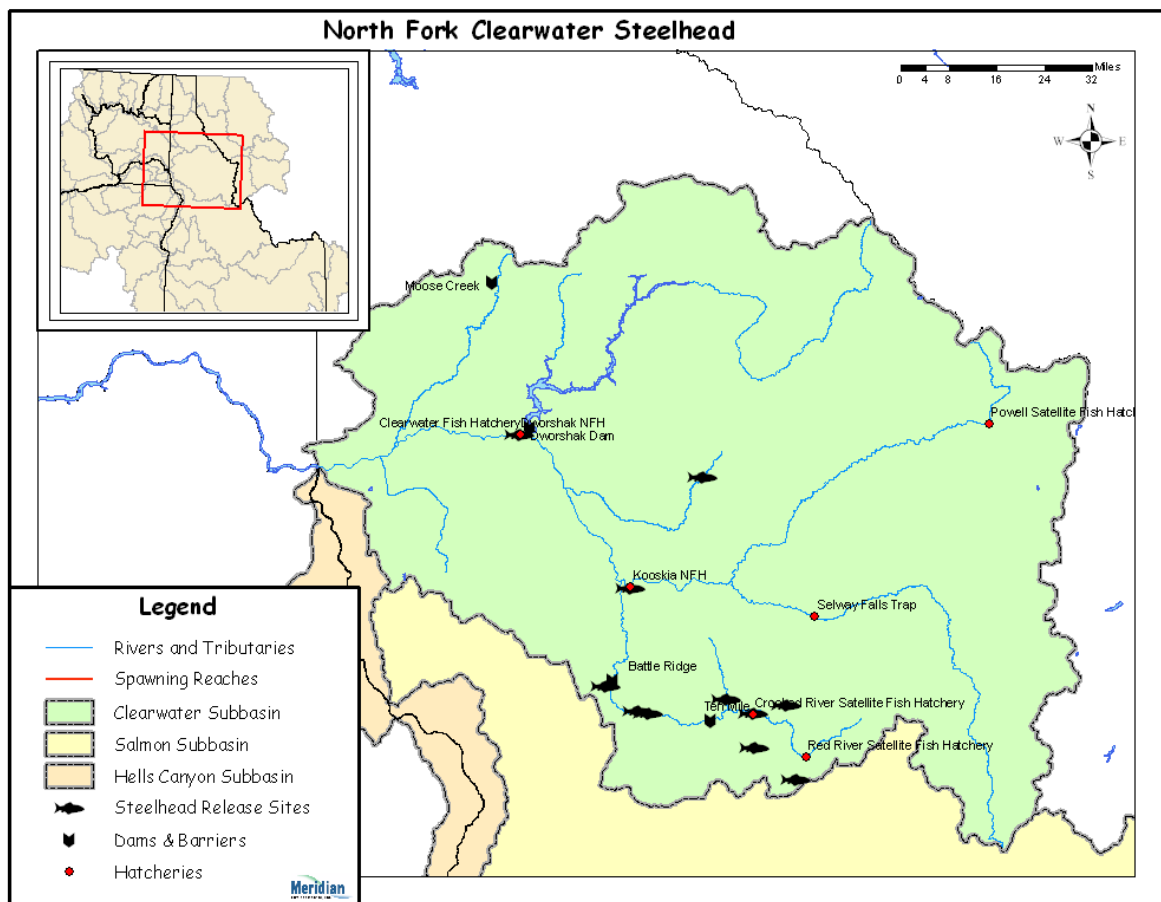


Hatchery Scientific Review Group Review and Recommendations

North Fork Clearwater Summer Steelhead (B-run) (Dworshak National Fish Hatchery) Population and Related Hatchery Programs

January 31, 2009



1 North Fork Clearwater Summer Steelhead (B-run)

The North Fork Clearwater steelhead population is part of the Snake River Basin Steelhead Distinct Population Segment (DPS) that includes all naturally-spawned populations in streams in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho (62 FR 43937; August 18, 1997). Several artificial propagation programs are considered part of the DPS: the Tucannon River natural stock, the North Fork Clearwater River stock reared at Dworshak National Fish Hatchery (NFH) and Clearwater Fish Hatchery and released in the Clearwater and Salmon Rivers¹, East Fork Salmon River local stock, and the Little Sheep Creek/Imnaha River Hatchery steelhead programs. The DPS was listed as a threatened under the ESA on August 18, 1997; this status was reaffirmed on January 5, 2006.

The DPS has six major population groupings (MPGs): Lower Snake River, Clearwater River, Grande Ronde River, Salmon River, Hells Canyon, and the Imnaha River (ICTRT 2006), and contains both A and B-run steelhead (based on migration timing, ocean-age and adult size). The North Fork Clearwater population (B-run) was blocked by the construction of Dworshak Dam in 1969, and currently is maintained only as a hatchery population. According to the ICTRT, the current Dworshak NFH B-run steelhead stock represents the historic North Fork Clearwater River population.

The ICTRT classified the North Fork Clearwater population as “Large.” A “Large” population is one that requires a minimum abundance of 1,500 natural spawners. However, the ICTRT also classified the North Fork Clearwater population as Extirpated.

There are no estimates of historical steelhead abundance in the North Fork Clearwater River.

2 Current Conditions

A segregated hatchery program is operated at the Dworshak NFH. Between 2000-2001 and 2005-2006, an average of 28,313 hatchery steelhead returned to the Clearwater River basin annually. Approximately 75% of these fish contributed to the sport harvest, 4% contributed to the Tribal harvest, 18% returned to the Dworshak NFH and 2% remained unharvested (Burge et al. 2004). Adult hatchery steelhead collected in excess of broodstock requirements are typically recycled to the lower Clearwater River for additional harvest opportunities or are added to the Tribal harvest. Currently, all wild fish collected at the hatchery are immediately transported and released upstream in the mainstem Clearwater just above Dworshak NFH. From 1980 through 2004, the smolt to adult survival of the population (as measured from hatchery rack returns) ranged from 0.11 to 0.88%. The mean hatchery rack return rate for 1993 through 2002 was 0.37% (Burge et al. 2004).

Due to its extirpated status and lack of usable spawning habitat (downstream of Dworshak Dam), natural-origin fish escapement and adjusted productivity for this population were not estimated (e.g., set at zero).

¹ Artificial propagation programs for steelhead in the Clearwater River subbasin are based on the North Fork Clearwater stock trapped at the base of Dworshak Dam when the dam blocked access to the North Fork in 1969.

2.1 Current Population Status and Goals

This section describes the current population, status, and goals for the North Fork Clearwater River steelhead population.

- **ESA Status:** The Snake River Basin steelhead DPS was listed as threatened on August 18, 1997; the threatened status was reaffirmed on January 5, 2006.
- **Population Description:** For the purpose of this review, the HSRG assigned this population as Stabilizing.
- **Recovery Goal for Abundance:** Population is extirpated. No abundance goal was developed.
- **Productivity Improvement Expectation:** NA
- **Habitat Productivity and Capacity:** Productivity: NA (blocked by Dworshak Dam), Capacity: NA (blocked by Dworshak Dam)

2.2 Current Hatchery Programs Affecting this Population

The Dworshak NFH operates a segregated (harvest) steelhead program in the North Fork Clearwater River. The program releases approximately 1.2 million smolts (6 fpp) directly into the mouth of the North Fork at the hatchery. All smolts are adipose fin-clipped and derived from B-run broodstock collected at Dworshak. Natural-origin fish are not used in harvest mitigation broodstock. The program has an R/S of 35.0.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from integrated in-basin programs: NA
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: NA

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 indicates that this population is entirely hatchery supported and would not be sustained without the hatchery. No natural, reproducing population exists in the habitat available downstream of Dworshak Dam and upstream of the confluence with the mainstem Clearwater River.

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

Managers have identified a strategy for the North Fork Clearwater River that emphasizes maintaining existing hatchery programs. Currently, this population is not consistent with the HSRG-defined standards for either a Primary or Contributing population designation (pHOS exceeds 0.10).

Only about 1.5 miles of the North Fork Clearwater River remains downstream of Dworshak Reservoir. As mitigation for the construction of the dam and the extirpation of B-run steelhead in this river, the Dworshak National Fish Hatchery was constructed in 1969. The hatchery releases approximately 1.2 million steelhead annually into the North Fork Clearwater River. All fish are adipose fin-clipped and a portion are coded wire-tagged (150,000 smolts currently) and PIT-tagged (20,000 smolts currently). Broodstock composition is 100% hatchery-origin. No steelhead spawning habitat remains in the 1.5-mile reach below the dam.

Most of the water supply for this hatchery is pumped from the North Fork Clearwater River near the adult collection intake, which has resulted in reoccurring disease problems at the facility.

Monitoring of straying is very limited; however, trapping in Fish Creek in the lower Lochsa indicates few hatchery fish straying into this location.

Recommendations

The HSRG recommends that managers develop an improved water supply at Dworshak NFH to address disease and temperature problems.

The managers should coordinate the programming of all salmon and steelhead populations reared in the Clearwater Fish Hatchery, Dworshak National Fish Hatchery, Kooskia National Fish Hatchery and Nez Perce Tribal Hatchery to maximize the benefits of available water supply, appropriate water temperature, and rearing containers. Operating these four major hatcheries as a coordinated system would facilitate the movement of programs/populations between and among the different hatcheries. This would maximize survival by producing fish in good condition for release at the appropriate life stage.

The HSRG notes that there is a general lack of information related to steelhead abundance, productivity, spatial structure and diversity as well as straying of hatchery fish into natural production areas. An effort should be made to improve this information base.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for North Fork Clearwater 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										
	Seg Harv	1,199.3	95%						13,389	4,059
No Hatchery										
HSRG Solution										
	Seg Harv	1,199.3	95%						13,389	4,059
HSRG Solution w/ Improved Habitat										
	Seg Harv	1,199.3	95%						13,389	4,059