



FISH PASSAGE CENTER

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MEMORANDUM

TO: FPAC

FROM: Michele DeHart

DATE: November 19, 2010

RE: Breakdown of ocean-age of returning PIT-tagged adult Fall Chinook at Lower Granite Dam in 2010

At the November 16, 2010 FPAC face-to-face meeting, FPAC requested that the FPC staff review the adult returns of PIT-tagged fall Chinook to Lower Granite Dam (LGR) in 2010 and summarize the age-structure of returning adult fall Chinook. Below are a few key points from this review, followed by a detailed discussion of the analysis and results.

- The PIT tags that are available were from various study groups and they are not marked proportionally across the population. Therefore, this analysis should be interpreted with caution when attempting to apply it to the run-at-large, as approximately 98.5% of the returning PIT-tagged adult fall Chinook detected at LGR in 2010 were of hatchery origin. The natural/wild population continues to be under represented by PIT-tags.
- The majority of PIT-tagged adult fall Chinook detected at LGR in 2010 were 2-ocean adults.
- Hatchery fall Chinook released as yearlings continue to return as 0-Ocean and 1-Ocean adults at a much higher rate than hatchery, wild, and unknown fall Chinook that were released as subyearlings.
- Natural/wild origin fall Chinook returned as 3-Ocean adults at a much higher rate than did any of the hatchery release strategies.

The FPC staff reviewed all detections of PIT-tagged adult fall Chinook at LGR in 2010. Adult fall Chinook detections were categorized based on rearing-type and age of release. The release categories used for this analysis were: 1) hatchery fall Chinook released as yearlings, 2) hatchery fall Chinook released as subyearlings, 3) hatchery fall Chinook surrogates (subyearlings), 4) unknown origin fall Chinook, and 5) natural/wild fall Chinook. The juvenile detections of all detected adults were reviewed in an attempt to identify known holdovers. A fish was considered a known holdover if it had a juvenile PIT-tag detection at one of the Snake River or Lower Columbia River sites in the spring following its original release year.

For each adult detected at LGR, the FPC staff estimated ocean age by subtracting the original release year from the return year (2010). There were 6 possible ocean ages: 1) 0-Ocean, 2) 1-Ocean, 3) 2-Ocean, 4) 3-Ocean, 5) 4-Ocean, and 6) 5-Ocean. The ocean age of known holdovers was adjusted to reflect that these individuals entered the ocean 1 year after their original year of out-migration.

A summary of the results from this analysis is available below (Table 1). Based on PIT-tag returns, approximately, 66.5% of the adult fall Chinook detected at LGR in 2010 were 2-Ocean adults; with 0-Ocean and 1-Ocean adults making up an additional 15.6% and 16.5% of the adult return, respectively.

However, it is important to note the substantial difference in the frequency 0-Ocean and 1-Ocean adults between the different release categories. Hatchery fall Chinook that are released as yearlings return as 0-Ocean and 1-Ocean adults at a much higher rate than all the other release categories (which were all released as subyearlings) (Table 1). Furthermore, wild origin fall Chinook continue to return as 3-Ocean adults at a much higher rate than do any of the hatchery release categories (Table 1).

Table 1. Age-structure of returning PIT-tagged adult Fall Chinook to LGR in 2010 (as of November 16, 2010).

Release Category	Percent of Total Detects						Total Detects
	0-Ocean	1-Ocean	2-Ocean	3-Ocean	4-Ocean	5-Ocean	
Hatchery Yearlings	46.2	23.8	29.9	0.0	0.0	0.0	1,159
Hatchery Subyearlings	0.1	9.6	89.7	0.2	0.4	0.0	1,482
Surrogates	1.6	18.8	76.4	0.6	2.5	0.0	849
Unknown Origin	0.0	5.3	31.6	21.1	36.8	5.3	19
Wild/Natural	0.0	17.6	67.6	14.7	0.0	0.0	34
Total	15.55	16.53	66.45	0.48	0.96	0.03	3,544