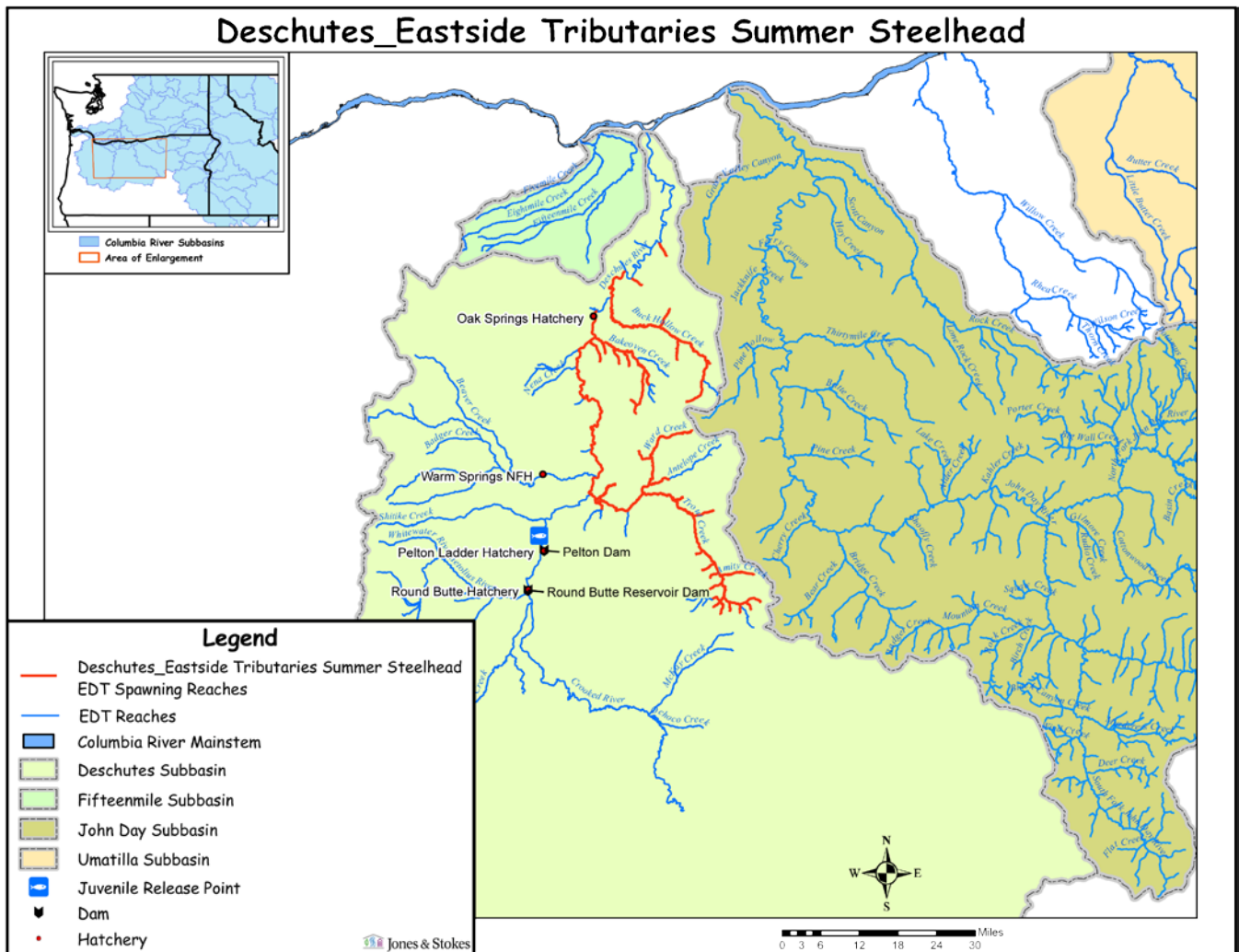


Hatchery Scientific Review Group Review and Recommendations

Deschutes-Eastside Tributaries Summer Steelhead Population and Related Hatchery Programs

January 31, 2009



1 Deschutes-Eastside Tributaries Summer Steelhead

The Deschutes River enters the Columbia at RM 205 above Bonneville and The Dalles dams, draining 10,500 square miles (the second largest subbasin in the state). It originates in the Cascade Mountains, flowing north along the eastern margin of the hills where the Cascades to the west meet the low-lying flats to the east.

Steelhead in the Deschutes River and its tributaries have been segregated by the Interior TRT into two distinct groupings; those that spawn in the westside tributaries and those that spawn in the eastside tributaries. The Deschutes River drains relatively dry, low-gradient streams flowing out of arid desert to the east and wetter, higher gradient streams flowing out of the Cascade Mountains to the west. Distinct habitat types and flow regimes have led to temporally segregated spawn timing between the westside and eastside tributaries, with westside spawning peaking between January and April and eastside spawning peaking between April and May (Olsen et al. 1992).

In recent years, wild adult steelhead returns to the Deschutes subbasin have exceeded the NOAA Fisheries interim spawner escapement objective of 6,300 wild steelhead. The run, however, remains below the ODFW goal for the Deschutes, which calls for a spawning escapement of 6,575 wild steelhead upstream from Sherars Falls to sustain maximum natural production potential during years of good juvenile and adult survival conditions. During years of outstanding fresh water and ocean rearing conditions and high smolt-to-adult survival, spawning escapement could be considerably larger (ODFW 1997). Steelhead production in the subbasin may expand in the near future if passage is restored past the Pelton Round Butte Project. Originally, Round Butte included fish passage facilities, but with the construction of Round Butte Dam in 1964, fish passage was abandoned and focus was shifted to hatchery production.

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:** Naturally spawning summer steelhead in the Deschutes system are included in the Middle Columbia River Steelhead DPS which was listed as Threatened under the ESA in 1999. Threatened status was reaffirmed in 2006.
- **Population Designation:** Using a rating system similar to that used by the recovery planners for the Lower Columbia and Willamette arrives at a designation of Primary.
- **Current Viability Rating:** Unknown
- **Recovery Goal for Abundance:** Unknown
- **Productivity Improvement Expectation:** Unknown
- **Habitat Productivity and Capacity (from EDT):** Productivity: 4.11, Capacity: 6,055

2.2 Current Hatchery Programs Affecting this Population

The goal of the Round Butte Hatchery/Pelton Trap complex is to rear and release 162,000 summer steelhead smolts (Stock No. 066) at ~4.2 fpp in April for an expected return of ~1,800

adults. Stock 066 is not included as part of the Middle Columbia River Steelhead DPS and so has no listing status under the ESA.

This program operates as a segregated harvest program, collecting only hatchery marked adults returning to the Pelton Trap at RM 100 on the Deschutes River. Adult volunteers are collected from the trap in three groupings: October 1 to December 9, December 10 to January 31, and February 1 to March 1, with one-third of the needed broodstock being collected during each period. Round Butte Hatchery origin adults volunteering to the trap are collected for broodstock, distributed to members of the Confederated Tribes of the Warm Springs, or disposed of by burying.

Broodstock are trucked to Round Butte Hatchery approximately 5 miles upstream of the Pelton Trap where they are held on Deschutes River water seeping from Lake Billy Chinook until mature and ready to spawn. Mating is 1:1 with 2 families being combined after fertilization. Families are marked on heath trays in the event culling due to INHV is necessary. Fish at Round Butte Hatchery are reared on seepage from Lake Billy Chinook that has been determined to be pathogen free.

Summer steelhead are released in April at ~ 4.2 fpp. Because the Round Butte Hatchery is above Lake Simtustus and the Pelton Dam, smolts are trucked below the dam and released at the Pelton Trap.

Coded-wire tag recoveries at the Warm Springs Hatchery indicate that a high percentage of steelhead straying into the Deschutes system originated from hatcheries or release locations in the Grande Ronde, Imnaha, Wallowa and other rivers in the Snake River Basin.

Out-of-DPS hatchery strays are approximately 30% of the naturally spawning of this population. This has been recognized as a risk to the population (Mid-Columbia Steelhead Recovery Plan – ODFW Draft 2007).

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 1,810 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 1.9 to 3.8. Average abundance of natural-origin spawners (NOS) would increase from approximately 2,951 fish to approximately 4,623 fish. Harvest contribution of the natural and hatchery populations would go from approximately 612 fish to approximately 349 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

The management goal is to sustain natural production and harvest.

The Deschutes Round Butte segregated hatchery program releases 162,000 smolts and is operated consistent with a Primary designation of both the east side and west side natural populations. Large numbers of out-of-DPS strays are a major concern for this population.

Recommendations

We have no specific recommendations to improve the Round Butte program. Efforts should be made to remove out-of-DPS hatchery strays from the population through harvest, weirs or other means (e.g., live trapping at Sherars Falls or other locations).

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Eastside Deschutes Tributary Summer 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	-	0%	0%	20%	0.00	2,951	1.9	223	0
	Round Butte Seg Harv	162.1	95%						389	2,145
No Hatchery	None None	-	0%	0%	0%	1.00	4,623	3.8	349	-
HSRG Solution	None None	-	90%	85%	2%	0.00	4,092	3.2	309	0
	Round Butte Seg Harv	162.1	95%						389	2,145
HSRG Solution w/ Improved Habitat	None None	-	90%	85%	2%	0.00	4,767	3.7	360	0
	Round Butte Seg Harv	162.1	95%						389	2,145