



## Oakdale Outmigration

Between March 8 and March 21, the trap sampled eleven of fourteen days and captured 4,145 Chinook which is only 1% of the season total of 394,879 fish (Figure 1). Forklengths ranged from 29 to 84 mm ( $\mu = 42$  mm) which is an average increase of 3 mm over the previous sampling period (Figure 2). Weights of Chinook sampled ranged between 0.2 g and 5.0 g ( $\mu = 0.75$  g).



Example of Chinook fry caught at Oakdale.

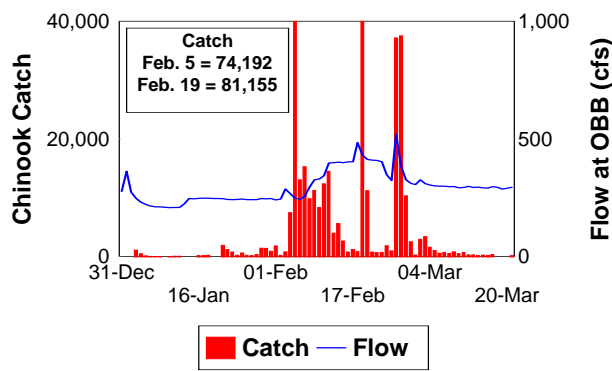


Figure 1. Daily Chinook catch at Oakdale and flow at Orange Blossom Bridge (OBB), 2003-2004.

Two trap efficiency tests were conducted, marked caudal fin green, at Oakdale, one on March 10 and one on March 16, with a trap efficiency of 29.2% and 33.5%, respectively.

In addition to Chinook, two *O. mykiss* (age 1+) were captured at Oakdale. The first, captured March 13, had a forklength of 262 mm and weighed 179.1 g (smolt index of 5). The second, captured March 14, had a forklength of 240 mm and weighed 134.2 g (smolt index of 5).

Flow remained steady during the sampling period due to relatively constant releases of between 176 cfs and 212 cfs at Goodwin Dam (GDW) and lack of any precipitation events during this sampling period. Flow at Orange Blossom Bridge (OBB) averaged 293 cfs. Turbidity at Oakdale varied between 0.9 NTU and 1.8 NTU. An increase in ambient air temperature, low flow, and no precipitation resulted in instantaneous water temperature increasing from 54°F on March 8 to 58°F on March 11. Temperature remained at 58°F during the remainder of the sampling period.

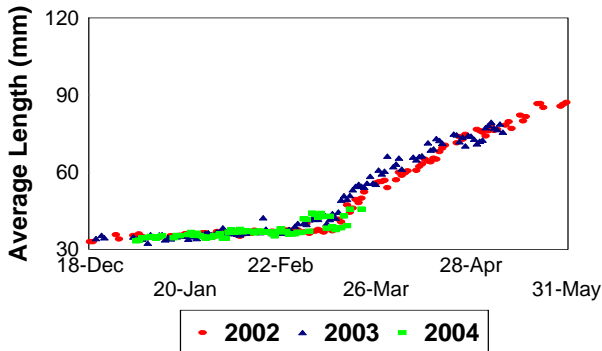


Figure 2. Daily average forklength of Chinook at Oakdale, 2002-2004.



Example of varying sizes of Chinook captured at Oakdale.



## Caswell Outmigration

Between March 8 and March 21, trapping occurred 8 of 14 days and captured 3,682 Chinook which is 10.2% of the season total of 35,929 Chinook (Figure 3). Forklengths ranged from 33 mm to 91 mm ( $\mu=50$  mm) which is an average increase of 12 mm over the previous sampling period. The majority of Chinook captured at Caswell during this sampling period were in the 40-49 mm size class (51%), whereas the majority of Chinook captured at Oakdale (65%) were in the 30-39 mm size class (Figure 4).

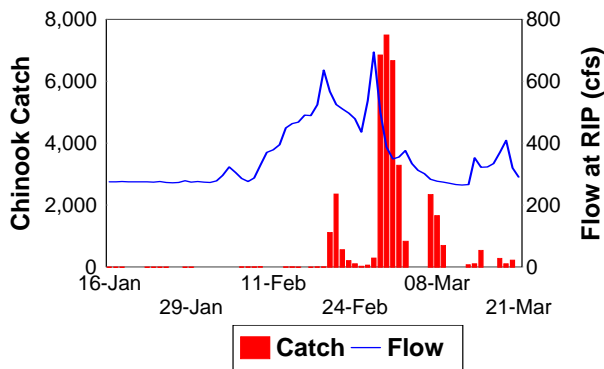


Figure 3. Daily Chinook catch at Caswell and flow at Ripon (RIP), 2004.

Average daily flow at Ripon remained between 265 cfs and 409 cfs ( $\mu=310$  cfs; Figure 4). Peaks in daily flow are varied due to irrigation spill at McHenry Avenue. Turbidity at Caswell varied between 5.6 NTU and 14.8 NTU ( $\mu=9.8$  NTU). Temperatures at Caswell were much warmer than Oakdale between 61°F and 64°F ( $\mu=63$ °F).

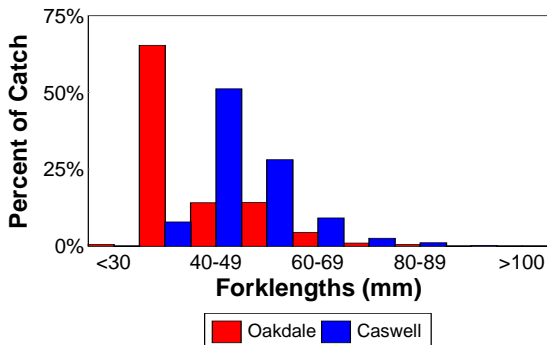


Figure 4. Percent of Chinook catch by size class at Oakdale and Caswell, March 8-21, 2004.



Example of Tule perch captured at Caswell.

At Caswell, two trap efficiency tests were conducted, one on March 8 and one on March 19, with a trap efficiency of 14.5% and 10.6%, respectively. Chinook were marked caudal fin pink for both releases.

Three *O. mykiss* (Age 1+) were captured at Caswell during this reporting period. This makes 8 *O. mykiss* captured this year so far, when only 13 were captured all last year.

Date	Species	Forklength (mm)	Weight (g)	Smolt Index
3/15/04	RBT	212	100	4
3/18/04	RBT	245	245	5
3/19/04	RBT	291	237	5



Example of an *O. mykiss* captured at Caswell.



## Lamprey Life History

It is not uncommon to catch thousands of lamprey in a day during January, February, and March. Peaks of lamprey catch correlate with increases in flow and turbidity. The Oakdale rotary screw trap has caught at least 16,330 lamprey this season with a peak of over 10,000 lamprey on February 27 which coincided with increased flow and turbidity (Figure 5). Although most lamprey have only been counted and identified to genus, it is suspected that the majority are Pacific lamprey based on sub-samples. The number of lamprey recorded are estimates and most likely underestimate our actual catches.



Lamprey captured at Oakdale.

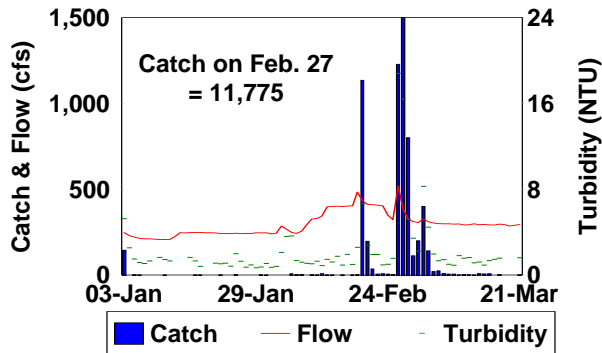


Figure 5. Lamprey catch, flow, and turbidity at Oakdale 2004.

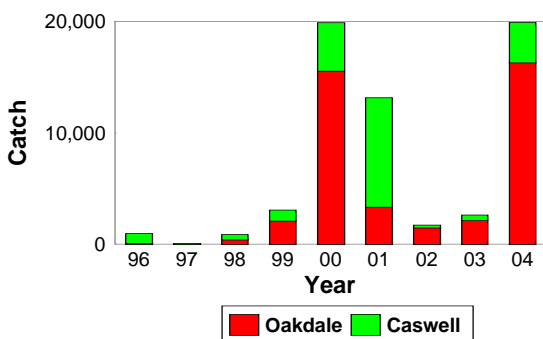


Figure 6. Lamprey catch at Oakdale and Caswell 1996 - 2004. Sampling did not occur in 1997 due to flood events. Note; trapping effort was not equal in all years.

Lampreys have round, elongate, flexible cartilaginous body with no true fins or jaws. At least three species of lamprey are found in the Sacramento-San Joaquin river system. Pacific lamprey, (*Lampetra tridentate*), the river lamprey, (*Lampetra ayresii*), and the Pacific brook lamprey, (*Lampetra pacifica*). The Pacific lamprey is anadromous. Like salmon they are born in freshwater streams, and spend 4-6 years as ammocoetes (larval stage). Ammocoetes burrow tail first into muddy substrates where they live as filter feeders. Once the ammocoetes metamorphose they migrate out to the ocean where they live for 2 to 3 years before returning to fresh water to spawn.