

# FISH PASSAGE CENTER

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## MEMORANDUM

TO: Rod Woodin, WDFW

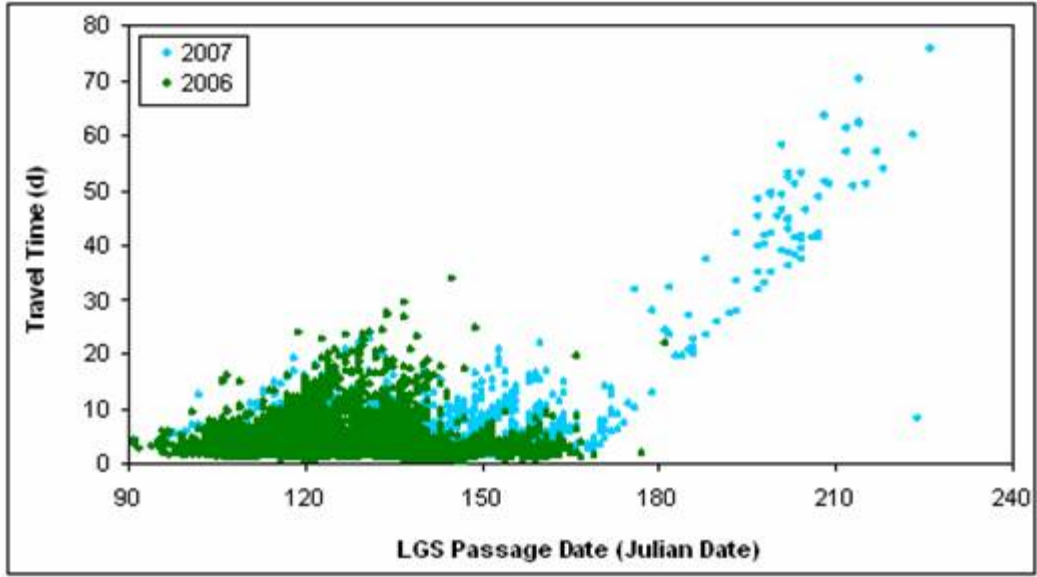
FROM: Jerry McCann

DATE: February 28, 2008

RE: Response to data request for information on the 2007 migration.

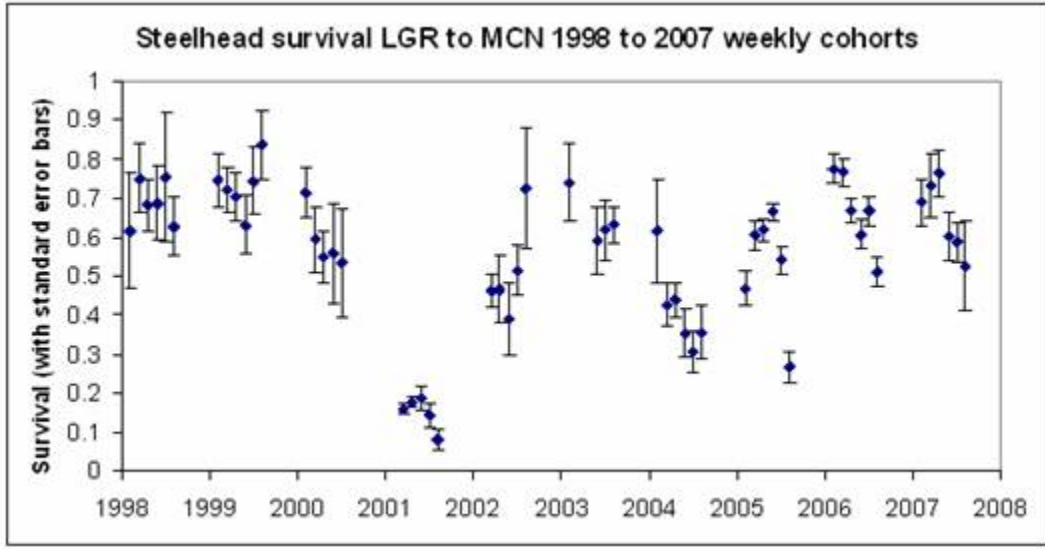
In response to your data request for information on the 2007 migration that would indicate a significant portion of migrant juvenile steelhead held-over in 2007 I took a look at several lines of evidence. First, I refer you to this document [http://www.fpc.org/documents/misc\\_reports/188-07.pdf](http://www.fpc.org/documents/misc_reports/188-07.pdf) on our web page.

In particular, look at the discussion of steelhead travel times (page 6) in June of 2007 compared to June of 2006. Figure 4 from that document (which I inserted below) indicates that there were much longer travel times late in the season, in the Lower Snake River (in this case LGR to LGS), likely in response to the very low flows at that time. The plot shows Julian date of passage at Little Goose Dam on the x-axis and the travel time of individual pit-tagged steelhead on the y-axis. After Julian date ~165, which corresponds to June 14, travel times became very protracted. This is the point at which flows dropped off very quickly in the Snake River. Slow migrating steelhead at this time of year likely stop migrating at some point, or do not survive to continue migration the next year.



**Figure 4. Travel time of steelhead juveniles migrating between Lower Granite and Little Goose Dam in 2007 as a function of arrival time at Little Goose Dam.**

A second piece of information is the reach survival data from LGR to McN. The figure below shows survival estimates for several years in the reach with data blocked in weekly cohorts based on passage timing at Lower Granite Dam. As you can see the late season group in 2007 (LGR passage dates 5/22 to 5/28) showed a relatively low survival compared to earlier groups in April and earlier in May. However, compared to late season estimates from other years, even high flow years like 2006 and 1998 that late season survival is relatively good. So the LGR to McN reach survival data is equivocal. It neither supports nor refutes the possibility that late season fish held over.



A third thing to consider is that season survival for steelhead was relatively high in 2007. NOAA estimated steelhead survival from the head of LGR pool to Bonneville Dam to be 0.392, which was comparable to 0.418 in 2006. These two years had the highest hydro-system survivals of any recent year.

Another thing to consider, is that over 95% of steelhead passage would have occurred by June 14 at Little Goose Dam. So even though there appears to be some evidence of holdovers from the PIT-tag data, those fish represent a small fraction of the overall population.

Overall then, the data is equivocal, so that we can only conclude that there may have been holdovers but we will have to wait and see—unfortunately.