



# FISH PASSAGE CENTER

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## MEMORANDUM

TO: Roger Elmore, Hatchery Manager Lookingglass Hatchery

FROM: Brandon R. Chockley

DATE: September 25, 2009

RE: Travel time, migration timing, and survival of yearling spring Chinook reared and released at Lookingglass Hatchery.

In a previous memo (September 2, 2009), the FPC provided analyses of travel times, migration timing, and juvenile and adult survivals for yearling spring Chinook that were reared at Lookingglass Hatchery but acclimated and released from the Imnaha and Catherine Creek Acclimation Facilities. These fish are PIT-tagged as part of the Comparative Survival Study (CSS). During our meeting on September 16, 2009, you showed interest in receiving the same analyses for yearling spring Chinook that are reared and released at Lookingglass Hatchery (LOOH). As I mentioned during our meeting, these on-site releases are not PIT-tagged specifically for CSS and, thus, were not a part of the original memo. However, I will include these releases in future hatchery reports.

A small portion of the yearling spring Chinook reared and released at LOOH since 2004 have been PIT-tagged. The number of PIT-tags being released each year at LOOH is variable, typically ranging from approximately 1,000 to 5,200 per year. PIT-tagged juveniles released at LOOH are typically released in the spring. However, in the fall of 2005 (September and October 2005), approximately 700 PIT-tagged spring Chinook juveniles were released at LOOH for out-migration in spring 2006. Finally, no PIT-tagged spring Chinook were released at LOOH in migration year 2007.

Table 1 below provides estimates of minimum, median, and maximum travel times from release at LOOH to Lower Granite Dam. Also provided in this table are the 95% confidence limits around the estimated median travel times. Table 1 includes estimates of travel times for the spring Chinook juveniles that were released in the fall of 2005 for out-migration in spring 2006. Travel times for the September and October releases are provided separately. However, these travel times should be interpreted with caution, as they include residence time prior to out-migration in spring 2006.

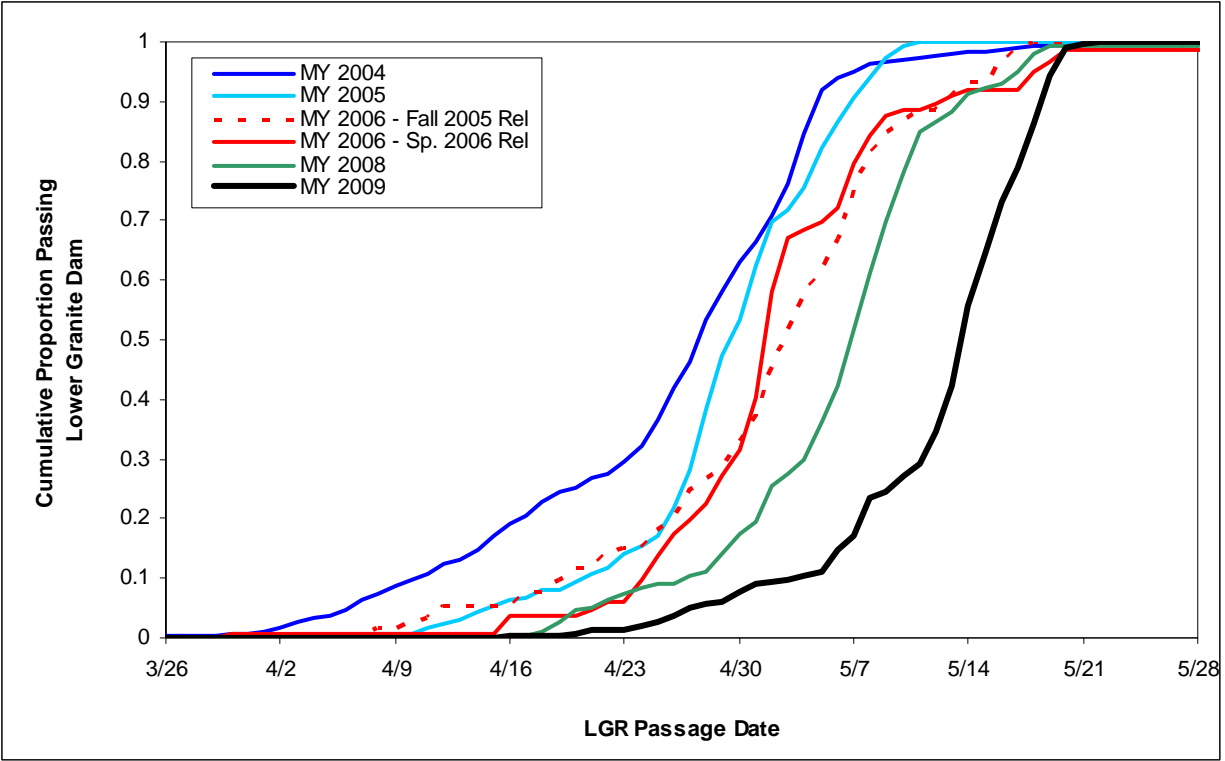
**Table 1. Lookingglass Hatchery – Yearling Spring Chinook Travel Time to Lower Granite Dam**

Migration Year	Release Date(s)	Travel Time (Days)			95% Confidence Limits	
		Min	Med	Max	Lower	Upper
2004	3/19/04	6.2	40.4	75.2	40.2	41.1
2005	3/18/05	18.0	42.6	54.3	42.0	43.6
2006	9/21/05	192.7	224.0	238.5	223.2	226.5
2006	11/3/05	156.0	181.9	195.5	178.4	184.0
2006	3/17-21/06	8.6	43.2	79.7	41.8	45.8
2008	4/1/08	16.4	36.6	57.8	35.7	37.0
2009	4/1/09	15.2	43.3	50.7	42.6	43.4

Table 2 below provides estimates of the 10%, 50%, and 90% passage dates at Lower Granite Dam for the yearling spring Chinook juveniles released from LOOH for migration years 2004 through 2009 (excluding 2007). For this analysis, we are providing two estimates of passage timing for migration year 2006. The first is for those PIT-tagged spring Chinook juveniles that were released in fall 2005 (September and October combined) and the other is for the PIT-tagged spring Chinook juveniles that were released in spring 2006 (March 17-21). Figure 1 is also provided to illustrate passage timing of spring Chinook released at LOOH to Lower Granite Dam. As with the passage date estimates, the two releases for migration year 2006 (fall 2006 and spring 2006) were analyzed separately.

**Table 2. Lookingglass Hatchery – Estimated 10%, 50%, and 90% passage dates at Lower Granite Dam.**

Migration Year	Release Date(s)	10% Passage Date	50% Passage Date	90% Passage Date
2004	19-Mar	11-Apr	28-Apr	5-May
2005	18-Mar	21-Apr	30-Apr	7-May
2006	9/21/05 & 11/3/05	20-Apr	3-May	13-May
2006	3/17-21/06	25-Apr	2-May	13-May
2008	1-Apr	27-Apr	7-May	14-May
2009	1-Apr	4-May	14-May	19-May



**Figure 1. Lookingglass Hatchery – Cumulative passage timing to Lower Granite Dam.**

Finally, due to the relatively small number of PIT-tags being released from LOOH each year, it was not possible to get reliable estimates of juvenile survival beyond Lower Granite Dam. However, it was possible to estimate juvenile survival from release to Lower Granite Dam for all the years we analyzed. Table 3 below contains estimates of juvenile survival from release at LOOH to Lower Granite Dam, along with 95% confidence limits around these survival estimates. As with the passage timing analysis, we are providing separate estimates of juvenile survival for the fall and spring releases of spring Chinook for migration year 2006.

Migration Year	Release Date(s)	Survival (RelToLGR)	95% Confidence Limit	
			Lower	Upper
2004	19-Mar	0.56	0.55	0.58
2005	18-Mar	0.52	0.48	0.55
2006	9/21/05 & 11/3/05	0.51	0.44	0.58
2006	3/17-21/2006	0.60	0.50	0.69
2008	1-Apr	0.72	0.66	0.78
2009	1-Apr	0.73	0.68	0.77

We hope you find these analyses informative and useful. If you would like any additional information regarding these releases please feel free to contact us.



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## DATA REQUEST FORM

Request Taken By: Brandon Chockley Date: 16-Sept-09

### Data Requested By:

Name: Roger Elmore Phone: \_\_\_\_\_

Address: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: roger.g.elmore@state

### Data Requested:

Requested that I provide similar analysis for releases  
@ LOOA as we do for releases at Cath. Crk.  
and Ina. Pad.

Data Format: Hardcopy  Text  Excel

Delivery: Mail  Email  Fax  Phone

### Comments:

Memo attached

Data Compiled By: [Signature] Date: 25-Sept-09

Request # 74