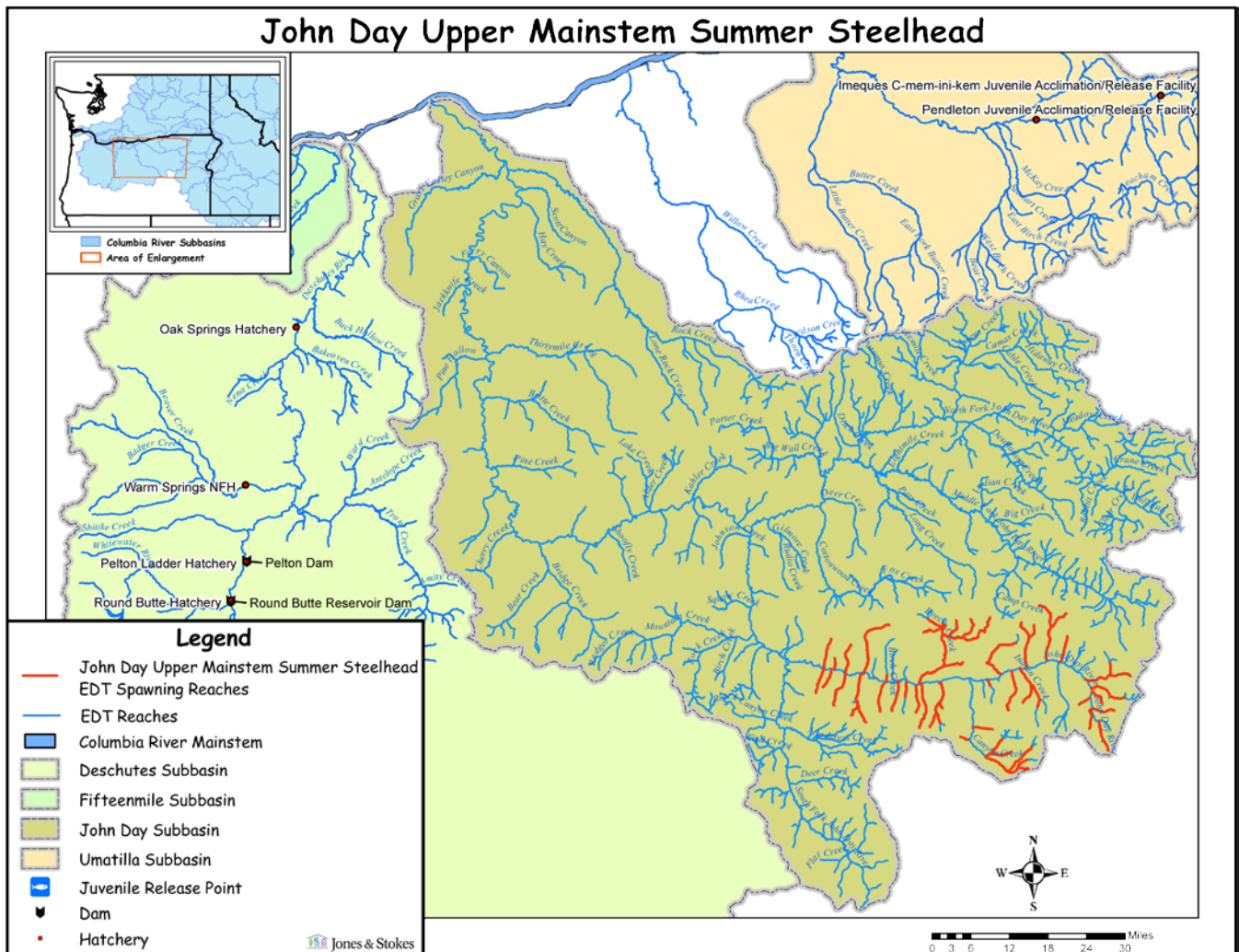


# Hatchery Scientific Review Group Review and Recommendations

## John Day-Upper Mainstem Summer Steelhead Population and Related Hatchery Programs

January 31, 2009



# 1 John Day-Upper Mainstem Summer Steelhead

The Interior Columbia Basin Technical Recovery Team (TRT) defined the John Day River as a major grouping based primarily on subbasin topography and distance from other spawning aggregates (NOAA Fisheries 2003). This subbasin is one of the few remaining summer steelhead streams in the interior Columbia Basin that have had little influence from introduced hatchery fish and that have more recently been classified as strong or healthy (Lee et al. 1997, Huntington et al. 1994). Within this major grouping, the TRT defined five populations on the basis of genetic information, demographic correlations, and habitat/ecoregion data. Spawning areas are widely distributed across tributary and mainstem habitats, but are not well documented. Steelhead are widely distributed throughout most of the subbasin. The only exceptions are in the South Fork drainage above Izee Falls – an impassible barrier – and in the Lower John Day area where high temperatures and low flows are widespread, restricting the current distribution.

The Upper Mainstem John Day River population includes the mainstem John Day River and tributaries upstream from the South Fork. It is separated from the lower mainstem on the basis of habitat differences and from the South Fork on the basis of topography (John Day Subbasin Plan 2004).

With some exceptions, the recent five-year average (geometric mean) abundance for natural steelhead within this DPS was higher than levels reported in the 1999 status review. Returns to the Yakima River, Deschutes River, and sections of the John Day River system are up substantially in comparison to 1992 to 1997. Recent five-year geometric mean annual returns to the John Day Subbasin are generally below the corresponding mean returns reported in previous status reviews. Despite episodic increases in abundance, the total population has been trending downward since 1958.

Empirical data collected by ODFW showed an average population size of 1,369 adults from 1992-1997 and an average size of 2,505 adults from 1999-2003.

## 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 John Day system are included in the Middle Columbia River Steelhead DPS which was listed as Threatened under the ESA in 1999.
- **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 Contributing.
- **Current Viability Rating:** Unknown
- **Recovery Goal for Abundance:** Unknown
- **NOAA Interim Abundance Target:** 2,000
- **Productivity Improvement Expectation:** Unknown
- **Habitat Productivity and Capacity (from EDT):** Productivity: 3.4, Capacity: 1,270

## 2.2 Current Hatchery Programs Affecting this Population

No hatcheries currently collect or release summer steelhead in the John Day system.

Out-of-DPS hatchery strays are approximately 5% of the naturally spawning population. This has been recognized as a risk to the population (Mid-Columbia Steelhead Recovery Plan- ODFW 2007 draft).

Estimated number of hatchery strays affecting this population:

- Hatchery strays from out-of-basin hatchery programs: 74 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 2.1 to 3.1. Average abundance of natural-origin spawners (NOS) would increase from approximately 607 fish to approximately 869 fish. Harvest contribution of the natural population would go from approximately 62 fish to approximately 89 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**  
Hatchery strays have exceeded 5% of the natural spawning population.

**Recommendations**  
The HSRG recommends that managers increase monitoring of spawning abundance and composition. Implement actions if necessary to reduce the proportion hatchery strays in the natural spawning population.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Upper Mainstem John Day 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%	4%	0.00	607	2.1	62	0
No Hatchery	None None	-	0%	0%	0%	1.00	869	3.1	89	-
HSRG Solution	None None	-	0%	0%	3%	0.00	673	2.3	69	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	3%	0.00	825	2.7	84	0