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: FPAC

FROM: Brandon R. Chockley

DATE: May 24, 2010

RE: Passage timing data at Rock Island Dam

In response to your request, I have summarized juvenile passage data from the Smolt Monitoring Program (SMP) at Rock Island Dam (RIS) for the last ten years (2000-2009), compared to this year (through May 23rd). Based on this analysis, it is clear that the spring migration of yearling Chinook, steelhead, coho, and sockeye is currently at or near its peak at RIS and continued flow augmentation from GCL would provide improved passage conditions for these juvenile migrants

At RIS, collection counts are estimates of the total number of juvenile salmonids captured through a volitional bypass. The daily passage index is computed by dividing the daily collection by the proportion of water passing through the powerhouse where the sampling takes place. The daily passage indices adjust for daily changes in spill proportion under the conservative assumption that the proportion of fish passing through spill will be close to the proportion of water being spilled. As long as the daily index remains highly correlated to daily population abundance at each site, and hatchery releases remain fairly constant, the index remains useful for gauging passage timing and magnitude.

Estimated 10%, 50%, 90% Passage Dates:

To characterize the passage timing of yearling Chinook, steelhead, sockeye, and coho juveniles at RIS, I estimated the 10%, 50%, and 90% passage date for each of the last ten years (2000-2009), based on the passage index. I also estimated a 10-year average 10%, 50%, and 90% passage date for each of these species. These dates are provided in Table 1. Based on

historic run timing, we would expect all the above to be between their 50% and 90% passage date at RIS (Table 1). On average (2000-2009), approximately 79% of yearling Chinook, 64% of steelhead, 65% of sockeye, and 43% of coho juveniles have passed RIS by May 23rd.

Table 1. Estimated 10%, 50%, and 90% passage dates for yearling Chinook, steelhead, sockeye, and coho juveniles at RIS in 2000 through 2009.

Species	Migration Year	Estimated Passage Date		
		10%	50%	90%
CH1	2000	3-May	14-May	31-May
	2001	20-Apr	6-May	30-May
	2002	28-Apr	15-May	7-Jun
	2003	24-Apr	8-May	31-May
	2004	17-Apr	7-May	25-May
	2005	19-Apr	10-May	27-May
	2006	29-Apr	5-May	25-May
	2007	20-Apr	16-May	10-Jun
	2008	4-May	22-May	3-Jun
	2009	29-Apr	14-May	27-May
	Average	**25-Apr**	**11-May**	**30-May**
ST	2000	5-May	18-May	28-May
	2001	12-May	26-May	17-Jun
	2002	7-May	24-May	3-Jun
	2003	6-May	26-May	3-Jun
	2004	3-May	12-May	30-May
	2005	2-May	12-May	26-May
	2006	8-May	19-May	5-Jun
	2007	10-May	21-May	5-Jun
	2008	11-May	20-May	6-Jun
	2009	8-May	21-May	31-May
	Average	**7-May**	**19-May**	**3-Jun**
SO	2000	21-Apr	13-May	13-Jul
	2001	22-May	25-May	4-Jun
	2002	22-Apr	10-May	9-Jun
	2003	20-Apr	10-May	29-May
	2004	17-Apr	2-May	24-May
	2005	28-Apr	12-May	8-Jul
	2006	1-May	21-May	26-May
	2007	21-Apr	20-May	25-May
	2008	19-May	25-May	31-May
	2009	9-May	27-May	15-Jun
	Average	**30-Apr**	**16-May**	**8-Jun**
CO	2000	20-May	27-May	7-Jun
	2001	19-May	24-May	8-Jun
	2002	20-May	28-May	10-Jun
	2003	24-May	3-Jun	11-Jun
	2004	11-May	23-May	5-Jun
	2005	10-May	15-May	26-May
	2006	11-May	20-May	4-Jun
	2007	17-May	24-May	5-Jun
	2008	18-May	24-May	6-Jun
	2009	18-May	30-May	7-Jun
	Average	**16-May**	**24-May**	**5-Jun**

Juvenile Passage in 2010 vs. Past Years:

Up to May 23rd, the total passage of juvenile yearling Chinook at RIS is above what was seen at this time in 2009, but still below the 10-year average (Table 2). Yearling Chinook passage in 2010 appears to have peaked at RIS on May 13th. However, passage numbers since this time have fluctuated but remained fairly high, averaging approximately 322 juveniles per day (Figure 1). Both the 10-year average and 2009 passage had a spike in yearling Chinook on April 30th. This spike in passage on April 30th did not occur in 2010 (Figure 1). Total passage of steelhead juveniles this year is very similar to that seen in 2009 and the 10-year average (Table 2). As with previous years, it seems that the peak of steelhead juvenile passage in 2010 occurred on or around May 21st. Steelhead numbers have remained above 1,000 per day since May 21st (Figure 2). Total coho passage in 2010 is behind what was seen in 2009 and substantially behind the 10-year average (Table 2). However, it appears that the peak of coho passage in 2010 has not occurred yet, as daily passage numbers have continued to increase since May 18th (Figure 3). The magnitude and timing of hatchery releases of coho juveniles above RIS in 2009 and 2010 are similar (1.44 million in 2009, 1.58 million in 2010). Given that the average 50% passage date for coho is May 24th, this may indicate that coho passage in 2010 is slightly delayed.

Table 1. 2010, 2009, and 10-year average (2000-2009) cumulative passage index for yearling Chinook, steelhead, sockeye, and coho at RIS from the start of sampling to May 23rd.

Species	2010	2009	10-Yr Avg
Yearling Chinook	8,797	7,824	15,360
Steelhead	12,020	12,069	12,467
Sockeye	13,408	1,857	9,596
Coho	7,316	10,143	21,370

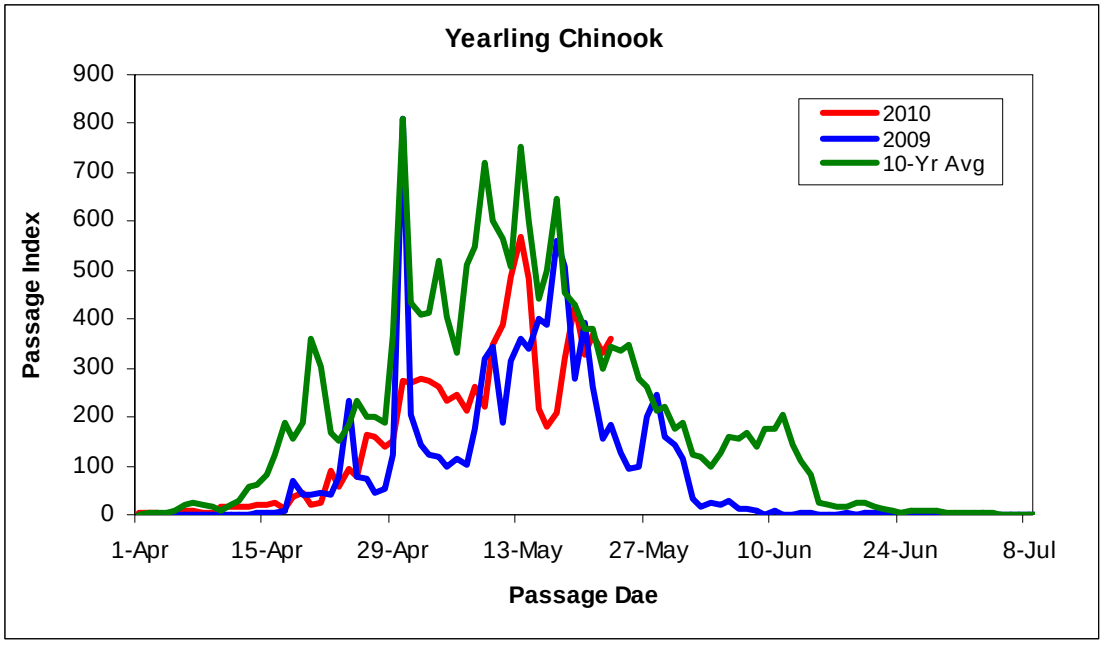

Figure 1. Yearling Chinook passage at RIS in 2010, 2009 and the 10-year average (2000-2009)

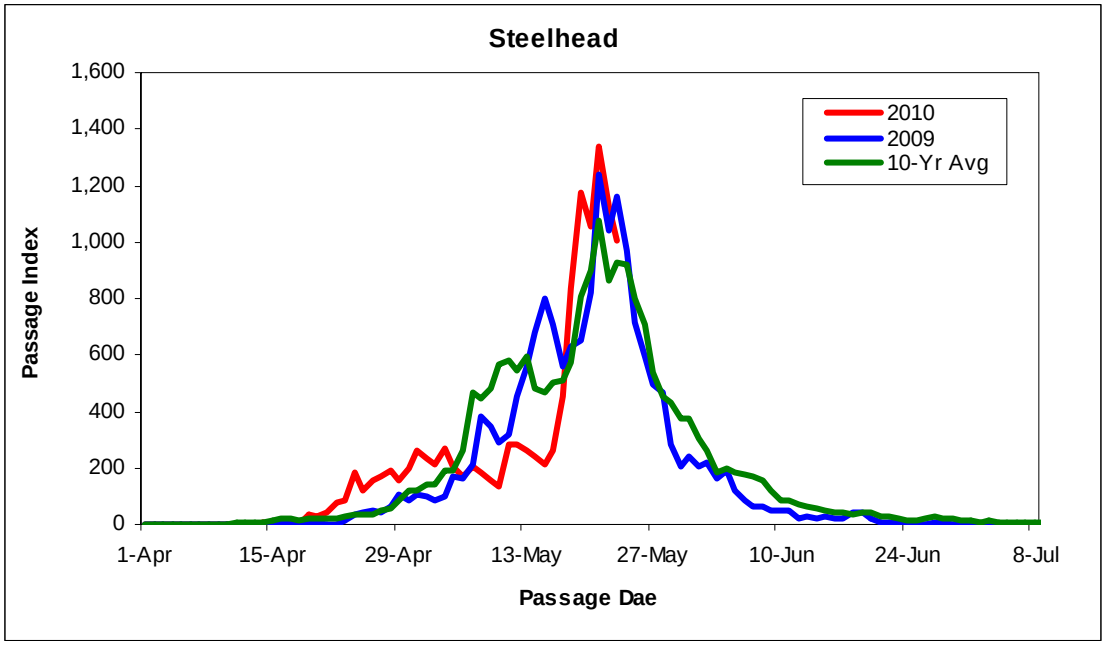

Figure 2. Steelhead passage at RIS in 2010, 2009 and the 10-year average (2000-2009)

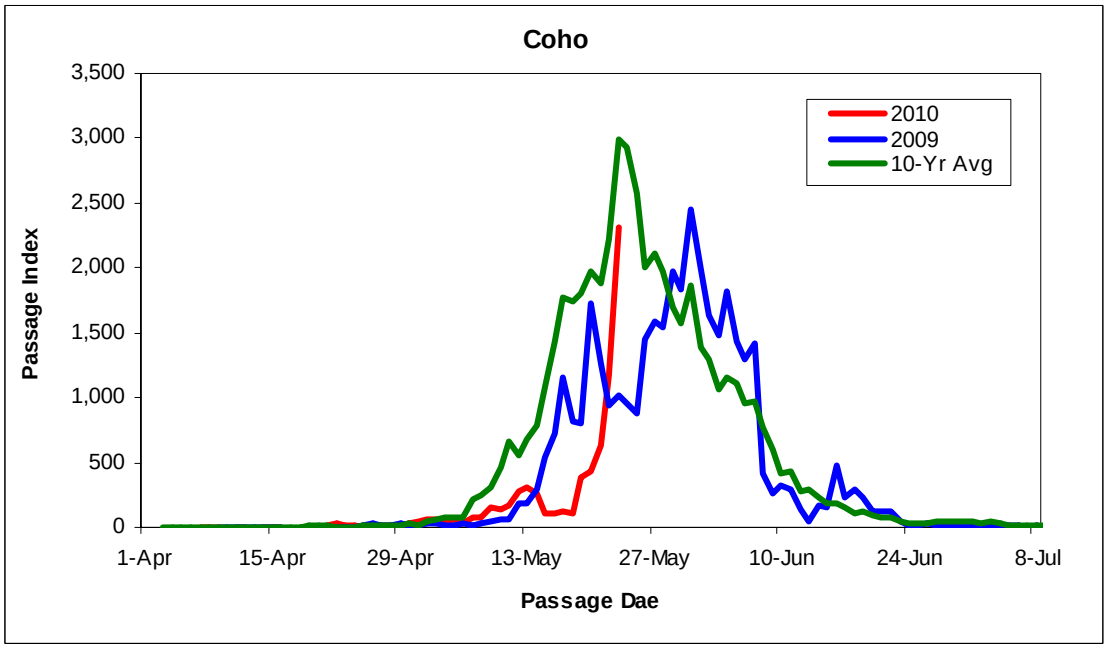

Figure 3. Coho passage at RIS in 2010, 2009 and the 10-year average (2000-2009)

Total sockeye passage numbers at RIS in 2010 are 7.22 times higher than 2009 and 1.40 times higher than the 10-year average (to date) (Table 2). Sockeye passage at RIS increased substantially on May 22nd. However, it is too soon to tell if this is the peak date of sockeye passage in 2010 (Figure 4). One potential explanation for the large difference between 2010 and

2009 passage is the magnitude of the hatchery releases for these migration years, as well as the high adult returns in 2008. Approximately 1.14 million sockeye juveniles were released into the Wenatchee and Okanogan rivers for out-migration in 2009. Of these, 78% were sockeye fry released into Lake Skaha in May 2008, while the remaining 22% were pre-smolts released from the Wenatchee Net Pens in October 2008. At nearly 1.8 million, the total release if sockeye juveniles for migration 2010 is approximately 1.6 times higher than what was seen for migration year 2009. Of the nearly 1.8 million sockeye juveniles released for out-migration in 2010, 91% were released into Lake Skaha as fry, while 9% were released from the Lake Wenatchee Net Pens. It is difficult to know to what degree the fry releases are contributing to the population of sockeye out-migrants passing RIS.

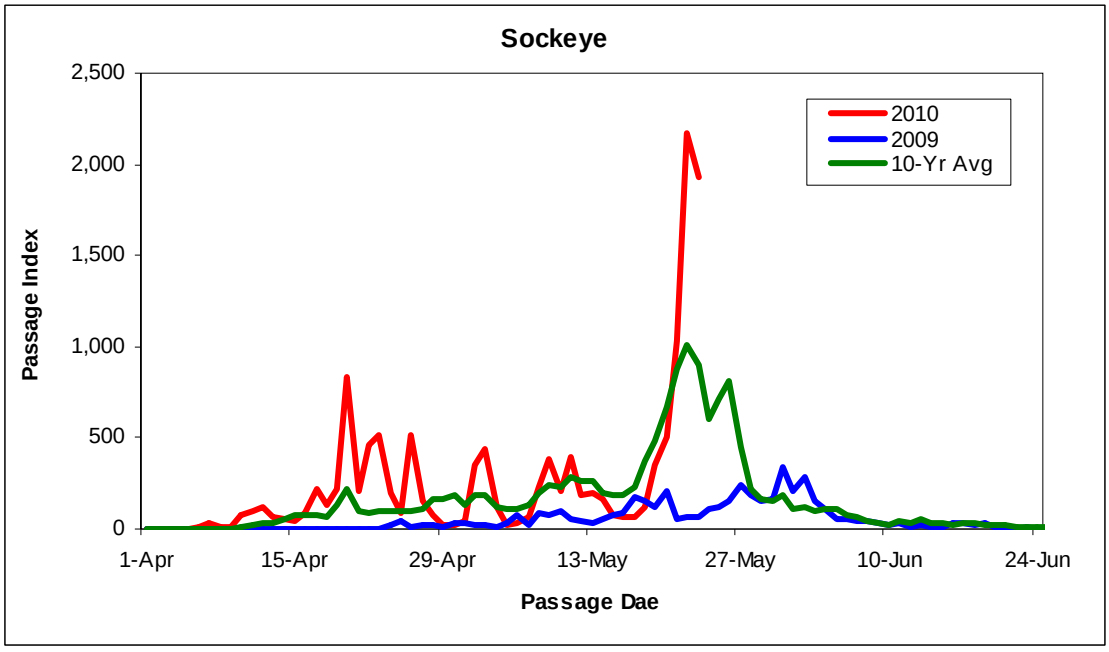

Figure 4. Sockeye passage at RIS in 2010, 2009 and the 10-year average (2000-2009).