



# FISH PASSAGE CENTER

1827 NE 44<sup>th</sup> Ave., Suite 240, Portland, OR 97213

Phone: (503) 230-4099 Fax: (503) 230-7559

<http://www.fpc.org/>

e-mail us at [fpcstaff@fpc.org](mailto:fpcstaff@fpc.org)

## MEMORANDUM

TO: Russ Kiefer, IDFG

FROM: Jerry McCann

DATE: January 15, 2008

RE: Steelhead transport proportion in 2007.

Based on your request, transport probabilities for steelhead originating above Lower Granite Dam were estimated for 2007. In addition, the transport proportion that would have resulted from ending spill at the Snake River Collector dams May 15, was also calculated. The results were as follows:

- The probability of steelhead originating above Lower Granite Dam being transported in 2007 was estimated to be 47% for hatchery steelhead and 43% for wild fish
- The estimated transport probabilities were the lowest since FPC began calculating those numbers in 1999
- The biggest cause of that difference was mainly to low flows which resulted in higher than average spill proportions at Snake River collector dams, but also in part to the delayed transport schedule

## Methods

Daily passage indices were used to estimate steelhead passage timing over the season at Lower Granite Dam. This approach was compared to population indices based on estimated daily detection efficiencies of PIT-tagged steelhead and found to be very similar for the years 2003 to 2007. Detection efficiency estimates were generated from CJS reach survival estimates for Lower Granite, Little Goose and Lower Monumental dams, for both hatchery and wild PIT-tagged steelhead released above Lower Granite Dam. From the Lower Granite timing data (which was combined for hatchery and wild steelhead), and the detection efficiency estimates, the probability of steelhead being transported at Snake River collector dams was calculated.

## Results

Detection probabilities used in the 2007 calculations are shown in table 1. The CE values were derived from survival estimates, while the transport proportion of collection was derived from SMP data. The detection probabilities in 2007 were much lower at Lower Granite Dam and especially at Little Goose Dam, such that overall detection probability for 2007 was markedly lower than other years. Table 2 summarizes the transport probabilities for steelhead originating above Lower Granite Dam in 2007. As can be seen the 2007 values of 47% for hatchery and 43% for wild fish were much lower than any other recent year. The next closest year, 2003 at 67%, was a relatively high flow year.

**Table 1. Estimated detection probabilities, transport proportions and resulting overall proportion of steelhead transported at transport dam.**

Species/Rear Type	Dam	CE estimated detection probability	P(t) Proportion of collection transported <sup>1</sup>	P(j) overall proportion transported
<b>Hatchery Steelhead</b>	LGR	0.24	0.995	0.244
	LGS	0.35	0.993	0.346
	LMN	0.18	0.990	0.181
<b>Wild Steelhead</b>	LGR	0.22	0.995	0.219
	LGS	0.39	0.993	0.388
	LMN	0.25	0.990	0.249

<sup>1</sup> Proportion of collection transported was calculated as (total fish transported/total collection) during the time period when transport was occurring at each dam.

**Table 2. Estimated proportion of steelhead arriving Lower Granite Dam “destined” to the transportation strategy.**

Species	Migration Year								
	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>Steelhead</b>	0.83	0.81	0.99	0.68	0.67	0.96	0.94	0.76(H) 0.79(W)	0.47(H) 0.43(W)