



FISH PASSAGE CENTER

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MEMORANDUM

TO: Don Anglin, USFWS
Howard Schaller, USFWS

Michele DeHart

FROM: Michele DeHart

DATE: September 13, 2007

RE: Historical passage timing, travel times, and juvenile survival of wild Hanford Reach sub-yearling Chinook to McNary Dam.

In response to your request, FPC staff summarized passage timing, travel time, and juvenile survival data for wild Hanford Reach subyearling Chinook from release to McNary Dam over the past several years. We approached this task in a manner similar to analyses conducted for hatcheries that release PIT-tagged juvenile salmonids for the Smolt Monitoring Program (SMP) and Comparative Survival Study (CSS).

Since 1993, wild subyearling Chinook have been captured, PIT-tagged, and released in the Hanford Reach of the Mid-Columbia River, below Priest Rapids Dam (excluding 2002 and 2006). With the release of these PIT-tags, information on the timing and migration speed of tagged individuals becomes available, along with information on survival as these juveniles migrate downstream.

Table 1 describes the median travel times for each release to McNary Dam along with the minimum and maximum travel time estimates for wild subyearling Chinook tagged and released from Hanford Reach. This table also provides the 95% confidence limits around the estimated median travel time.

Table 1. Median travel time from release to McNary Dam for wild Hanford Reach subyearling Chinook.

Release Dates	Migration Year	Travel Time (Days)			Confidence Limits (95%)	
		Min	Median	Max	Lower	Upper
6/7-6/15	1993	3.2	29.1	79.0	28.7	30.0
6/6-6/7	1994	3.1	32.5	109.1	32.0	33.7
6/6-6/8	1995	6.0	28.1	49.8	27.7	28.5
6/10-6/13	1996	1.9	31.7	57.2	30.2	33.2
6/9-6/13	1997	1.2	29.1	72.8	28.3	30.1
6/1-6/3	1998	2.3	31.6	56.9	30.9	32.3
6/3-6/10	1999	2.4	33.0	74.8	32.0	34.1
6/1-7/3	2000	3.7	31.1	80.5	30.7	31.5
5/29-7/1	2001	1.6	33.0	298.4	32.0	33.8
5/27-5/30	2003	2.1	26.3	58.9	25.6	27.1
6/2-6/4	2004	4.0	23.2	57.7	25.6	27.1
5/31-7/1	2005	2.1	14.5	154.7	14.0	14.9
6/6-6/10	2007	2.3	28.7	63.3	28.4	28.9

Table 2 contains estimates of juvenile survival from release to McNary Dam, along with upper and lower confidence limits on these estimates. The yearly estimates are for all releases of wild subyearling Chinook tagged and released at Hanford Reach over that migration year.

Table 2. Survival (release to McNary) of Hanford Reach wild subyearling Chinook.

Release Dates	Migration Year	Survival	Confidence Limits (95%)	
			Lower	Upper
6/7-6/15	1993	N/A	N/A	N/A
6/6-6/7	1994	N/A	N/A	N/A
6/6-6/8	1995	0.414	0.096	0.733
6/10-6/13	1996	N/A	N/A	N/A
6/1-6/3	1998	0.617	0.518	0.707
6/3-6/10	1999	0.399	0.352	0.448
6/1-7/3	2000	0.416	0.386	0.446
5/29-7/1	2001	0.365	0.341	0.390
5/27-5/30	2003	0.311	0.273	0.351
6/2-6/4	2004	0.331	0.292	0.373
5/31-7/1	2005	0.286	0.262	0.310
6/6-6/10	2007	0.377	0.348	0.406

Finally, Figures 1 and 2 show the passage timing to McNary Dam of the PIT-tagged wild Hanford Reach subyearling Chinook, over the past several years. To better facilitate comparison, we have broken the years into two separate graphs.

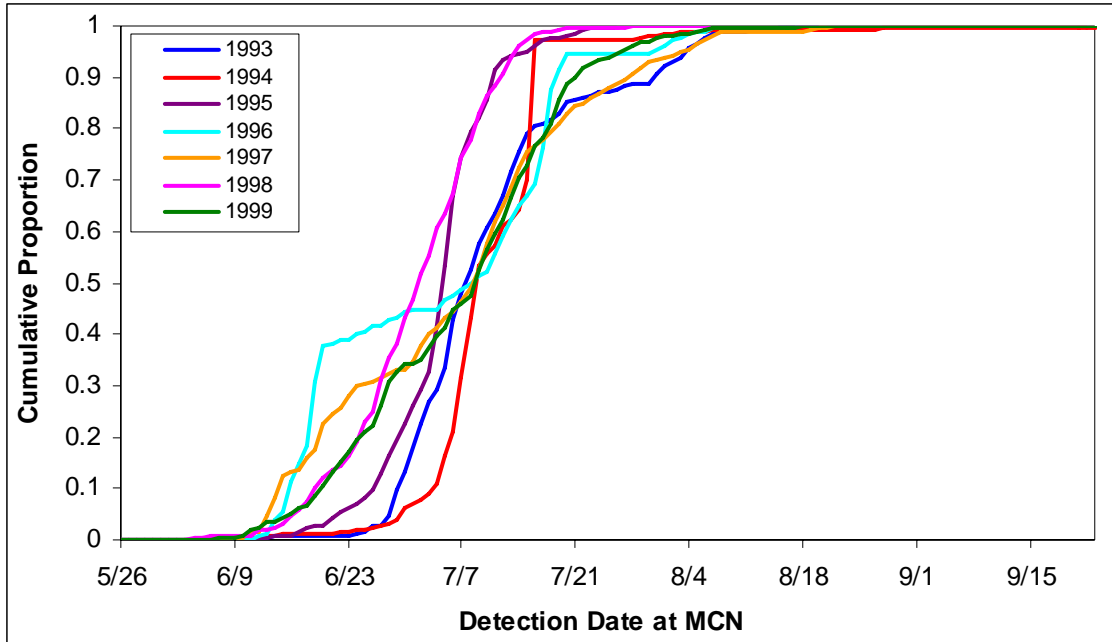


Figure 1. Passage timing to McNary Dam of PIT-tagged wild Hanford Reach subyearling Chinook (1993-1999).

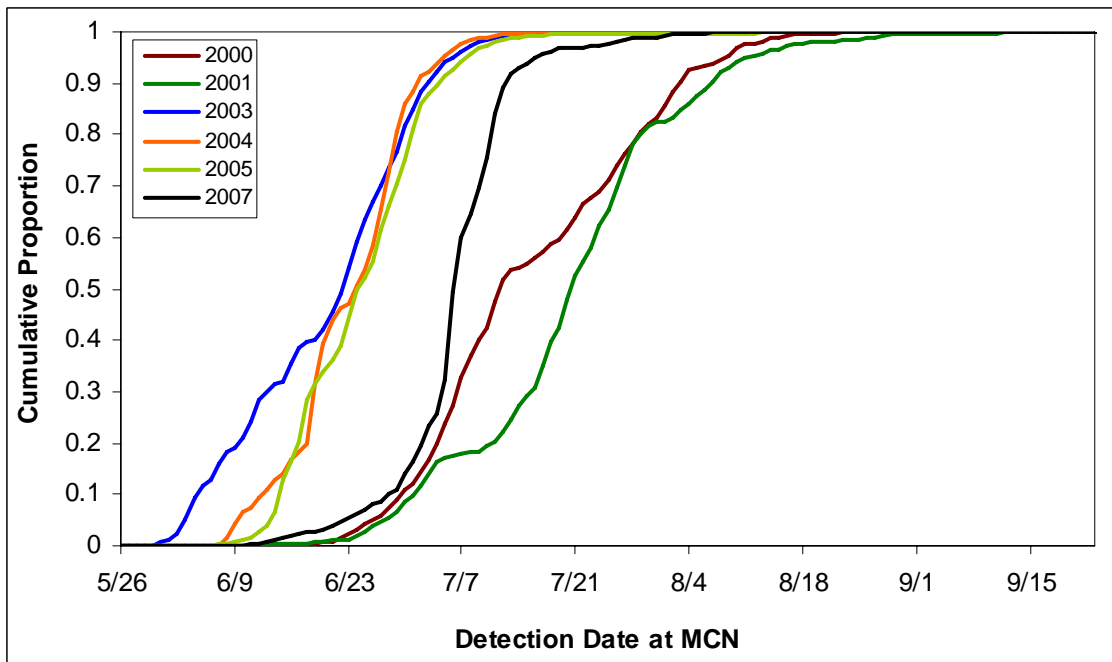


Figure 2. Passage timing to McNary Dam of PIT-tagged wild Hanford Reach subyearling Chinook (2000-2007).