



FISH PASSAGE CENTER

1827 NE 44th Ave., Suite 240, Portland, OR 97213

Phone: (503) 230-4099 Fax: (503) 230-7559

<http://www.fpc.org/>

e-mail us at fpcstaff@fpc.org

MEMORANDUM

TO: Rick Kruger, ODFW
Michele DeHart

FROM: Michele DeHart

DATE: April 23, 2013

RE: Transportation Start Date

You requested that we continue our consideration of changes to the transport start date (April 23, 2013 memo) to include the information in the February 26, 2013 presentation given by NOAA to the Regional Implementation Oversight Group, and discussed at FPAC today. The RIOG presentation does not appear to include all of the available information and, therefore, we also included the data from the NOAA 2010 report. In response to your request we have the following to offer:

- There data do not support transportation prior to May 1st at Lower Granite Dam. In the RIOG presentation (Smith 2013) most empirical SAR estimates of transported smolts are not greater than their in-river counterparts prior to May 1st. The model results which incorporate the same data also do not support a transport date prior to May 1st.
- In most years the only data available prior to May 1st is for groups of fish that were marked at Lower Granite Dam as part of the transportation evaluation study. The following points pertain to those data:
 - The data for wild Chinook migrating prior to May 1st (a total of 11 paired transport and control releases from 2006 to 2009) only show one pair that may (based on visual observations of the graphs) show a statistically significant improvement for transportation. (Figure 1).
 - For wild steelhead there were twelve paired releases prior to May 1 (2006-2010) and only 2 of the 12 may show a statistically significant improvement for transportation. (Figure 2).

- For hatchery Chinook there were only two pairs of point estimates prior to May 1st that could be compared (2006-2008), but for these pairs, although the in-river point estimates were higher, there was no statistical difference between transport and in-river groups. (Figure 3).
- For hatchery steelhead there were 3 paired releases (2006 -2007 and 2010) and only one showed a positive benefit for transport. (Figure 4).
- In 2006 there was data available for fish marked above Lower Granite Dam for wild and hatchery Chinook and wild and hatchery steelhead. For each group there were two paired releases (eight total) available prior to May 1st. There were no significant differences for any of the groups. (Figure 5).
- The 2007 migration year was presented as one possible analog for the current year because of similar flow conditions. An additional group, which was not presented in the RIOG presentation, but has data for transported and in-river groups prior to May 1st, is hatchery steelhead. The analyses for hatchery steelhead do not show a benefit from transportation prior to May 1st (NOAA 2010). In fact, in the model results, a detriment occurs from transporting prior to May 1st.
- Regardless of the results of the T:B ratio, an unintended negative consequence of transportation is an increased straying rate. Increasing transportation percentage for Snake River stocks increases the straying rate for the returning adults (Keefer and Caudill 2012; CSS 2011 Annual Report). Snake River steelhead that strayed tended to enter the Deschutes and John Day river basins which have small spawning populations as compared to the returning Snake River hatchery steelhead population. Snake River hatchery steelhead may be limiting the recovery of these two distinct steelhead populations.

References

NOAA 2010. Analyses of juvenile Chinook salmon and steelhead transport from Lower Granite and Little Goose dams, 1998-2008. NOAA Fisheries Northwest Fisheries Science Center Fish Ecology Division. January 2010. 122 pp.

Smith, S. G. 2013. Smolt Survival and Travel Time and Adult Return Rates for Salmonids in the Snake and Columbia Rivers [Update with 2012 Data]. Presentation from: Regional Implementation Oversight Group Briefing February 26, 2013.

Wild Chinook

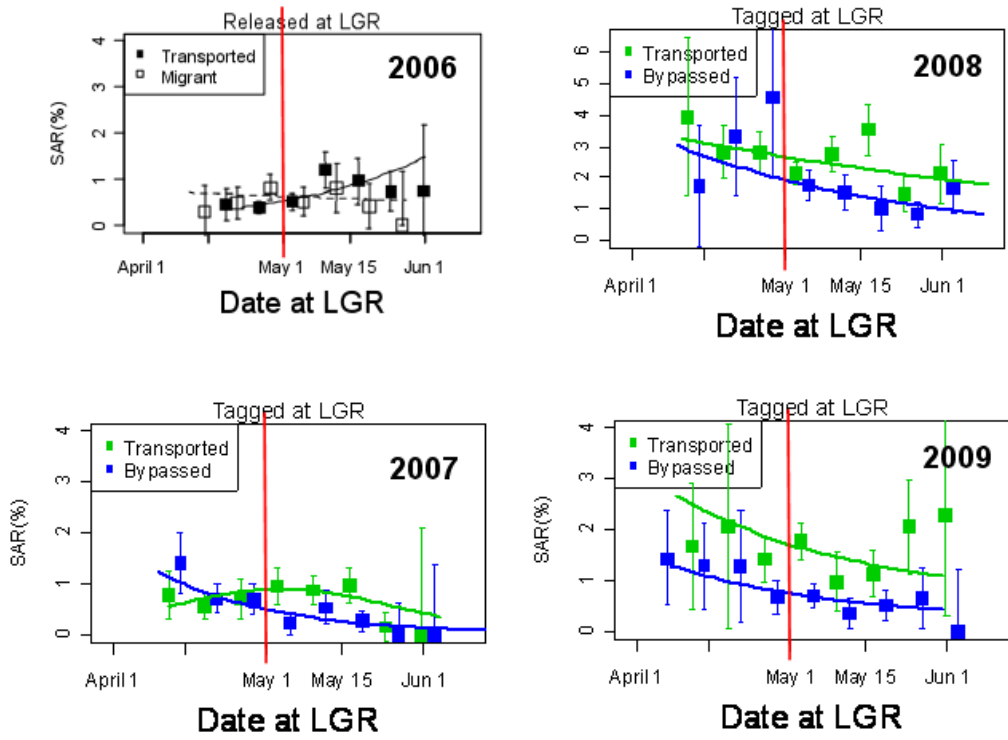


Figure 1. Wild Chinook T:B ratio from Smith 2013 (2007-2009) and from NOAA 2010 (2006). Red lines added. Prior to May 1st, 1 of 11 potential comparisons *may* show a statistically significant improvement from transportation as compared to their bypassed counterparts.

Wild Steelhead

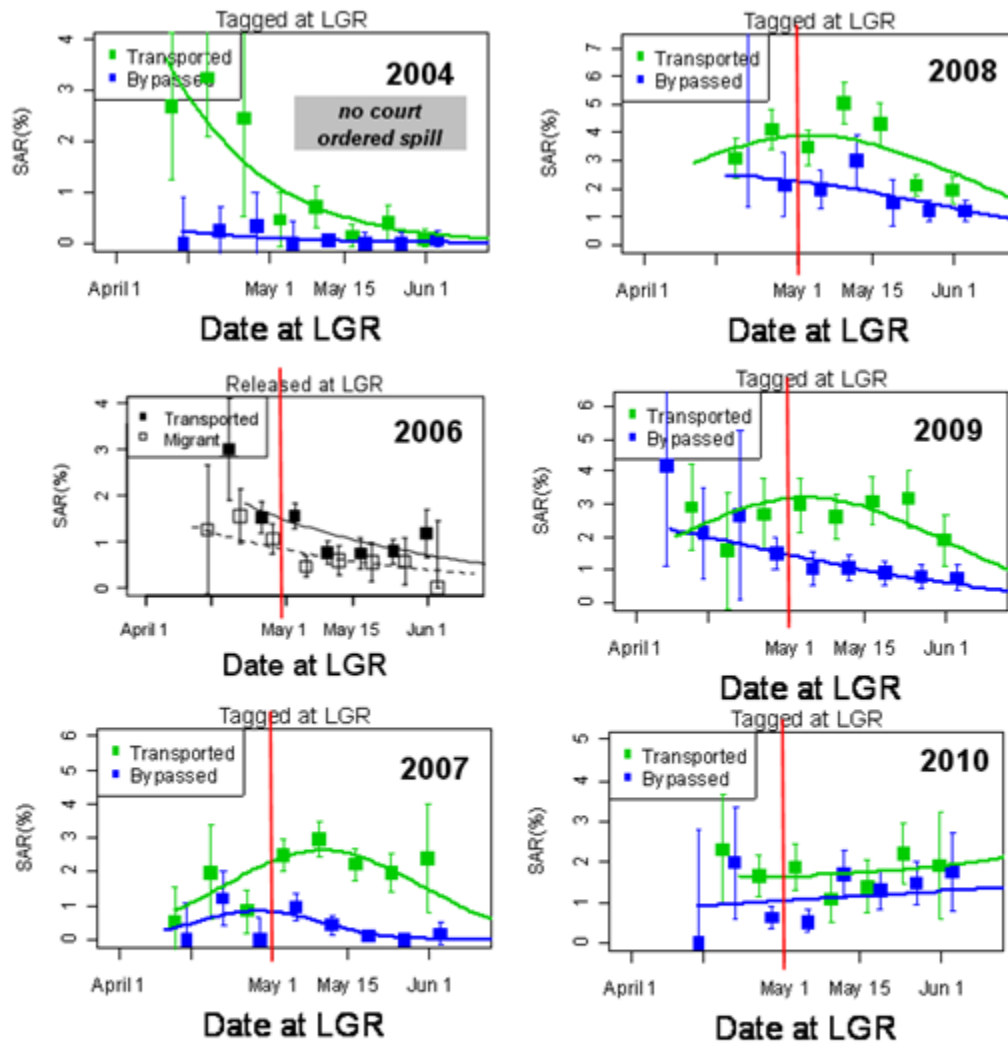


Figure 2. Wild steelhead T:B ratio (2004, 2007-2010) from Smith 2013 and for 2006 from NOAA 2010. Red lines added. Migration year 2004 *does not* include the benefits of the court ordered spill program. Prior to May 1st for 2006-2010, 2 of 12 potential comparisons *may* show a statistically significant improvement from transportation as compared to their bypassed counterparts.

Hatchery Chinook

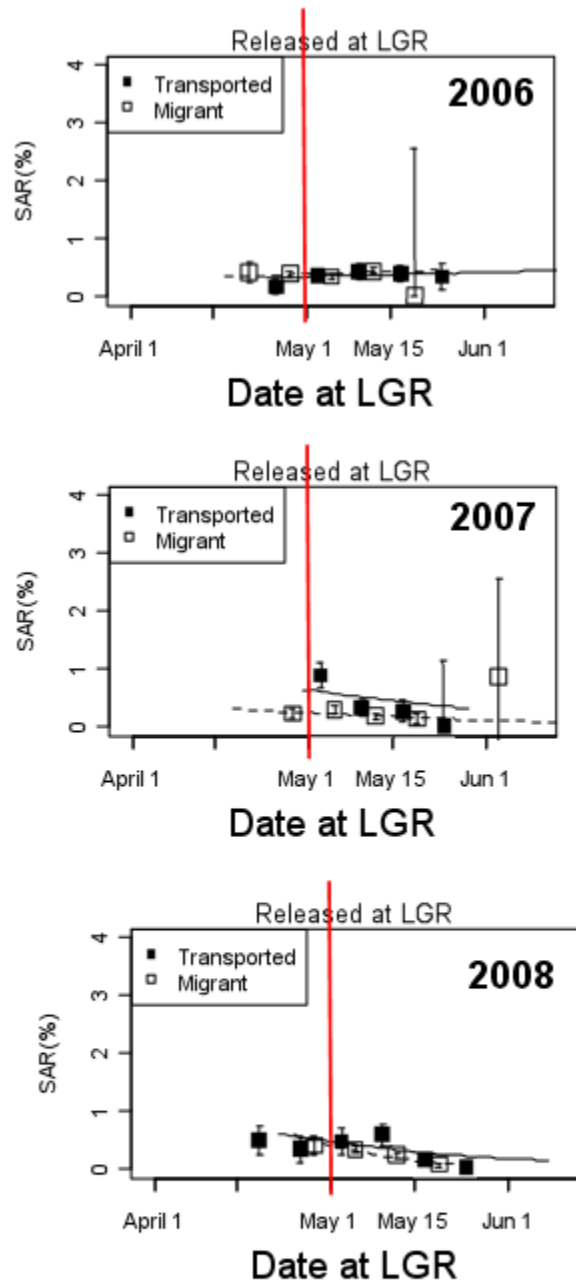


Figure 3. Hatchery Chinook T:B ratio for 2006-2008 from NOAA 2010. Red lines added. Of the two pairs of point estimates where transport and in-river were comparable, there was no statistical difference.

Hatchery Steelhead

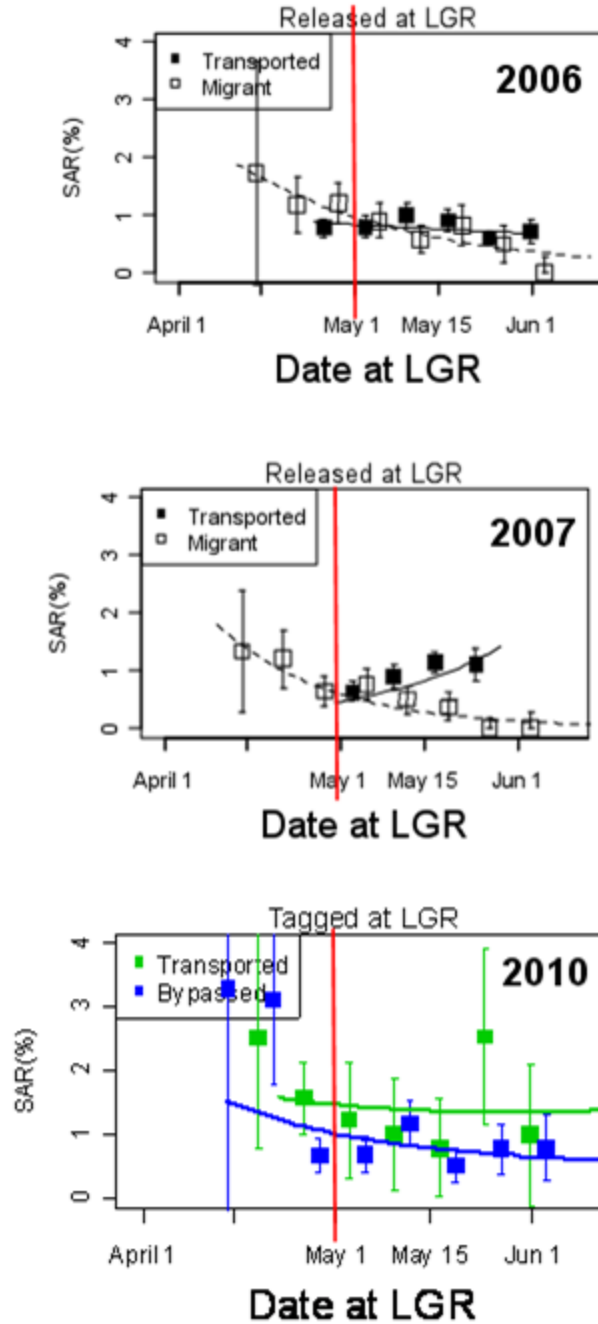


Figure 4. Hatchery steelhead T:B ratio for 2010 from Smith 2013 and for 2006 and 2007 from NOAA 2010 (2008 was not included). Red lines added. Regarding transporting prior to May 1st, migration year 2006 shows a negative effect of transportation for one data point, 2007 shows a decreasing trend and 2010 shows one of two pairs of points with a benefit from transportation.

MY 2006

Model-Averaged - Descriptive

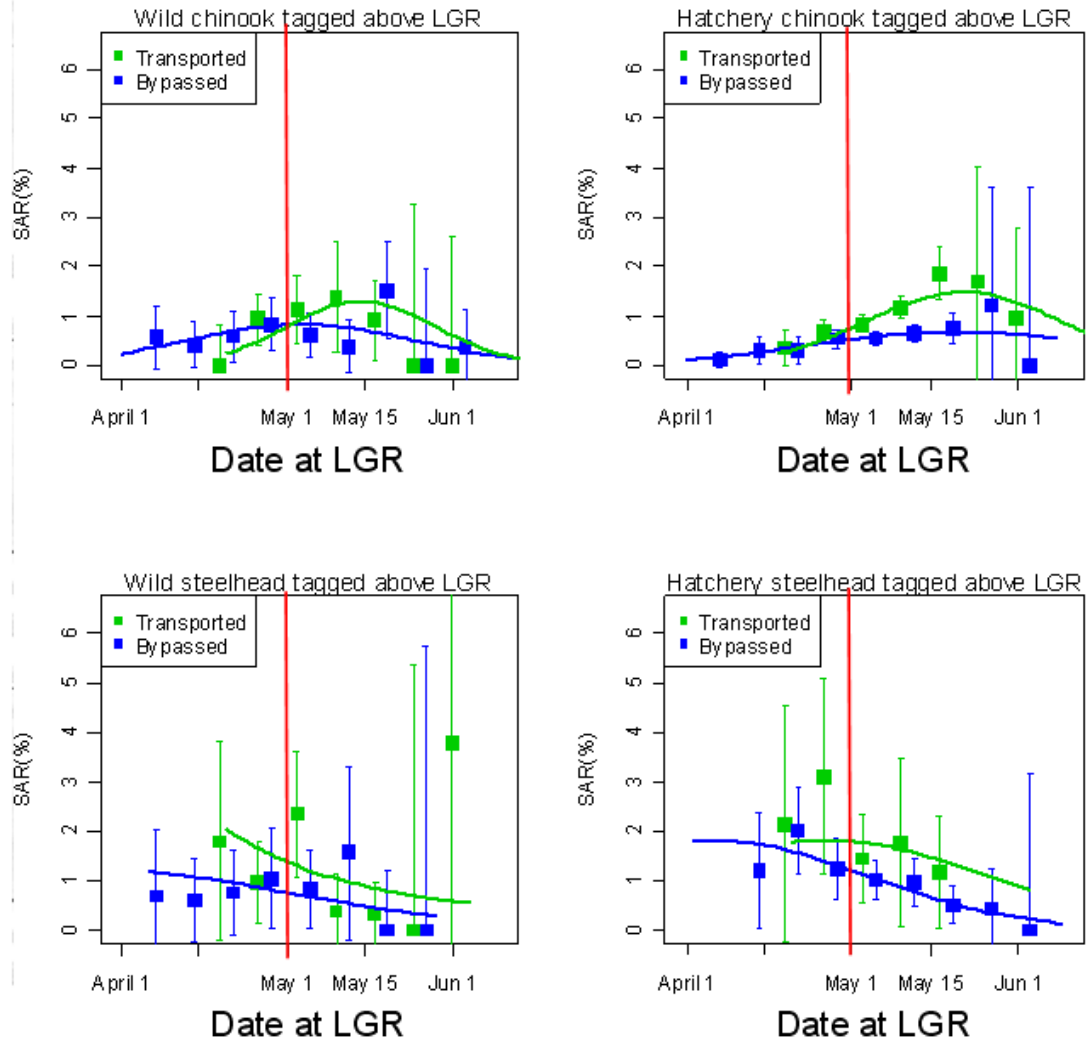


Figure 5. Hatchery steelhead T:B ratio for 2006 from Smith 2013 for smolts marked above Lower Granite Dam. Of eight pairs of estimates, there was no statistical difference for transported and in-river.