



## ❖ Components of This Report

This report provides the recommendations developed by the Hatchery Scientific Review Group (HSRG) upon reviewing three regions during 2002—the Skagit River Basin, the Nooksack and Samish rivers, and Central Puget Sound. It includes a chapter for each of the regions reviewed. Each of these chapters begins with a general overview of the region and/or its identified sub-regions, a table containing ratings for all salmonid stocks in that region (as provided by the managers), then reviews and recommendations for each salmonid stock that has an associated hatchery program.

This report focuses primarily on issues that need to be addressed and recommends changes that need to be made. It should not be read as a complete review listing every positive attribute alongside those that need to be changed. The HSRG has, overall, been very impressed by the diligence—and frequently the ingenuity—with which the state and tribal staffs carry out their programs; and with their dedication to the resource.

It is important to note that the recommendations contained in this document are based upon the goals stated and best scientific information available at the time the reviews were conducted. This document has not been updated since 2003 to take into account actions to implement these recommendations, nor to reflect refinements in the HSRG’s terminology and/or approach as the regional review process went along. In keeping with the tenets of adaptive management,<sup>1</sup> it will be necessary to review and adapt these recommendations as new scientific information arises and/or goals change. This and all other Hatchery Reform Project-related publications are available from the project’s web site ([www.hatcheryreform.org](http://www.hatcheryreform.org)) or by contacting Long Live the Kings at (206) 382-9555.

### **Program Recommendations**

Each individual salmonid stock program review and recommendations section begins with a listing of the managing agency(s) and/or tribe and a table that provides the current, short-term (10–12 year) and long-term (50 year) stock goals and associated hatchery program purpose and type, as they were expressed to the Scientific Group by the managers during the regional review process (see example below). Following the example table are definitions of each rating included in the table.

<b>Stock Goals:</b>	<b>Current</b>	<b>Short-Term</b>	<b>Long-Term</b>
<i>Biological Significance</i>	High	High	High
<i>Population Viability</i>	Critical	Critical	At Risk
<i>Habitat</i>	Inadequate	Inadequate	Limiting
<i>Harvest Opportunity</i>	None	None	Occasional
<b>Hatchery Program:</b>			
<i>Purpose</i>	Conservation		
<i>Type</i>	Integrated		

<sup>1</sup> See HSRG Report, chapter on Emerging Issues in Hatchery Management, for a discussion on adaptive management.



**Biological significance** is determined by considering a number of specific factors relating to stock origin, biological attributes and population subdivisions (see *HSRG Scientific Framework and Hatchery Review Program* for more detail), with the stock defined as being of either *low*, *intermediate* or *high* significance.

**Population viability** is also determined by considering a number of specific factors such as age class structure, spawner escapement and proportion of hatchery-origin fish in natural spawning (see *HSRG Scientific Framework and Hatchery Review Program* for more detail), with the stock's viability defined as being either *critical*, *at risk* or *healthy*. This rating refers to the stock's ability to sustain itself in the natural environment (except in the case of a segregated harvest program, in which case the ratings are *low*, *medium* and *high* and refer to the stock's ability to sustain itself in the culture environment).

The stock's spawning, freshwater, migration and estuarine **habitat** is rated as either *inadequate* (target stock is unproductive and the population will go extinct, even without terminal harvest), *limiting* (target stock is productive enough for the population to sustain itself at a low level terminal harvest) or *healthy* (productivity of the stock is high and the population is capable of growth and supporting significant terminal harvest).

**Harvest opportunity** is rated according to whether the goal is to provide *no* directed harvest opportunity, *occasional* opportunity, opportunity *most years*, or opportunity *each year*.

The **purpose** of the hatchery program is defined as either *conservation*, *harvest*, *both* and/or another purpose (such as *education*, *research* or *cultural/ceremonial*).

The **type** of program is also included. Hatchery programs are classified as *integrated* if the goal is to minimize potential genetic divergence between the hatchery broodstock and the naturally-spawning population in the watershed where fish are released and returning adults trapped for broodstock. *Segregated* programs are classified as those in which the goal is to maintain the hatchery population as a distinct, or genetically segregated, population.<sup>2</sup>

Following this table, each stock review and recommendations section includes: 1) the Program Description as provided by the managers, including Genetic Diversity Unit (GDU) information,<sup>3</sup> 2)

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<sup>2</sup> See *HSRG System-Wide Recommendation on operating integrated and segregated hatchery programs*.

<sup>3</sup> A genetic diversity unit (GDU) is a group of genetically similar stocks that is genetically distinct from other such groups. The stocks typically exhibit similar life histories and occupy ecologically, geographically, and geologically similar habitats. Information about GDUs and broodstock origin included in these program descriptions provided by Washington State Department of Fish and



Operational Considerations (elements recognized by the Scientific Group in considering the way the program is currently being operated), 3) the Benefits and Risks being conferred by the program on the target stock and other regional stocks,<sup>4</sup> 4) the Recommendations from considering benefits and risks, 5) a section for other Comments on the program from the Scientific Group, and 6) a section for a Response to the review and recommendations from the relevant management agency(s) and/or tribes.

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*Wildlife staff; GDU information is based on Busack, C. and J. B. Shaklee. 1995. Genetic Diversity Units and Major Ancestral Lineages of Salmonid Fishes in Washington. Washington State Department of Fish and Wildlife, Technical Report #RAD 95-02. A table listing all Puget Sound and Coastal Washington GDUs is included as an appendix to this report.*

<sup>4</sup> *The HSRG understands that the terms "risk" and "benefit" are sometimes used to convey a specific legal or policy status, condition or decision about the results of a particular action, policy or program. For the purposes of the HSRG's review and recommendations, these terms are not being used in this manner, but rather in the general sense of whether a hatchery program, or some aspect of that program, is likely to be affecting one or more regional salmonid stocks in a positive and/or negative way. The intent is to provide policy makers with a sense of the trade-offs involved in different options or courses of action.*