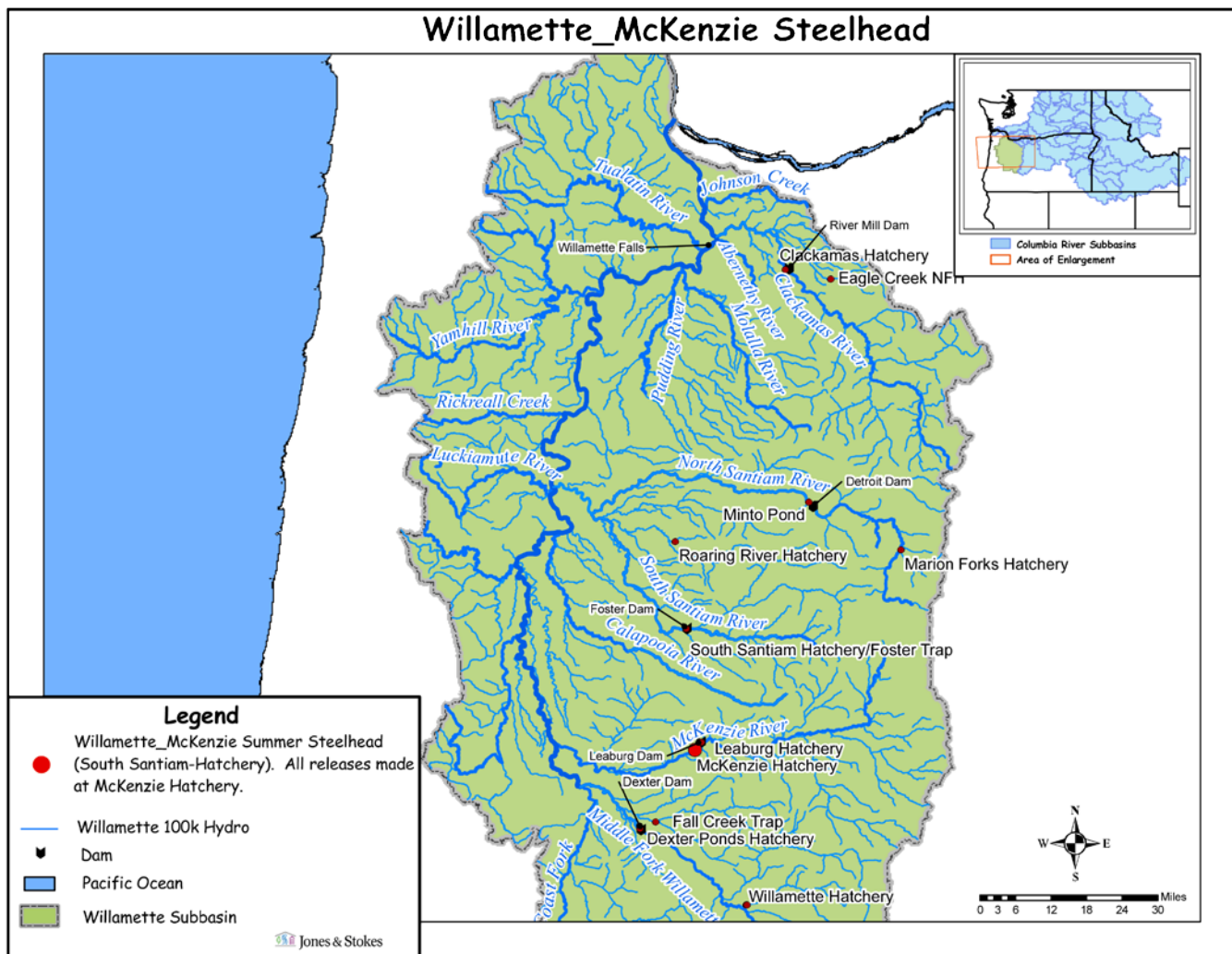


Hatchery Scientific Review Group Review and Recommendations

Willamette – McKenzie Steelhead Population and Related Hatchery Programs

January 31, 2009



1 McKenzie Steelhead

This population consists of a few naturally-produced winter steelhead resulting from historic hatchery outplants and summer run steelhead outplanted from the South Santiam Hatchery. Steelhead are not native to the McKenzie River and there is general agreement that steelhead did not ascend the Willamette River beyond the Calapooia River. There are numerous theories on the factors affecting the distribution of steelhead. These vary from the occurrence of *Ceratomyxa shasta* in the lower portion of the river to passage problems in the historically highly braided river reaches above the Calapooia River. There are native *O. mykiss* populations in the upper portion of the Willamette Basin; however, these appear to be the resident form (Kostow 1995). Both summer and winter steelhead that currently are found in the McKenzie and Middle Fork Willamette rivers are the descendants of hatchery introductions. These populations may pose a risk to native populations downstream associated with the out-of-ESU origin of most introductions.

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: The McKenzie Winter Steelhead are not part of any ESU.
- Population Description: None.
- Recovery Goal for Abundance: NA
- Productivity Improvement Expectation: NA
- Habitat Productivity and Capacity (e.g., from EDT): NA.

2.2 Current Hatchery Programs Affecting this Population

Summer steelhead are released into the basin as part of the Willamette River segregated harvest summer steelhead program. Broodstock are collected at Foster Dam trap on the South Santiam River and incubated at the South Santiam Hatchery. Fish are reared at South Santiam, Roaring River, Leaburg and Dexter fish hatcheries. Yearling summer steelhead are released in April into the North Santiam (161,500), South Santiam (144,000), Willamette River at Eugene (42,000), Middle Fork Willamette (115,000) and McKenzie (108,000) rivers (HGMP 2004).

Since steelhead are not native to the McKenzie River, no analysis of the effects of hatchery straying was done.

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).

Since steelhead are not native to the McKenzie River, no analysis of the effect of removing hatchery influence from this watershed was done.

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

Steelhead are not native to the McKenzie River. Leaburg Hatchery releases about 188,000 segregated summer steelhead smolts annually. The current program provides recreational fishing opportunities. Aside from its potential ecological interactions, this program has no apparent impacts on natural populations of concern (spring Chinook) in the McKenzie River. This program has experienced IHN outbreaks in the past that may have a detrimental effect on resident trout populations.

Recommendations

We recommend that efforts be continued to minimize the prevalence of the IHN virus in this program.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for McKenzie Winter 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										
	Seg Harv	123.5	0%						1,488	0
No Hatchery										
HSRG Solution										
	Seg Harv	123.5	0%						1,488	0
HSRG Solution w/ Improved Habitat										
	Seg Harv	123.5	0%						1,488	0