



# FISH PASSAGE CENTER

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## MEMORANDUM

TO: Todd Garlie, IDFG

FROM: Brandon R. Chockley

DATE: January 13, 2016

RE: 2015 Pahsimeroi Hatchery Report

The Fish Passage Center has been marking summer Chinook from Pahsimeroi Hatchery over the last several years as part of the Comparative Survival Study (CSS). The CSS is a multi-year program that estimates survival rates over different life stages for spring and summer Chinook and steelhead produced in major hatcheries. We would like to share with you some of the information we developed under the CSS for the Chinook used from Pahsimeroi Hatchery in 2015 and past years.

With the marking efforts over the past several years, information on the timing and migration speed from the hatchery to Lower Granite Dam is available. In addition, as part of the CSS study, juvenile survival estimates are developed for the hydrosystem between Lower Granite and Bonneville dams, as well as survival to adulthood of different passage histories.

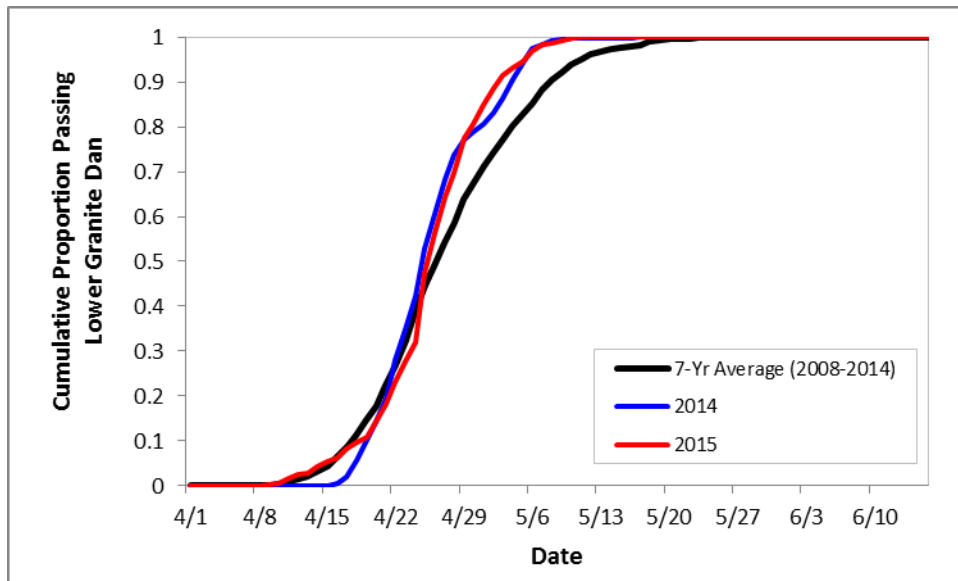
Table 1 provides estimates of minimum, median, and maximum travel times for each year's release of summer Chinook to Lower Granite Dam. Also provided are estimates of the 95% confidence limits around the estimated median travel time. In addition, we are providing you with the estimated 10%, 50%, and 90% passage dates of yearling summer Chinook (Table 2) juveniles at Lower Granite Dam for each of the years of tagging. Figure 1 provides an illustration of the 2015 arrival timing at Lower Granite Dam compared to that from 2014 and the current 7-year average (2008–2014).

**Table 1.** Travel times (release to LGR) of Pahsimeroi Hatchery yearling summer Chinook.

Migration Year	Release Date	Travel Time (Days)			95% Confidence Limits	
		Min	Med	Max	Lower	Upper
2008	3/31	18.6	38.2	153.4	37.9	38.3
2009	3/30	13.3	24.8	52.3	24.6	24.9
2010	3/30	21.4	30.5	66.6	30.5	30.6
2011	4/1	7.3	26.8	62.4	26.6	27.0
2012	4/1	6.3	18.3	48.9	18.2	18.4
2013	4/5	7.6	22.8	56.7	21.9	23.3
2014	4/9	6.5	16.5	40.5	16.3	16.5
2015	4/1	7.3	24.9	41.6	24.7	25.2

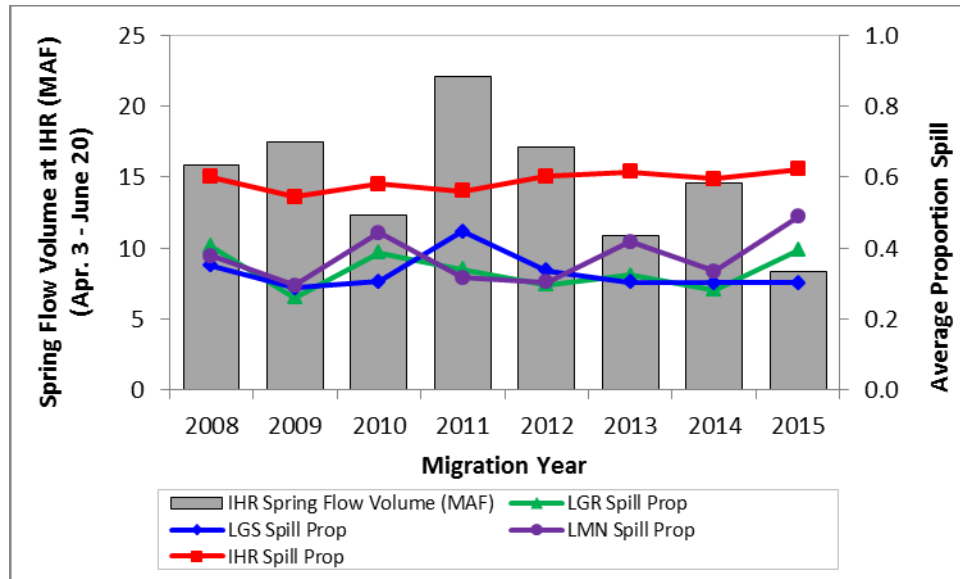
**Table 2.** Estimated 10%, 50%, and 90% passage dates of PIT-tagged Pahsimeroi Hatchery yearling summer Chinook at Lower Granite Dam.

Migration Year	Release Date(s)	10% Passage Date	50% Passage Date	90% Passage Date
2008	3/31	1-May	8-May	18-May
2009	3/30	19-Apr	24-Apr	4-May
2010	3/30	25-Apr	29-Apr	5-May
2011	4/1	18-Apr	27-Apr	7-May
2012	4/1	13-Apr	20-Apr	25-Apr
2013	4/5	17-Apr	27-Apr	6-May
2014	4/9	19-Apr	25-Apr	4-May
2015	4/1	19-Apr	26-Apr	3-May

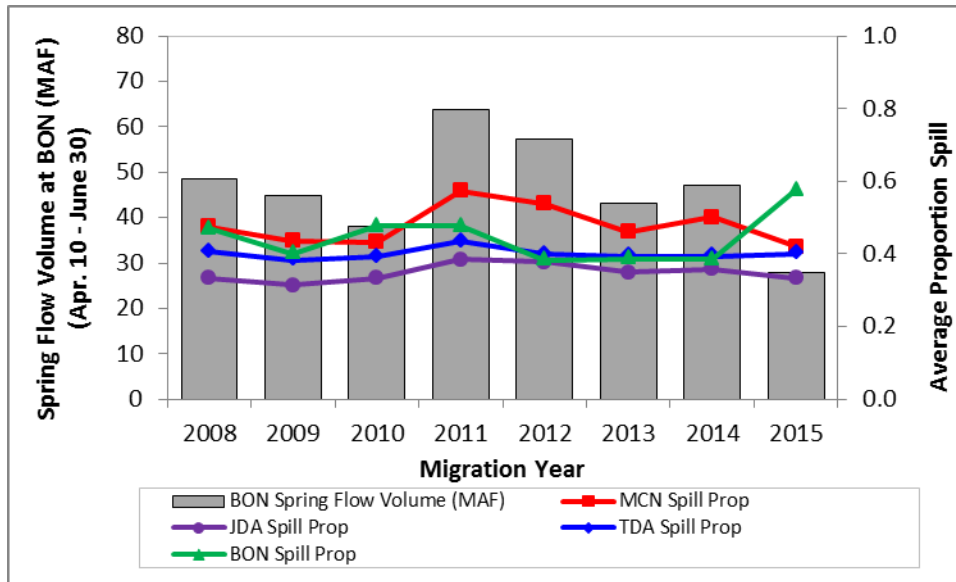


**Figure 1.** Cumulative passage timing of Pahsimeroi Hatchery yearling summer Chinook to Lower Granite Dam.

Figures 2 and 3 are provided below to illustrate the out-migration conditions that these spring migrants may have experienced in the Snake and Lower Columbia rivers. Figure 2 provides the total spring flow volume (April 3–June 20) for the Snake River (as measured at Ice Harbor), along with the average spring spill proportions at each of Lower Granite, Little Goose, Lower Monumental, and Ice Harbor dams, for each migration year. Figure 3 provides the total spring flow volume (April 10–June 30) for the Lower Columbia (as measured at Bonneville), along with the average spring spill proportions at each of McNary, John Day, The Dalles, and Bonneville dams, for each migration year.



**Figure 2.** Total spring flow volume in the Snake River (at Ice Harbor Dam) and average spill proportion at Lower Granite, Little Goose, Lower Monumental, and Ice Harbor dams. Spring period in the Snake River is April 3–June 20.



**Figure 3.** Total spring flow volume in the Lower Columbia River (at Bonneville Dam) and average spill proportion at McNary, John Day, The Dalles, and Bonneville dams. Spring period in the Lower Columbia River is April 10–June 30.

Finally, Table 3 contains estimates calculated for Pahasimeroi Hatchery Chinook by the CSS. The estimates provided include: (1) juvenile survival in the hydrosystem between Lower Granite and Bonneville dams, (2) the proportion of the juvenile population destined for transportation, and (3) the smolt-to-adult survival (SAR) for several passage categories. Those passage categories are SAR(T), SAR(C<sub>0</sub>), and Weighted SAR<sub>LGR-10-LGR</sub>, where SAR(T) represents smolts transported from Lower Granite, Little Goose, or Lower Monumental Dam, SAR(C<sub>0</sub>) represents smolts migrating in river (undetected at Snake River transportation collector sites), and SAR<sub>LGR-10-LGR</sub> is a weighted estimate that is obtained by taking the proportion of the total population of smolts (tagged and untagged) at Lower Granite Dam in each study category and multiplying by the respective study category's SAR<sub>LGR-10-LGR</sub>. In effect, the weighted SAR<sub>LGR-10-LGR</sub> is the estimated SAR for the overall hatchery release (without jacks). The data presented in Table 3 were taken from various chapters and appendices of the 2015 CSS Annual Report, which can be downloaded from the FPC webpage [www.fpc.org/documents/CSS.html](http://www.fpc.org/documents/CSS.html). Figure 4 is a time series of the Weighted SAR<sub>LGR-10-LGR</sub> over the years of available data for Pahasimeroi Hatchery summer Chinook.

**Table 3.** Pahsimeroi Hatchery summer Chinook survivals from CSS.

Release Date(s)	Migration Year <sup>A</sup>	Juvenile Survival (LGR-BON)	Proportion Transported	TIR	SAR(T) %	SAR(C <sub>0</sub> ) %	Overall SAR <sub>LGR-to-LGR</sub> %
3/31	2008	0.51	0.54	1.23	1.53	1.24	1.26
3/30	2009	0.71	0.08	1.62	0.87	0.54	0.55
3/30	2010	0.52	0.21	N/A <sup>B</sup>	0.33	0.02	0.09
4/1	2011 <sup>C</sup>	0.44	0.21	N/A <sup>B</sup>	0.00	0.00	0.01
4/1	2012	0.68	0.02	N/A <sup>B</sup>	0.00 <sup>E</sup>	0.24	0.16
4/5	2013 <sup>D</sup>	0.66	0.13	1.54	0.17	0.11	0.14
4/9	2014 <sup>F</sup>	0.66	0.22				

<sup>A</sup> Smolt migration year 2008 through 2013 use combined TWS and BWS data.

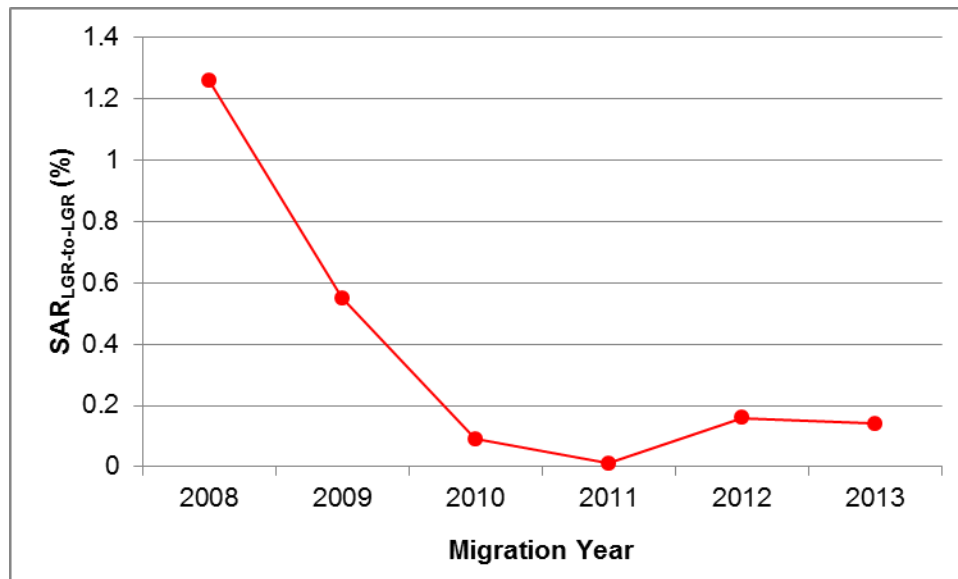
<sup>B</sup> There were too few C<sub>0</sub> adults for this summer Chinook stock to get a meaningful estimate of TIR.

<sup>C</sup> Although smolt numbers were 1,515 for TX group and 2,517 for C<sub>0</sub> group, zero adults have returned as of September 14, 2104.

<sup>D</sup> Adult returns for migration year 2013 are incomplete with Age 2-salt adult returns through 9/14/2015.

<sup>E</sup> Due to early passage timing, smolt numbers were 202 for TX group and, as of September 14, 2015, no adults have returned.

<sup>F</sup> No adult returns have been analyzed to date, only juvenile metrics available for estimation.



**Figure 4.** Weighted SAR<sub>LGR-to-LGR</sub> for Pahsimeroi Hatchery spring Chinook (2008–2013). Adult returns for migration year 2013 are incomplete, with Age 2-salt adult returns through 9/14/2015.

We hope that the information we have provided regarding the use and application of information from the marked groups over the last several years is of some use to you. If you would like any additional information regarding these releases please feel free to contact us.

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