



FISH PASSAGE CENTER

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MEMORANDUM

TO: Michele DeHart

FROM: Jerry McCann

DATE: August 16, 2005

RE: Origin (Hatchery or Wild) of run-at-large at LGR in August

In response to your request, we reviewed the composition and passage distribution of the fall chinook in the Snake River.

We looked at two main sources of information to determine whether the remaining unmarked subyearling chinook passing Lower Granite Dam are hatchery or wild in origin. First, we looked at PIT-tag timing data which shows the various groups of fish that have passed and are currently passing the project and the areas where they were released. Second, we compared the proportion of adipose-clipped fish versus unclipped fish in the sample, this month compared to the season as a whole.

- The available data suggest that nearly all the fish collected at Lower Granite since August 1 were of wild origin.
- Analysis of the cumulative timing curve for the run-at-large shows that it reflects the passage timing of large hatchery releases made from late April to the end of May.

In August, a total of 1,976 subyearling chinook have been sampled at the site, of those sampled, only 10 were fin-clipped, whereas over 60% of all hatchery releases above Lower Granite Dam of subyearling chinook were adipose clipped. At the same time, of PIT-tagged fish passing the project only 1 PIT-tag detected this month was from a production release of hatchery fish, and all fish in that release were adipose clipped. Based on these data we concluded that well over 90% of the subyearling chinook collected at the dam are wild origin.

Hatchery subyearling Chinook PIT-tag timing information

PIT-tag timing at Lower Granite Dam of hatchery subyearling Chinook that were released in 2005 are summarized in Figure 1. Based on PIT-tag timing all hatchery PIT-tag groups passed prior to mid- June. The hatchery release group detection timing depicted in Figure 1 were grouped into three geographic areas, the Snake River, Clearwater River and Oxbow Hatchery. The Oxbow release was shown separately because those fish show a different, even earlier passage timing than the acclimation releases at Captain John's Rapid and Pittsburg Landing lower in the Snake River. All but of few of these hatchery released PIT-tag detections at Lower Granite Dam occurred prior to by July 1. Two large research releases of PIT-tagged hatchery fish were not included. A release of 121,000 PIT-tags in the Snake River and a release of nearly 46,000 in the Clearwater river at Big Canyon Creek were released as part of a transportation study. These releases do not represent hatchery fish timing and do not represent a large portion of the unmarked population passing the project in August.

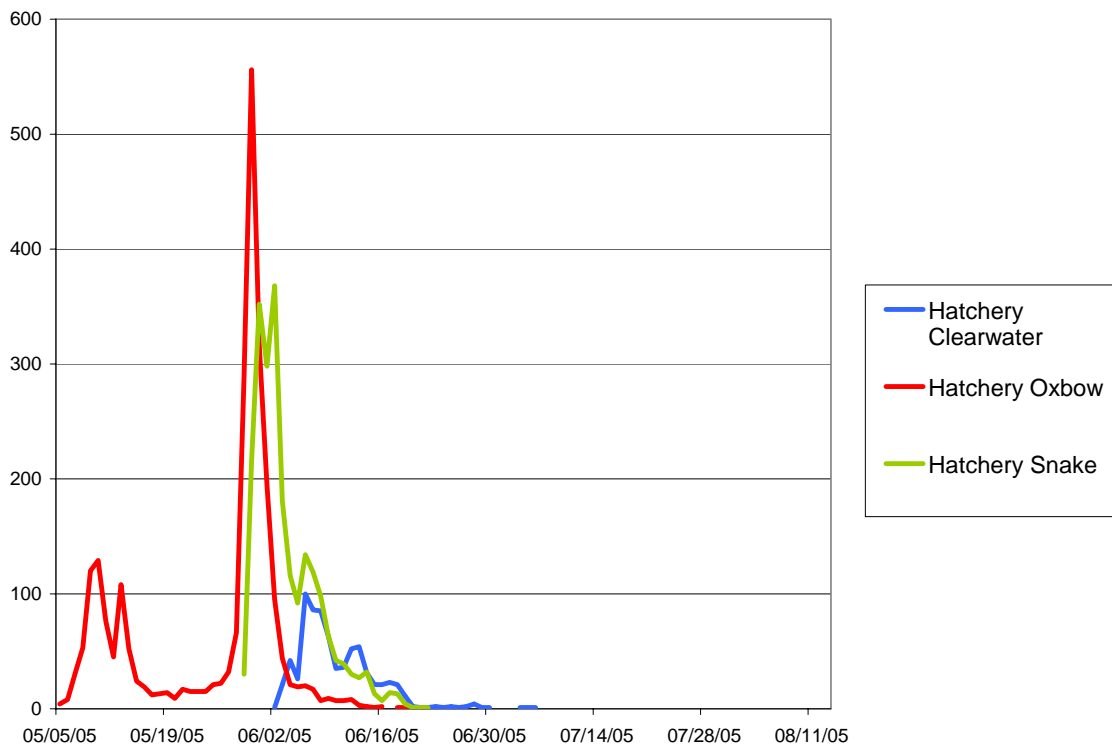


Figure 1. PIT-tagged hatchery subyearling fall Chinook detections at Lower Granite Dam 2005 grouped by geographic area of release. Plot includes all tag groups that represent production hatchery releases (i.e. excluding research PIT-tag releases).

Looking just at PIT-tag passage in August, there have been detections from 5 different releases of fish Table 1. The largest number of detections this month are from research releases in the Clearwater River of hatchery origin fish (BCCAP – DMM) with 63 observations. These fish are part of a research release and as such all but a few were marked with PIT-tags and do not contribute significantly to the unmarked population passing Lower Granite Dam. It is likely that

detections from this release will continue through the end of the season. The second largest number of detections are for another research release group (SNAKE3 – DMM) of which 5 have been detected this month. The one production hatchery release detection (SNAKER – MLS) is from a release that was 100% adipose clipped and so would not represent unmarked fish passing at this time. The other detections represent wild unmarked fish from the Snake River and Clearwater River passing the project at this time.

Table 1. Numbers of PIT-tag detections at Lower Granite Dam in August grouped by PIT-tag release river and rearing disposition.

Release site/ Rearing type	PTAGIS Release Site Code and Coordinator ID	Number of Detections in August at LGR
Snake River/ Wild	(SNAKE3 and SNAKE4) – WPC	2
Snake River/ Research - Hatchery	SNAKE3 – DMM	5
Snake River/ Production - Hatchery	SNAKER - MLS	1
Clearwater River/ Wild	CLWR - BDA	1
Clearwater River/ Research - Hatchery	BCCAP - DMM	63

Sampling Data

Information from hatchery release data shows the proportion of hatchery subyearling chinook released above Lower Granite Dam that were fin clipped or unclipped in 2005 (Table 2). From these data it is apparent that a large portion of hatchery fish were released with external marks. Some unclipped hatchery releases also had coded wire tags, however those tags were not summarized in this analysis but also would lead to similar conclusions. For example, for the week August 5 to 11, of the 1,123 unclipped subyearling collected, only 1 coded wire tagged fish was detected.

Table 2. The number of hatchery released subyearling chinook

Release River	Number with adipose clip	Number with no fin clips	Percent fin-clipped	Total
Clearwater	717,226	1,109,220	0.39	1,826,446
Grande Ronde	200,000	282,460	0.41	482,460
Snake River	1,892,272	355,030	0.84	2,247,302
Total	2,809,498	1,746,710	0.61	4,556,208

Given the high proportion of clipped fish in the hatchery releases, it would be expected that if a large portion of fish passing Lower Granite Dam were of hatchery origin that would be reflected in the marked proportion. However, as can be seen from Table 3 below, there were very few clipped fish detected in August at the project.

Table 3. Number of subyearling chinook collected at Lower Granite Dam and proportion with clipped adipose fins prior to and after August 1.

Time period when at LGR	Clipped	Unclipped	Percent clipped
Prior to August 1	692,562	879,409	0.44
August	10	1,966	0.01

Assuming the overall proportion of hatchery fish passing the project reflects the ratio of marked to unmarked hatchery fish then we would expect roughly 60% of hatchery fish collected at Lower Granite would be marked. Expanding for that 40% of the hatchery release population that would be unclipped yielded an estimated 1% of fish passing Lower Granite Dam in August were of hatchery origin (Table 4).

Table 4. Estimated number of Total Subyearling Chinook collected at Lower Granite Dam that were hatchery or wild based on marked proportion in SMP samples.

Time period when at LGR	Estimated Hatchery Origin	Estimated Wild Origin	Percent Hatchery
Prior to August 1	1,154,270	417,701	73%
August	17	1,959	< 1%

Based on PIT-tag timing, proportion hatchery marks as well as the numbers of marked versus unmarked fish, it appears that nearly all fish passing the project at this time are wild origin.