



# FISH PASSAGE CENTER

1827 NE 44<sup>th</sup> Ave., Suite 240, Portland, OR 97213

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

<http://www.fpc.org>

e-mail us at [fpcestaff@fpc.org](mailto:fpcestaff@fpc.org)

September 25, 2008

Mr. Roger Elmore  
 Lookingglass Fish Hatchery  
 Oregon Department of Fish and Wildlife  
 Route 2 Box 89-D-B  
 Elgin, OR 97287

Dear Bob-

The Fish Passage Center has been marking fish from the Lookingglass Fish Hatchery facility over the last several years as part of the Smolt Monitoring Program (SMP) and the Comparative Survival Study (CSS). For purposes of these studies data are collected on either juvenile life stage, or both the juvenile and adult life stages. The SMP provides information for in-season management of the hydrosystem and post-season analyses to the federal, state, and tribal fishery agencies. The CSS is a multi-year program that estimates survival rates over different life stages for spring and summer Chinook produced in major hatcheries. We would like to share with you some of the information we developed under these studies for the fish used from the Lookingglass Hatchery facilities (Imnaha and Catherine Creek Acclimation Ponds).

Under the Smolt Monitoring Program, information is collected on the timing and migration speed from the hatchery to Lower Granite Dam. 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.** Imnaha Acclimation Pond – Spring Chinook Travel Time to Lower Granite Dam

Release Date	Migration Year	Travel Time (Days)			Confidence Limits 95%		Lower Granite	
		Min	Med	Max	Lower	Upper	Flow (kcfs)	Temp (F)
Apr-7	1997	9.1	28.1	79.7	27.9	28.7	144.1	51.9
Apr-6	1998	8.3	26.2	60.8	26	26.3	70.5	51.8
3/16, 4/05	1999	5.1	54.7	175.6	54.4	54.9	98	49.4
22-Mar	2000	15.7	42.8	66.3	42.5	43.1	82.1	50
21-Mar	2001	8.8	42.1	93	41.7	42.2	36.8	47.1
21-Mar	2002	8.2	45.2	66	44.9	45.4	27.9	
1-Apr	2003	7.2	34.6	76.6	34.5	34.7	28	
26-Mar	2004	9.9	38.5	84.4	38.5	38.6	23.6	
3/26, 3/29	2005	9.3	36.1	78.7	35.9	36.3		
3/21, 3/30	2006	6.3	40.6	74.2	40.2	41	44	
3/21, 3/31	2007	17.0	41.3	103.5	41.2	41.4	49.6	
25-Mar	2008	17.4	43.8	163	43.7	43.9	54.2	49.7

**Table 2.** Catherine Creek Acclimation Pond – Spring Chinook Travel Time to Lower Granite Dam

Release Date	Migration Year	Travel Time (Days)			Confidence Limits 95%		Lower Granite Flow (kcfs)	Lower Granite Temp (F)
		Min	Med	Max	Lower	Upper		
4/2	2001	13.6	42.4	98.9	42.3	42.5	41.7	47.7
4/1-4/02	2002	9.3	45.6	82.9	45.4	45.9	27.7	
3/12, 3/23, 3/31	2003	3	41.2	90.9	40.9	41.9	28.8	
3/15, 3/30	2004	10.3	46.3	117.1	45.6	46.6	23.8	
3/14, 4/04	2005	15.9	43.9	85.7	43.7	44.3		
27-Mar	2006	13.6	42.4	98.9	42.3	42.5	41.7	47.7
26-Mar	2007	24.9	44.8	74.1	44.5	45.2	53.0	
24-Mar	2008	17.1	48.4	104.9	48.1	48.6	56.4	49.7

The above tables provide estimates of minimum, median, and maximum travel times from release to Lower Granite Dam for the Imnaha Acclimation Pond (Table 1) and Catherine Creek Acclimation Pond (Table 2) releases. These tables also provide the 95% confidence limits around the estimated median travel times.

The tables below contain estimates calculated in the CSS study of juvenile survival in the hydrosystem between Lower Granite and Bonneville Dams and survival to adulthood of juvenile salmonids released from Imnaha Acclimation Pond (Table 3) and Catherine Creek Acclimation Pond (Table 4) in several categories. Those 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, 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. The data presented in Tables 3 and 4 were taken from the Draft 2008 CSS Annual Report, which can be downloaded from the FPC webpage (<http://www.fpc.org/documents/CSS.html>).

**Table 3.** Imnaha Acclimation Pond – Spring Chinook Survival

Release Date	Migration Year	Juvenile Survival LGR-BON	Proportion Transported	T/C Ratio	SAR(T)	Adult Survival	
						SAR(C <sub>0</sub> ) %	Weighted SAR <sub>LGR-10-LGR</sub>
Apr-7	1997	0.31	0.515	1.36	1.16	0.86	0.98
Apr-6	1998	0.53	0.848	1.55	0.85	0.55	0.81
3/16, 4/05	1999	0.54	0.777	1.89	2.69	1.43	2.41
22-Mar	2000	0.57	0.686	1.29	3.11	2.41	2.89
21-Mar	2001	0.37	0.976	10.8	0.62	0.06 <sup>B</sup>	0.61
21-Mar	2002	0.50	0.662	1.75	0.80	0.45	0.68
1-Apr	2003	0.70	0.549	1.21	0.58	0.48	0.53
26-Mar	2004	0.56	0.887	1.64	0.38	0.23	0.36
3/26, 3/29	2005	0.58	0.856	1.77	0.28	0.16 <sup>C</sup>	0.27
3/21, 3/30	2006 <sup>A</sup>	0.50	0.725	0.70	0.97	1.43	1.07

<sup>A</sup> Migration year 2006 is incomplete with Age 2-salt adult returns through 8/13/2008

<sup>B</sup> Assumed SAR(C<sub>0</sub>) same as SAR(C<sub>1</sub>) for 2001

<sup>C</sup> In-river SAR is combination of groups C<sub>1</sub> and C<sub>0</sub>

**Table 4.** Catherine Creek Acclimation Pond – Spring Chinook Survival

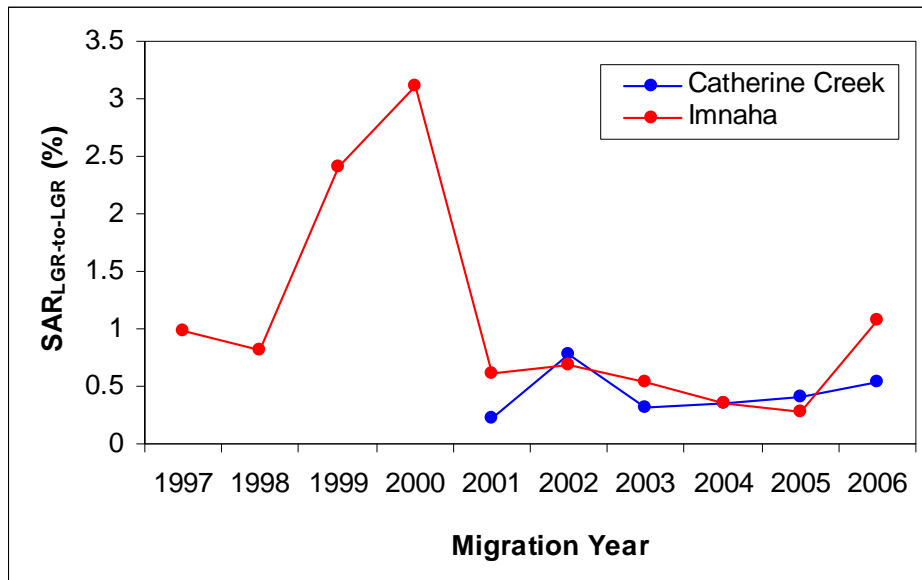
Release Date	Migration Year	Juvenile			T/C Ratio	SAR(T)	Adult Survival	
		Survival LGR-BON	Proportion Transported	Weighted SAR <sub>LGR-to-LGR</sub>			SAR(C <sub>0</sub> ) %	
4/2	2001	0.25	0.964	5.33	0.23	0.04 <sup>B</sup>	0.22	
4/1-4/02	2002	0.65	0.706	1.81	0.89	0.49	0.77	
3/12, 3/23, 3/31	2003	0.62	0.550	1.45	0.36	0.25	0.31	
3/15, 3/30	2004	0.48	0.896	1.94	0.38	0.20	0.36	
3/14, 4/04	2005	0.51	0.862	2.48	0.44	0.18 <sup>C</sup>	0.40	
27-Mar	2006 <sup>A</sup>	0.48	0.682	0.45	0.41	0.92	0.54	

<sup>A</sup> Migration year 2006 is incomplete with Age 2-salt adult returns through 8/13/2008

<sup>B</sup> Assumed SAR(C<sub>0</sub>) same as SAR(C<sub>1</sub>) for 2001

<sup>C</sup> In-river SAR is combination of groups C<sub>1</sub> and C<sub>0</sub>

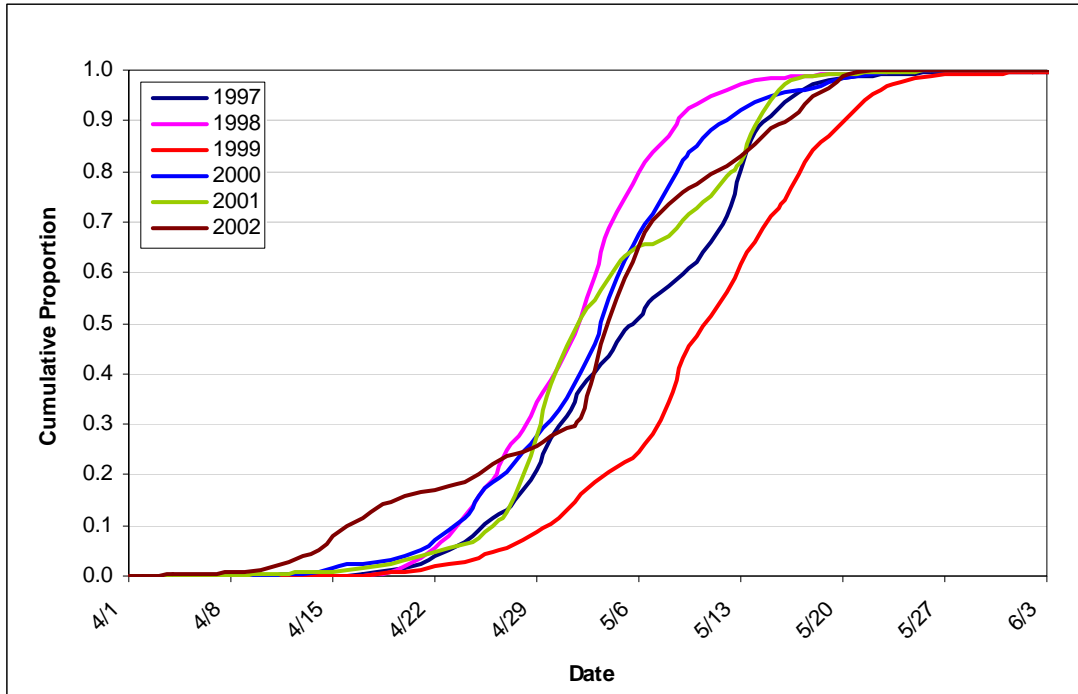
Figure 1 below is a time series of the Weighted SAR<sub>LGR-to-LGR</sub> over the years of available data for Lookingglass Hatchery spring Chinook released at the Imnaha Acclimation Pond and Catherine Creek Acclimation Pond.



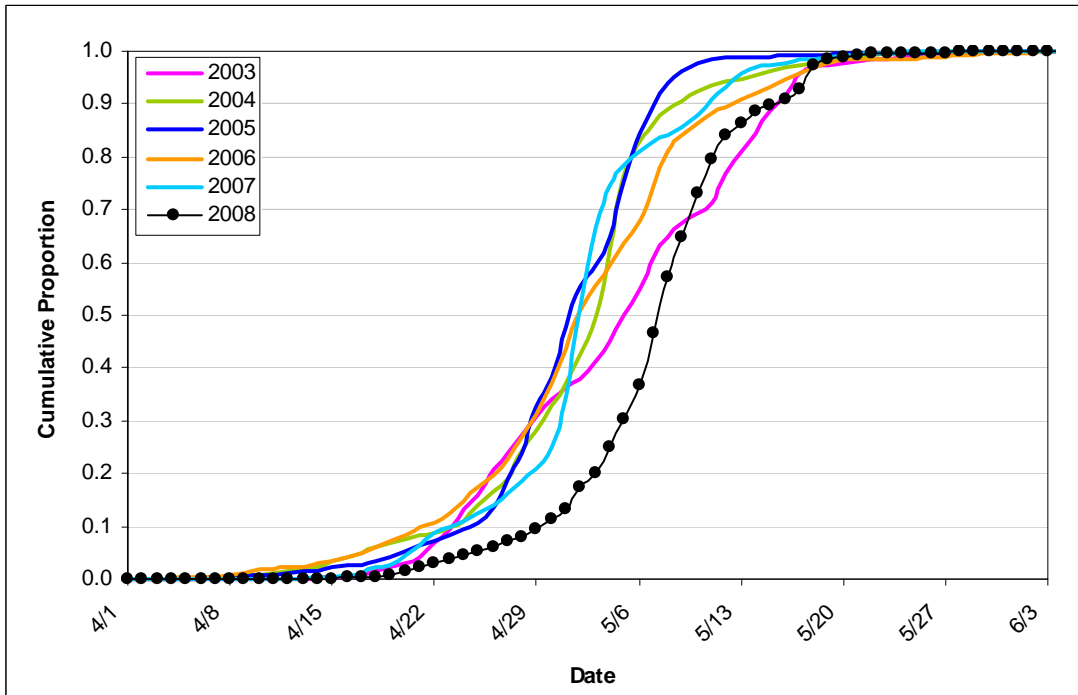
**Figure 1.** Weighted SAR<sub>LGR-to-LGR</sub> for Lookingglass hatchery spring Chinook released from Imnaha Acclimation Pond (1997-2006) and Catherine Creek Acclimation Pond (2001-2006)

Finally, we are providing figures to illustrate passage timing of Lookingglass Hatchery spring Chinook to Lower Granite Dam for the past several years. To better facilitate comparison, we have broken the years into two separate graphs for each of the release sites. Please note the different scales on the x-axis between the two release sites.

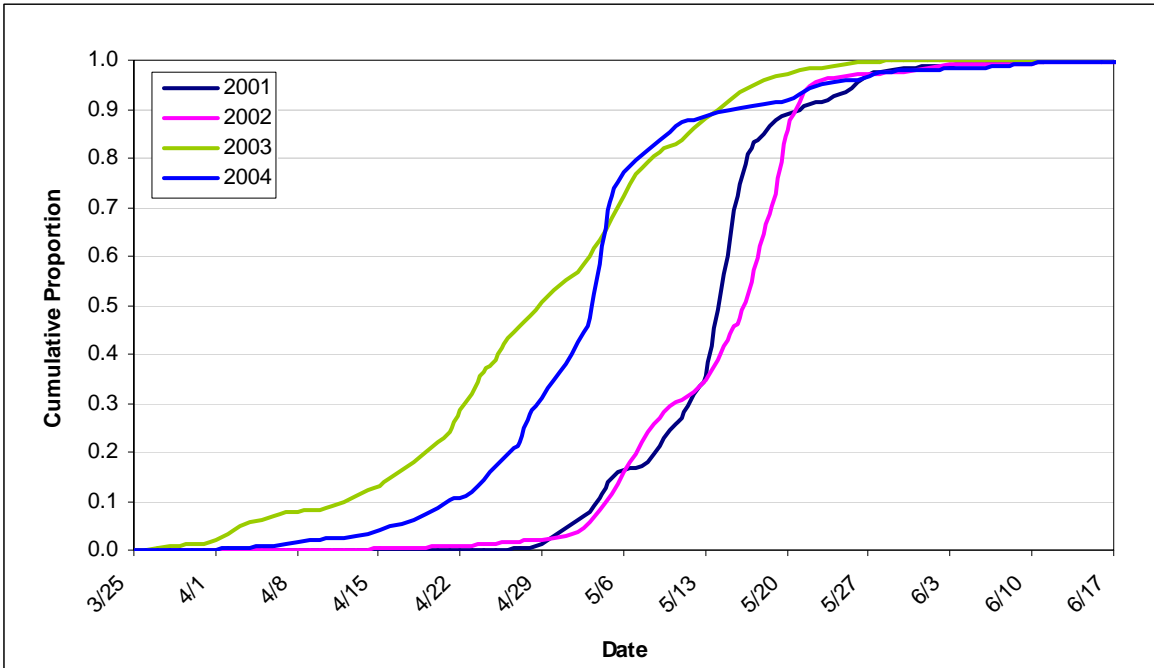
**Imnaha Acclimation Pond – Spring Chinook (1997-2002)  
Passage Timing to Lower Granite Dam**



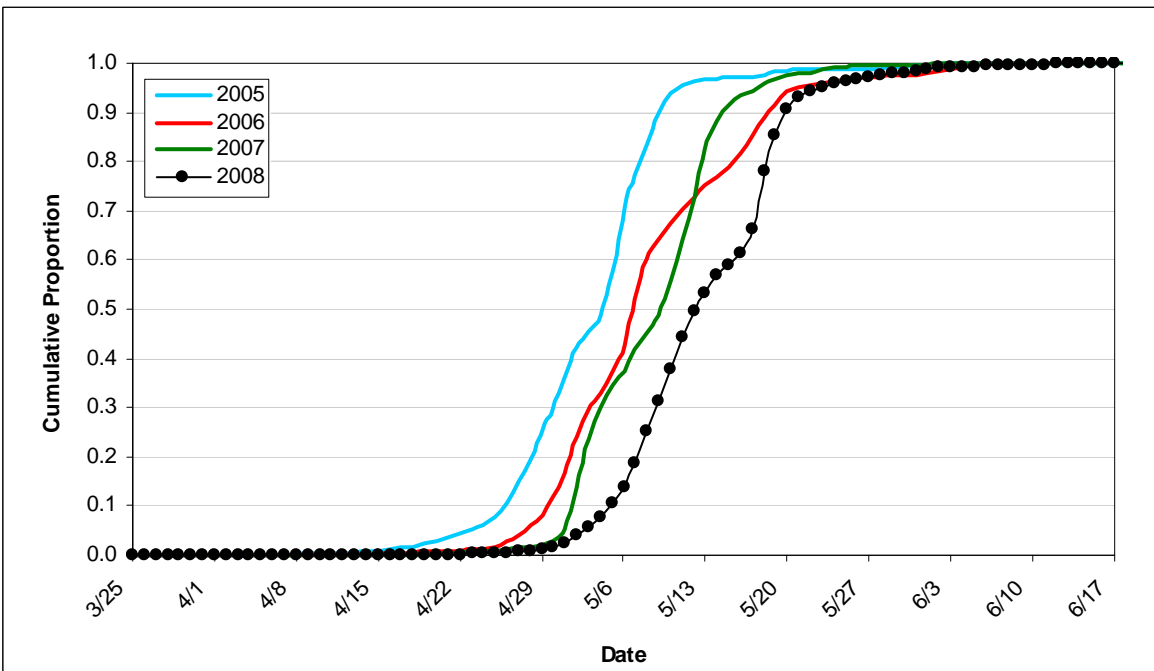
**Imnaha Acclimation Pond – Spring Chinook (2003-2008)  
Passage Timing to Lower Granite Dam**



**Catherine Creek Acclimation Pond – Spring Chinook (2001-2004)  
Passage Timing to Lower Granite Dam**

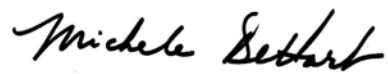


**Catherine Creek Acclimation Pond – Spring Chinook (2005-2008)  
Passage Timing to Lower Granite Dam**



We hope that the information we have provided regarding the use and application of information from the marked groups at the hatchery 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.

Sincerely,

A handwritten signature in black ink that reads "Michele DeHart". The signature is written in a cursive, flowing style.

Michele DeHart  
Fish Passage Center Manager

Cc: Pete Hassemer, IDF&G  
Doug DeHart, USFWS  
Brian Lipscomb, CBFWA  
Tony Nigro, ODFW  
Ron Boyce, ODFW  
FPAC