Fisheries Service available at http://www.nwfsc.noaa.gov/trt/trt_viability.htm.

Interior Columbia Technical Recovery Team (ICTRT). 2003. Independent populations of Chinook, steelhead, and sockeye for listed evolutionary significant units within the Interior Columbia River Domain. IC-TRT Report. NOAA Fisheries, Northwest

Fisheries Science Center, Seattle, Washington. Report available at: http://www.nwfsc.noaa.gov/trt/trt_columbia.htm.

Lower Columbia River Fish Recovery Board (LCFRB). 2004. Lower Columbia salmon recovery and fish & wildlife subbasin plan. Lower Columbia Fish Recovery Board, Vancouver, Washington. Report available at http://www.lcfrb.gen.wa.us/default1.htm.

McElhany, P., M.H. Ruckelshaus, M.J. Ford, T.C. Wainwright, and P. Bjorkstedt. 2000. Viable salmonid populations and the recovery of evolutionarily significant units. U.S. Department of Commerce, NOAA Tech. Memo. NMFS-NWFSC-42.

National Marine Fisheries Service (NMFS). 2005. Status review update for Puget Sound steelhead. National Marine Fisheries Service, Northwest Fishery Science Center. Seattle, Washington. Report available at: http://www.nwr.noaa.gov/Publications/Biological-Status-Reviews/upload/SR2005-steelhead.pdf.

Scott, J. B. Jr. and W.T. Gill. 2006. DRAFT *Oncorhynchus mykiss:* Assessment of Washington State's anadromous populations and programs. WDFW. Olympia, WA.

United States v. Oregon. 1983. United States Court of Appeals for the Ninth Circuit. No. 82-3556; No. 82-3604.

United States v. State of Washington. 1986. United States District Court, Western District of Washington. West Publishing Co., St. Paul, Minnesota.

Washington Department of Fish and Wildlife. 1994. DRAFT steelhead management plan. Washington Department of Fish and Wildlife, Olympia, Washington.

Washington Department of Fish and Wildlife (WDFW). 2003. Salmonid stock inventory (SaSI) 2002. Washington Department of Fish and Wildlife, Olympia, Washington.

Washington Department of Fish and Wildlife. 2004. Puget Sound Chinook salmon hatcheries: A component of the comprehensive Chinook salmon management plan. Washington Department of Fish and Wildlife and Puget Sound Treaty Tribes, Olympia, Washington.

Washington Department of Fish and Wildlife. 2004. Comprehensive management plan for Puget Sound Chinook: harvest management plan. Washington Department of Fish and Wildlife and Puget Sound Treaty Tribes, Olympia, Washington.

Appendix 1. Agency Legislative Mandate and Strategic Plan

Legislative Agency Mandate

"The department shall conserve the wildlife and food fish, game fish, and shellfish resources in a manner that does not impair the resource. The department shall promote orderly fisheries and shall enhance and improve recreational and commercial fishing in this state."

WDFW Strategic Plan

Mission Statement
The Washington Department of Fish and Wildlife serves Washington's citizens by protecting, restoring and enhancing fish and wildlife and their habitats, while providing sustainable fish and wildlife-related recreational and commercial opportunities.

Vision Statement
Make Washington State a world-class outdoor destination by fostering an appreciation of abundant and sustainable fish and wildlife resources and their ongoing contributions to the Northwest quality of life.

Goal I – Fish and Wildlife: Achieve healthy, diverse and sustainable fish and wildlife populations and their supporting habitats.

Goal II – Public Benefit: Ensure sustainable fish and wildlife opportunities for social and economic benefit.

Goal III – Funding: Ensure effective use of current and future financial resources in order to meet the needs of the states fish and wildlife resource for the benefit of the public.

Goal IV – Competence: Implement processes that produce sound and professional decisions, cultivate public involvement and build public confidence and agency credibility.

Goal V – Science: Promote development and responsible use of sound, objective science to inform decision-making.

Goal VI – Employee: Create and agency environment that nurtures professionalism, accountability, enthusiasm, and dedication in order to attract, develop, and retain a workforce that can successfully carry out the mandate of the agency.

Appendix B. Statewide Steelhead Management Plan Response to Comments.

State of Washington
DEPARTMENT OF FISH AND WILDLIFE
Mailing Address: 600 Capitol Way N Olympia, WA 98501-1091 (360) 902-2222, TDD (360) 902-2207
Main Office Location: Natural Resources Building 1111 Washington Street SE Olympia, WA

April 3, 2007

Ad hoc Stakeholder Respondents

Subject: Response to comments - Statewide Steelhead Management Plan

The Washington Department of Fish and Wildlife's (Department) Statewide Steelhead Management Plan DRAFT was released for comment on December 22, 2006 with a follow-up Ad hoc stakeholder meeting on January 9, 2007 to review and receive preliminary input on the contents of the document. Subsequent to the meeting, several written comments were received by the Department as well. Many comments were insightful, constructive and formed the basis for a number of revisions or clarifications within the Department's revised DRAFT (Attachment A). In addition, although the Department received a number of written comments, consistent themes became evident. Thus the Department has opted to respond to the comments through a single letter organized by the themes within the stakeholder comments.

Wild, Natural, Native or Locally Adapted Steelhead
Stakeholders, tribes, local entities, and other state and federal agencies use a variety of terms to describe steelhead stocks relative to their origin within the context of a watershed. Furthermore, stakeholders and staff used several terms to describe steelhead stocks during the meetings. The lack of a consistent and clear definition often resulted in confusion and debates regarding the intent of the Department's policies, strategies, and actions. Clarifying the Department's definition is crucial for evaluating how steelhead will be conserved and managed. Rebuilding criteria for some of the currently federally listed ESA populations represents the underpinning for the Department's decision to use the term "wild"; defined as "Naturally produced fish from a locally adapted stock regardless of origin or parentage". Further definitions for "wild fish" and "wild-origin" can be located in 'Definitions' of the statewide steelhead management plan on page 30.

Long term goal for rebuilding and conserving Washington's steelhead

A long-term goal is crucial in defining the scope of the Department's management actions, and thus establishes a benchmark from which management can be assessed. Several comments suggested four main alternatives for a long term goal:

1) Historical abundance levels extending beyond those currently described in the 'steelhead science paper':
    a. Use cannery pack data or other anecdotal information prior to European settlement.
    b. Establish long-term abundance goals greater than current level.
2) MSH-based goals (maximum sustainable harvest):
    a. Fishery management driven goal
    b. Based on stock recruitment information
    c. Successful when habitat and stock are at healthy levels.
3) Technical recovery teams (TRT) use Viable Salmonid Population (VSP) characteristics (McElhany et al. 2000).
    a. VSP represents characteristics of a population that collective define the depth and breathe of health and productivity to withstand natural perturbations within its life history.
    b. Characteristics include abundance (number of fish), productivity (ability to replace itself), diversity (variation among), and spatial structure (physical distribution).
4) Healthy and harvestable goals for steelhead stocks.
    a. Consistent with federal ESA recovery plans for listed populations
    b. Based on 'Properly Functioning Conditions' (PFC) for habitat
    c. Co-manager recovery goals for Puget Sound Chinook derived from PFC, expressed as a range of spawners at MSH to replacement level.

Considering the state's population growth, the commensurate required infrastructure and the condition of the habitat currently throughout the state, recovering steelhead to historical abundances is an impractical goal. However, recognition that pre-settlement abundances were likely much higher than initially estimated will influence the selection of both intermediate and long-term goals for steelhead.

Maximum sustainable harvest goals are insufficient to meet the rebuilding rates required to increase abundance, diversity and spatial structure of populations throughout the state, even though MSH goals are sufficient when populations are at abundances that achieve density dependent parameters.

Viable Salmonid Population represents metrics to assess a long-term goal because it describes measurable characteristics of a population, but in and of itself fails to capture fisheries in relation to a stock as well as adequately define numerical values. Thus MSH is fishery management biased, while VSP is population biased. Some combination of the two captures the conservation and sustainable fishery goals of the Department.

Thus, the Department chose a long-term goal based on the concept of "healthy and harvestable" stocks utilizing the concept of VSP as a metric for population health, and developing numerical

values similar in principle to those developed by the Department and Puget Sound Tribes and TRT analyses of Columbia Basin stocks.

The department will place the highest priority on the protection of wild steelhead stocks and the restoration of these stocks to healthy and harvestable levels. See 'Goals and Policies' as well as the 'Natural Production Policy Statement' on pages 3 & 5, respectively, of the steelhead statewide plan; see page 5 as well for the definition of a healthy stock. The Department acknowledges the policy for wild steelhead management framed by the definition of healthy will be difficult to achieve, and nearly impossible without substantial habitat improvements; for stocks with low abundance, an interim escapement objective must be established that builds stock abundance in lieu of an escapement goal based on MSH.

Escapement Goals

Prior to federal ESA listings, escapement goals for salmonids were based on fixed values to produce the MSH. Today, escapement goals and objectives for salmonids are a mixed bag, reflecting de-listing criteria, inclusion of VSP characteristics, PFC for habitat, and harvest rates that ultimately provide for increasing escapement in the absence of explicit changes in escapement goals. MSH spawner escapement goals were established for most Washington steelhead stocks in the early 1980s. De-listing criteria have been established for the majority of ESA-listed stocks in the Columbia River basin with consideration of VSP characteristics that are consistent with a 5% risk of extinction over a 100-year time frame. WDFW provided recovery goals derived from PFC of aquatic habitat for the Lower Columbia steelhead DPS.
Several comments suggested three main alternatives:

1) MSH-based escapement goals, which are consistent with existing tribal agreements and definable by stock-recruit functions
2) Escapement goals greater than MSH to assure VSP achieved, extinction risk is lowered, and to avoid negative feedback in stock productivity associated with insufficient inputs of marine-derived nutrients
3) Maximum Sustained Recreational (MSR) opportunity, a variation of alternative 2, manages for recreational fishing opportunities, implemented through catch and release fisheries, rather than MSH which is implicit with harvest.

The Department has chosen an approach that identifies achievement of escapement objectives as a higher priority than fishing opportunity. This approach will be prioritized based upon stock status to include alternative escapement objectives that will provide increasing numbers of adults as habitat is restored. It will also include VSP characteristics to maximize the rebuilding and plasticity of the population over time. MSH may still be used on stocks of high abundance with good habitat. Where a fixed escapement goal is not appropriate, interim objectives will be used to increase spawning in order to move towards an escapement goal. This decision is further reflected in 'Natural Production, Strategies, page 5, with strategy 2 "Provide Sufficient Spawners" and strategy 4 "Describe Path to Short-term and Long-term Goals". In the 'Natural Production', Actions 2 & 3, page 5 & 6, further describes the departments goals and states that for healthy steelhead stocks, the escapement policy will be <u>to provide at least, if not more than</u>, the number of wild spawners necessary to achieve MSH. Significant work will be required to establish an interim escapement goal that provides for rebuilding. Furthermore, fisheries may become more restrictive, especially on stocks with "unknown" status, while some tribes may

disagree with an escapement alternative to MSH. Additional funding and staffing will be required to increase precision in stock assessment.

Early-timed component of steelhead stocks

Stakeholders and some historic data suggests the early-timed component of some winter steelhead stocks has been diminished in abundance because of relatively high harvest rates targeting hatchery origin steelhead during the early portion of the run. In addition, interbreeding between non-local hatchery steelhead and early timed wild steelhead has also been cited as a risk. Managing escapements inclusive of VSP characteristics will help restore the diversity and spatial structure of steelhead, both within and among stocks, and will be essential to assuring long-term viability.

Further detail on this approach can be found in the "Natural Production" chapter, Strategy 1, page 5. More information can also be found in the "Fishery Management" chapter, Strategy 1 and Actions 2 & 3 on pages 10-11. Evaluation of the potential selective effects of fisheries on run-timing of wild stocks will require substantial staff time, including assessment of the incidental mortality during fisheries directed at hatchery-origin fish. Reductions in early-season fisheries, changes in release sites for Chambers Creek type steelhead, or both may be required to protect and restore the early run-timing component of some steelhead stocks. Steelhead management shall place the highest priority on the protection of wild steelhead stocks and restoration of these stocks (Natural Production Policy Statement, page 5).

Management of under-escaped steelhead stocks.

Stakeholders provided the following alternatives for fishery management actions when abundance of returning adults was less than the escapement objective:

1) Close all fisheries including those that incidentally impact the stock
2) Allow only incidental impacts on fisheries directed at other species
3) Open fisheries if the abundance of hatchery-origin adults exceeds broodstock requirements, but require the release of all unmarked steelhead
4) Limit mortalities in all fisheries to either 10% or, for ESA-listed species, the fishery permit limit

The Department will assess and manage steelhead fisheries based on total fishing-related mortality for all non-tribal fisheries, though some uncertainty exists in the mortality of unmarked fish released, especially as it relates to long-term survival. Until further studies refine precision, the Department will apply a 10% hook and release mortality rate to steelhead as a risk containment measure (see Fishery Management chapter, Action 9, page 12). More information can be found in the Fishery Management chapter, Strategies 1 & 4, as well as Actions 7 & 8 on pages 10-12.

Natural Stock Reserves

Various concepts regarding wild stock management, natural production reserves and/or sanctuaries have been proposed. In general, the consistent concept is to provide a genetic reserve of wild fish to protect the fish in the event of a temporary loss of a nearby stock through a catastrophic loss in habitat e.g. eruption of Mt. St. Helens, Elwha Dam breach, landslide; a risk containment measure in the recovery of ESA-listed species; or, as a control for scientific studies assessing the effects of hatchery, harvest, and/or habitat actions. Stakeholders generally support

the concept of natural stock reserves (wild steelhead management zones), despite the substantial variation in the influence of hatchery and harvest actions allowed in these areas. Stakeholders provided the following alternatives:

1) Protect and restore habitat in the natural stock reserve; eliminate all hatchery programs and fisheries impacting the stock
2) Eliminate all steelhead hatchery programs and fisheries impacting the stock
3) Eliminate segregated hatchery steelhead programs impacting the stock and allow only catch-and-release fisheries
4) Eliminate only steelhead hatchery programs impacting the stock

The Department chose to focus on the definition and major objective; limit direct and indirect impacts of steelhead hatchery programs. Thus, a network of "Natural Stock Reserves" will be established across the state consistent with the applied definition. One natural stock reserve will be established for each major population group with the following characteristics 1) the area of the natural stock reserve must incorporate the spawning area of the stock, 2) the stock must be sufficiently abundant and productive to be self-sustaining into the future, 3) limited direct and indirect influence from hatchery production. For more information on natural stock reserves, see "Artificial Production" chapter, Strategy 1 on page 14.

Implementation of the natural stock reserves may require substantial modification of some artificial production programs as well as agreement with tribal managers. Analyses and subsequent discussions will be forthcoming with stakeholders and Department staff to identify potential natural stock reserves for steelhead.

Selective Fisheries

A variety of views were expressed regarding the relative emphasis on selective fishing methods in recreational, non-treaty commercial fisheries directed at other species, and treaty fisheries. Selective fisheries, characterized as those that minimize the impact on wild fish (or non-target populations) while attempting to maximize harvest of abundant hatchery origin fish, are a valuable management tool. Stakeholders provided the following alternatives:

1) The Department should advocate the use of selective fishing methods for recreational fisheries and non-treaty commercial fisheries directed at all species
2) The Department should advocate the development of selective fishing methods for recreational and non-treaty commercial fisheries directed at other species
3) The Department should advocate the use of selective fishing methods for recreational fisheries and non-treaty commercial fisheries, as well as treaty fisheries directed at steelhead
4) WDFW should advocate the use of selective fishing methods only for stocks returning at abundance levels less than the escapement objective

The Department will promote the use of selective fisheries, and expand the selectivity of all non-treaty fisheries, see "Fishery Management" chapter, Strategy 2, page 10.

Habitat

Stakeholders expressed the need for a habitat chapter and challenged the Department to address steelhead habitat issues. Although the DRAFT Statewide Steelhead Plan is not a species

recovery plan, the Department has included a habitat chapter in order to address current initiatives, the Department's leadership role, and foster the application of VSP for steelhead habitat issues. The Agency's Habitat Program has been instrumental in developing the science foundation for habitat in the Steelhead Science Paper, as well as the habitat chapter of the DRAFT Statewide Plan. For more information on this issue see "Habitat Protection and Restoration" chapter, page 7.

Goals and benchmarks for restoration and conservation
Stakeholders expressed the need for the Department to establish short and long-term goals for restoration and conservation of wild steelhead populations to provide more timely and informed decision making to long term rebuilding. The DRAFT Statewide Steelhead Plan requires each region to describe a path to short-term and long-term goals (see "Natural Production", Strategy 4, page 5). The Department also chose to establish these goals in fisheries management (see "Fishery Management, Strategy 5, page 10) and in artificial production (see "Artificial Production" chapter, Strategy 5, page 14) since each will play a pivotal role in the overall restoration and conservation of wild steelhead.

Implementation of integrated hatchery steelhead programs
Stakeholders expressed general opposition to the widespread development and use of integrated hatchery programs, particularly in the Puget Sound region. However, is a risk analysis showed an integrated program to be more beneficial than a segregated program, the integrated program included a sunset provision, with a clearly defined monitoring plan, then it could potentially be considered.

The Department has provided a description of both segregated and integrated artificial production programs in the "Artificial Production" chapter, Strategy 5, pages 14-15. The Department requires regions to evaluate the current benefits and risks of artificial production programs within the context of the individual watershed plans through a "viability stressors" table. Further detail will be provided in the individual watershed plans.

Protection and management of resident *O. mykiss* populations
Anadromy is not obligatory in *O. mykiss*. Progeny of anadromous steelhead can spend their entire life in freshwater, while progeny of rainbow trout can migrate seaward. Anadromy, is both environmentally and genetically linked. It is difficult to summarize one life history strategy (anadromy) without due recognition of the other (resident). The two strategies co-mingle on some continuum with certain residency at one end, and certain anadromy on the other.

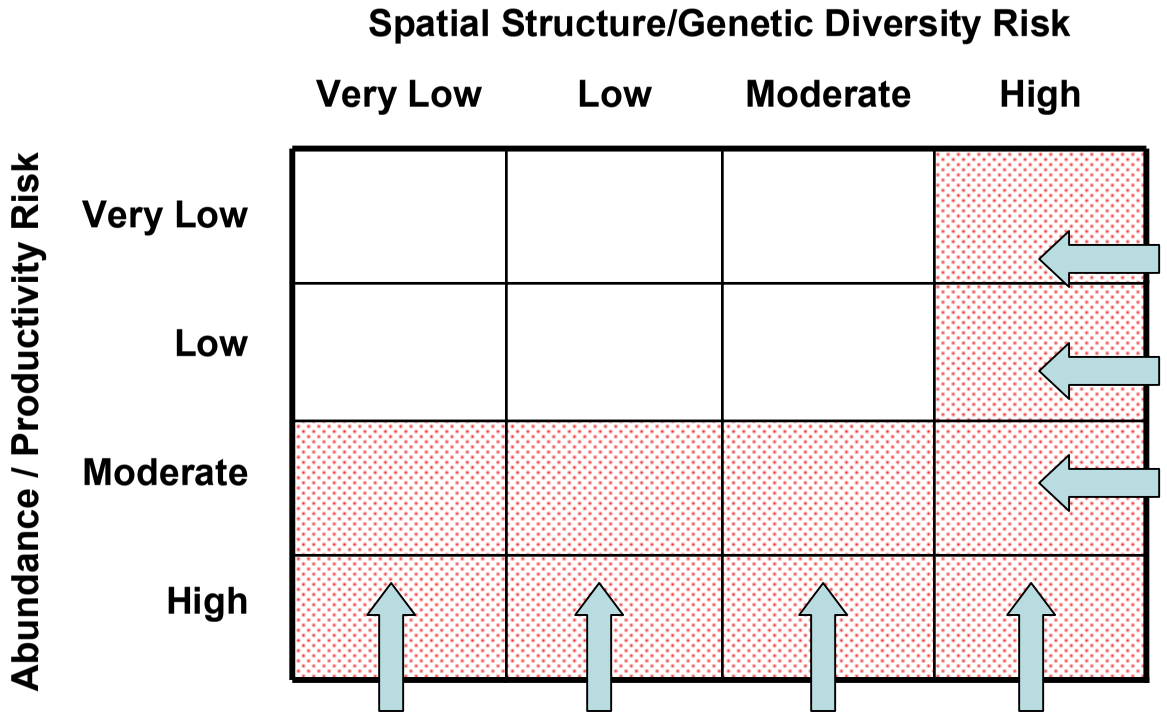
Many stakeholders expressed a desire to have the Department address a vital component of steelhead life history particularly in regard to protection of resident trout populations and hybridization with anadromous populations. Managing from an ecosystem perspective (see Artificial Production chapter, Strategy 4, page 14) will allow natural dynamics to occur. To support native trout management, the Department will discontinue the release of hatchery-origin rainbow trout in rivers, streams and lakes that would result in a significant negative impact to steelhead (see Action 1 & 2, page 15). In addition, the Department will prioritize research (see Research chapter, Strategy 1, page 23) and promote interest in steelhead research on the contribution of resident rainbow trout to anadromous steelhead populations (Research chapter,

Strategy 4, page 23) and build on current studies in the Cedar and Yakima rivers to develop a better understanding of the relationship of resident and anadromous O. Mykiss (Research chapter, Action 7, page 23).

Address sources of wild steelhead mortalities
Stakeholders requested the Department expand mortality estimates to include all sources e.g. hook and line release, net-drop out, poaching, etc. Limited information currently exists to accurately quantify the various sources of mortality. However, the Department will prioritize research (see Research chapter, Strategy 1, page 23) to expand and increase precision for fishery related mortality associated with catch-and-release fisheries, through mark and recapture or tagging studies as well as expand enforcement efforts and outreach and education programs to address poaching issues (Research, Action 1, page 23).

VSP analysis for wild steelhead populations
VSP criteria will be used to assist in developing interim escapement objectives to rebuild wild steelhead populations. However, we should be clear that greater risk might be taken with some characteristics of VSP in order to secure significant benefits in another characteristic. For example, spatial structure and diversity can add plasticity to the overall stock, but if abundance and productivity are so low that genetic changes occur e.g. inbreeding depression than the stock improvement does not occur. Thus, in some situations, abundance and productivity may be prioritized in order to build stocks to a level that diversity and spatial structure can be optimized. Furthermore, it will be difficult for stocks to move diagonally up through the blocks (figure 1), and in practice stair stepping upwards will be the likely outcome.

Figure 1. Example of VSP and actions that can reduce risk to characteristics (NOAA Fisheries 2006).



- Hatchery programs preserve a population until the factors limiting recovery are addressed.
- Manage the proportion of hatchery origin fish spawning naturally (*p*HOS).
- Reduce the influence of *p*HOS that depresses natural origin productivity (straying from Segregated Hatchery Programs).
- Improve juvenile and adult fish passage or reestablish access to underutilized habitat.
- Restore or improve habitat quality
- Adjust harvest timing and/or broodstock collection timing to reflect historical run timing.
- Establish natural stock reserves.

- Hatchery programs preserve a population until the factors limiting recovery are addressed.
- Offspring from naturally spawning HOF jump-start naturally self-sustaining populations after the factors limiting recovery are addressed.
- Reduce the influence of *p*HOS that depresses natural origin productivity (straying from Segregated Hatchery Programs).
- Reduce the number of NOF killed or injured by hatchery water diversions.
- Freshwater nutrient levels increase due to fish carcasses (all anadromous species).
- Reduce hatchery origin predation on and competition with natural origin fish through release timing and release location measures.

For more information see Goals and Policies and Natural Production Chapter, and the definition of a healthy stock, page 5.

Monitoring, Adaptive Management and Regulatory Compliance
The Department recognizes the importance of establishing clear and measurable goals for the steelhead stocks, and key to long-term success will be the development of intermediate goals since many years are required to rebuild the stocks to more productive and abundance levels. This in turn requires monitoring so that we know how quickly, directly, and efficiently we are moving towards achieving our goals.

The DRAFT Statewide Steelhead Management Plan establishes a framework to develop monitoring and evaluation plans that will support adaptive management (see Monitoring, Evaluation, and Adaptive Management chapter, Policy Statement, page 19). The strategy establishes a feedback loop to implement and evaluate appropriate actions to support progress towards achieving the identified goals (see Strategy 2, page 19). Status of all steelhead populations will be reassessed on 4 to 8 year cycles; with annual review of at risk populations to ensure opportunities for early action are not missed (Actions 10 & 11, Stock Status, page 20). Annual reports for natural production will be developed and include spawner distribution, habitat utilization through mapping, and subsequent natural smolt production and migration (Habitat Monitoring, Action 16, page 21). Annual recreational and tribal harvest reports will be available (Fishery Management, Actions 12 & 13, page 21). A number of artificial production programs will have commensurate hatchery monitoring and evaluation plans, inclusive of broodstock management to determine if strategies are achieving the identified program goals as well as summarize every five years the hatchery replacement rate to support adaptive management (Artificial Production, Action, 21 and 22, page 21). Every five years a regional report that compiles and summarizes the above pieces will be written and provided to the Director and FWC articulating the results and progress towards wild production goals (Verification and Accountability, Action 24, page 21).

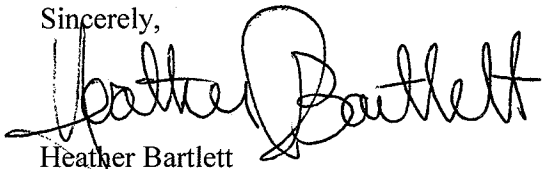
Increased monitoring and reporting of fisheries readily expands to regulatory compliance. Increased emphasis on regulatory compliance will also extend to a greater level of enforcement affecting habitat (Verification and Accountability, Action 25, page 22) (see Regulatory Compliance chapter, Strategies 1-5, Actions 1-9, pages 17-18).

Steelhead as part of Salmonid Stock Inventory (SaSI) information
It was clear based upon the common response from stakeholders that the Department needed to update the SaSI database to reflect current data on steelhead stocks, and prioritize data needs to address the "unknown" stocks, as well as clarify the definition of "healthy" to be linked with the definition provided in the DRAFT Steelhead Statewide Management Plan. The Department has made a commitment to update SaSI stock information (see Monitoring, Evaluation, and Adaptive Management chapter, Action 10, page 20), and developed a budget package for the 2007-09 biennial period to increase stock assessment in Puget Sound to resolve some of the 'unknown' stock statuses. The biennial package was not funded, however, the Department remains committed to seeking the state funds necessary to determine stock status of Puget Sound 'unknowns'. In addition, the SaSI definition of a "healthy" will be updated to more accurately

reflect the definition of healthy included with the DRAFT Steelhead Statewide Plan as well as numerous regional recovery plans.

Stakeholder involvement has been key to the development of the current DRAFT Statewide Steelhead Management Plan. The Department is aware this process has been laborious, time consuming and sometimes even frustrating. However, we also believe the final product will more accurately reflect stakeholder values and management principles from a scientific foundation than most other documents the Department has written to date. The department has greatly valued your time, feedback, and assistance in developing a plan that will be successful in all aspects of protecting and restoring steelhead populations statewide. Thank you for your continued participation and support. You have been a vital part of the development of the statewide steelhead management plan process.

Sincerely,



Heather Bartlett
Salmon and Steelhead Division Manager

Cc:Phil Anderson
Lew Atkins
Craig Burley
John Easterbrooks
Pat Frazier
Bob Gibbons
Bill Gill
Sara LaBorde
Bob Leland
John Long
Joe Miller
Jim Scott
Jo Wadsworth
Ron Warren

Appendix C. Summary of Initial Environmental Impact Potential Review for the *SSMP* Non-project Action

Statewide Steelhead Management Plan - DEIS Potential Impacts from WAC 197-11-960 Environmental Checklist, Section B: Environmental Elements

The *SSMP* is a **non-project action** intended to provide statewide guidelines for improving the management and status of steelhead in Washington. It seeks to balance policy to address the dual mandate to conserve the wild steelhead resource and provide utilization opportunity to the citizens of the state. Considering the current and anticipated factors affecting the steelhead resource, a key element of the plan is the shift in emphasis to VSP-based management, with a focus on the watershed ecosystem, from the current co-management based largely on abundance considerations and harvest agreements.

The establishment of new statewide guidelines to address wild steelhead populations and steelhead recreational opportunity would not be expected to have direct adverse environmental impacts in itself. However, as the detailed analysis at the watershed level begins to emerge, it is likely that specific **project actions** will be recommended to achieve some guideline strategies. This initial impact analysis was conducted to set the framework for the more detailed evaluation of potential environmental impacts associated with the subsequent watershed plans and proposed actions.

Environmental impact potential review summarized by element: The elements in UPPER CASE (#5 and #12) are addressed in this DEIS because 1) the *SSMP* focus is on strategies affecting wild steelhead and recreation by intent, and 2) strategy implementation at the watershed level could result in action details that may require further assessment of potential impacts in these two element areas. Items in **bold** indicate other possible elements to be considered during watershed plan development.

1. Earth
    a. No clearing, grading or filling
    b. No additional impervious surface due to construction activity
    c. **Potential reduction of access and fishing related impacts in some areas**

2. Air
    a. **Quantities of emissions from fishing related boating activity will likely decrease to a small degree.**

3. Water
    a. No dredge or fill operations in surface waters
    b. In-channel monitoring and evaluation activities are conducted **during normal stream flow and under established protocols**
    c. No groundwater withdrawal or discharges into ground
    d. No activities to affect surface runoff flow or quality

4. Plants
    a. No removal or alteration of existing vegetation
    b. No additions to existing vegetation

5. ANIMALS
    a. Some steelhead stocks are listed under ESA as being Threatened or Endangered
    b. For all species, the plan will be in compliance with the ESA process to allow fisheries and incidental take. The process includes utilization of 4 (d) rules, or the Fisheries Management and Evaluation Plan (FMEP) process, and Section 7/10 Consultation/Permits.
    c. **The primary purpose of the plan is the preservation and enhancement of steelhead stocks and their ecosystems**

6. Energy and natural resources
    a. No energy use requirements
    b. Will not affect alternative energy projects or potential use

7. Environmental health
    a. **Reduced fishing activity in some areas would reduce risk of any associated environmental health hazards**
    b. No new special emergency services required
    c. **Reduced fishing or boating activity in some areas would decrease the overall noise level.**

8. Land use and shoreline use
    a. No structures demolished
    b. No introduction or displacement of people
    c. The WSP (WDFW 1997, EIS prepared) is compatible with existing and projected land use and plans statewide. The *SSMP* is a further, and probably more restrictive, enhancement of the WSP guidelines

9. Housing
    a. No housing introductions or eliminations

10. Aesthetics
    a. No aesthetics impact (degraded or blockage of views)

11. Light and Glare
    a. No light or glare impacts

12. RECREATION
    a. Stream closures or fishing restrictions **could displace some recreational fishing opportunity**
    b. **Recreational fishing would be allowed when/where appropriate, as outlined in the plan**

13. Historic and cultural preservation
    a. No environmental impacts

14. Transportation
    a. Proposal will not affect existing State of Washington transportation infrastructure
    b. Vehicular trip reduction possible to a minor degree

15. Public services
    a. No environmental impacts

16. Utilities
    a. No environmental impacts