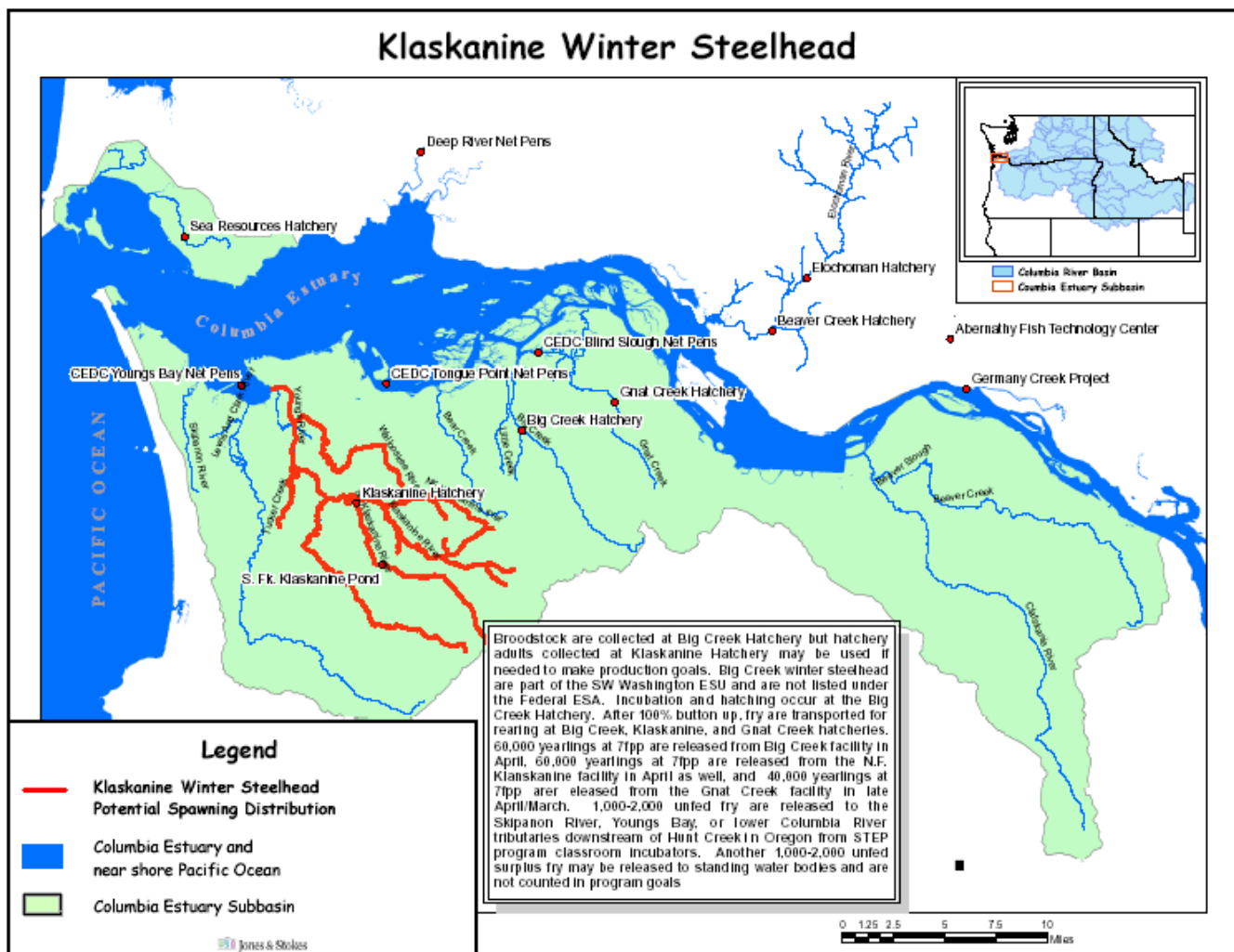


Hatchery Scientific Review Group Review and Recommendations

Youngs Bay Tributaries Winter Steelhead Population and Related Hatchery Programs

January 31, 2009



1 Columbia Estuary-Youngs Bay Tributaries Winter Steelhead

The Klaskanine River is tributary to Youngs Bay near Astoria. The Klaskanine Hatchery is located on the North Fork Klaskanine River about 12 miles southeast of Astoria. A weir at the hatchery prevents passage further up the North Fork. Currently only unmarked steelhead are passed above the weir when the trap is being operated.

2 Current Conditions

2.1 Current Population Status and Goals

The HSRG has insufficient information about the steelhead population in the Youngs Bay subbasin and about the stray rate from this hatchery program.

- **ESA Status:** This population is not listed. Youngs Bay steelhead are part of the Southwest Washington Coast DPS.
- **Population Description:** Unknown
- **Current Viability Rating:** Likely Low
- **Recovery Goal for Abundance:** No goal established
- **Productivity Improvement Expectation:** With only unmarked steelhead being passed over the North Fork weir, significant improvements in productivity could be expected. However scale analysis is needed to determine if unmarked fish are really NORs or misidentified hatchery fish.
- **Habitat Productivity and Capacity:** Productivity: 3.0; Capacity: 200 assigned for this review.
- **Hatchery Populations of the Same Species that Affect this Population:** Steelhead released into the Klaskanine subbasin are Big Creek stock. No other steelhead are thought to be released into Youngs Bay tributaries so stray rates from other programs should be insignificant. Big Creek stock can affect local steelhead, if any, via genetic introgression and competition for food and space.
- **Populations Affected by this Hatchery Population Include:** Big Creek stock hatchery steelhead returning to Klaskanine Hatchery likely stray into other portions of the subbasin and could also enter other tributaries of Youngs Bay. Marked steelhead are harvested in Youngs and Lewis & Clark rivers, indicating that straying is occurring. As these steelhead are reared at Big Creek Hatchery, they could be expected to stray into Big Creek at unknown rates. When Big Creek broodstock returns are insufficient, adults from Klaskanine Hatchery are used as broodstock at Big Creek Hatchery. ESA-listed chum salmon fry could be affected by predation from steelhead smolts.

2.2 Current Hatchery Programs Affecting this Population

Annually 60,000 fingerlings at 14 fpp are transferred to Klaskanine Hatchery from Big Creek Hatchery. These fish are reared and then released at the hatchery in the spring at 7 fpp. Broodstock are of Big Creek origin.

- **PNI and pHOS Estimates (include straying from all hatchery programs):** pHOS is estimated at 17%.
- **Estimated Productivity (with harvest and fitness factor effects from AHA):** 1.36
- **Projected Average Natural Origin Escapement:** 51 adults

- Average Harvest Contribution: 425

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin segregated and out-of-basin hatchery programs – 92 fish.

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 proportionate natural influence (PNI) 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 increase from 1.4 to 2.7. Average abundance of natural-origin spawners (NOS) would increase from approximately 51 to approximately 127. Harvest contribution of the natural and hatchery populations would go from 425 fish to approximately 13 fish.

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 considered a Stabilizing population. There is a 60,000 segregated winter steelhead smolt release in the North Fork of the Klaskanine River at the Klaskanine Hatchery. There is little steelhead habitat. The current program is satisfying management objectives.

The HSRG suggests that ODFW consider whether the Klaskanine watershed is capable or could be capable of supporting a natural-origin spawning population of steelhead. The existing hatchery program does not allow any significant production of natural-origin fish. Additional information is needed on stray rates into other portions of the Klaskanine River and tributaries of Youngs Bay. Natural smolt production in the North Fork Klaskanine above the weir should be estimated to confirm the low production capacity of the overall Klaskanine system.

Recommendations

The HSRG has no specific recommendations for this program.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Klaskanine 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	None None	-	75%	0%	17%	0.00	51	1.4	5	0
	Seg Harv	60.0	75%						420	288
No Hatchery	None None	-	0%	0%	0%	1.00	127	2.7	13	-
	Seg Harv	60.0	75%						420	288
HSRG Solution	None None	-	75%	0%	17%	0.00	51	1.4	5	0
	Seg Harv	60.0	75%						420	288
HSRG Solution w/ Improved Habitat	None None	-	75%	0%	14%	0.00	63	1.6	6	0
	Seg Harv	60.0	75%						420	288