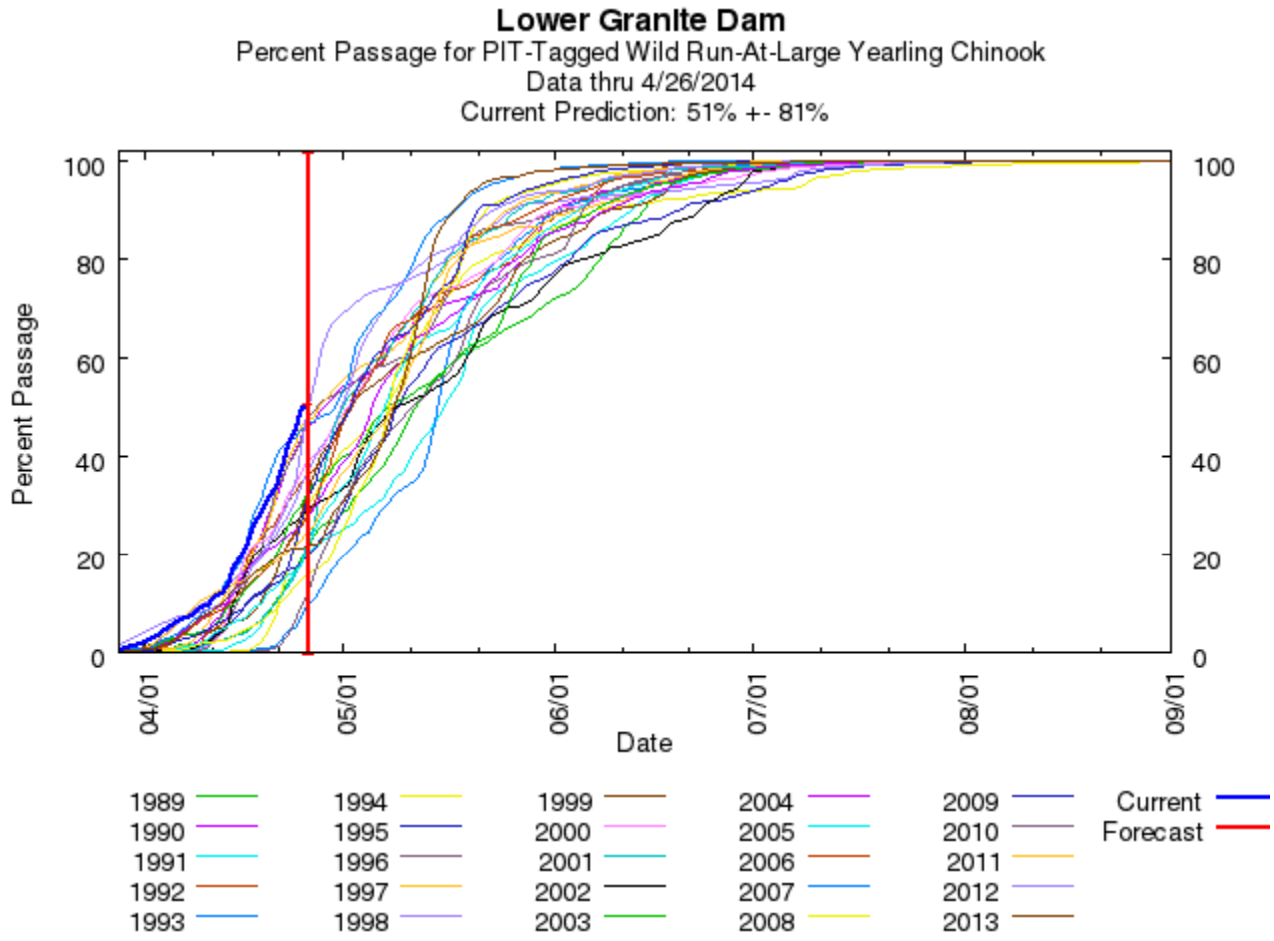
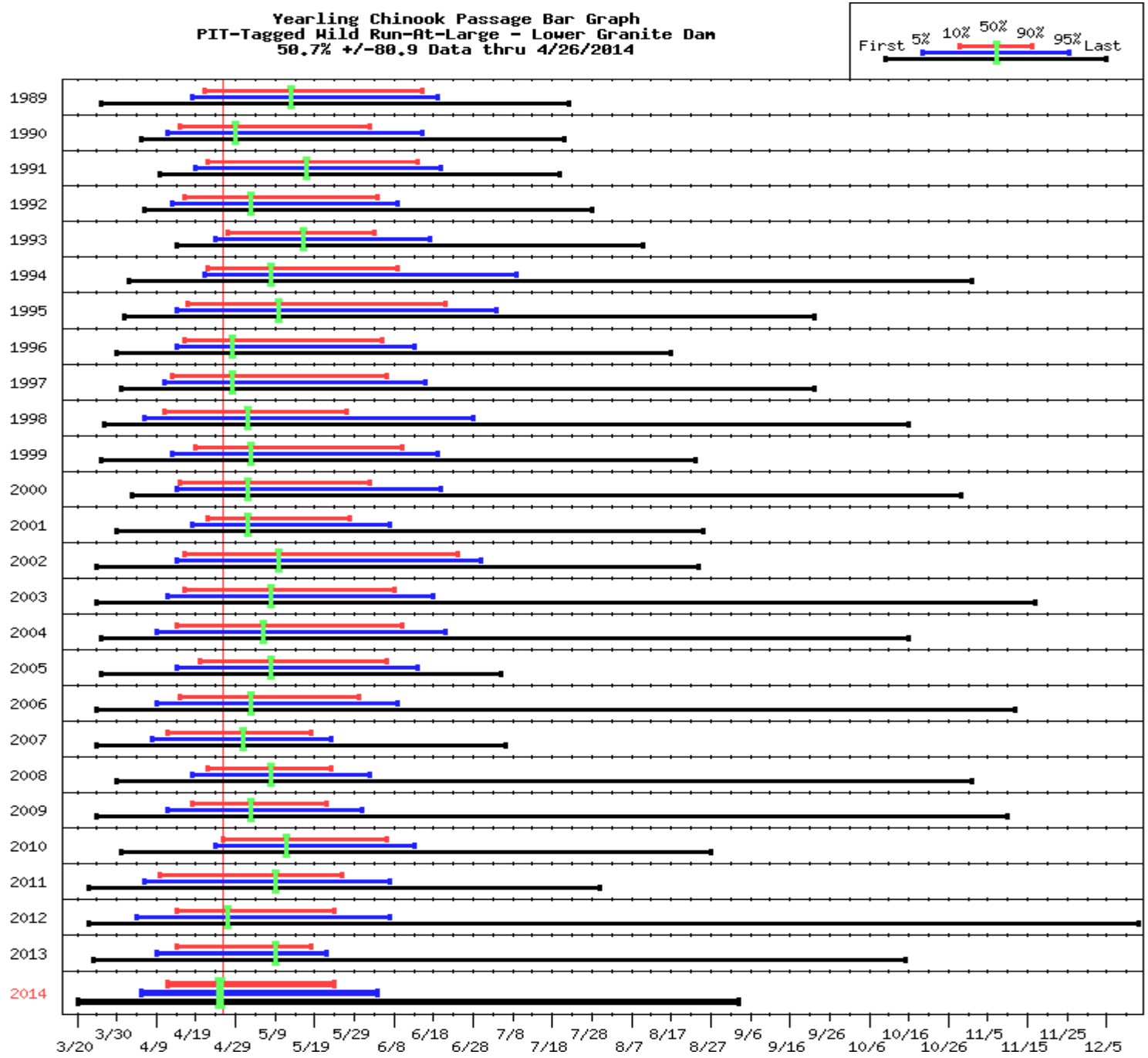
FCRPS BiOp operations

- Criteria for transitioning to summer spill at lower Snake River (SR) projects changed
  - **From**: when subyearling chinook collection at the SR projects exceed 50% for a 3 day period for each SR project after June 1,
  - **To**: a 95% juvenile spring migrant passage criteria at LGR and incremented by an estimate of water travel time for LMN.

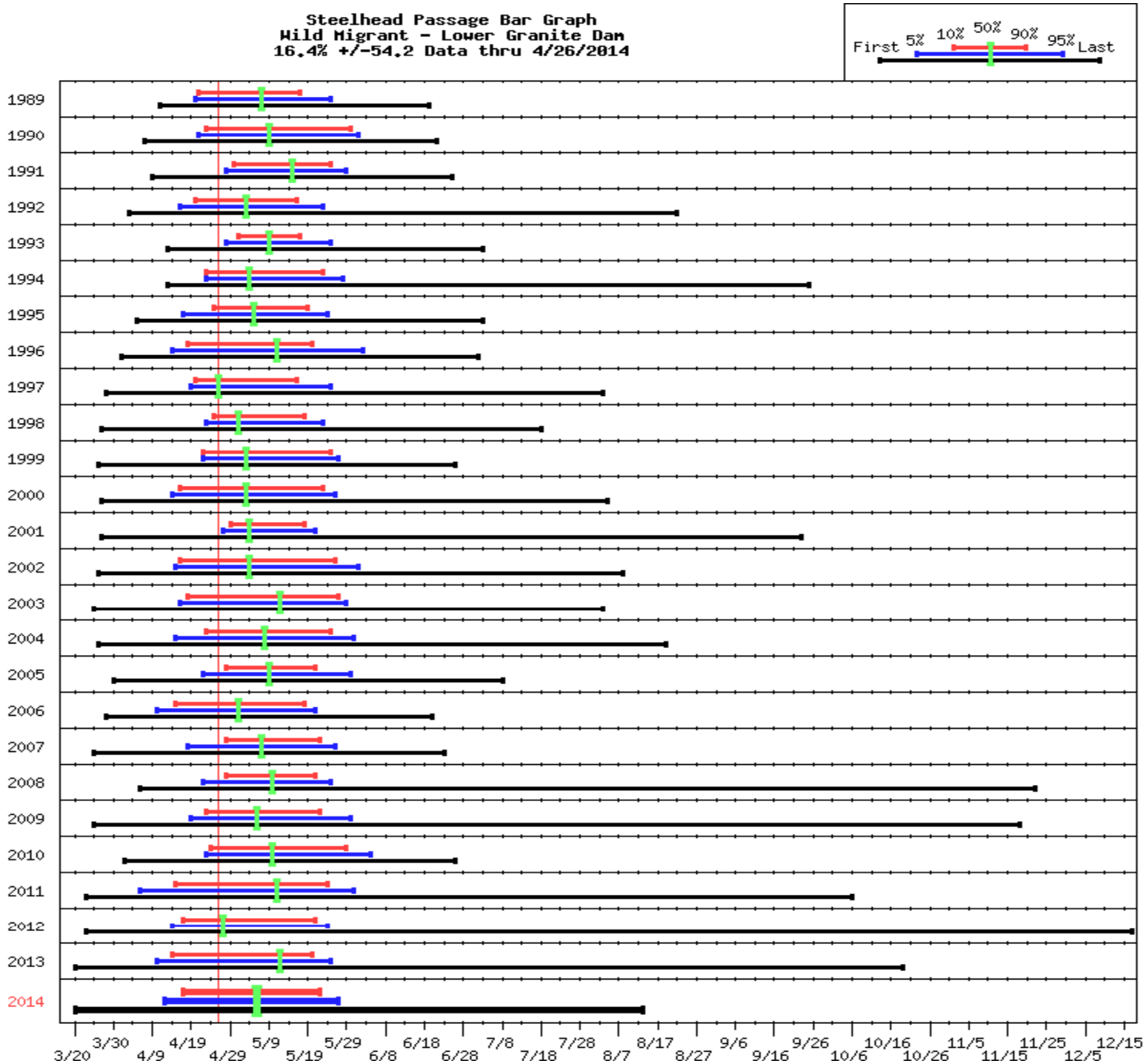

Lower Granite Dam
Percent Passage for PIT-Tagged Wild Run-At-Large Yearling Chinook
Data thru 4/26/2014
Current Prediction: 51% +- 81%
Percent Passage
0
20
40
60
80
100
04/01
05/01
06/01
07/01
08/01
09/01
Date
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Current
Forecast


Yearling Chinook Passage Bar Graph
PIT-Tagged Wild Run-At-Large - Lower Granite Dam
50.7% +/-80.9 Data thru 4/26/2014
First
5%
10%
50%
90%
95%
Last
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
3/20
3/30
4/9
4/19
4/29
5/9
5/19
5/29
6/8
6/18
6/28
7/8
7/18
7/28
8/7
8/17
8/27
9/6
9/16
9/26
10/6
10/16
10/26
11/5
11/15
11/25
12/5

Migration Timing Characteristics

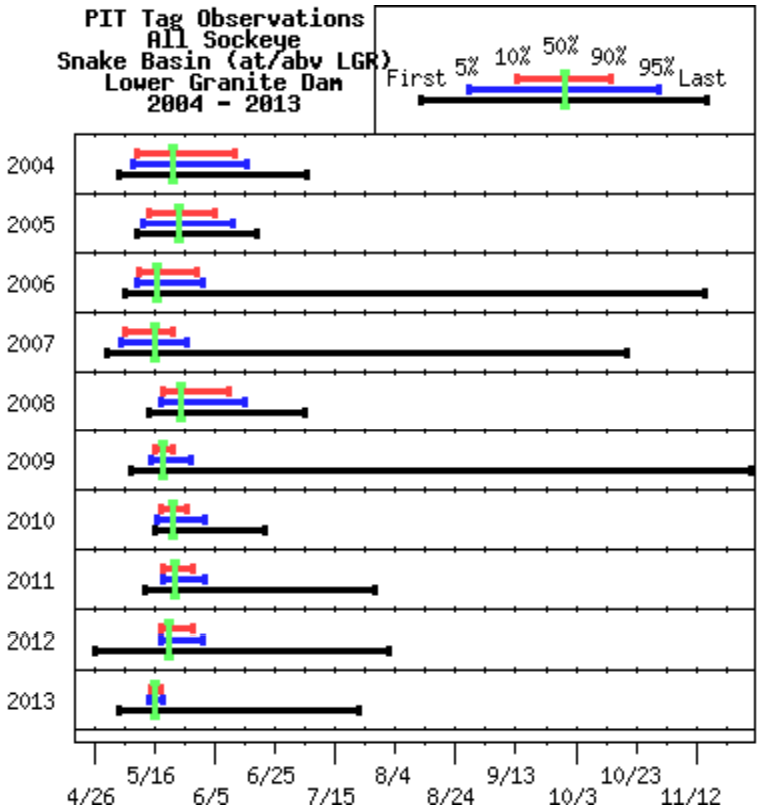
Wild spring chinook

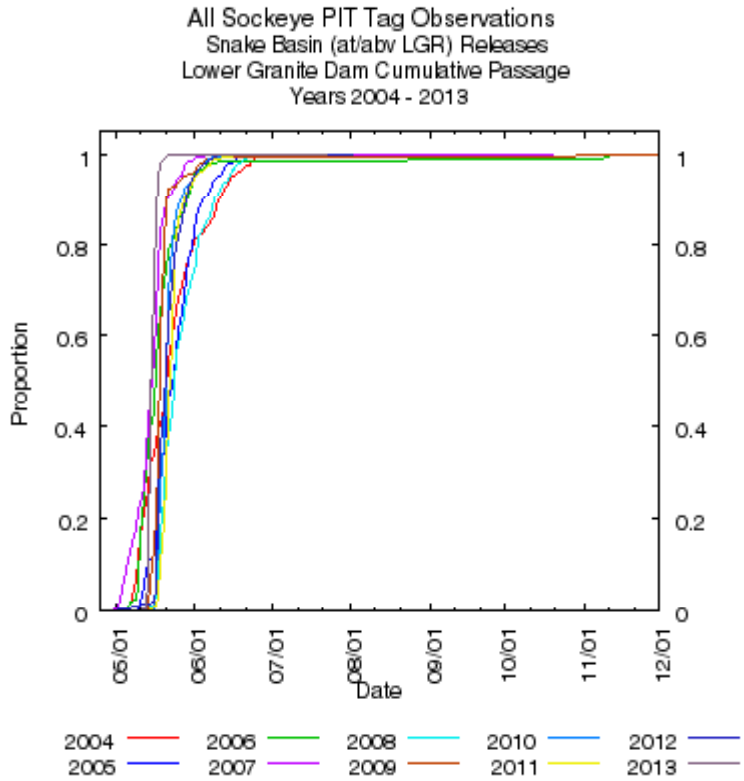
Year	Passage Dates								Middle 80% Days
	First	1%	5%	10%	50%	90%	95%	Last	
1998	03/27	04/03	04/06	04/11	05/02	05/27	6/28	100/16	47
1999	03/26	04/02	04/13	04/19	05/03	06/10	06/19	08/23	53
2000	04/02	04/10	04/13	04/14	05/01	06/01	06/19	10/28	49
2001	03/30	04/11	04/18	04/22	05/02	05/28	06/07	08/25	37
2002	03/25	04/10	04/14	04/16	05/10	06/24	06/30	08/24	70
2003	03/25	04/03	04/12	04/16	05/08	06/08	06/18	11/17	54
2004	03/25	04/03	04/08	04/13	05/05	06/09	06/20	10/15	58
2005	03/26	04/08	04/14	04/20	05/08	06/06	06/14	07/05	48
2006	03/25	04/05	04/09	04/15	05/03	05/30	06/09	11/12	46
2007	03/25	04/03	04/08	04/12	05/01	05/18	05/23	07/06	37
2008	03/29	04/08	04/17	04/21	05/07	05/22	06/01	10/31	32
2009	03/25	04/04	04/12	04/18	05/03	05/22	05/31	11/10	35
2010	03/31	04/22	04/24	04/26	05/12	06/06	06/13	08/27	42
2011	03/23	04/03	04/06	04/10	05/09	05/26	06/07	07/30	47
2012	03/22	03/27	04/03	04/13	04/26	05/23	06/06	12/12	41
2013	03/24	04/04	04/09	04/14	05/09	05/18	05/22	10/15	35
2014	03/20	03/30	04/05	04/12	04/25	05/24	06/04	09/03	43


Steelhead Passage Bar Graph
Wild Migrant - Lower Granite Dam
16.4% +/-54.2 Data thru 4/26/2014
First
5%
10%
50%
90%
95%
Last
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
3/20
3/30
4/9
4/19
4/29
5/9
5/19
5/29
6/8
6/18
6/28
7/8
7/18
7/28
8/7
8/17
8/27
9/6
9/16
9/26
10/6
10/16
10/26
11/5
11/15
11/25
12/5
12/15

Migration Timing Characteristics Wild Steelhead

Year	Passage Dates								Middle 80% Days
	First	1%	5%	10%	50%	90%	95%	Last	
1998	03/27	04/05	04/23	04/25	05/01	05/18	05/23	07/18	24
1999	03/26	04/05	04/22	04/22	05/03	05/25	05/27	06/26	34
2000	03/26	04/08	04/13	04/15	05/02	05/22	05/25	08/03	38
2001	03/27	04/23	04/27	04/29	05/04	05/18	05/21	09/23	20
2002	03/26	04/12	04/15	04/16	05/04	05/26	06/01	08/08	41
2003	03/25	04/04	04/16	04/18	05/12	05/27	05/29	08/03	40
2004	03/25	04/04	04/14	04/22	05/07	05/24	05/30	08/18	33
2005	03/30	04/11	04/22	04/28	05/09	05/21	05/30	07/08	24
2006	03/28	04/08	04/10	04/15	05/01	05/18	05/21	06/20	34
2007	03/25	04/09	04/18	04/28	05/07	05/22	05/26	06/23	25
2008	04/05	04/18	04/21	04/27	05/09	05/20	05/24	11/21	24
2009	03/25	04/13	04/19	04/23	05/06	05/22	05/30	11/18	30
2010	04/02	04/22	04/23	04/24	05/10	05/29	06/04	06/26	36
2011	03/23	04/02	04/06	04/15	05/11	05/24	05/31	10/06	40
2012	03/22	04/03	04/13	04/16	04/26	05/20	05/23	12/16	35
2013	03/20	04/08	04/10	04/14	05/12	05/20	05/25	10/19	37
2014	03/20	03/31	04/12	04/17	05/06	05/22	05/27	08/13	36


PIT Tag Observations
All Sockeye
Snake Basin (at/abv LGR)
Lower Granite Dam
2004 - 2013
First
5%
10%
50%
90%
95%
Last
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
4/26
5/16
6/5
6/25
7/15
8/4
8/24
9/13
10/3
10/23
11/12


All Sockeye PIT Tag Observations
Snake Basin (at/abv LGR) Releases
Lower Granite Dam Cumulative Passage
Years 2004 - 2013
Proportion
0
0.2
0.4
0.6
0.8
1
05/01
06/01
07/01
08/01
09/01
10/01
11/01
12/01
Date
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013

Migration Timing Characteristics

Snake River Sockeye

Year	Passage Dates								Middle 80% Days
	First	1%	5%	10%	50%	90%	95%	Last	
2004	05/03	05/06	05/08	05/09	05/21	06/11	**06/15**	07/05	34
2005	05/10	05/11	05/12	05/14	05/24	06/05	**06/11**	06/19	23
2006	05/06	05/07	05/10	05/11	05/17	05/30	**06/01**	11/15	20
2007	04/30	05/03	05/05	05/06	05/16	05/22	**05/27**	10/20	17
2008	05/13	05/15	05/17	05/18	05/24	06/09	**06/14**	07/04	23
2009	05/08	05/15	05/15	05/16	05/19	05/22	**05/28**	11/30	7
2010	05/16	05/17	05/17	05/18	05/22	05/27	**06/02**	06/22	10
2011	05/13	05/18	05/19	05/19	05/23	05/29	**06/02**	07/28	11
2012	04/25	05/10	05/17	05/17	05/20	05/28	**05/31**	08/01	12
2013	05/04	05/14	05/14	05/15	05/16	05/18	**05/19**	07/23	4

Snake River Wild Spring Chinook mean seasonal travel time (days)

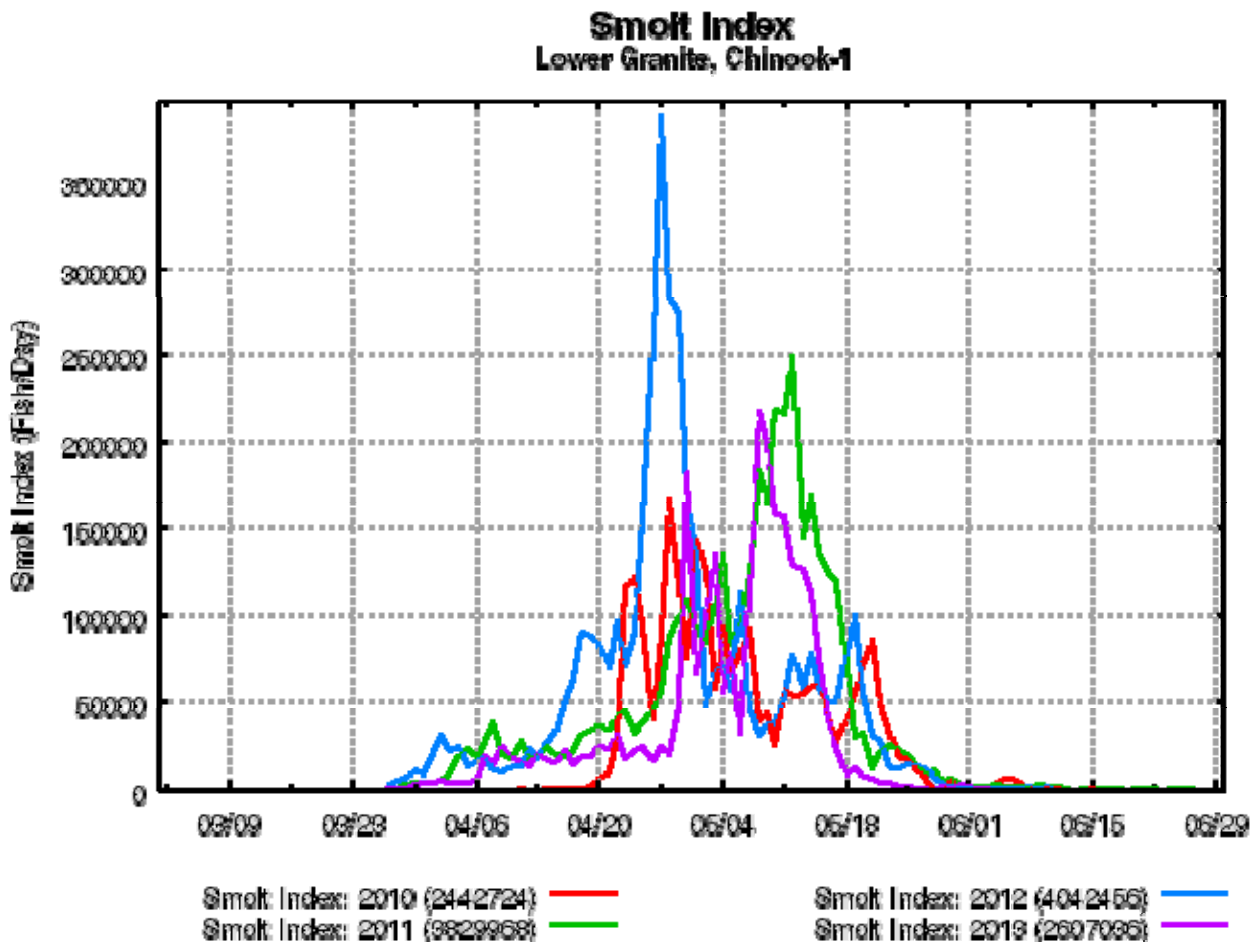
Arithmetic mean travel times by reach and year																						
Reach	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
LGR-LGS	6.17	6.36	6.12	5.68	4.53	6.21	4.32	5.18	7.76	4.92	4.70	5.27	5.84	4.14	4.64	5.23	4.25	3.10	4.18	4.41	3.32	4.01
LGR-LMN	7.68	10.79	8.43	7.48	6.42	8.82	6.44	7.51	14.64	9.17	6.43	10.48	8.12	5.94	6.24	7.10	6.12	4.36	5.52	6.60	4.95	6.40

Snake River Sockeye mean seasonal travel time (days)

Arithmetic mean travel times by reach and year																						
Reach	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
LGR-LGS		4.06	7.90	7.46	16.40	4.56	2.78	5.77	6.49	3.38	1.74	3.08	5.45	3.11	5.01	3.33	2.54	2.35	3.77	3.63	1.95	
LGR-LMN		6.43	12.86	5.00	8.30	6.82	4.48	4.06	17.14	6.90	3.31	9.02	9.13	3.94	5.56	4.15	3.59	3.95	4.88	5.55	3.02	

Snake River Steelhead mean seasonal travel times (days)

Arithmetic mean travel times by reach and year																						
Reach	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
LGR-LGS	3.79	5.55	5.62		2.63	3.59	3.03	4.38	6.62	4.11	3.82	4.94	4.33	2.78	3.48	3.50	2.86	2.54	2.81	2.42	2.61	2.85
LGR-LMN	4.60	8.61	7.90		4.96	6.55	5.80	7.89	12.87	8.90	7.52	9.33	7.14	5.10	6.79	4.78	5.64	4.23	5.19	4.95	4.49	5.51


Smolt Index
Lower Granite, Chinook-1
Smolt Index (Fish/Day)
350000
300000
250000
200000
150000
100000
50000
0
03/09
03/23
04/06
04/20
05/04
05/18
06/01
06/15
06/29
Smolt Index: 2010 (2442724)
Smolt Index: 2011 (3829968)
Smolt Index: 2012 (4042456)
Smolt Index: 2013 (2607086)

Summary of procedure used to determine dates in draft 2014 FOP

- Based on median (change from mean) passage timing for the past 5 years and allowing for travel time to lower river projects the spring-spill-transition dates will be:
- LGR – June 6
- LGS – June 11
- LMN – June 14

Alternative proposal

- Base the transition on the last date observed in the past 5 year data set. This would result in:
- LGR - June 13
- LGS – June 18
- LMN – June 21