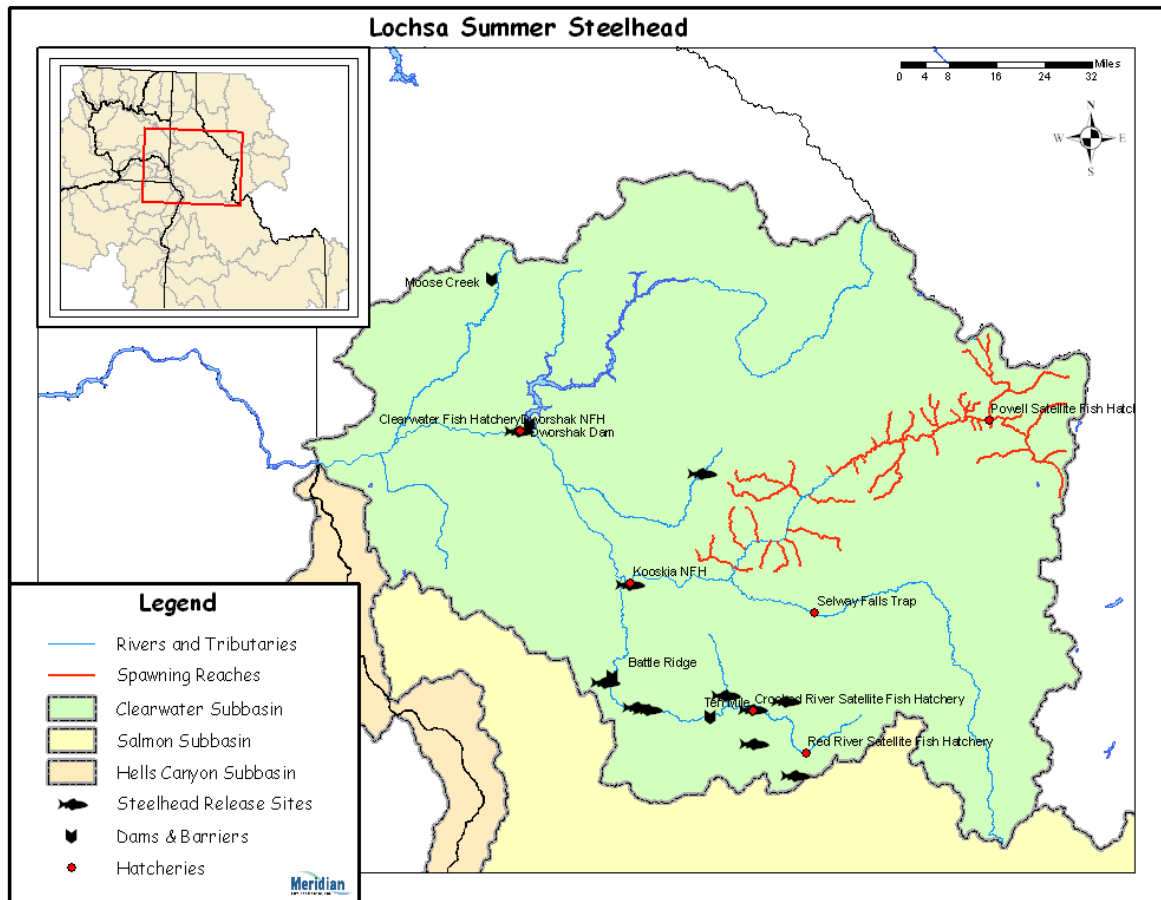


Hatchery Scientific Review Group Review and Recommendations

Lochsa Summer Steelhead (B-run) Population and Related Hatchery Programs

January 31, 2009



1 Lochsa Summer Steelhead (B-run)

The Lochsa River steelhead population is part of the Snake River Basin Steelhead Distinct Population Segment (DPS) that includes all naturally spawned populations of steelhead 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 reared and released in the Clearwater and Salmon rivers¹, East Fork Salmon River local stock, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery 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 Lochsa River population is a natural B-run population and is included in the Clearwater River MPG. The population is found in the mainstem Lochsa River and all tributaries. Like all populations in the MPG, Lochsa steelhead occupy areas upstream from the historical Lewiston Dam, which was in place from 1927 to 1973. The dam was fitted with a fish ladder, but it provided only marginal passage for migrating steelhead adults and smolts (Cramer et al. 1998). Unlike Chinook salmon, steelhead were able to maintain some access to the Clearwater River subbasin during the dam's existence and so have been included in the DPS. Lewiston Dam was thought to be a partial barrier to adult steelhead migration, reducing escapement to upstream reaches.

The Interior Columbia Technical Recovery Team (ICTRT) classified the Lochsa River population as an "Intermediate" population based on historical habitat potential. An "Intermediate" population is one that requires a minimum abundance of 1,000 natural spawners and an intrinsic productivity greater than 1.30 recruits per spawner (R/S) to meet the 5% extinction risk criteria established by the ICTRT.

According to the Draft Snake River Steelhead Recovery Plan, Snake River steelhead enter fresh water from June to October and spawn the following spring from March to June. Emergence occurs by early June in low elevation streams and as late as mid-July at higher elevations. Snake River steelhead usually smolt at age-2 or age-3 years and reside in marine waters for 1 to 3 years prior to returning to their natal stream to spawn at 4 or 5 years of age.

There are no estimates of historical steelhead run sizes in the Lochsa River.

2 Current Conditions

Steelhead spawning has been observed in the upper mainstem Lochsa River and in several tributaries. The ICTRT defined seven major spawning areas (Crooked Fork Creek, White Sands Creek, Boulder Creek, Fish Lake, Fish Creek, Warm Springs Creek, and the lower Lochsa River). High spring flows usually prevent documentation of spawning in most streams. Juvenile steelhead rearing has been documented in most of the Lochsa River drainage that is accessible to adult migration.

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

Current natural abundance (number of adults spawning in natural production areas) is unknown for this population. While the aggregate B-run abundance for the DPS can be quantified based on counts at Lower Granite Dam, it is extremely difficult to census abundance at the population level. The ICTRT developed a generic dataset for B-run steelhead populations to be used for a preliminary assessment of abundance productivity risk. The dataset was derived by distributing the natural-origin steelhead counted annually at Lower Granite Dam equally across the nine extant B-run populations. Abundance for the generic “B” run steelhead in recent years has been moderately variable. The most recent 10-year geometric mean number of natural spawners was 272 fish. From 1986 to 1998, returns per spawner for the generic “B” run steelhead dataset ranged from 0.24 (1990) to 6.63 (1998). The most recent 13-year SAR adjusted and delimited geometric mean of returns per spawner was 0.85.

For AHA modeling, IDFG estimated natural-origin fish escapement and adjusted productivity for this population to be 777 and 1.75, respectively.

2.1 Current Population Status and Goals

This section describes the current population, status, and goals for the Lochsa 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 Primary. The population currently meets the broodstock criteria for this population designation.
- **Recovery Goal for Abundance:** The ICTRT defined the Lochsa River B-run steelhead population as “Intermediate” and identified a minimum abundance threshold of 1,000 natural-origin adults.
- **Productivity Improvement Expectation:** The ICTRT productivity standard associated with a population defined as “Intermediate” is 1.15.
- **Habitat Productivity and Capacity:** Productivity: 2.5, Capacity: 2,000.

2.2 Current Hatchery Programs Affecting this Population

Currently there are no hatchery programs for steelhead in the Lochsa River and the occurrence of adult hatchery fish in the population is unknown. Hatchery-origin steelhead could have returned to various tributaries within the population from fry releases made from 1973 through 1982. Hatchery steelhead fry were released in eight of the ten years during that period (a total of 5.93 million fry). Adult steelhead were also released into the Lochsa River in 1973, 1979 and 1990. In 1981, adults were released into Post Office Creek and Squaw Creek. There is no documentation of any releases after 1990. All releases are presumed to have been Dworshak NFH B-run stock (ICTRT 2005). The occurrence of adult hatchery fish in the current population is unknown; however, hatchery-origin steelhead are rarely observed in the important production areas in the Lochsa and Selway rivers or in the lower Clearwater River tributaries. They are not believed to influence the natural populations.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from integrated in-basin programs: 0
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 46 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 that Adjusted Productivity (with harvest and fitness factor effects from AHA) would increase from 1.8 to 2.0. Average abundance of natural-origin spawners (NOS) would increase from approximately 776 fish to approximately 909 fish. The harvest contribution of the natural and hatchery populations would go from approximately 218 fish to approximately 255 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

Managers have identified a strategy for Lochsa River B-run steelhead that emphasizes maintaining existing natural spawning populations. Currently this population is operating consistent with the HSRG-defined standards of a Primary population (pHOS less than 0.05).

There are no releases of hatchery-origin steelhead within the Lochsa River and Selway River drainages of the Clearwater River Major Population Group.

Recommendations

The HSRG notes that there is a general lack of information about 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 Lochsa River Summer Steelhead (B-run). 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%	1%	0.00	776	1.8	218	0
No Hatchery	None None	-	0%	0%	0%	0.00	909	2.0	255	-
HSRG Solution	None None	-	0%	0%	1%	0.00	797	1.8	224	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	1%	0.00	1,176	2.5	330	0