



FISH PASSAGE CENTER

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September 2, 2009

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

Dear Roger-

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 an update of 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.

The tables below provide estimates of minimum, median, and maximum travel times from release to Lower Granite Dam for the Imnaha Acclimation Pond (IHAP) (Table 1) and Catherine Creek Acclimation Pond (CCAP) (Table 2) releases. These tables also provide the 95% confidence limits around the estimated median travel times. In previous year's reports, the travel times for the CCAP releases have been estimated as the date of arrival at LGR minus the release date. However, since these releases are volitional, this methodology may produce inaccurate travel times, depending on how quickly the yearling Chinook out-migrate. Given that CCAP has had a PIT-tag detection facility on site since PIT-tagged releases for CSS began in 2001, we are providing new estimates of travel time to LGR for migration this release site. These new travel times to LGR are now estimated as the date of arrival at LGR minus the date of

detection at the CCAP detection site (CCP). As in the past, we are providing these estimates of median travel time, as well as minimum, maximum, and 95% confidence limits around the median (Table 2).

Table 1. Innaha Acclimation Pond – Spring Chinook Travel Time to Lower Granite Dam

Release Date	Migration Year	Travel Time (Days)			Confidence Limits 95%		Lower Granite Flow (kcfs)
		Min	Med	Max	Lower	Upper	
Apr-7	1997	9.1	28.1	79.7	27.9	28.7	144.1
Apr-6	1998	8.3	26.2	60.8	26	26.3	70.5
3/16, 4/5	1999	5.1	54.7	175.6	54.4	54.9	98
22-Mar	2000	15.7	42.8	66.3	42.5	43.1	82.1
21-Mar	2001	8.8	42.1	93	41.7	42.2	36.8
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
30-Mar	2009	13.8	44.6	69.3	44.6	44.8	85.0

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

Release Date(s)	Migration Year	Travel Time (Days)			95% Confidence Intervals	
		Min	Median	Max	Lower	Upper
2-Apr	2001	8.3	28.2	62.8	28.1	28.3
4/1-4/2	2002	12.7	33.9	75.5	33.6	34.2
3/12, 3/23, 3/31	2003	8.2	32.3	74.4	31.6	33.0
3/15, 3/30	2004	11.1	37.5	98.8	37.1	38.4
3/14, 4/4	2005	14.1	34.0	72.7	33.2	34.6
27-Mar	2006	11.6	31.1	78.8	30.4	31.6
26-Mar	2007	15.9	30.2	59.5	29.5	30.6
24-Mar	2008	11.5	28.1	102.8	27.9	28.4
3/16, 3/24	2009	15.5	38.4	101.0	38.0	39.1

In past years, we have provided you with figures to illustrate passage timing of yearling spring Chinook released from IHAP and CCAP to Lower Granite Dam since tagging began at each of these sites. However, given that these releases have been going on for so many years, these figures have become cumbersome. This year, we have decided to provide tables that present the estimated 10%, 50%, and 90% passage dates at Lower Granite Dam for the yearling spring Chinook juveniles that are released from each of these sites (Table 3 for IHAP and Table 4 for CCAP). We are also providing two figures to illustrate the 2009 passage timing for Lookingglass Hatchery yearling spring Chinook released for the CSS study. The first of these figures illustrates the passage timing of the 2009 release from IHAP, compared to that in 2008 and the 10-year average (1999-2008) (Figure 1). The second is a comparison of the passage timing of the 2009 release from CCAP, compared to that in 2008 and the 8-year average (2001-2008) (Figure 2).

Table 3. Imnaha Acclimation Pond – Estimated 10%, 50%, and 90% passage dates at Lower Granite Dam.

Migration Year	Release Date(s)	10% Passage Date	50% Passage Date	90% Passage Date
1997	7-Apr	26-Apr	6-May	15-May
1998	6-Apr	24-Apr	2-May	9-May
1999	3/16, 4/5	30-Apr	11-May	21-May
2000	22-Mar	24-Apr	4-May	12-May
2001	21-Mar	26-Apr	2-May	15-May
2002	21-Mar	16-Apr	4-May	17-May
2003	1-Apr	24-Apr	5-May	16-May
2004	26-Mar	24-Apr	4-May	9-May
2005	3/26,3/29	25-Apr	2-May	8-May
2006	3/21,3/30	22-Apr	2-May	13-May
2007	3/21,3/31	24-Apr	2-May	11-May
2008	25-Mar	30-Apr	8-May	16-May
2009	30-Mar	30-Apr	14-May	19-May

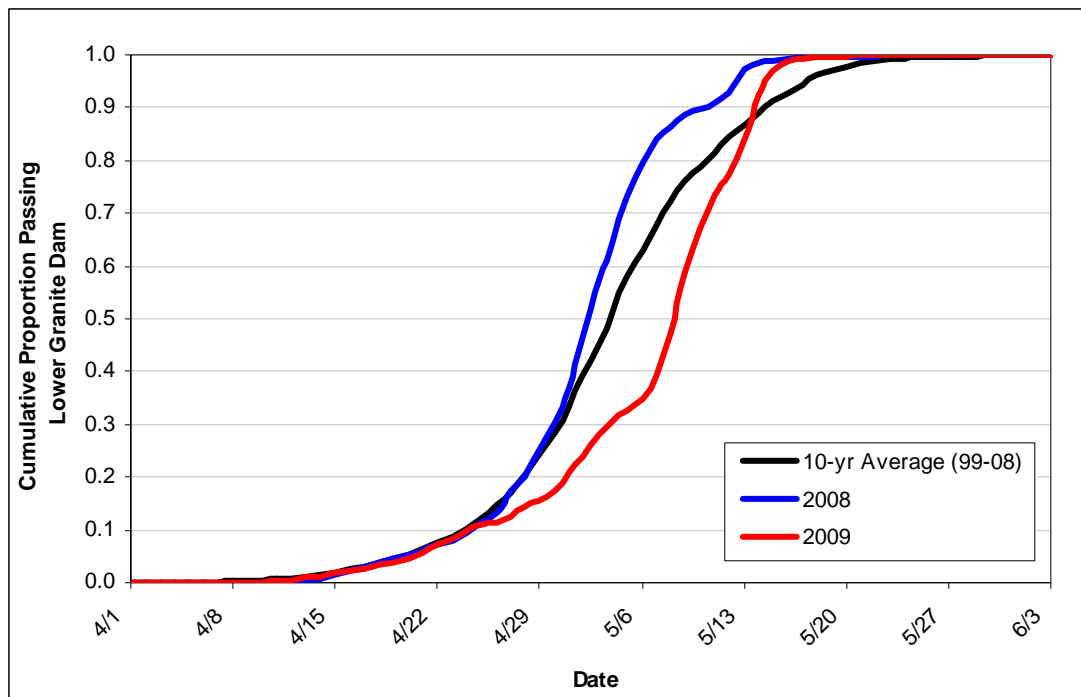


Figure 1. Imnaha Acclimation Pond – Cumulative passage timing to Lower Granite Dam.

Table 4. Catherine Creek Acclimation Pond – Estimated 10%, 50%, and 90% passage dates at Lower Granite Dam.

Migration Year	Release Date(s)	10% Passage Date	50% Passage Date	90% Passage Date
2001	2-Apr	4-May	15-May	22-May
2002	4/1-4/2	5-May	17-May	21-May
2003	3/12,3/23,3/31	13-Apr	29-Apr	15-May
2004	3/15,3/30	21-Apr	4-May	16-May
2005	3/14,4/4	26-Apr	5-May	10-May
2006	27-Mar	30-Apr	7-May	19-May
2007	26-Mar	2-May	10-May	15-May
2008	24-Mar	5-May	13-May	20-May
2009	3/16,3/24	2-May	15-May	23-May

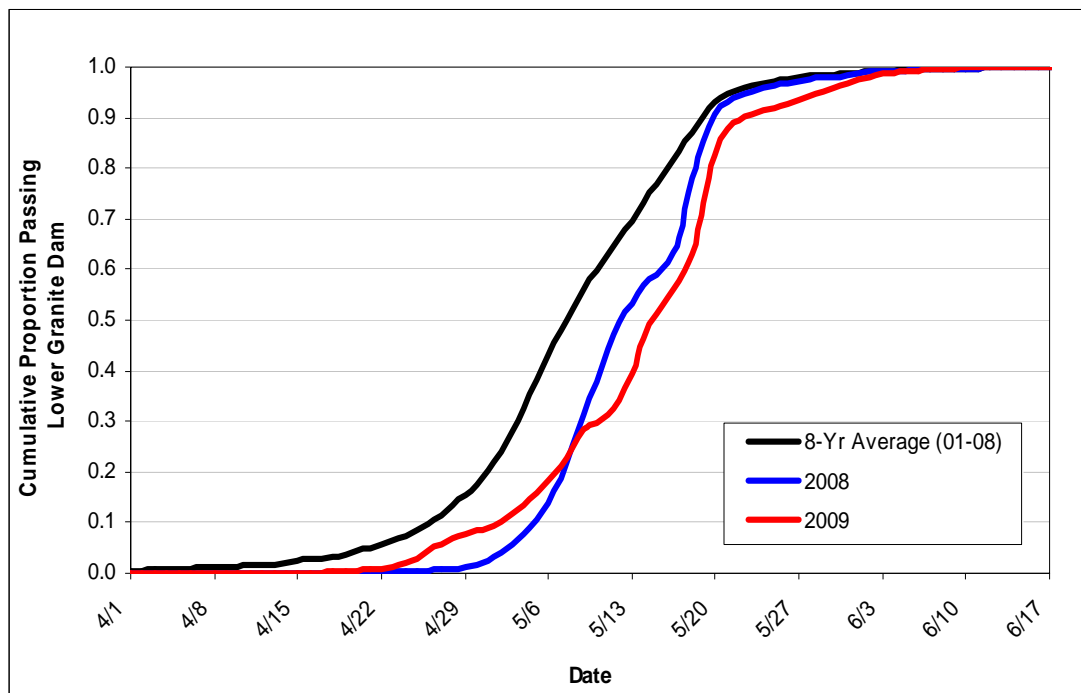


Figure 2. Catherine Creek Acclimation Pond – Cumulative passage timing to Lower Granite Dam.

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(C₀), and Weighted SAR_{LGR-10-LGR}, where SAR(T) represents smolts transported from Lower Granite, Little Goose, or Lower Monumental Dam, SAR(C₀) represents smolts migrating in river, and SAR_{LGR-10-LGR} 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_{LGR-10-LGR}. In effect, the weighted SAR_{LGR-10-LGR} is the estimated SAR for the overall hatchery release. The data presented in Tables 3 and 4 were taken from the

Draft 2009 CSS Annual Report, which can be downloaded from the FPC webpage (<http://www.fpc.org/documents/CSS.html>).

Table 5. Imnaha Acclimation Pond – Spring Chinook Survival

Release Date(s)	Migration Year	Juvenile			Adult Survival		
		Survival (LGR-BON)	Proportion Transported	T/C Ratio	SAR(T) %	SAR(C ₀) %	Weighted SAR _{LGR-10-LGR}
Apr-7	1997	0.31	0.52	1.36	1.16	0.86	0.98
Apr-6	1998	0.53	0.85	1.55	0.85	0.55	0.81
3/16, 4/05	1999	0.54	0.78	1.89	2.69	1.43	2.41
22-Mar	2000	0.57	0.69	1.29	3.11	2.41	2.89
21-Mar	2001	0.37	0.98	10.8	0.62	0.06 ^B	0.61
21-Mar	2002	0.50	0.66	1.75	0.80	0.45	0.68
1-Apr	2003	0.70	0.55	1.21	0.58	0.48	0.53
26-Mar	2004	0.56	0.89	1.64	0.38	0.23	0.36
3/26, 3/29	2005	0.58	0.86	1.77	0.28	0.16 ^C	0.27
3/21, 3/30	2006 ^D	0.50	0.73	0.62	0.77	1.25	0.86
3/21, 3/31	2007 ^{A D}	0.69	0.37	1.57	0.96	0.61	0.73

^A Migration year 2007 is incomplete with Age 2-salt adult returns through 8/3/2009

^B Assumed SAR(C₀) same as SAR(C₁) for 2001

^C In-river SAR is combination of groups C₁ and C₀

^D Smolt migration year 2006 and 2007 use combined TWS and BWS data

Table 6. Catherine Creek Acclimation Pond – Spring Chinook Survival

Release Date(s)	Migration Year	Juvenile			Adult Survival		
		Survival (LGR-BON)	Proportion Transported	T/C Ratio	SAR(T) %	SAR(C ₀) %	Weighted SAR _{LGR-10-LGR}
4/2	2001	0.25	0.96	5.33	0.23	0.04 ^B	0.22
4/1-4/02	2002	0.65	0.71	1.81	0.89	0.49	0.77
3/12,3/23,3/31	2003	0.62	0.55	1.45	0.36	0.25	0.31
3/15, 3/30	2004	0.48	0.90	1.94	0.38	0.20	0.36
3/14, 4/04	2005	0.51	0.86	2.48	0.44	0.18 ^C	0.40
27-Mar	2006 ^D	0.48	0.68	0.45	0.41	0.92	0.54
26-Mar	2007 ^{A D}	0.72	0.44	1.46	0.54	0.37	0.46

^A Migration year 2007 is incomplete with Age 2-salt adult returns through 8/13/2008

^B Assumed SAR(C₀) same as SAR(C₁) for 2001

^C In-river SAR is combination of groups C₁ and C₀

^D Smolt migration year 2006 and 2007 use combined TWS and BWS data

Finally, figure 3 below is a time series of the Weighted SAR_{LGR-10-LGR} over the years of available data for Lookingglass Hatchery spring Chinook released at the Imnaha Acclimation Pond and Catherine Creek Acclimation Pond.

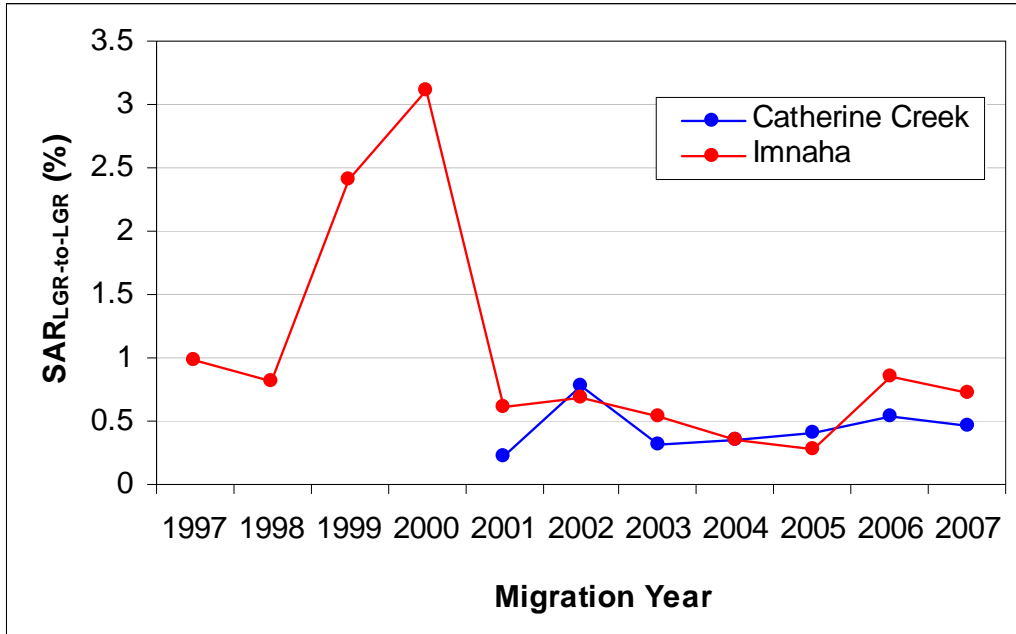


Figure 3. Weighted SAR_{LGR-to-LGR} for Lookingglass hatchery spring Chinook released from Imnaha Acclimation Pond (1997-2007) and Catherine Creek Acclimation Pond (2001-2007). Migration year 2007 is incomplete with Age 2-salt adult returns through 8/13/2008

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,

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Fish Passage Center Manager

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