

Stanislaus River Juvenile Outmigration Summary #4

January 22nd - February 5th

Note: This summary includes results from the past two weeks of sampling at Oakdale and Caswell.

Oakdale:

The screw trap sampled continuously between January 22 and February 5 in order to sample during daily fluctuations in catch and the supplemental flow experiment that will be discussed later. Total catch for the sampling period was 29,069 Chinook increasing the season total to 36,847. The total catch for this season is greater than the total catch during the same time period in 2002, but less than 2001. Daily catch fluctuated between 113 and 10,883 Chinook, and forklengths ranged from 29 mm to 72 mm. Mean length was 36.4 mm forklength, which is 1.6 mm longer than the mean length from the previous sampling period.

Three trout were captured between January 29 and February 5 increasing the season total to 10 trout at Oakdale. Please refer to the table below for the date of capture, forklengths and smolt indices of the trout captured this week.

| Date | Species | Forklength | Smolt Index |
|----------|---------|------------|-------------|
| 01/29/03 | RBT | 226 | 5 |
| 01/31/03 | RBT | 240 | 5 |
| 02/04/03 | RBT | 216 | 5 |

Temperature at Oakdale fluctuated between 46 degrees and 53 degrees Fahrenheit, and turbidity ranged between 1.44 NTU and 2.97 NTU. Flow at Orange Blossom Bridge (OBB) ranged between 270 cfs and 744 cfs during the sampling period. As we have reported in the past, the gauge at OBB is not reporting discharge accurately. However, OBB will still be used in order to discuss changes in catch that are correlated to changes in flow. The discharge reading at OBB is approximately 100 to 250 cfs less than the actual amount that was released at Goodwin Dam (GDW). The difference between the gauges at OBB and GDW is greater as flow increases.

On January 27, flow was increased over an 8-hour period to the target flow of 1,000 cfs at GDW where it was sustained for approximately 48 hours. Prior to the start of the experiment, flow was increased by 20 cfs to 290 cfs on January 25. After the experiment concluded, the flow was

decreased to 350 cfs at GDW, but later increased to 500 cfs 2 days later where it remained for the rest of the sampling period.

Two methods of estimating trap efficiency will be evaluated this season. The first method, the “traditional method”, consists of releasing a marked group of fish and removing recoveries from the livebox immediately after they are released. The second method, the “new method”, consists of releasing a group of marked fish and removing recoveries from the livebox the next morning. Over the past three years we have conducted livebox efficiency tests to determine the percentage of fish that escape from the livebox during the night. The results varied between lifestages and velocities (measurements taken in front of the trap). The “traditional method” did not account for the escapees since the fish were removed immediately after the release. The “new method” will self-adjust for livebox efficiency and therefore will most likely be lower than the estimated efficiency of the “traditional method”. Although we have experimented with both methods, the “traditional method” was the method we normally used in past years due to problems with the trap stopping because of debris. This season we will be using both methods each week to determine if there is a difference in estimated efficiency between the two methods, and if so, determine a correction factor that can later be applied to past year’s data.

Three trap efficiency releases were conducted between January 22 and February 4 at Oakdale. The first release was conducted on January 29 using the “traditional method” and consisted of 248 Chinook marked caudal fin blue (CFB). Trap efficiency for the CFB group was estimated to be 2.82% at a flow of 744 cfs at OBB. Mean length at release was 36.4 mm and 37.1 mm at recapture. The second and third releases were conducted on February 4 using both of the trap efficiency methods. A group of 267 Chinook marked caudal fin green (CFG) was released using the “traditional method”. The second group consisting of 561 Chinook marked caudal fin orange (CFO) was released using the “new method”. The CFG and CFO groups resulted in an estimated efficiency of 7.49% and 3.74%, respectively at a flow of 404 cfs at OBB. Mean length at release for the CFG group was 37.4 mm and 36.7 mm at recapture. Mean length at release for the CFO group was 37.4 mm and 35.7 mm at recapture. Each week we will target releasing one large group of approximately 500 Chinook using the “traditional method” coupled with four daily releases using the “new method”. Each of the daily releases will consist of up to 250 Chinook and results from daily releases for the week will be pooled together. Passage will be calculated by applying the trap efficiency obtained through the “new method”, however, if the trap is manned around the clock, the “traditional method” estimate will be applied.

Caswell:

The traps resumed fishing the morning of January 28 to coincide with the supplemental flow experiment. Prior to this sampling period, the season total at Caswell was zero. Between January 29 and February 5, daily catch ranged from 47 to 3,761 Chinook for an 8-day total of 7,110. During the same period in 2001 and 2002 daily catch ranged from 0 to 5 Chinook. Mean length for the sampling period was 34.0, and forklengths ranged from 27 mm to 50 mm. No trout have been captured at Caswell this season.

Flow at Ripon (RIP) ranged between 275 cfs and 797 cfs during the sampling period. Similar to OBB, the gauge at RIP is recording inaccurate readings and the difference between the gauges at GDW and RIP (up to 250 cfs) differ by a greater amount as the flow at GDW increases. The flow peaked at RIP on January 29, and then stabilized at approximately 485 cfs after the experiment concluded. Turbidity ranged between 1.55 NTU and 8.23 NTU, and temperature fluctuated between 48 degrees and 52 degrees Fahrenheit. The peak in turbidity was correlated to the peak in flow and decreased as the flow decreased.

Two trap efficiency releases were conducted between January 29 and February 4 at Caswell. The first group consisted of 859 Chinook marked CFO and were released on January 29 using the "traditional method". Trap efficiency for the CFO group was estimated to be 10.83% at a flow of 797 cfs at RIP. Mean length at release was 31.1 mm and 34.3 mm at recapture. The second group consisted of 44 Chinook marked caudal fin pink (CFP) and released using the "new method". Trap efficiency was estimated to be 13.64% at a flow of 489 cfs at RIP. Mean length at release was 34.6 mm and 35.5 mm at recapture. Up to four daily trap efficiency tests will be conducted at Caswell using the "new method", and the results will be pooled together for the week. Each test will consist of up to 500 Chinook, but no more than 1,000 Chinook will be used during a one week period.

Supplemental Flow Experiment:

An experiment was developed to evaluate the effectiveness of supplemental flow releases at moving Chinook out of the Stanislaus River and into the Delta where survival may be higher. Past data suggests that increases in flow and turbidity always move Chinook past Oakdale, but are not always sufficient to move Chinook past Caswell. The supplemental flow experiment was designed to deliver and sustain 1,000 cfs for a 2-day period to evaluate the effectiveness of this magnitude and duration of increased flow at moving fish past Caswell.

During the experiment, traps at Oakdale and Caswell were monitored around the clock to ensure proper function and to limit crowding of captured fish in the livebox. Catch at Oakdale remained elevated over a period of 2 days and preliminary expansions suggest 656,832 fry moved past the

site during the period. In past years when we observed increased catch in response to natural freshet events, as many as 475,000 fry moved past Oakdale, which is more than 150,00 fewer than the number that moved past Oakdale during this year's flow experiment.

Prior to the flow experiment, we had yet to capture any Chinook at Caswell this season. However, as soon as the flow surpassed 1,000 cfs and turbidity reached 8 NTU, we observed a pronounced spike in passage. When flow began to decrease, passage dropped sharply. During the experiment, 61,373 fry moved past Caswell. The largest response to flow that we observed during the fry period at Caswell was in 2000 when an estimated 150,000 fry passed Caswell at a flow of 950 cfs and turbidity of 37 NTU.