



# FISH PASSAGE CENTER

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## MEMORANDUM

TO: Henry Franzoni (CRITFC)

FROM: Michele DeHart

DATE: April 18, 2012

RE: Survival and migration timing for two release sites of Hanford Reach fall Chinook PIT-tagged and released in 2011.

In response to your request, the FPC staff has analyzed PIT-tag data for Hanford Reach fall Chinook juveniles that were tagged and released in 2011. Specifically, you requested that we analyze data from PIT-tagged fish that were released at two different release sites (Hanford and White Bluffs) to determine whether their survivals and/or migration timing were different. Below are our general conclusions from these analyses, followed by a more detailed discussion of the analyses.

- Juvenile survivals from release to McNary Dam (MCN) were similar for the two groups. The release to MCN survival for the Hanford group was 0.40, while that for the White Bluffs group was 0.38.
- Juvenile survival from release to John Day Dam (JDA) for the Hanford release site was 0.18, while that for the White Bluffs release site was 0.30. However, based on their overlapping confidence intervals, these differences in survival estimates were not statistically significant.
- Median travel times from release to the various downstream projects were similar between the two groups.
- Early passage timing at MCN was different between the two groups. The Hanford release group had a much earlier 10% passage date than the White Bluffs release group. The 50% and 90% passage dates at MCN were similar for the two groups.
- Passage timing at JDA and BON were similar between the two release groups.

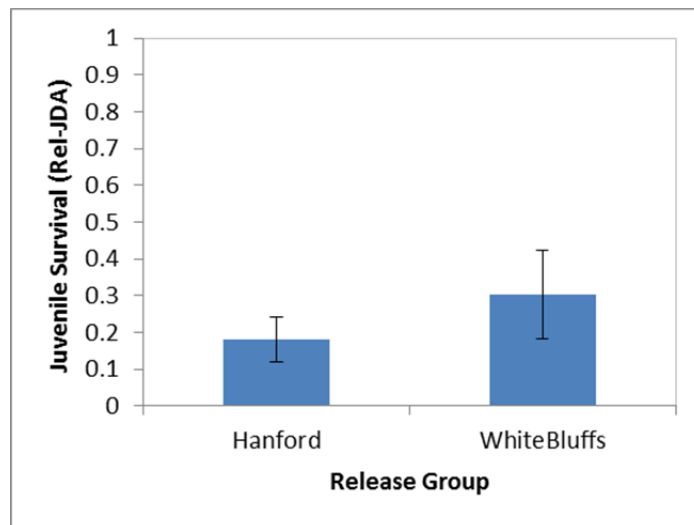
## Survival

For this analysis, the FPC staff downloaded PIT-tag data from PTAGIS for the groups that were outlined in the original data request. Of the PIT-tag files you listed in your data request, we assigned those that ended with HAN to the Hanford Release Group (HAN) while those that ended with HWB were assigned to the White Bluffs Release Group (WBL). In all, 5,130 PIT-tagged subyearling fall Chinook were assigned to the HAN group and 5,203 were assigned to the WBL group. Both release groups were tagged and released from June 6 to June 10, 2011. Due to the high flows in the Lower Columbia River in 2011, the PIT-Tag detection trawl was not in operation in June and July of 2011. Without PIT-tag detections below Bonneville Dam, it was not possible to estimate survival past John Day Dam (JDA).

Juvenile survivals from release to McNary Dam (MCN) were similar for the two groups. The release to MCN survival for the HAN group was 0.40, while that for the WBL group was 0.38 (Table 1). At 0.80, juvenile survival for the MCN to JDA reach was higher for the WBL group compared to the HAN group (0.46) (Table 1). However, the confidence intervals for the WBL group are relatively wide and, therefore, these differences in survival are not statistically significant. Finally, overall juvenile survival from release to JDA for the HAN group was 0.18, while that for the WBL group was 0.30 (Table 1, Figure 1). However, as with the MCN-JDA survivals, these differences in release to JDA survival were not statistically significant.

**Table 1.** Survival estimates for PIT-tagged Hanford Reach subyearling fall Chinook released at Hanford and White Bluffs in 2011.

| Release Group | Rel-MCN (95% CI) | MCN-JDA (95% CI) | Rel-JDA (95% CI) |
|---------------|------------------|------------------|------------------|
| Hanford       | 0.40 (0.29-0.50) | 0.46 (0.26-0.65) | 0.18 (0.12-0.24) |
| White Bluffs  | 0.38 (0.29-0.46) | 0.80 (0.43-1.17) | 0.30 (0.18-0.42) |



**Figure 1.** Estimated survival (Rel-JDA) of PIT-tagged Hanford Reach subyearling fall Chinook released at Hanford and White Bluffs in 2011.

## Travel Time and Migration Timing

Travel times for the two groups were similar (Table 2). The long travel times for the release to MCN reach (39.8-40.1 days) suggests that there was a great deal of post-tagging rearing for both groups. Furthermore, there was no consistent pattern among the median travel times for the various reaches (Rel-MCN, Rel-JDA, Rel-BON) between the two groups. The largest difference in median travel times was 0.92 days, which was for the release-to-JDA reach. For this reach, the HAN group had the longer median travel time, at 42.3 days.

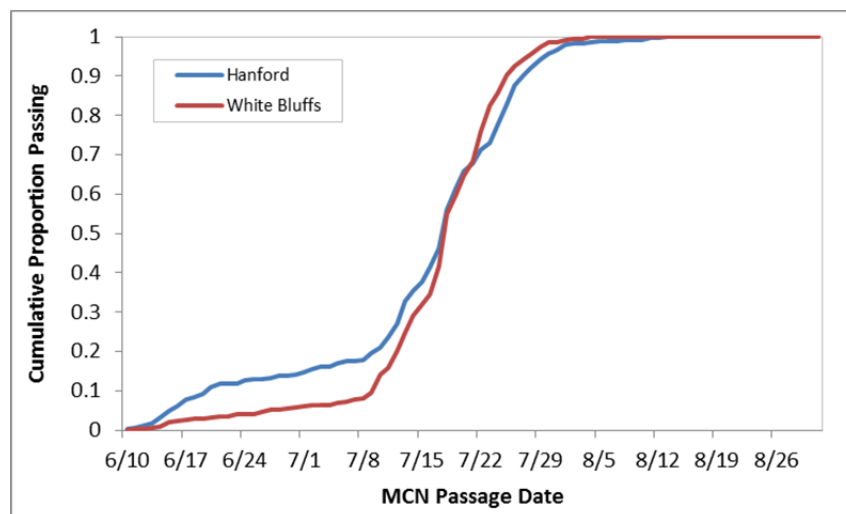
**Table 2.** Median travel times for PIT-tagged Hanford Reach subyearling fall Chinook released at Hanford and White Bluffs in 2011. 95% confidence intervals are provided in parentheses.

| Release Group | Release to MCN (95% CI) | Release to JDA (95% CI) | Release to BON (95% CI) |
|---------------|-------------------------|-------------------------|-------------------------|
| Hanford       | 39.8 (38.8-40.4)        | 42.3 (41.4-42.9)        | 44.0 (42.5-46.1)        |
| White Bluffs  | 40.1 (39.4-41.0)        | 41.4 (40.4-41.8)        | 43.4 (42.3-44.4)        |

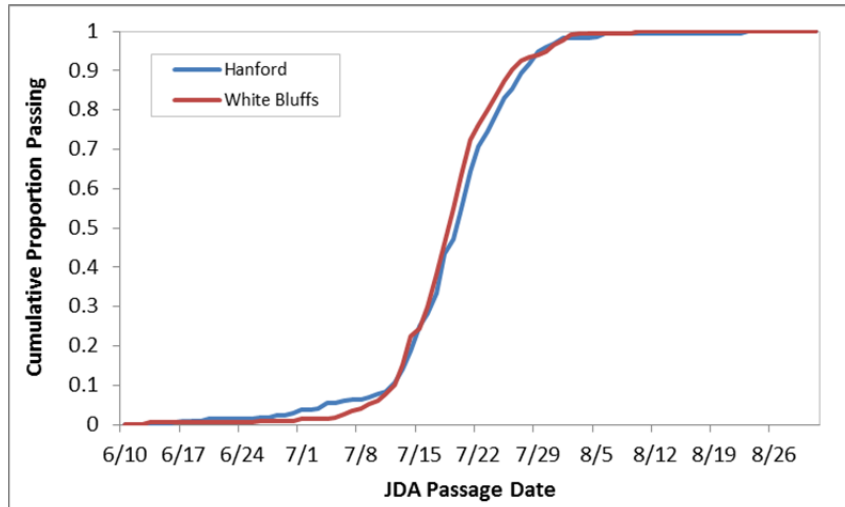
For the most part, passage timing for the two groups was similar at all the projects. The one exception to this was the 10% passage date at MCN. The HAN group had a much earlier 10% passage date (June 20) than the WBL group (July 10) (Table 3, Figure 2). However, these two groups had very similar 50% and 90% passage dates at MCN (Table 3, Figure 2). The 10%, 50%, and 90% passage dates at JDA and BON differed by no more than two days for the two groups (Table 3, Figures 3 and 4).

**Table 3.** Estimated 10%, 50%, and 90% passage dates at MCN, JDA, and BON for PIT-tagged Hanford Reach subyearling fall Chinook released at Hanford and White Bluffs in 2011.

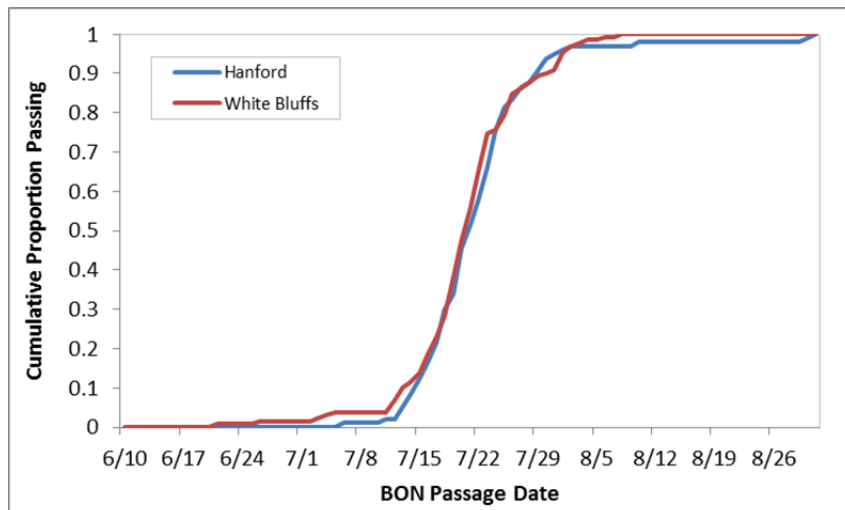
| Release Group | MCN    |        |        | JDA    |        |        | BON    |        |        |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|               | 10%    | 50%    | 90%    | 10%    | 50%    | 90%    | 10%    | 50%    | 90%    |
| Hanford       | 20-Jun | 18-Jul | 27-Jul | 12-Jul | 20-Jul | 28-Jul | 15-Jul | 21-Jul | 29-Jul |
| White Bluffs  | 10-Jul | 18-Jul | 25-Jul | 12-Jul | 19-Jul | 26-Jul | 14-Jul | 21-Jul | 30-Jul |



**Figure 2.** Cumulative MCN passage timing of for PIT-tagged Hanford Reach subyearling fall Chinook released at Hanford and White Bluffs in 2011



**Figure 3.** Cumulative JDA passage timing of for PIT-tagged Hanford Reach subyearling fall Chinook released at Hanford and White Bluffs in 2011



**Figure 4.** Cumulative BON passage timing of for PIT-tagged Hanford Reach subyearling fall Chinook released at Hanford and White Bluffs in 2011



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**DATA REQUEST FORM**

Request Taken By: Michelle DeHart Date: 16-Apr-2012

**Data Requested By:**

Name: Henry Fraizoni Phone: \_\_\_\_\_  
Address: CRITFC Fax: \_\_\_\_\_  
Email: \_\_\_\_\_

**Data Requested:**

Estimate survival and migration timing for  
two groups of Hanford Reach fall Chinook

Data Format: Hardcopy  Text  Excel   
Delivery: Mail  Email  Fax  Phone

**Comments:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Data Compiled By: [Signature] Date: 17-Apr-2012

Request # 25

## Brandon Chockley

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**From:** Michele Dehart  
**Sent:** Monday, April 16, 2012 11:27 AM  
**To:** Jerry McCann; Brandon Chockley  
**Subject:** FW: A Data Request

What is the best way to calculate survival and travel time on these fish, for Henry? I guess it would be survival to John Day with McN as the intermediate. Maybe Bonneville? How should we do this request? Who can do it? Erin and I are going to finish Pevan next week, and then do Bellerude, but that should be pretty quick. I am thinking the response to Henry would be something like the hatchery reports, Michele

-----Original Message-----

From: Henry Franzoni [<mailto:frah@critfc.org>]  
Sent: Monday, April 16, 2012 11:16 AM  
To: Michele Dehart  
Subject: A Data Request

Michele,

could you guys do a survival and migration timing calculation for two groups of Hanford tags from last year for us on a fairly fast track?

What we did last year is to release fish at both White Bluffs (HWB) and Hanford (HAN) and I'd like to see if there are any differences in survival and migration timing for these fish. The tag data is in these tagging files on PTAGIS:

JKF11157.HAN 972  
JKF11157.HWB 996  
JKF11158.HAN 1427  
JKF11158.HWB 1434  
JKF11159.HAN 1194  
JKF11159.HWB 1216  
JKF11160.HAN 1034  
JKF11160.HWB 1036  
JKF11161.HAN 503  
JKF11161.HWB 521  
JKF11161.MRT 5

all the best  
Henry