



Washington Department of Fish and Wildlife

***Statewide Steelhead Management Plan:
Statewide Policies, Strategies, and Actions***

February 29, 2008

EXECUTIVE SUMMARY

In 2004, the Director of the Washington Department of Fish and Wildlife challenged the agency to develop a scientific foundation for a Statewide Steelhead Management Plan (SSMP). The scientific foundation for the SSMP comes from the Department's steelhead science paper "*Oncorhynchus mykiss: Assessment of Washington State's Anadromous Populations and Programs*" (Draft February 2, 2008), which provided several findings and recommendations to rebuild Washington's wild stocks. The findings and recommendations represent the underpinnings of the Statewide Steelhead Management Plan.

The steelhead management plan is necessary because in spite of seventy years of conservation efforts directed at the state's steelhead stocks, many of these stocks are at a fraction of their historic numbers. Five of the seven distinct population segments that exist in Washington are currently federally listed under the Endangered Species Act.

Public review of *O mykiss* and the SSMP as well as comments and concerns expressed during the SEPA process contributed to the management plan. The plan provides a framework of policies, strategies, and actions that present overarching guidelines for department managers to collaborate with tribal co-managers and other interested parties, including watershed and regional groups, in the development of watershed and regional management plans (RMPs). RMPs will 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 within its management area.

Policies, strategies and actions in the plan apply to steelhead program operations as well as administration. Steelhead operations include chapters dealing with natural production, habitat protection and restoration, artificial production, and fisheries management. These chapters explain how the Department will deal with steelhead and their habitats and are strongly interrelated.

Steelhead administration includes policy decisions that affect the administration of operations programs related to steelhead and their habitats. These chapters provide guidance to the Department for decisions affecting regulatory compliance, monitoring, evaluation and adaptive management, research and outreach & education programs. Their implementation increases the probability of success for the operations policies.

A summary of the policies for each chapter can be found under Goals and Policies following the Introduction. The Policy Statement for each chapter is shown in a box at the beginning of the chapter. Each chapter contains a short narrative followed by the strategies and actions to support achieving the goals and policies.

ACKNOWLEDGEMENTS

The Department would like to thank the following for their support and guidance in the development of the statewide steelhead management plan.

Director: Jeff Koenings

Deputy Director: Phil Anderson

Former Deputy Director: Larry Peck

Assistant Director Fish Program: Lew Atkins

Deputy Assistant Director Fish Program: Jo Wadsworth

The Department would also like to thank those who contributed to the statewide steelhead management plan.

WA Department of Fish & Wildlife

Core Team

Heather Bartlett

Jim Buck

Bob Gibbons

William T. Gill

Sara LaBorde

Bob Leland

David Price

Jim Scott

Amilee Wilson

Supporting Staff

Andy Appleby

Craig Bartlett

David Bramwell

Joe Bumgarner

Craig Burley

Craig Busack

Teresa Eturaspe

Kent Dimmitt

James Dixon

Steve Foley

Pat Frazier

Bill Freymond

Ross Fuller

Bryce Glaser

Doug Hoyer

Chad Jackson

Keith Keown

Curt Kraemer

Anne Marshall

Glen Mendel

Hal Michael

Pat Michael

Pat Pattillo

Todd Pearsons

Mike Scharpf

Mark Schuck

Paul Seidel

Kirk Truscott

Garret Ward

Ron Warren

Lisa Wood

Steelhead Ad Hoc Stakeholder Group or Public Comment

Bill Bakke

Harry Barber

Hal Boyton

Dick Burge

Ed Conroy

John C. Evensen

Nick Gayeski

Scott Hagen

John Kelly

Jim McRoberts

Bart Madison

Nate Mantua

Marianne Mitchell

Bill Redman

Myron Saikewicz

Doug Schaad

Pete Soverel

Phil Tucker

Terry Turner

Frank Urabeck

Ramon Vanden Brulle

Hatchery Scientific Reform Group

John Barr

Northwest Indian Fisheries Commission

Will Beattie

National Marine Fisheries Service

Jeff Hard

Jim Myers

King County

David St. John

Table of Contents

| | Page |
|---|------|
| Introduction..... | 1 |
| Goal and Policies | 3 |
| Natural Production | 5 |
| Strategies..... | 5 |
| Actions | 6 |
| Habitat Protection and Restoration | 8 |
| Strategies..... | 8 |
| Actions | 10 |
| Fishery Management..... | 13 |
| Strategies..... | 13 |
| Actions | 14 |
| Artificial Production | 19 |
| Strategies..... | 19 |
| Actions | 20 |
| Regulatory Compliance | 23 |
| Strategies..... | 23 |
| Actions | 24 |
| Monitoring, Evaluation, and Adaptive Management..... | 25 |
| Strategies..... | 25 |
| Actions | 26 |
| Research..... | 29 |
| Strategies..... | 29 |
| Outreach and Education | 31 |
| Strategies..... | 31 |
| Actions | 32 |
| Definitions..... | 33 |
| List of Acronyms and Abbreviations..... | 39 |
| References/Literature Cited | 40 |
| Appendix 1. Agency Legislative Mandate and Strategic Plan | 42 |

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 steelhead management 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, Regional Management Plans (RMPs).

The 1998 Salmon Recovery Act, codified as RCW 77.85 created lead entities in each watershed in the state to address salmon recovery. The law included steelhead because they often share habitat with other salmonids. As required by statute, these lead entities listed factors limiting production of salmon and steelhead and created prioritized lists of habitat recovery projects that would benefit their watersheds. Some of these entities have already moved toward regionalizing their salmon recovery efforts. The Department will use the SSMP to build on the habitat work already done by the watershed and regional groups by incorporating hatchery, harvest and hydro actions into watershed plans. These watershed plans will then be combined into Regional Management Plans for each DPS.

For many of these regions, ESA recovery plans have been developed and will serve as primary guidance for detailed strategies and actions in the RMPs. An ESA recovery plan is intended to sufficiently recover a species so it can be delisted while the SSMP is intended to restore and maintain healthy steelhead stocks. By definition, a healthy stock 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. The SSMP recognizes that more

conservative actions may already be in place in ESA recovery plans than those recommended by the SSMP. It also recognizes that not all steelhead stocks are listed and seeks to provide flexible management strategies that will allow each region to pick actions that best fit its situation. 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 provides guidance for WDFW employees to manage the steelhead resource, however, many of the regional plans must 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 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. In a manner consistent with this 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:*** Artificial production programs in themselves cannot assure achievement of rebuilding and sustaining wild populations and, improperly implemented, can pose risks to wild populations. Promote the achievement of the natural production policy and provide fishery-related benefits by implementing artificial production programs as a component of a comprehensive habitat, hydro, harvest, and hatchery strategy, and by assuring artificial production programs meet 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, spatial structure, productivity, and abundance of wild stocks to be met.

- ***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

- 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.

A healthy wild stock meets viable salmonid population 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.

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) ***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.
- 4) ***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.
- 5) ***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. These goals will recognize that long-term variations in the abundance of wild steelhead, even with pre-settlement freshwater habitat, will occur in response to variations in marine conditions and steelhead survival.

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 an implementation plan for establishing a network of wild stock gene banks.
- 3) 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.

- 4) Implement consistent procedures with watershed planning groups to review changes in habitat resulting from restoration projects or other factors and adjust escapement objectives.
- 5) Support programs that restore balanced ecological functions and reduce predation impacts critical to 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.

Habitat protection under existing assistance and regulatory authorities has been insufficient to protect steelhead. WDFW will advance the protection and restoration of functional habitat through increased and focused technical assistance, implementation of a more efficient HPA program and state fish 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. Advance the protection of steelhead habitat through the implementation of the Department’s Habitat Conservation Plan development process. Maximize the current use of existing HPA authorities. Continue to streamline

HPA's for habitat restoration projects, and implement an effective analysis for HPA projects.

- 6) ***Develop and Implement Interagency Agreements to Improve the Effective Coordination of State Regulatory Processes Among Permitting Agencies.*** Work with local governments and sister state agencies to improve the protection of steelhead habitat through the consistent implementation of existing regulatory authorities. Using best available science, increase the protection needs where they under-support steelhead habitat.
- 7) ***Protect In-stream Flows.*** Working cooperatively with the Department of Ecology, continue to advance the science and provide the technical expertise and specific recommendations necessary to establish and protect minimum in-stream flows for the maintenance and recovery of productive steelhead habitat.
- 8) ***Advocate for Protection and Acquisition of High Quality Steelhead Habitats.*** Working with co-managers, the Forest Service, and other entities with expertise, develop proposals to nominate high quality steelhead streams to elevated water quality protection status under Department of Ecology's "outstanding resource water" (Tier III) designation. Develop similar proposals for Wild and Scenic Rivers designation where appropriate.
- 9) ***Manage WDFW-Owned Lands Consistent with Steelhead Habitat Conservation.*** Consistent with Lands 20/20 vision and the developing HCP, acquire critical steelhead habitats. Ensure that existing WDFW ownership meets Clean Water Act standards for fine sediment and other water quality elements. Develop and use structural designs and materials in capital projects that support steelhead and their habitats.
- 10) ***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.
- 11) ***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.

- 12) **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.
- 13) **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.
- 14) **Develop a Climate Change Response Plan.** Participate in national and international fishery forums that quantify and assess impacts of climate change.
- 15) **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.
- 16) **Mitigate for Wild Steelhead Habitat Loss.** Actions that result in irreparable loss of steelhead habitat mitigated at least proportional to their affect on steelhead habitat. Mitigation actions will follow a mitigation sequencing hierarchy and appropriate watershed and RMP priority restoration sequencing
- 17) **Develop and Support a Statewide Adaptive Management Program to Ensure the Effectiveness of Steelhead Habitat Protection and Recovery Strategies.** Working with local governments, other state agencies, tribes, and the public, implement monitoring strategies so that effective recovery processes are supported and ineffective strategies are changed or discarded.

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) Ensure 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 (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) Continue to provide technical expertise and timely data to the Department of Ecology so that their decisions on the establishment of minimum in-stream flows protect and restore productive steelhead habitat.
- 8) Actively pursue the acquisition of high quality salmon and steelhead habitats through grant and other processes to work towards implementing proposals related to designated Tier III waters and Wild and Scenic rivers.
- 9) Encourage local government participation to improve efforts to correctly identify fish bearing streams prior to approving land use decisions.
- 10) 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.
- 11) 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.
- 12) 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.
- 13) 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.
- 14) Mitigate unavoidable wild steelhead habitat loss by enhancement and replacement with at least equivalent habitat for wild production. To the extent possible, follow regional recovery plans and RMPs to appropriately design and implement priority mitigation actions.
- 15) Manage WDFW-owned lands consistent with regulations. Ensure that existing WDFW lands meet Clean Water Act standards for fine sediment, temperature, and other water quality elements. Analyze and utilize WDFW-owned water rights to ensure they are wisely used for the protection and benefit of steelhead. Prevent the use of toxic materials

and detrimental construction designs where they negatively influence steelhead or their habitats.

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 Oceanic 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. Consistent with this goal, the Department will seek to maintain fishing-related economic and cultural benefits.

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 of 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 unless an ESA permit directs otherwise or empirical research shows a different overall mortality rate is applicable. 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 when wild stocks are reasonably vulnerable.
- 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) | |
|--|---|---|
| | <u>Less than</u> the Hatchery MU escapement objective | <u>Greater than</u> the Hatchery MU escapement objective |
| <u>Abundance Less than</u> Wild MU escapement objective | <ul style="list-style-type: none"> • Close all recreational steelhead fisheries. | <ul style="list-style-type: none"> • 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 <i>or</i> the <u>ESA fishery permit limit(s)</u>. |
| <u>Abundance Greater than</u> Wild MU escapement objective | <ul style="list-style-type: none"> • Assure wild MU escapement objective is achieved. • Minimize mortality impacts on hatchery fish to provide sufficient broodstock. | <ul style="list-style-type: none"> • 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) | |
|--|---|--|
| | <u>Less than</u> the Hatchery MU escapement objective | <u>Greater than</u> the Hatchery MU escapement objective |
| <u>Abundance Less than</u> Wild MU escapement objective | <ul style="list-style-type: none"> • Close all recreational steelhead fisheries. | <ul style="list-style-type: none"> • Minimize mortality to wild stock(s); in no case exceed a 10% impact from all fisheries <i>or</i> the <u>ESA fishery permit limit(s)</u>. |
| <u>Abundance Greater than</u> Wild MU escapement objective | <ul style="list-style-type: none"> • Assure wild MU escapement objective is achieved. • Minimize mortality impacts on hatchery fish to provide sufficient broodstock. | <ul style="list-style-type: none"> • 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.

- c. “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 (FMMP) requirements on an annual basis with an initial summary in five years and every five years thereafter.
- 10) Develop (web based access) central repository for reporting total harvest of steelhead through direct and indirect fisheries.

ARTIFICIAL PRODUCTION

Policy Statement

Artificial production programs in themselves cannot assure achievement of rebuilding and sustaining wild populations and, improperly implemented, can pose risks to wild populations. Promote the achievement of the natural production policy and provide fishery-related benefits by implementing artificial production programs as a component of a comprehensive habitat, hydro, harvest, and hatchery strategy, and by assuring artificial production programs meet 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) **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.
- 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) **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.
 - 6) **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. (No egg takes of Chambers winter run after January 31st of each year).
- 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:
 - Leave trapping facilities open during the entire return time for adults of the segregated stock.
 - Eliminate recycling of hatchery-origin adults to anadromous waters.
 - Release steelhead juveniles from steelhead programs only at locations where returning adults can be captured.
 - Increase the harvest rates on hatchery-origin fish.
 - Reduce the number of fish released or change the release location, rearing practices affecting the rate of residualism, or other program characteristics to reduce the rate of gene flow.
 - Eliminate the segregated hatchery program.
 - 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.

- a. 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.
 - b. Collect broodstock from the wild stock that is representative of their abundance, diversity, distribution, and run timing.
 - c. Evaluate the PNI and the effect of annual variations in wild stock abundance, 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 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.

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 thereafter.

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. Monitor compliance with HPA permits.

Actions

- 1) Seek legislation to change the (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.
- 11) Ensure that existing WDFW lands meet Clean Water Act standards for fine sediment, temperature, and other water quality elements. Analyze and utilize WDFW-owned water rights to ensure they are wisely used for the protection and benefit of steelhead. Prevent the use of toxic materials and detrimental construction designs where they negatively influence steelhead or their habitats.
- 12) Provide fish passage at all road crossings on WDFW-owned forest roads by 2016. Provide fish passage to wild steelhead in streams adjacent to hatchery facilities.

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 (Growth Management Act (GMA), Shoreline Management Act (SMA), and Stream Restoration Act (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, develop 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) Cooperatively establish and participate in 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, and Regional Fisheries Enhancement Groups (RFEs), 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, Washington State University (WSU) Cooperative Extension, and University of Washington Cooperative Research.
- 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 management 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 Trout Unlimited, 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 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 freshwater, mature in saltwater, and return to freshwater 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 Federal 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: compensatory 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 possessing 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 ecological function: Activity or role performed by an organism or element in relation to other organisms, elements or the environment.

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 steelhead 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. (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 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 Management Zone (WSMZ): A network of wild steelhead 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 or Natural Stock Reserve.

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 wild steelhead stocks are 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 and ESA regulations (if applicable) are met.

LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|-------|---|
| BRAP | Benefit-Risk Assessment Program |
| BRP | Biological Reference Point |
| CWT | Coded-wire tag |
| DPS | Distinct Population Segment |
| 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 |
| HCP | Habitat Conservation Plan |
| HGMP | Hatchery Genetic Management Plan |
| HPA | Hydraulic Project Approval |
| 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 | Regional management plan |
| SaSI | Salmonid Stock Inventory |
| SCPAG | Steelhead and Cutthroat Policy Advisory Group |
| SEPA | State Environmental Policy Act |
| SMA | Shoreline Management Act |
| SRA | Stream Restoration Act |
| SSMP | Statewide Steelhead Management Plan |
| 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. 2008. 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.