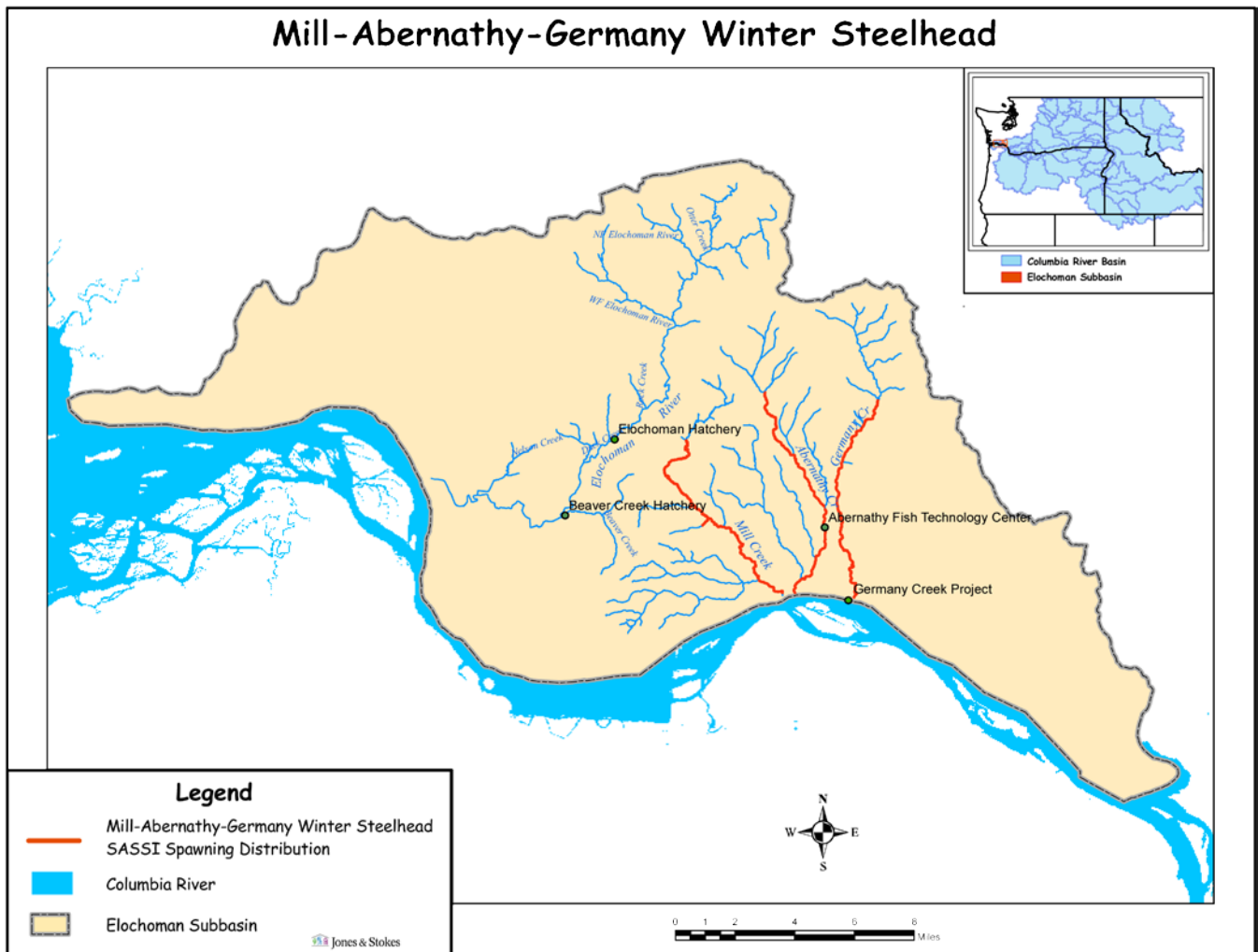


# Hatchery Scientific Review Group Review and Recommendations

## Mill, Abernathy and Germany Creek Winter Steelhead Population and Related Hatchery Programs

January 31, 2009



# 1 Mill, Abernathy and Germany Creek Winter Steelhead

Mill Creek winter steelhead were identified as a stock based on their distinct spawning distribution. Most spawning takes place in mainstem Mill Creek and the North Fork Mill Creek. Spawning also occurs in some unnamed tributaries. Spawning generally occurs from March to early June. No genetic analysis has been done on Mill Creek winter steelhead although it is known to be a native stock with wild production. There are no adequate abundance trend data available for Mill Creek winter steelhead, so their status was Unknown in 2002 (SaSSI 2002).

Abernathy Creek winter steelhead were identified as a stock based on their distinct spawning distribution. Most spawning takes place in Abernathy Creek and in tributaries such as Slide and Cameron creeks from March through early June. No genetic analysis has been done on Abernathy winter steelhead. This is a native stock with wild production. Stock status was rated Depressed in 2002 because of chronically low escapements. An escapement goal of 306 fish has been established for this stock. Escapements have been generally low, with an all-time low in 1996 of 16 fish (SaSSI 2002).

Germany Creek winter steelhead were identified as a stock based on their distinct spawning distribution. Spawning occurs in Germany Creek and in tributaries such as Loper and John creeks from March through early June. No genetic analysis has been done on Germany winter steelhead. This is a native stock with wild production, although the creek has been planted with hatchery winter steelhead since 1961. Stock from the Elochoman River, Chambers Creek and Cowlitz River have been used for these plants. WDFW considers that a native stock still exists because the non-native fish spawn much earlier than the native stock. Stock status was rated Depressed in 2002 because of chronically low escapements. An escapement goal of 202 fish has been established, although it has been met only twice, in 1993 and 2001.

## 2 Current Conditions

### 2.1 Current Population Status and Goals

This section describes the current population, status, and goals for the *natural* population.

- ESA Status: Not listed
- Population Description: Primary
- Recovery Goal for Abundance: 600
- Productivity Improvement Expectation: 0%
- Habitat Productivity and Capacity (e.g., from EDT): Productivity: 5.06; Capacity: 691

### 2.2 Current Hatchery Programs Affecting this Population

No hatchery steelhead hatchery programs are operated in this watershed. Estimated number of hatchery strays affecting this program:

- Hatchery strays from in-basin integrated hatchery program – from AHA summary: N/A
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs – from AHA summary: 5

### 3 HSRG Review

The HSRG has developed guidelines for minimal conditions that must be met for each type of program as a function of the biological significance of the natural populations they affect. For populations of the highest biological significance, referred to as Primary, the proportion of effective hatchery-origin spawners (pHOS) should be less than 5% of the naturally spawning population, unless the hatchery population is integrated with the natural population. For integrated populations the proportion of natural-origin adults in the broodstock should exceed pHOS by at least a factor of two, corresponding to a PNI (proportionate natural influence) value of 0.67 or greater. For Contributing populations, the corresponding guidelines are: pHOS less than 10% or PNI greater than 0.5. It is important to note that these represent minimal conditions not targets. For example, the potential for fitness loss when effective pHOS is 5% is significantly greater than it would be at 3%. For Stabilizing populations we assume the current pHOS or PNI would be maintained.

The HSRG analyzed the current condition and a range of hatchery management options for this population, including the effect of removing all hatchery influence, and arrived at one or more proposed solutions intended to address the manager's goals consistent with the HSRG guidelines for Primary, Contributing, and Stabilizing populations. The solution included in the cumulative analysis is the last option described in the Observations and Recommendation box below.

In order to highlight the importance of the environmental context, two habitat scenarios were considered: current conditions and a hypothetical 10% habitat quality improvement. See HSRG Observations and Recommendations in the box below for more information.

#### 3.1 Effect on Population of Removing Hatchery

The No Hatchery scenario is intended to look at the potential of the natural population absent all hatchery effects with projected improved fish passage survival in the Snake and Columbia mainstem (FCRPS Biological Opinion May 5, 2008).

Our analysis estimated Adjusted Productivity (with harvest and fitness factor effects from AHA) would remain unchanged at 4.7. Average abundance of natural-origin spawners (NOS) would remain unchanged at 693. Harvest contribution of the natural and hatchery populations would remain unchanged at 40.

#### 3.2 HSRG Observations/Recommendations

In the Observation and Recommendation box below we describe elements of the current situation (Observations) that were important to evaluate the natural population and where applicable the hatchery program(s) affecting that population. We also describe a solution (Recommendations) that appeared to be consistent with manager's goals. However, this is not the only solution. In some cases more than one solution is described.

Summary results of this analysis are presented in Table 1. The adjusted productivity values reported for each alternative incorporates all factors affecting productivity (i.e., habitat quality, hatchery fitness effects, and harvest rates).

**Observations**

This population is designated a Primary population that appears to be productive and abundant. There are no hatchery releases in Mill or Germany creeks.

An ongoing research project at the USFWS Abernathy Fish Technology Center annually releases 10,000 smolts from an integrated program into Abernathy Creek, but releases from this research project are scheduled to be terminated in 2014.

**Recommendations**

Monitor contribution of hatchery strays in spawning escapement.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Mill, Abernathy and Germany Creek Steelhead. The light green row indicates the natural population and yellow indicates the segregated hatchery population, if applicable. A 10% habitat improvement is applied to the HSRG Solution to evaluate the additional effect of improved habitat towards conservation objectives.

Alternative	Type and Purpose	Prog Size (/1000)	HOR Recapture	Additional Weir Efficiency	Effective pHOS	PNI	NOS Esc	Adj Prod	Harvest	Hatchery Surplus
Current	None None	-	50%	0%	0%	1.00	693	4.7	40	0
No Hatchery	None None	-	0%	0%	0%	1.00	693	4.7	40	-
HSRG Solution	None None	-	0%	0%	0%	1.00	690	4.7	40	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	0%	1.00	777	5.2	45	0