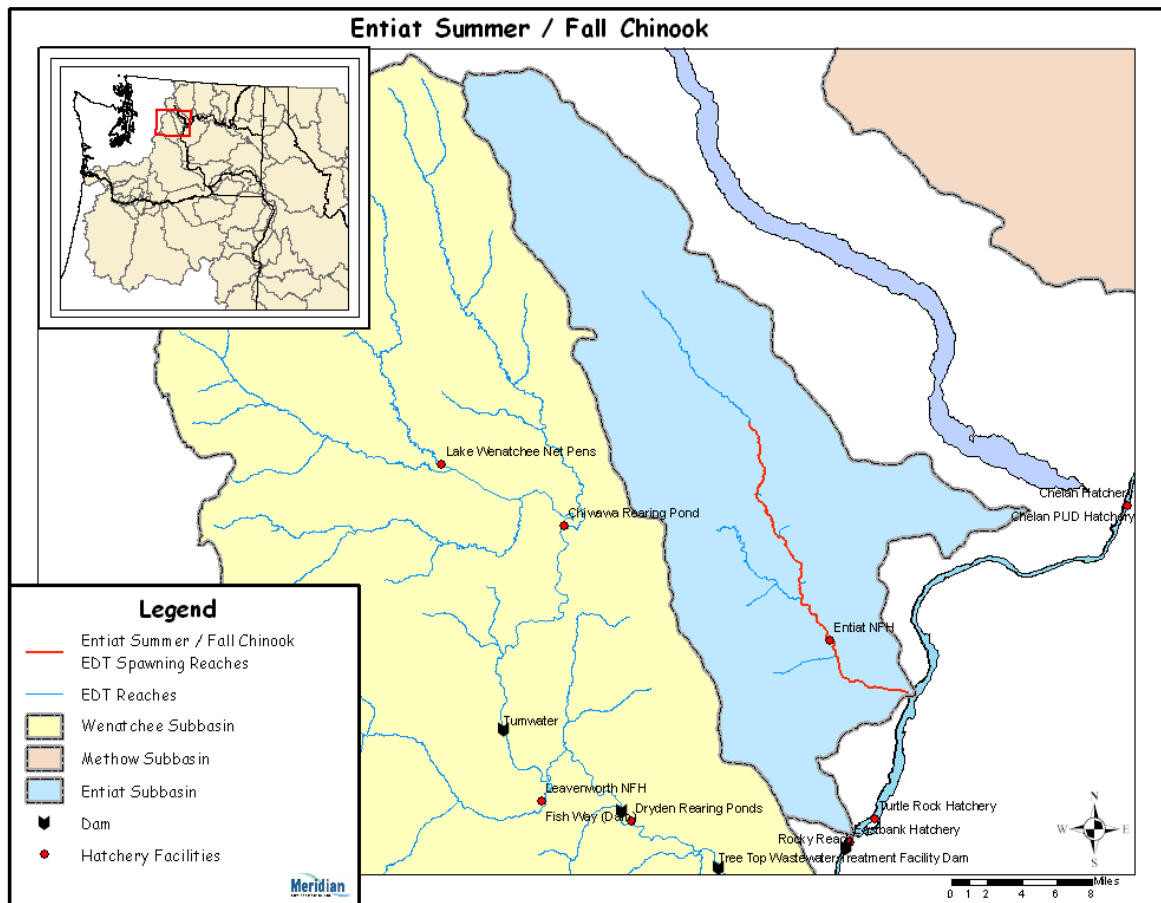


Hatchery Scientific Review Group Review and Recommendations

Entiat Summer Chinook Population and Related Hatchery Programs

January 31, 2009



1 Entiat River Summer Chinook

The Entiat summer/fall-run Chinook is likely the descendents of hatchery fish released by the Entiat National Fish Hatchery from 1941 to 1976. According to the Entiat Subbasin Plan, summer/fall-run Chinook were not native to the Entiat River (NPPC 2004). Entiat summer Chinook are considered part of the Upper Columbia River summer/fall-run Chinook ESU that includes all late-run (summer and fall), ocean-type Chinook salmon in the mainstem Columbia River and its tributaries between Chief Joseph and McNary dams (excluding Marion Drain). NMFS concluded that at the time of their review, this larger ESU did not merit protection under ESA (NMFS 1995 and 50 CFR Parts 222, 226, and 227).

2 Current Conditions

Entiat River summer/fall Chinook begin entering the subbasin in June. These fish spawn in late September to early November in the lower 23 miles of the mainstem Entiat River downstream of Preston Creek. Summer/fall-run redd counts made since 1957 show that adult abundance is less than 250 fish.

2.1 Current Population Status and Goals

This section describes the current population, status, and goals for the natural population.

- ESA Status: Not Listed
- Population Description: Entiat Summer Chinook are thought to have originated from hatchery operations associated with the Grande Coulee Fish Maintenance Project (1939 to 1943), and Entiat Nation Fish Hatchery releases to the subbasin. The HSRG classifies this population as Stabilizing.
- Recovery Goal for Abundance: Not Applicable
- Productivity Improvement Expectation: Productivity is expected to increase over time as habitat actions designed to improve the abundance and productivity of ESA listed spring Chinook are implemented in the subbasin.
- Habitat Productivity and Capacity: Productivity: 1.69; Capacity: 300

2.2 Current Hatchery Programs Affecting this Population

No hatchery programs currently release summer/fall-run Chinook to the Entiat River. Relatively large numbers of out-of-basin strays (423) from the following hatchery programs may spawn in the subbasin:

- Methow Summer Chinook
- Okanogan Similkameen Summer Chinook
- Upper Middle Columbia Mainstem Summer Chinook (Turtle Rock Hatchery)
- Wenatchee Summer Chinook
- Upper Middle Columbia Summer Chinook (Wells Hatchery)

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: 220 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 0.5 to 1.1. Average abundance of natural-origin spawners (NOS) would decrease from approximately 70 fish to approximately 19 fish. Harvest contribution of the natural and hatchery populations would go from approximately 87 fish to approximately 23 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 managers' 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 not assigned a population designation for the Entiat summer Chinook. No hatchery programs for summer Chinook operate in the subbasin. The Entiat River population appears to be composed of stray hatchery fish. Under current habitat and harvest conditions, no population would exist in the absence of these hatchery fish.

Recommendations

Due to the low productivity and capacity, the HSRG recommends that this population be managed as a Stabilizing population.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Entiat Summer Chinook. 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%	72%	0.00	70	0.5	87	0
No Hatchery	None None	-	0%	0%	0%	1.00	19	1.1	23	-
HSRG Solution	None None	-	0%	0%	77%	0.00	79	0.5	120	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	75%	0.00	88	0.6	134	0