

# 2012 Juvenile Winter Chinook Outmigration: Is This Year Any Different?



Presented by  
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# Orientation: Sacramento River Salmon



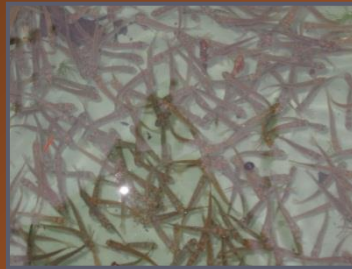
Late-Fall  
Winter  
Spring  
Fall



**Winter Chinook  
Carcass Survey Area  
(RM 288-302)**



≈ 50 miles



**Red Bluff Diversion Dam  
(RM 243)**

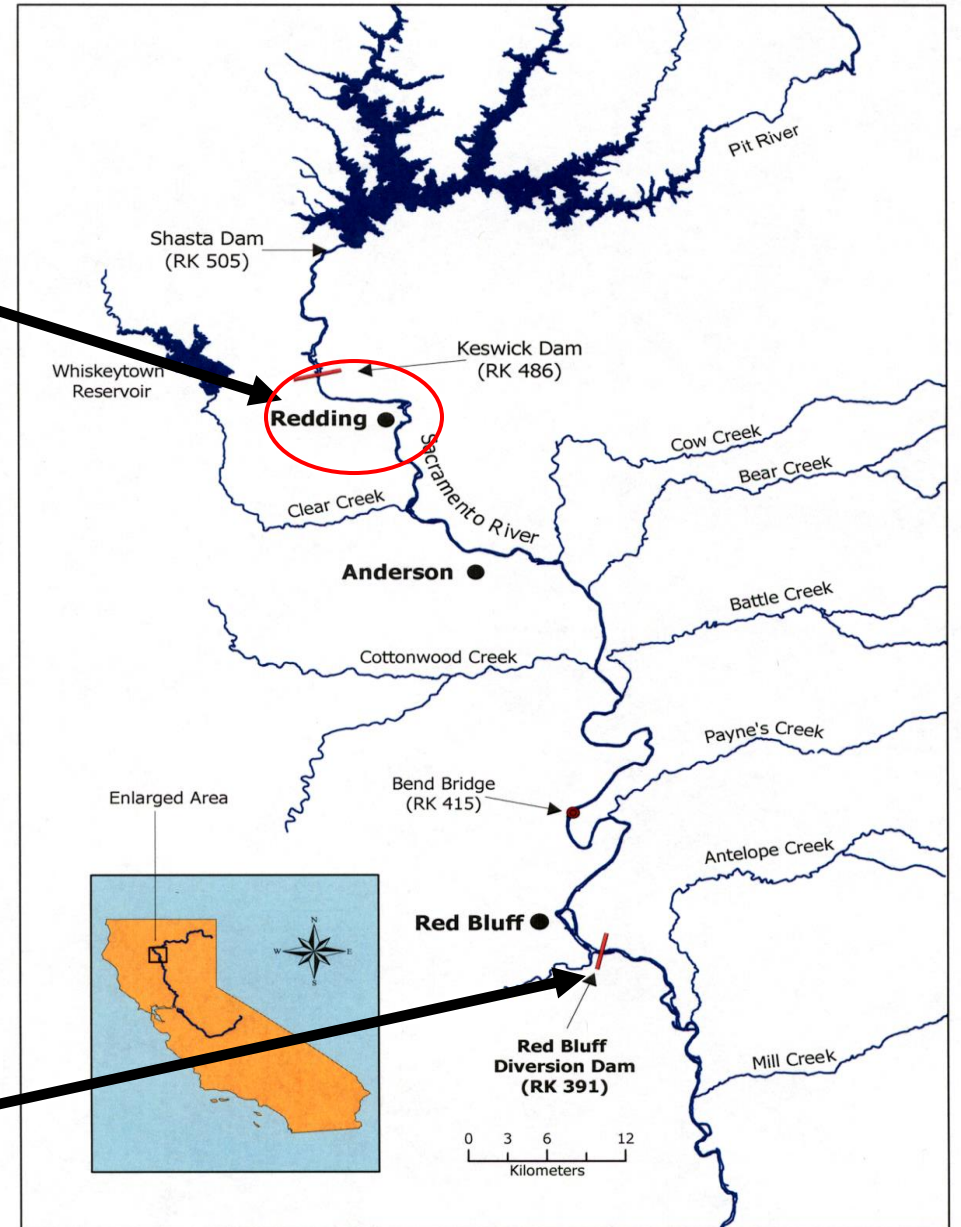


Figure 1. Location of Red Bluff Diversion Dam on the Sacramento River, California at river kilometer 391 (RK 391).

# Real-time winter Chinook Passage estimates:

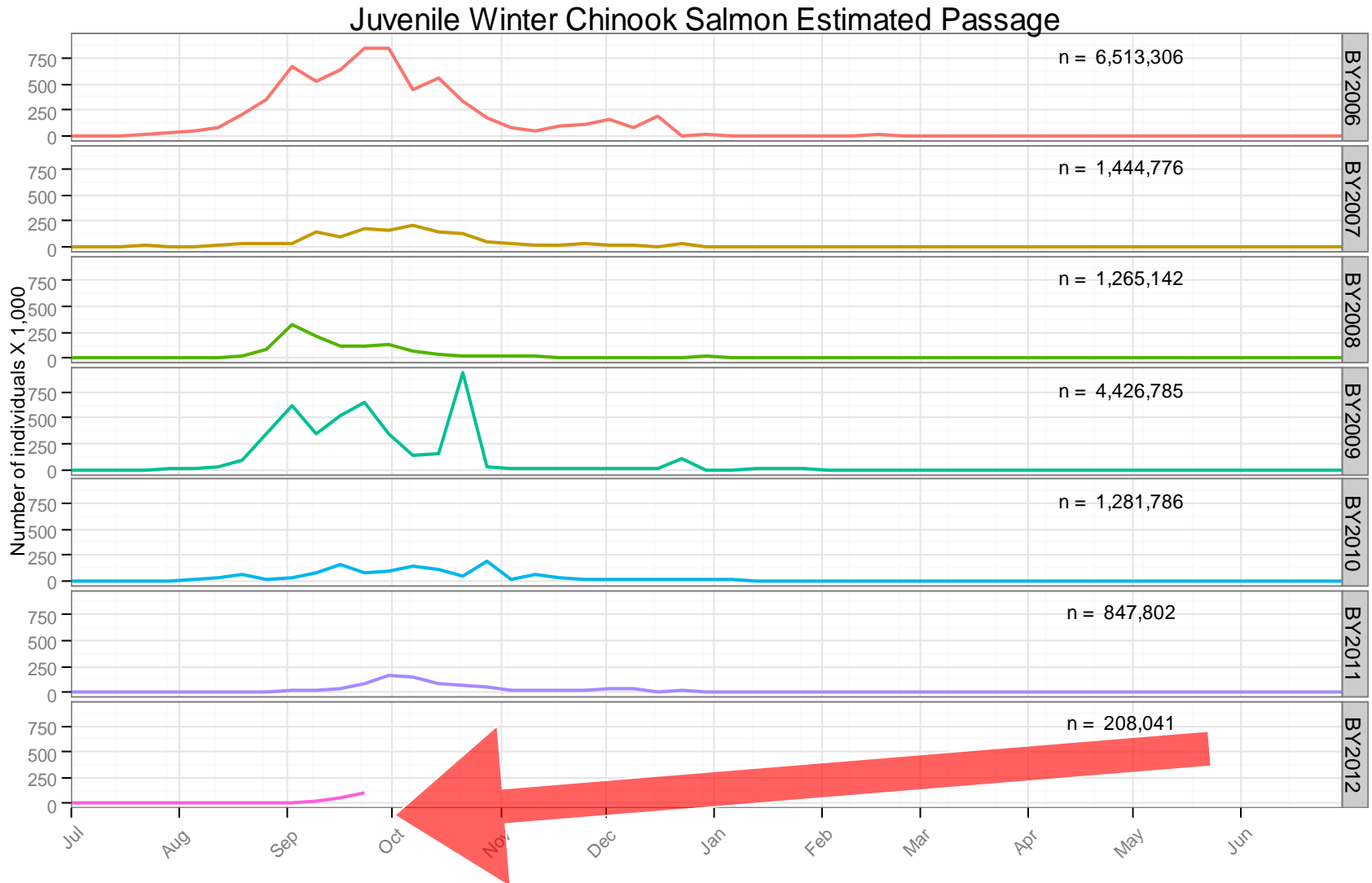
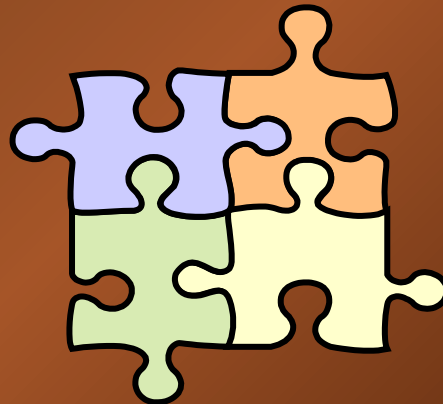


Figure 1. Weekly estimated passage of juvenile winter Chinook Salmon at Red Bluff Diversion Dam (RK391), by brood-year (BY). Fish were sampled using rotary-screw traps for the period July 1 2006 to present .

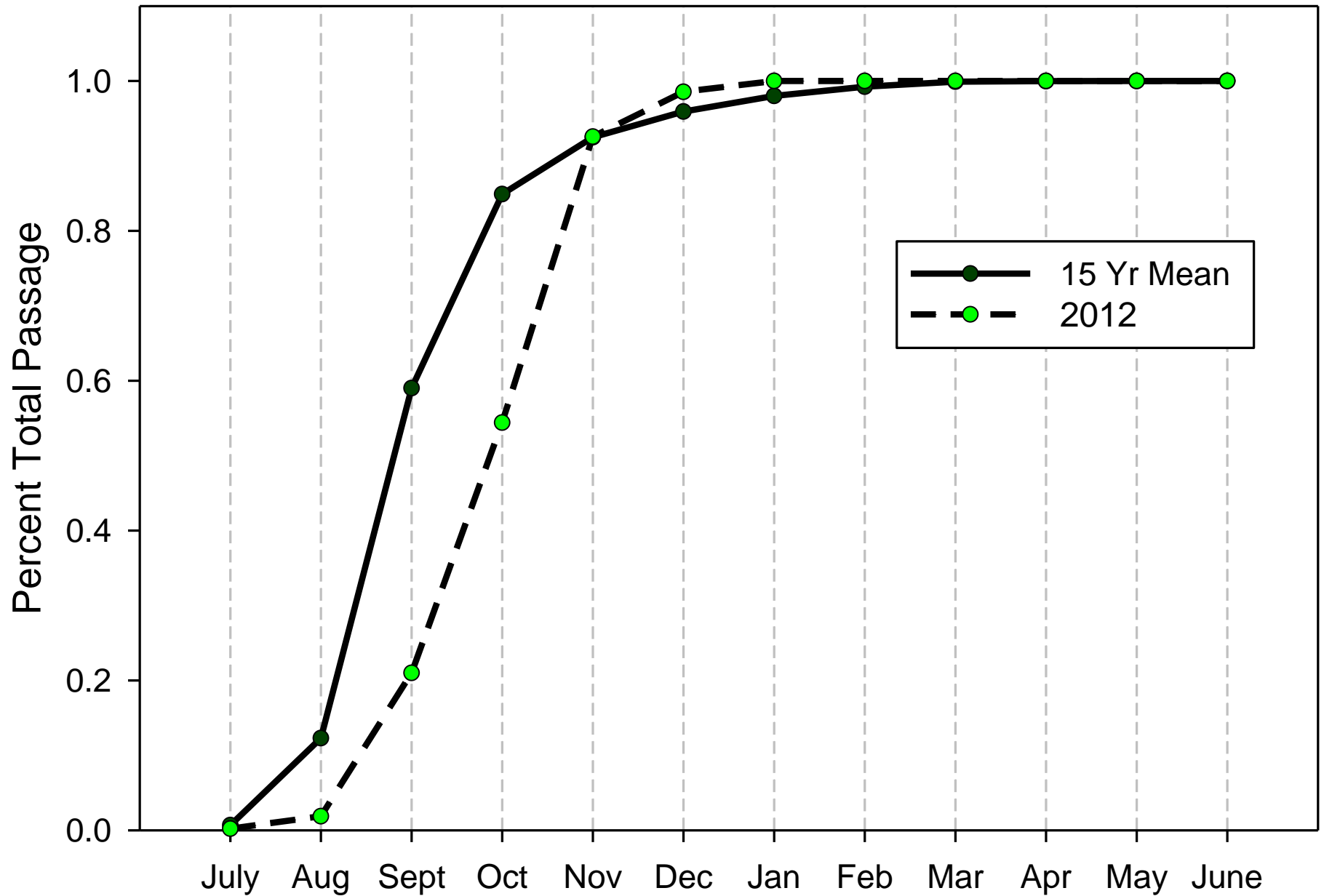
By October...



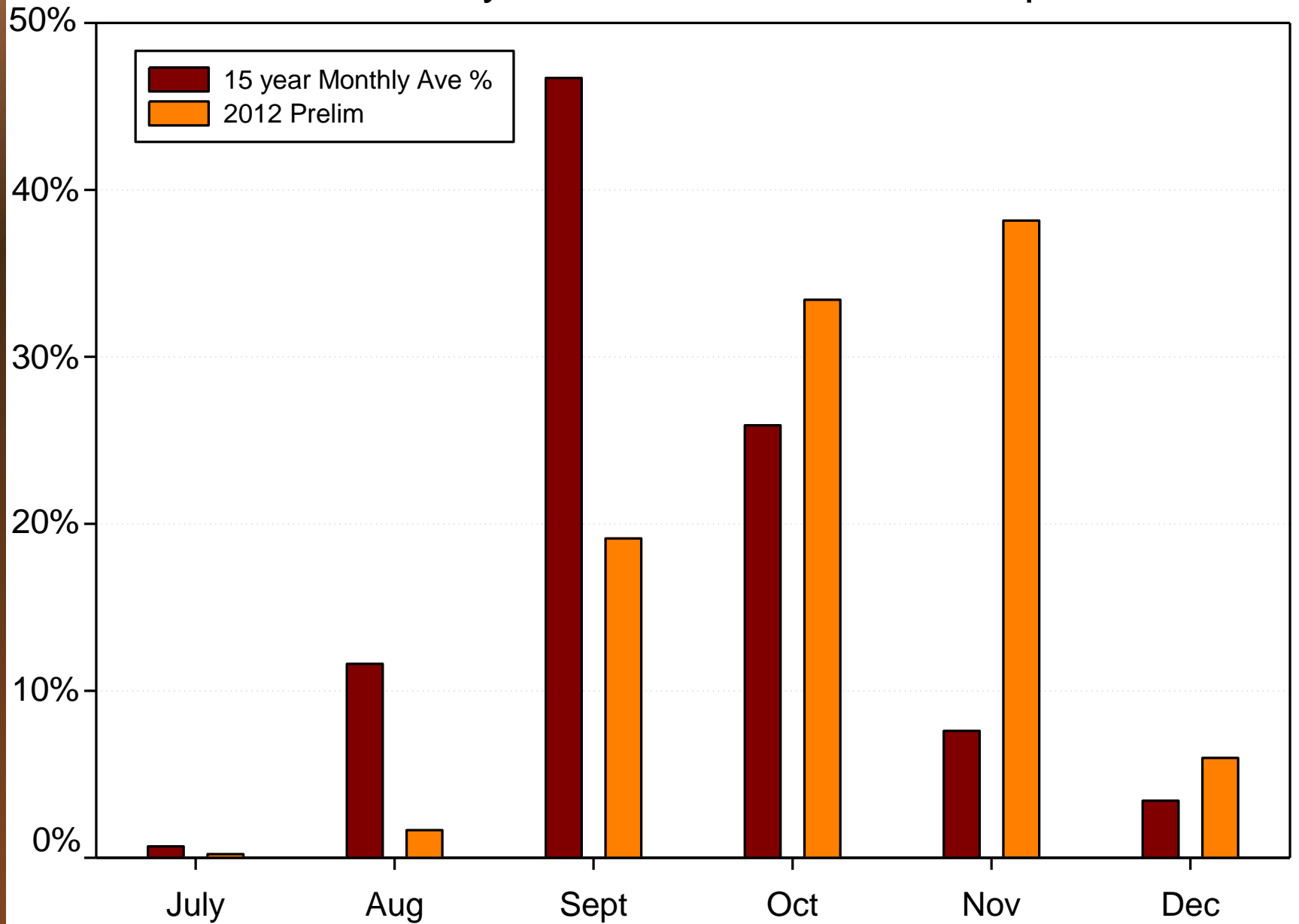
Where are all the 2012  
winter run juveniles????



# Cumulative Percent Winter Run Passage



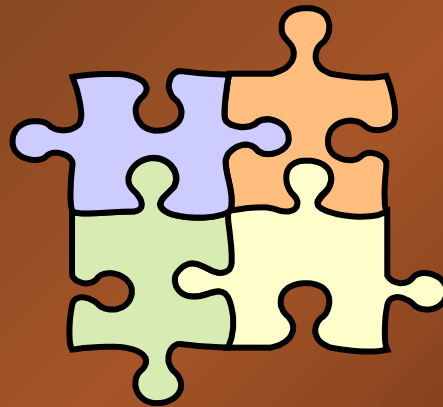
# WCS Monthly Abundance Pattern Comparison



Hmmm...



Let's shift gears a bit....



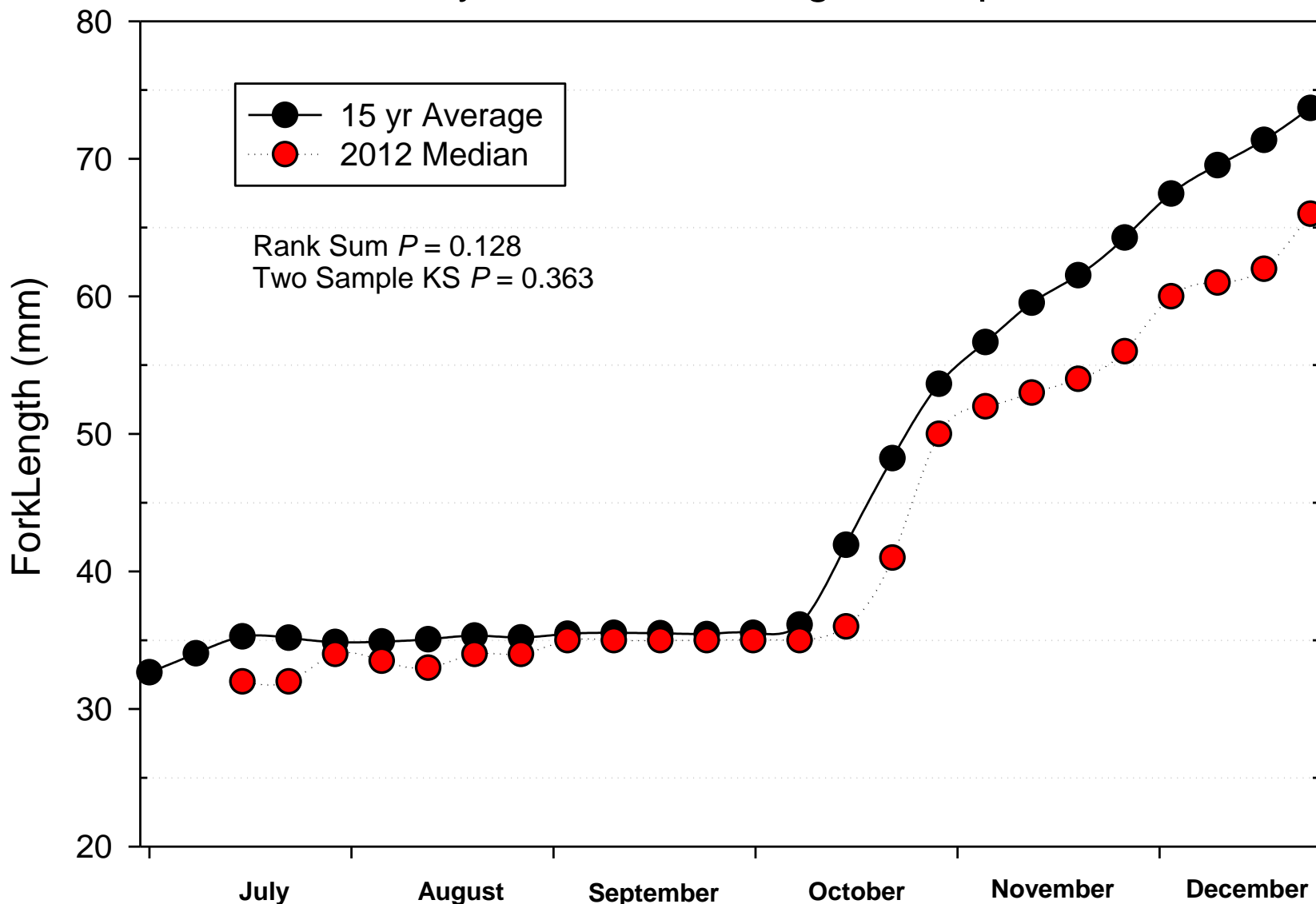




# Quick 16 year data crunch reveals...

| Week | 1995 | 1996 | 1997 | 1998 | 1999 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012        | Average | Median | Delta Median |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------------|---------|--------|--------------|
| 27   | 32   |      | 34   | 33   | 27   | 34   | 33   |      |      | 34   | 34   |      | 33   |      |      | preliminary | 32.7    | 33     |              |
| 28   |      |      | 34   | 35   | 35   | 35   | 34   | 31   | 34.5 | 35   | 35   |      | 31   | 35   |      |             | 34.0    | 35     |              |
| 29   | 36   |      | 35   | 34   | 36   | 35   | 35   | 36   | 36   | 35   | 35   | 35   | 34.5 | 36   |      | 32          | 35.3    | 35     |              |
| 30   | 37   | 34   | 36   | 34   | 37   | 35   | 34   | 35   | 36   | 35   | 35   | 34   | 34   | 36.5 |      | 32          | 35.2    | 35     |              |
| 31   | 36   | 35.5 | 35   | 33   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 34   | 37   | 32.5 | 34          | 34.9    | 35     | -2.5         |
| 32   | 31.5 | 37   | 35   | 34   | 35   | 35   | 36   | 35   | 35   | 35   | 35   | 35   | 34   | 36   | 35   | 33          | 34.9    | 35     | 0            |
| 33   | 35   | 34   | 35   | 34   | 35   | 35   | 36   | 35   | 35   | 35   | 35   | 35   | 35   | 36   | 36   | 33          | 35.1    | 35     | 1            |
| 34   | 35   | 34   | 35   | 34   | 36   | 35   | 37   | 36   | 36   | 35   | 35   | 35   | 35   | 37   | 35   | 34          | 35.3    | 35     | 0            |
| 35   | 34   | 34   | 35   | 34   | 35   | 36   | 37   | 36   | 36   | 35   | 35   | 35   | 35   | 36   | 35   | 34          | 35.2    | 35     | 0            |
| 36   | 34   | 34   | 35   | 34   | 35   | 36   | 37   | 36   | 36   | 36   | 36   | 35   | 36   | 36   | 35   | 34          | 35.4    | 36     | -1           |
| 37   | 35   | 35   | 35   | 34   | 35   | 36   | 37   | 36   | 35   | 36   | 36   | 35   | 36   | 36   | 36   | 35          | 35.5    | 36     | 0            |
| 38   | 35   | 35   | 35   | 34   | 36   |      | 36   | 35   | 36   | 36   | 36   | 35   | 36   | 36   | 36   | 35          | 35.5    | 36     | 0            |
| 39   | 34.5 | 34   | 35   | 34   | 36   | 36   | 36   | 35   | 36   | 36   | 36   | 35   | 37   | 36   | 35   | 36          | 35.4    | 36     | -1           |
| 40   | 35   | 34   | 35   | 34   | 36   | 36   | 37   | 35   | 36   | 36   | 36   | 35   | 37   | 36   | 35   | 38          | 35.5    | 36     | -1           |
| 41   | 35   | 35   | 37   | 34   | 36   | 37   | 37   | 35   | 36   | 36   | 36   | 40   | 37   | 36   | 36   | 39          | 36.2    | 36     | 0            |
| 42   | 36   | 57   | 45   | 44   | 46   | 39   | 37   | 37   | 37   | 37   | 37   | 52   | 48   | 41   | 40   | 44          | 42.2    | 40     | 0            |
| 43   | 51   | 60.5 | 53   | 52   | 56   | 47   | 38   | 47   | 42   | 40   | 40   | 55   | 53   | 51   | 47   | 49          | 48.8    | 51     | -4           |
| 44   | 52.5 | 60   | 55   | 57   | 59   | 51   | 48   | 52   | 49   | 48   | 48   | 60   | 59   | 54   | 52   | 51          | 53.6    | 52.5   | -0.5         |
| 45   | 58   | 64   | 57   | 56   | 59   | 53   | 52   | 55   | 51   | 53   | 53   | 63   | 61   | 57   | 58   | 54          | 56.7    | 57     | 1            |
| 46   |      | 69   | 61   | 56   | 62.5 | 57   | 53   | 59   | 57   | 55   | 55   | 66   | 64   | 61   | 59   | 56          | 59.6    | 59     | 0            |
| 47   | 63   | 71   | 63   | 58   | 62   | 59   | 57   | 61   | 59   | 57   | 57   | 67   | 66   | 63   | 60   | 57          | 61.5    | 61     | -1           |
| 48   | 65.5 | 74   | 68   | 60   | 69   | 62   | 59   | 64   | 60   | 59   | 59   | 69.5 | 69   | 63   | 63   | 57          | 64.3    | 63     | 0            |
| 49   | 68   | 90   | 70.5 | 65   | 68   | 62.5 | 61   | 67   | 63   | 62   | 62   | 73   | 70   | 65   | 65   |             | 67.5    | 65     |              |
| 50   | 70.5 | 84   | 73.5 | 68   | 74.5 | 64   | 63   | 69   | 67   | 64   | 64   | 74   | 74   | 68   | 65   |             | 69.5    | 68     |              |
| 51   | 70   | 82   | 66   | 71   | 80   | 77   | 64   | 72   | 68   | 67   | 67   | 74   | 77   | 66.5 | 70   |             | 71.4    | 70     |              |
| 52   | 68   | 72   | 70.5 | 81   | 86.5 | 72   |      | 75   |      | 66.5 | 66.5 | 82   | 78   | 70   | 71   |             | 73.8    | 72     |              |

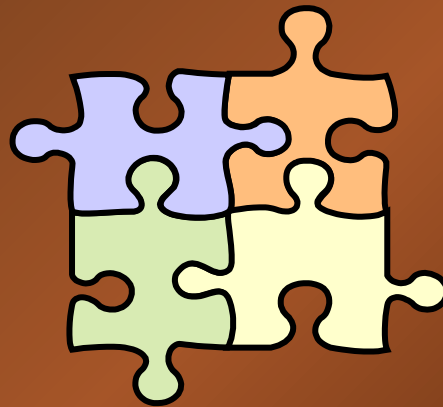
# Weekly Median Forklength Comparison



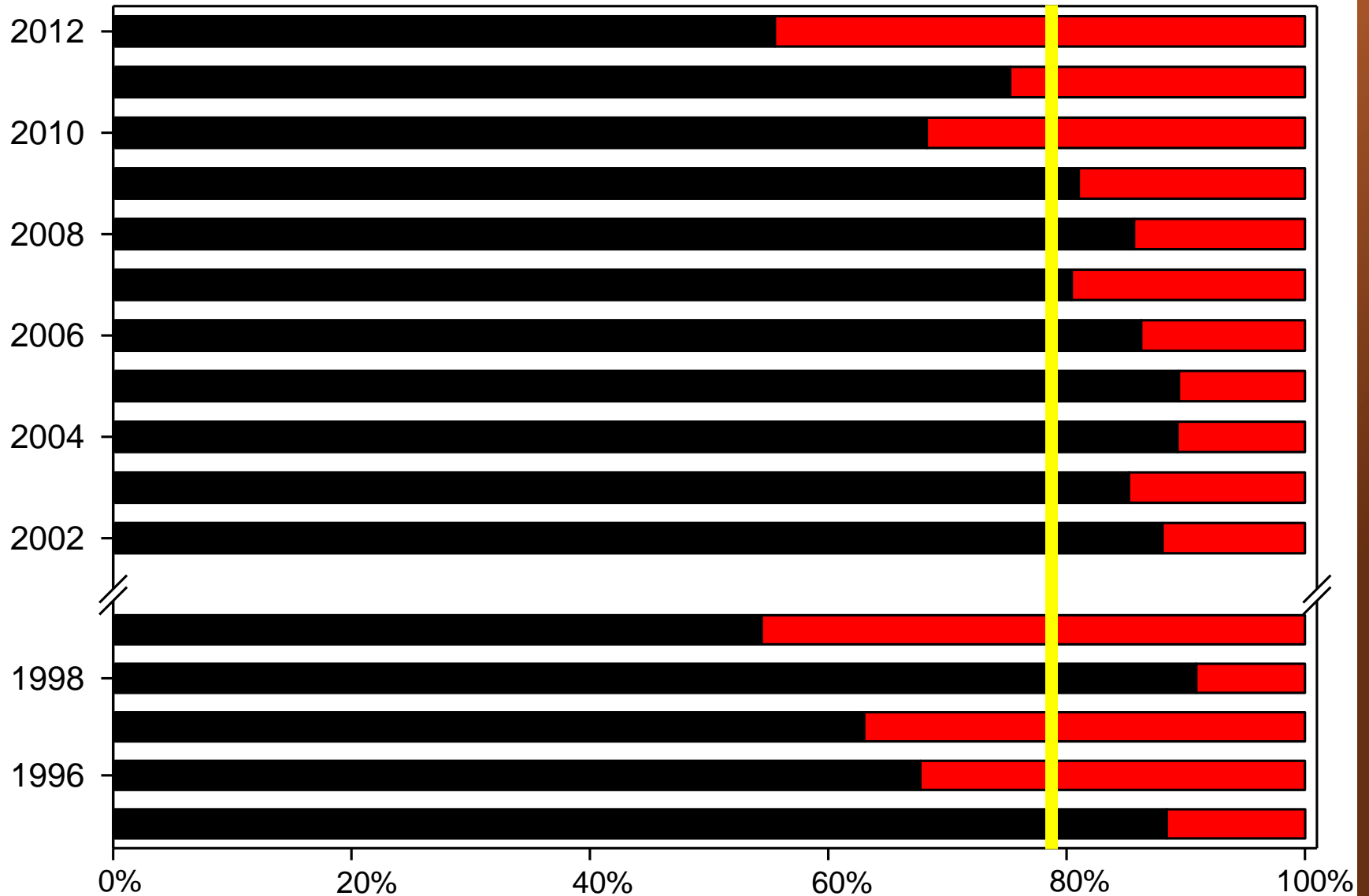
Hmmm...



Put these 2 together.....

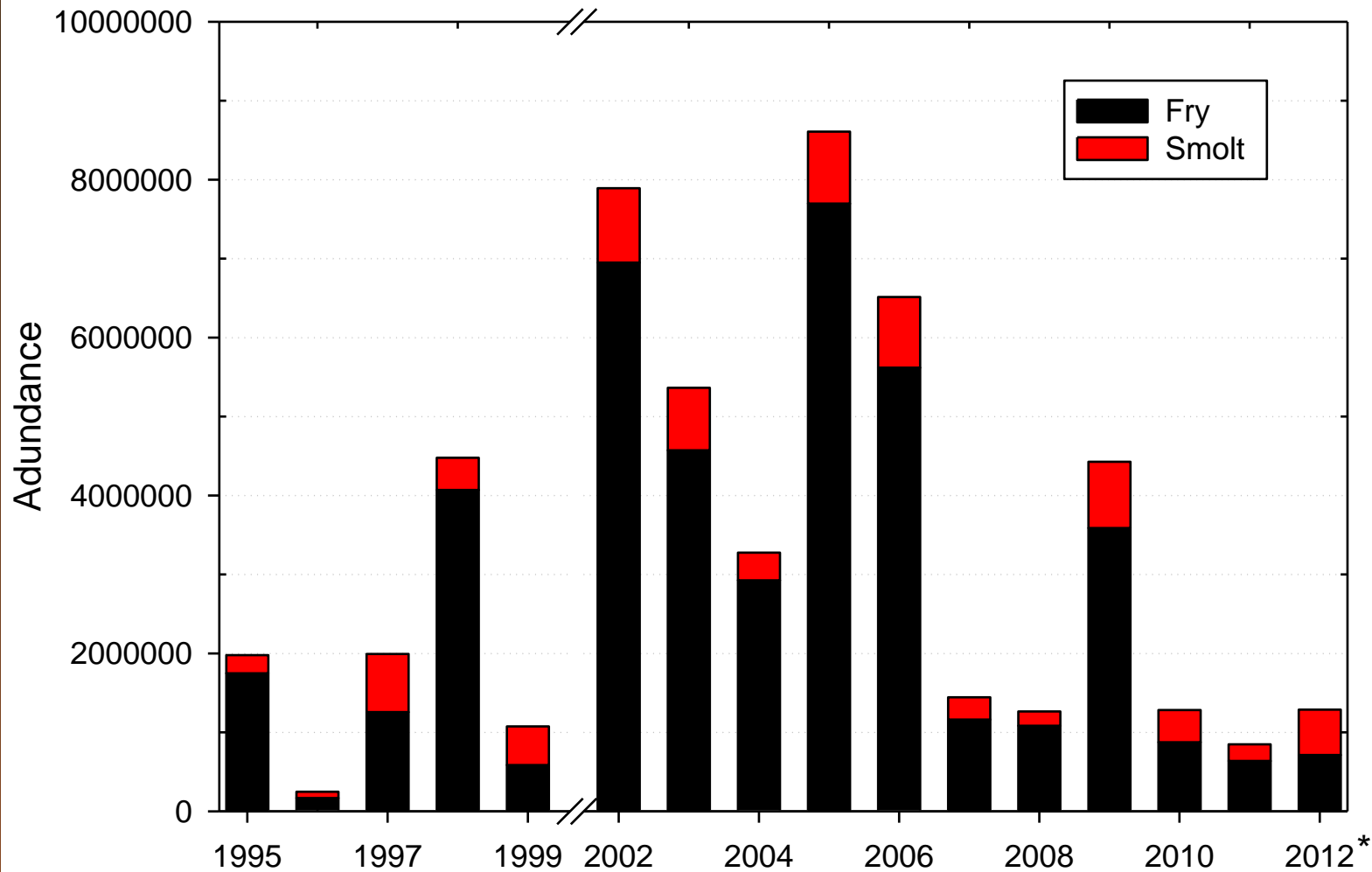


# WCS Fry (Black) to Smolt (Red) Passage Ratio



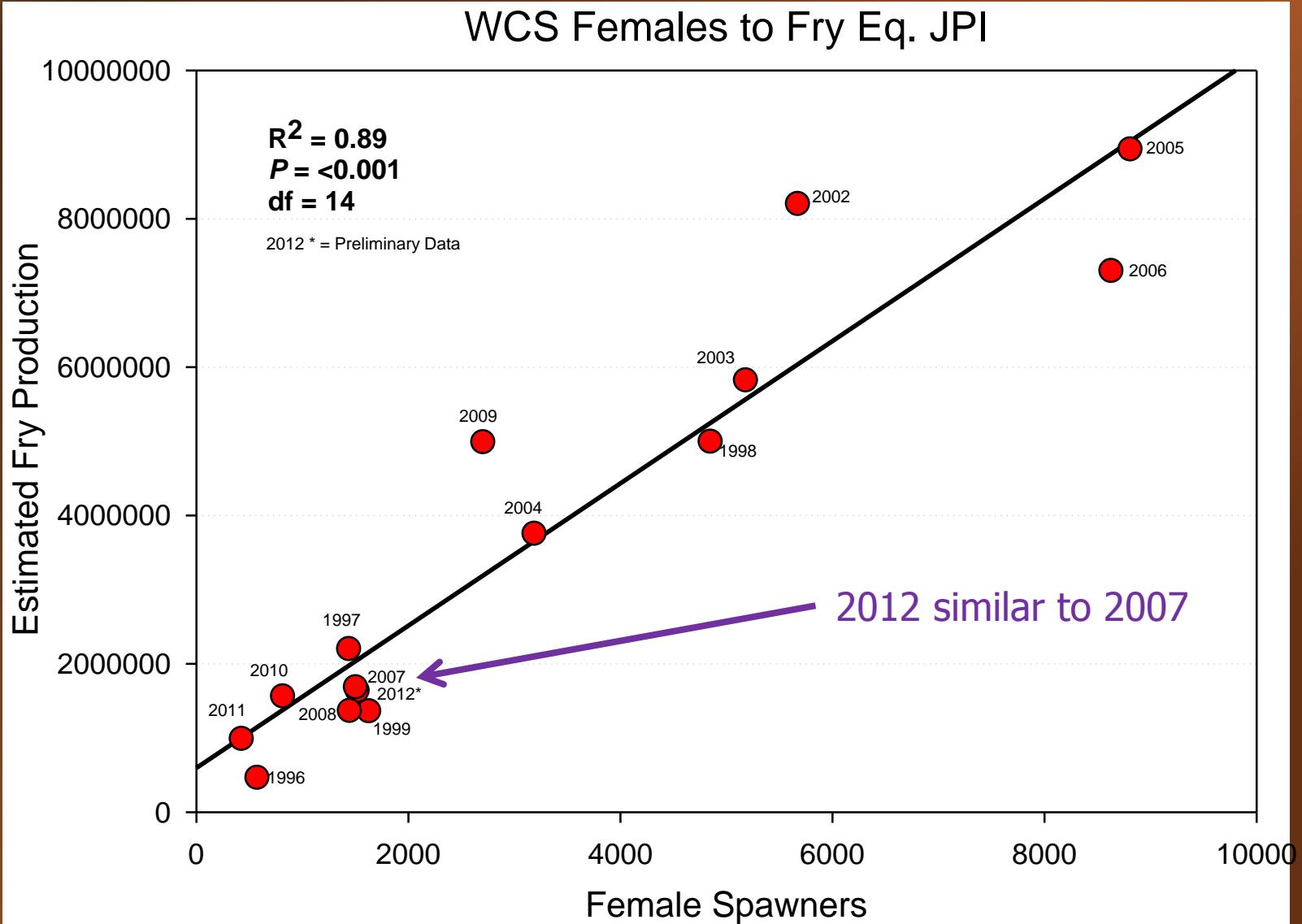
# Fry/Smolt Ratio's and Total Abundance

WCS Annual Abundance Indices

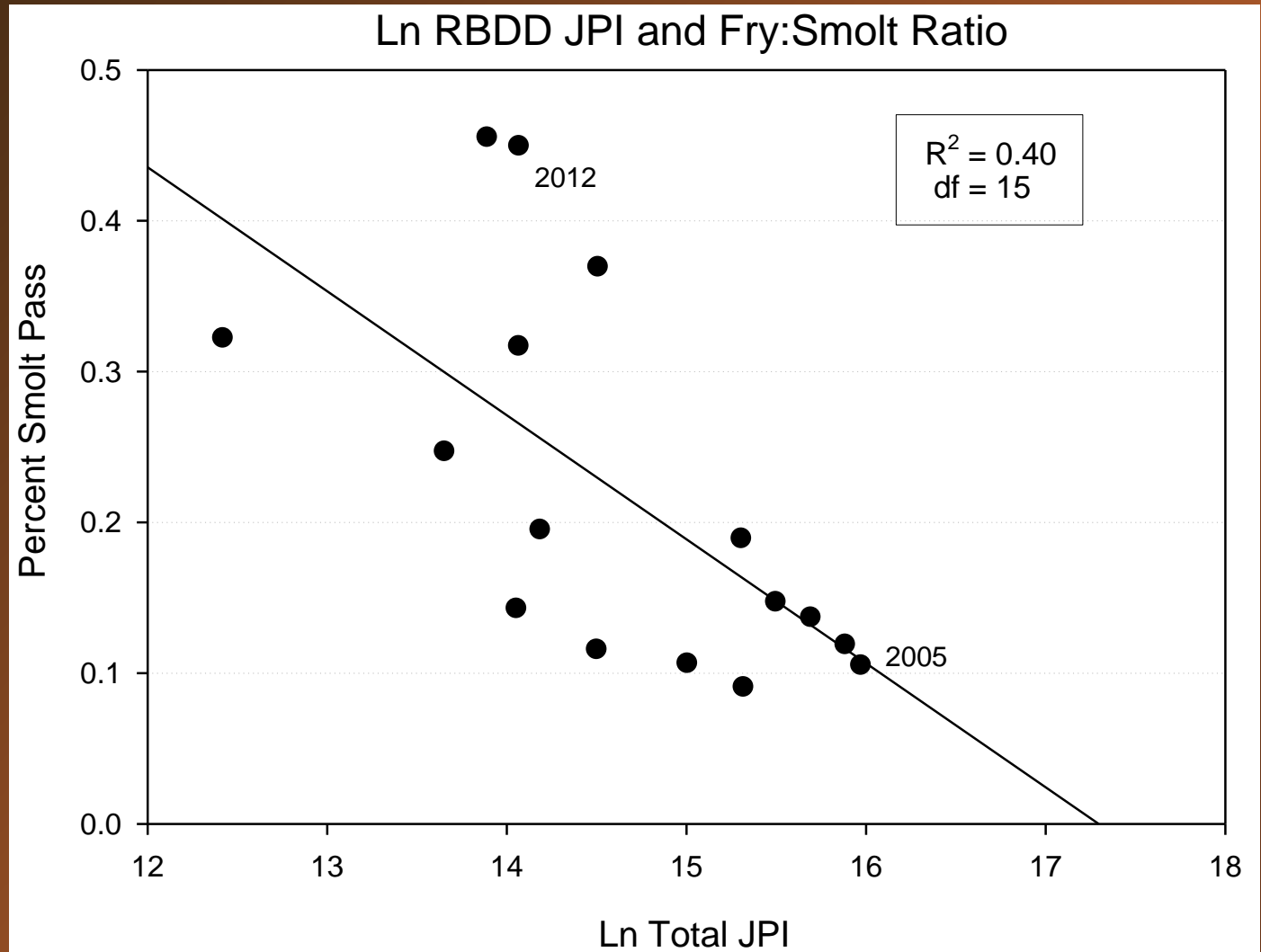


\* Preliminary and Incomplete BY

# Expected versus Observed?



# Abundance vs Length at Migration





# In The End, the 2012 migration...

- Overall migration later than average.
  - Peak Abundance occurred 2 months > average.
- No significant statistical fish length (size) difference.
- Fry/smolt abundance ratio 55/45.
  - Highest since 1999
  - ~2 Standard deviations from 15 year average ratio (sig different)
- 2012 Projected abundance level anticipated to be similar to 2007
  - As of 3/11/2013 estimated passage = 1.69 M Fry Eq
- Moderate correlation between total abundance levels and size at migration.
- 2015 Return Rate???

