



# 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 [fpcstaff@fpc.org](mailto:fpcstaff@fpc.org)

## MEMORANDUM

TO: Paul Wagner (Chair, FPAC)

FROM: Michele DeHart

DATE: July 20, 2009

RE: Proportion of sockeye adults passing McNary Dam during evening non-counting hours

In response to your request, the FPC staff has reviewed PIT-tag detection data for adult sockeye passing McNary Dam (MCN). Specifically, the FPC staff reviewed four years of adult detection data (2006-2009) at MCN in order to determine what proportion of PIT-tagged adults pass MCN during times when counting occurs versus those times when counting does not occur (i.e., non-counting hours). Below is a brief summary of our findings, followed by a more detailed discussion.

- Overall, approximately 4.9% of PIT-tagged sockeye adults detected at MCN were detected during the non-counting periods.
- For the weekly time periods analyzed, adult sockeye passage at MCN during non-counting periods seems fairly consistent, ranging from 4.3% to 5.8%.
- When adult sockeye window counts at MCN were adjusted based on weekly estimates of passage during non-counting periods, sockeye adult counts at MCN increased by 4.2-6.6%.

### **McNary Dam Adult Counts:**

Each year, McNary Dam (MCN) begins counting adult salmonids on March 1<sup>st</sup> and generally continues through December 31<sup>st</sup>. Sockeye adult passage generally does not begin at MCN until early to mid-June and continues through September. The majority (>99%) of the adult sockeye run at MCN usually passes between June 1<sup>st</sup> and August 1<sup>st</sup>. During this time, adult counts at MCN are based on direct counts which take place from 05:00 to 21:00 (DST). Therefore, adult sockeye counts at MCN are based on counts from a 16-hour period. This means

that adults passing the counting station during non-counting times are missed. It is thought that a negligible proportion of adult salmonids pass through the adult ladders during these non-counting times.

To estimate the proportion of sockeye adults that pass through the adult ladder at MCN during non-counting times, FPC staff relied on PIT-tag data. Specifically, FPC staff reviewed four years (2006-2009) of detection data for PIT-tagged adult sockeye detected at the MCN counting window detection monitors between June 14<sup>th</sup> and July 18<sup>th</sup> of each year. Based on window counts during these years, this time period encompasses a minimum of 93% of the adults passing MCN. There were no detections of PIT-tagged adults in 2005 and too few detections in 2004 to be included in this analysis. Based on the counting times presented above, PIT-tagged adults were categorized as having passed MCN during the counting period versus those that passed during the non-counting period. Passage time was based on the time of last detection at each of the counting window monitors.

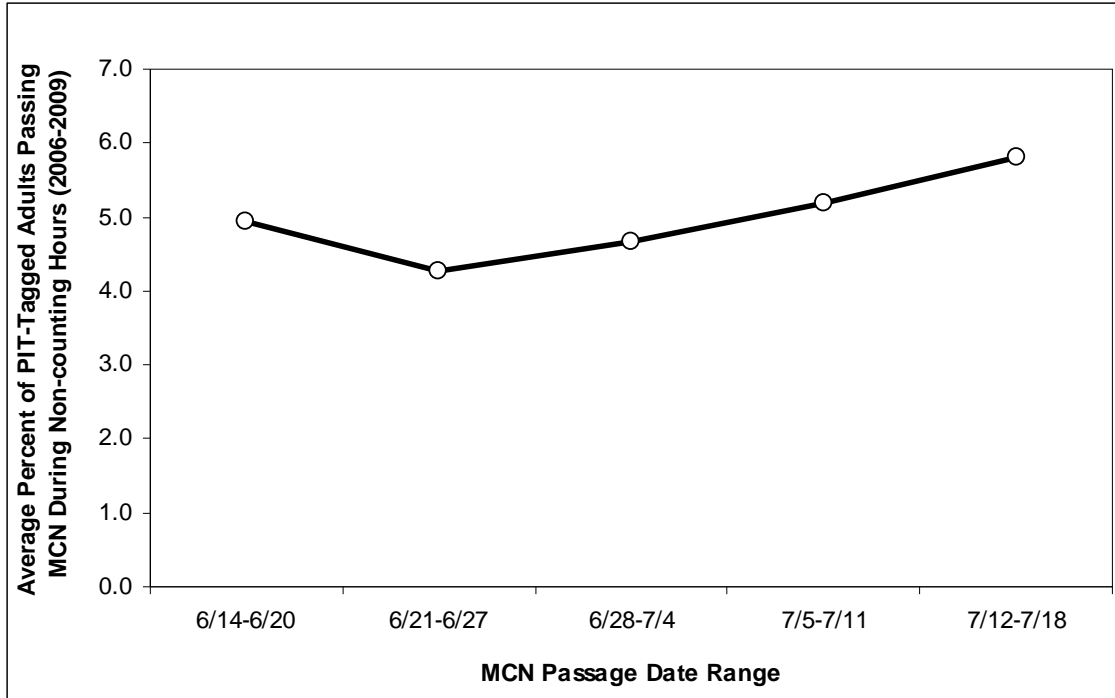
On average, about 4.9% of PIT-tagged adult sockeye detected in the MCN adult ladder counting windows from 2006 through 2009 were detected during non-counting hours (Table 1). However, there was some variability between the years. So far, return year 2009 has the lowest estimate of non-counting passage for adult sockeye at 4.1%. Return year 2007 had the highest estimate of passage during non-counting periods (6.4%) (Table 1).

**Table 1.** Detections of PIT-tagged adult sockeye at MCN during counting and non-counting time periods and percent of adult sockeye detected at MCN that were detected during non-counting periods. These data are for detections June 14<sup>th</sup> to July 18<sup>th</sup> of each year.

<b>Year</b>	<b>Counting Period Detections</b>	<b>Non-Counting Period Detections</b>	<b>Overall Percent Detected During Non-Counting Periods</b>
2006	395	23	5.5
2007	335	23	6.4
2008	831	42	4.8
2009	851	36	4.1
<b>2006 – 2009</b>	2412	124	4.9

In order to investigate whether passage during non-counting periods might change over the adult passage season, adult detections at MCN were broken into five one-week periods. The first one-week period began on June 14<sup>th</sup> of each year. Based on this analysis, the passage of adult sockeye at MCN during non-counting periods is fairly consistent throughout the season, generally ranging from 3.0% to 7.0% on a weekly basis (Table 2). On average, passage of sockeye adults at MCN during non-counting periods ranged from 4.3% to 5.8% (Figure 1).

Finally, based on the seasonal estimates of adult sockeye passage during non-counting periods, we estimated an adjusted adult count if counting were to be extended to 24 hours (Table 2). These adjusted adult counts represented a 4.2-6.6% increase over the actual adult counts at MCN for each of the years analyzed.



**Figure 1.** Average percent of PIT-tagged adult sockeye that were detected at MCN during non-counting periods.

**Table 2.** Seasonal detections of PIT-tagged adult sockeye at MCN during counting and non-counting time periods and percent of adults passing MCN that passed during non-counting periods. Also included are estimates of adjusted adult sockeye window counts at MCN based on the passage of adult sockeye during non-counting periods at MCN.

Year	Date Range	Counting Period Detections	Non-Counting Period Detections	Percent Detected During Non-Counting Period	Adult Sockeye Window Counts	Adjusted Adult Sockeye Window Counts
2006	6/14-6/20	18	1	5.3	2,647	2,794
	6/21-6/27	81	0	0.0	5,919	5,919
	6/28-7/4	138	9	6.1	12,413	13,223
	7/5-7/11	91	3	3.2	5,348	5,524
	7/12-7/18	67	10	13.0	1,732	1,991
	<b>Total Count</b>					<b>28059</b>
2007	6/14-6/20	57	4	6.6	2,012	2,153
	6/21-6/27	95	9	8.7	5,700	6,240
	6/28-7/4	101	4	3.8	5,686	5,911
	7/5-7/11	71	6	7.8	2,373	2,574
	7/12-7/18	11	0	0.0	1,048	1,048
	<b>Total Count</b>				<b>16,819</b>	<b>17,926</b>
2008	6/14-6/20	75	2	2.6	8,027	8,241
	6/21-6/27	319	15	4.5	60,714	63,569
	6/28-7/4	214	15	6.6	56,246	60,188
	7/5-7/11	142	5	3.4	16,173	16,742
	7/12-7/18	81	5	5.8	3,969	4,214
	<b>Total Count</b>				<b>145,129</b>	<b>152,955</b>
2009	6/14-6/20	88	5	5.4	9,362	9,894
	6/21-6/27	193	8	4.0	32,662	34,016
	6/28-7/4	315	7	2.2	44,440	45,428
	7/5-7/11	191	13	6.4	26,722	28,541
	7/12-7/18	64	3	4.5	4,912	5,142
	<b>Total Count</b>				<b>118,098</b>	<b>123,020</b>



**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 [fpcstaff@fpc.org](mailto:fpcstaff@fpc.org)

### DATA REQUEST FORM

Request Taken By: Brandon Chockley Date: 14 July 09

**Data Requested By:**

Name: Paul Wagner, FPAC Phone: \_\_\_\_\_  
Address: \_\_\_\_\_ Fax: \_\_\_\_\_  
\_\_\_\_\_ Email: \_\_\_\_\_  
\_\_\_\_\_

**Data Requested:**

Estimate nighttime passage of sockeye @  
McN - PET-TOYS  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Data Format: Hardcopy  Text  Excel   
Delivery: Mail  Email  Fax  Phone

**Comments:**

Memo attached.  
\_\_\_\_\_  
\_\_\_\_\_

Data Compiled By: \_\_\_\_\_ Date: \_\_\_\_\_

Request # 42