



# FISH PASSAGE CENTER

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## MEMORANDUM

TO: FPAC

FROM:  Jerry McCann

DATE: June 20, 2007

RE: Preliminary Detection Probability Estimates for Snake River Subs in 2007

Low passage indices at Snake River projects in 2007 have led to concern that fish population is either delayed due to low flows or simply lower than other recent years (Table 1). Hatchery releases are lower than in other recent years, so the population reaching Lower Granite Dam is likely smaller (Table 2). However, due to low flows in the Snake River, spill proportion is relatively high at Lower Granite and Lower Monumental dams, so that fish collection may be lower than in other years as well.

In order to explore this question, the FPC estimated detection probability for subyearling Chinook released above Lower Granite Dam in 2007. Detection probability was estimated to be relatively low at all three Snake River collector projects (Table 1). Detection probability was estimated using downstream detections to estimate detection probability at upstream dams. Data are limited due to fewer tags in 2007 and to low detection efficiency at the dams, so that estimates should be viewed as preliminary and taken with caution.

As had occurred during the Spring migration, the index at Lower Granite is less than that at Little Goose Dam. This is due to the higher spill proportion at Lower Granite resulting in the lower detection probability at the site. Based on our detection probability estimate a “population index” at Lower Granite Dam (collection/detection probability) would be nearly 1 million fish, while at Little Goose the “population index” would be closer to 700,000, while the Lower Monumental “index” would be near 500,000.

Historic timing based on passage indices over the past 10 years, (the indices are relatively robust for timing estimation despite underestimating overall population size), suggests that approximately  $38\% \pm 36\%$  of the run would have passed by this date. The wide confidence interval reflects the inter-annual variability in timing, which is due, in large part, to changes in hatchery release timing as well as the increasing proportion of hatchery fish in the last 10 years.

It should be noted that all of the scheduled hatchery releases of subyearling Chinook above Lower Granite Dam for 2007 have occurred. But, based on PIT-tag data, the fish from Nez Perce Tribal hatchery release of 500,000 subyearlings on June 15, are just beginning to reach Lower Granite Dam.

Table 1. Collection, Passage indices and estimated detection probability of subyearling Chinook PIT-tagged above LGR in 2007.

<b>Site</b>	<b>Passage Index Since May 1</b>	<b>Collection Since May 1</b>	<b>Estimated Detection probability</b>	<b>Population Index</b>
<b>Lower Granite</b>	212,607	135,386	0.15	967,043
<b>Little Goose</b>	251,773	175,287	0.25	701,148
<b>Lower Monumental</b>	54,023	30,759	0.06	512,650

Table 2. Hatchery releases of subyearling fall Chinook above Lower Granite Dam in recent years.

<b>Migration Year</b>	<b>Hatchery Releases above LGR</b>
1997	282,794
1998	86,824
1999	670,033
2000	2,184,384
2001	1,878,529
2002	2,600,985
2003	2,881,640
2004	1,517,006
2005	3,964,117
2006	4,226,183
2007	2,231,124