SMELT WORKING GROUP
Monday, March 18, 2013

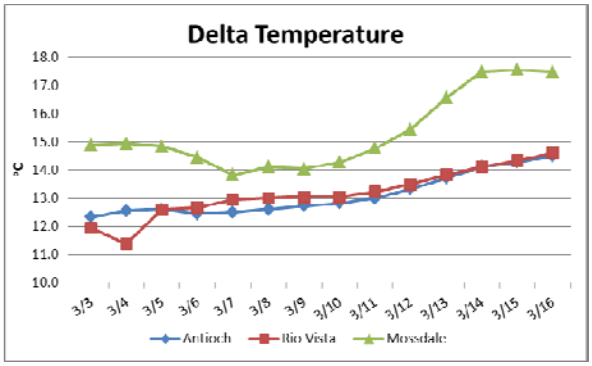
Meeting Summary:

The Working Group recommended that OMR flow should be set at a 14-day average flow of no more negative than -5,000 cfs with a corresponding 5-day average flow of no more negative than -6,250 cfs. The Working Group will continue to monitor salvage, turbidity, and other conditions, and will reconvene Monday, March 25.

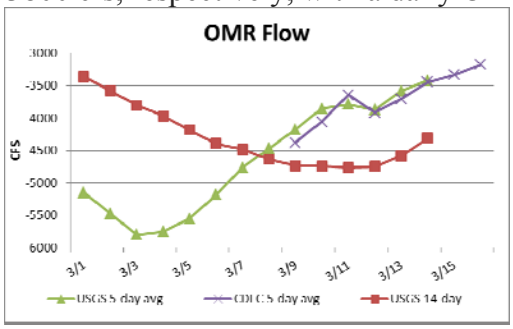
Reported Data:

1) Current environmental data:

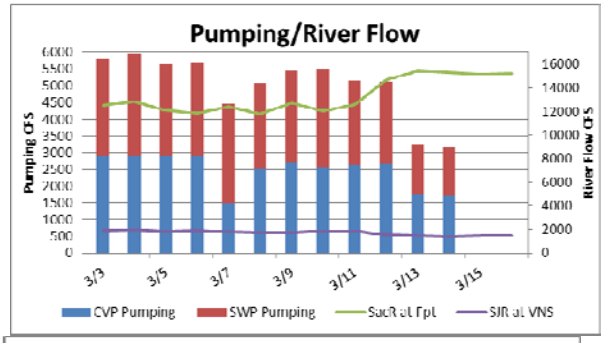
- **Water temperatures**:

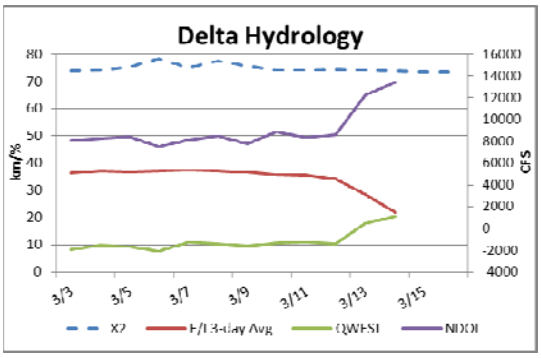


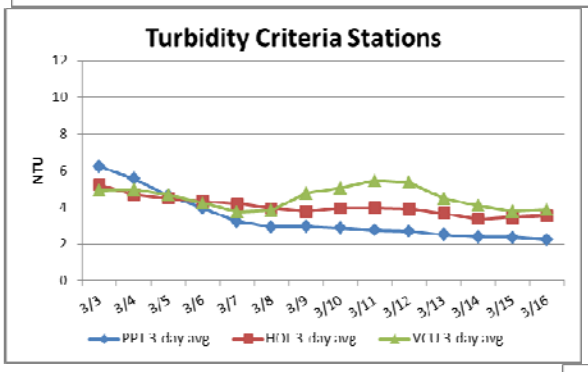
- **OMR:** USGS tidally-averaged 5-day average OMR flow and 14-day average OMR flow on March 14 was -3,415 cfs and -4,312 cfs, respectively. CDEC 5-day average OMR flow on March 16 was -3,170 cfs. The approximate 5-day and 14-day OMR flows reported during the call were -3000 cfs, and -3800 cfs, respectively, with a daily OMR flow of -3200 cfs.

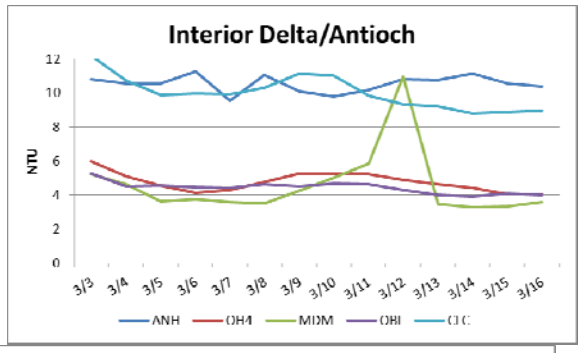


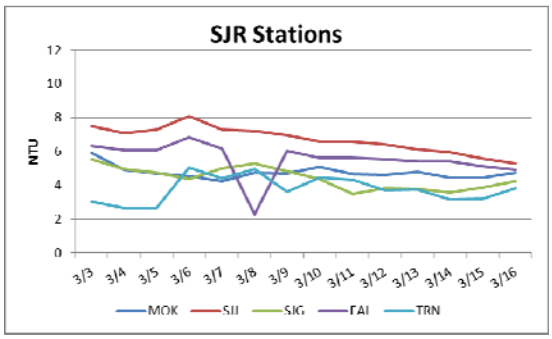
- **Flow:** Sacramento River flows at Freeport are approximately15,000 cfs and San Joaquin River at Vernalis is approximately 1,500 cfs. On March 16, X_2 was located between 73 and 74km.

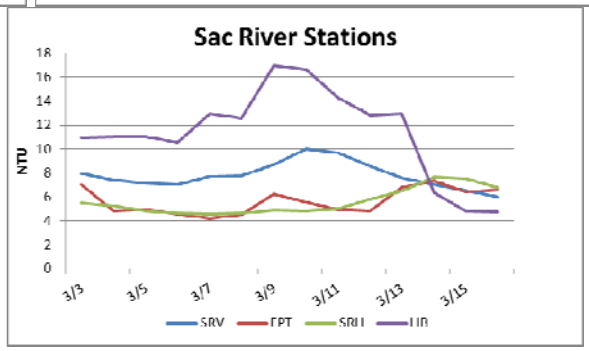












Delta Fish Monitoring:

The final Smelt Larval Survey of the season (SLS 6) is in the field this week. Some preliminary information is anticipated for the south and central Delta stations by the end of the week.

20-mm Survey #1 was in the field from March 11-14. Sample processing is on-going; approximately 65% of all samples are complete. All samples from the 12 south and central Delta station have been processed. No delta smelt larvae or adults were collected (Table 1). A total of 1,076 longfin smelt larvae were collected; 12 were collected in the south and central Delta (Table 2, in longfin smelt advice). Current data have been uploaded to the 20-mm survey webpage (http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm).

Table 1. Delta smelt catch per station from 2013 20mm Survey, Survey 1.
(These data are preliminary and subject to change)

Year	Survey	Station	Date	# Tows Processed	Species_	Total Catch	Min Length	Max Length	Avg Length	
2013	1	323	13-Mar-13	1	No Delta Smelt Catch	0				Suisun Bay & West
2013	1	340	13-Mar-13	1	No Delta Smelt Catch	0				
2013	1	342		0	Not Yet Processed	0				
2013	1	343	13-Mar-13	1	No Delta Smelt Catch	0				
2013	1	344	13-Mar-13	1	No Delta Smelt Catch	0				
2013	1	345		0	Not Yet Processed	0				
2013	1	346		0	Not Yet Processed	0				
2013	1	405	12-Mar-13	1	No Delta Smelt Catch	0				
2013	1	411	12-Mar-13	1	No Delta Smelt Catch	0				
2013	1	418	12-Mar-13	1	No Delta Smelt Catch	0				
2013	1	501	13-Mar-13	1	No Delta Smelt Catch	0				
2013	1	504	13-Mar-13	1	No Delta Smelt Catch	0				
2013	1	519	13-Mar-13	1	No Delta Smelt Catch	0				
2013	1	602	12-Mar-13	1	No Delta Smelt Catch	0				
2013	1	606	12-Mar-13	1	No Delta Smelt Catch	0				
2013	1	609	12-Mar-13	1	No Delta Smelt Catch	0				
2013	1	610	12-Mar-13	1	No Delta Smelt Catch	0				
2013	1	508	13-Mar-13	1	No Delta Smelt Catch	0				Confluence
2013	1	513	13-Mar-13	1	No Delta Smelt Catch	0				
2013	1	520	13-Mar-13	1	No Delta Smelt Catch	0				
2013	1	801	13-Mar-13	1	No Delta Smelt Catch	0				
2013	1	804	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	703	12-Mar-13	3	No Delta Smelt Catch	0				Sac. River System
2013	1	704	12-Mar-13	3	No Delta Smelt Catch	0				
2013	1	705	12-Mar-13	3	No Delta Smelt Catch	0				
2013	1	706	12-Mar-13	3	No Delta Smelt Catch	0				
2013	1	707	12-Mar-13	3	No Delta Smelt Catch	0				
2013	1	711	11-Mar-13	2	No Delta Smelt Catch	0				
2013	1	716	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	718	14-Mar-13	2	No Delta Smelt Catch	0				
2013	1	719	11-Mar-13	3	No Delta Smelt Catch	0				
		720		0	Not Sampled	0				
2013	1	723	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	724	11-Mar-13	2	No Delta Smelt Catch	0				
2013	1	726	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	809	11-Mar-13	3	No Delta Smelt Catch	0				Central & South Delta
2013	1	812	12-Mar-13	3	No Delta Smelt Catch	0				
2013	1	815	12-Mar-13	3	No Delta Smelt Catch	0				
2013	1	901*	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	902	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	906	12-Mar-13	3	No Delta Smelt Catch	0				
2013	1	910	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	912	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	914	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	915	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	918	11-Mar-13	3	No Delta Smelt Catch	0				
2013	1	919	12-Mar-13	3	No Delta Smelt Catch	0				

Processing complete through 3/15/2013

*Five minute tows

20-mm Survey #2 will be in the field the week of March 25.

Spring Kodiak Trawl #4 is in the field the week of April 2.

The 2012 annual Fall Midwater Trawl Index (September through December) is 42. The combined SWP and CVP total allowable take for adult delta smelt for the WY 2013 as calculated from the FMWT Index using the formula prescribed in the BO is 362 (revised).

The 2012 Delta Smelt Recovery Index (based on September and October) is 13. More information on the Recovery Index can be found on the Bay-Delta Office's web site at http://www.fws.gov/sfbaydelta/species/delta_smelt.cfm. Results from CDFW surveys are available online at: http://www.dfg.ca.gov/delta/.

2) Salvage:

Four adult delta smelt were salvaged at the CVP on March 14. The total combined delta smelt salvage for the season is 256 (112 at the SWP and 144 at the CVP) as of March 17, or approximately 71% of the total allowable take of 362. Twenty longfin smelt young of the year were salvaged at the CVP over the reporting period of March 11 though 17. The total combined longfin smelt adult salvage for the season is 4; the total combined young of the year longfin smelt salvage for the season is 20. [After this call, the weekly total of young of the year longfin smelt was updated to 32 due to additional fish found in the larval fish samples at the CVP.]

The SWP indicated that larval fish sampling began on March 6. The CVP began larval fish sampling last week. No larval delta smelt have been reported as yet. Larval or post-larval longfin smelt were observed from larval fish samples on March 9 at the SWP and March 13 and 14 at the CVP.

Current longfin smelt and delta smelt salvage information can be downloaded from DFG's salvage FTP site at ftp://ftp.dfg.ca.gov/salvage/Daily%20Smelt%20Summary/ or queried from DFG's salvage web page at http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx

3) Expected Project Operations:

Combined CVP/SWP exports are approximately 3,200 cfs as of March 17. This week, the CVP will conduct a Fish Collection Efficiency Loss Study at the Tracy Fish Facility and will vary the level of exports per day, as follows: 4200 cfs on March 21, 2900 cfs on March 22, and 1000 cfs on March 23. The SWP will target a daily export flow rate of 2500 cfs over the next few days. Operators commented that current pumping levels support the Delta D-1641 standards (SWRCB); specifically the 18 days X2 needs to meet Chipps Island in March.

4) Particle Tracking Modeling:

No PTM runs were requested for this week.

5) **Turbidity Modeling:**

No turbidity modeling was discussed today.

6) **Assessment of Risk:**

Background:
RPA Component 1, Action 2: "An action implemented using an adaptive process to tailor protection to changing environmental conditions after Action 1. As in Action 1, the intent is to protect pre-spawning adults from entrainment and, to the extent possible, from adverse hydrodynamic conditions."

"The range of net daily OMR flows will be no more negative than -1,250 to -5,000 cfs. Depending on extant conditions (and the general guidelines below) specific OMR flows within this range are recommended by the Working Group from the onset of Action 2 through its termination…" (page 35).

RPA Component 2, Action 3: "The objective of this RPA component (which corresponds to Action 3 in Attachment B), is to improve flow conditions in the Central and South Delta so that larval and juvenile delta smelt can successfully rear in the Central Delta and move downstream when appropriate" (page 282).

"Upon completion of RPA Component 1 or when Delta water temperatures reach 12°C (based on a 3-station average of daily average water temperature at Mossdale, Antioch, and Rio Vista) or when a spent female delta smelt is detected in the trawls or at the salvage facilities, the projects shall operate to maintain OMR flows no more negative than -1,250 to -5000 cfs based on a 14-day running average with a simultaneous 5-day running average within 25 percent of the applicable 14-day OMR flow requirement. Depending on the extant conditions, the SWG shall make recommendations for the specific OMR flows within this range from the onset of implementing RPA Component 2 through its termination. The Service shall make the final determination regarding specific OMR flows. This action shall end June 30 or when the 3-day mean water temperature at Clifton Court Forebay reaches 25° C, whichever occurs earlier" (page 282).

Discussion: The Working Group reviewed and discussed all relevant data from Delta monitoring, salvage, field surveys, and planned Project operations.

With the detection of spent females in the SKT #3, the Working Group looks to Action 3 of the RPAs for guidance on assessing the risk of entrainment to juveniles as well as continuing to assess the risk of entrainment to adults. The Working Group discussed its March 11 recommendation, the Service's March 12 determination of -5,000 cfs OMR flow target, the WY 2013 adult and juvenile delta smelt Incidental Take Limit, and the low salvage of adult delta smelt for the previous five weeks.

The Working Group members discussed the revised 2013 WY remaining allowable take of 106

adult delta smelt, (362 adult delta smelt take limit minus the 256 cumulative total adult delta smelt salvaged to date). The Working Group agreed that we are approaching the probable end of the adult entrainment period.

Daily OMR flows since March 11 have ranged between approximately -2,400 and -4,168 cfs, and adult delta smelt salvage numbers have remained low. The weekly total salvage for the previous reporting period was fourteen, while the current week's reporting total is four. Low weekly salvage for the past five weeks further suggests that delta smelt densities in the south Delta are low.

Although the Working Group expects that low levels of adult delta smelt salvage may continue, the Working Group considered that the projects are not at the Biological Opinion's concern level (revised to 272) and concluded that at the current low salvage trend, the projects are not at risk of approaching the WY 2013 incidental take level. However, the Working Group will continue to monitor Delta conditions, delta smelt salvage, and survey data to determine if the salvage trend could be expected to increase to a level that would cause the projects to approach the concern level, and potentially exceed the incidental take limit.

Due to the absence of delta smelt larvae in the previous SLS #1 and 20-mm Survey (partial results only) results and their absence in the larval fish samples collected at the fish salvage facilities, the Working Group did not make a recommendation to protect that life stage at this time. Members indicated that the SLS #6, in the field this week, may be the first opportunity to obtain distributional information on larvae prior to April. Preliminary data is anticipated as early as later this week.

WEEKLY ADVICE FOR THE DEPARTMENT OF FISH AND GAME FOR LONGFIN SMELT

Advice for week of March 18, 2013:
The Smelt Working Group believes that an OMR of -5,000 cfs is protective of longfin smelt at this time.

Summary of Risk:
Risk of additional entrainment into the south Delta is low. The first 20mm Survey collected only 12 longfin smelt larvae in the central and south Delta March 11-14. Smelt Larva Survey (SLS) #5 results showed double digit catches farther from the pumps in the San Joaquin River channel and generally lower catches in the central Delta than SLS #4. Qwest was positive for a few days beginning March 13, but is now slightly negative, suggesting a brief period of net downstream displacement of larvae in the lower San Joaquin River. Barker Slough criteria are only in effect during "Dry" and "Critical" water years; this year is currently forecast as Below Normal for the Sacramento River.

Summary of Advice:
Previously, SLS survey #3 distribution numbers triggered Longfin Smelt Incidental Take Permit advice from the SWG on February 4 to limit OMR flows to -5,000 cfs (see criterion 3 below). On February 19, to limit south Delta entrainment of larvae from Station 809 and other San Joaquin River stations, an OMR of no more negative than -4,000 cfs was advised. On February

25 and 26, SLS survey #5 central and south Delta catches from declined rather than increased, so as of March 1 an OMR of -5,000 was once again deemed protective. As of March 18 and similar to March 11, OMR of -5,000 remained protective.

Basis for advice:
The 2009 State Water Project 2081 for longfin smelt states that advice to the DFG Director shall be based on the following criteria:

1. Adult Salvage – total adult (> = 80 mm) longfin smelt salvage (SWP + CVP) for December through February > 5 times the Fall Midwater Trawl longfin smelt annual abundance index.

2. Adult abundance, distribution or other information indicates that OMR flow advice is warranted.

3. Larva distribution in the Smelt Larva Survey or the 20-mm Survey finds longfin smelt larvae present at 8 of 12 central and south Delta sampling stations in 1 survey (Stations 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919; see Figure 1).

4. Larva catch per tow exceeds 15 longfin smelt larvae or juveniles in 4 or more of the 12 survey stations listed.

5. For Barker Slough Exports only: between January 15 and March 15 of Critically Dry or Dry water years only (Sacramento River), based on abundance and distribution and detection of longfin smelt larvae at Station 716.

Discussion of Criteria
1. On March 13, the first juvenile longfin smelt of the year was salvaged. Since then a total of 20 juveniles have been salvaged. More can be expected, but no ITP criterion exists for juvenile longfin smelt.

On January 20 and 21, 2013, longfin smelt salvage occurred at the SWP for a total salvage of 4. This was the first and only instance of adult longfin smelt salvage this water year. The Fall Midwater Trawl longfin smelt annual abundance index has completed and is 61. The total salvage level threshold for advice is > 305 (see criterion in #1). No advice is warranted based on this criterion.

2. In early March Bay Study collected 3 longfin smelt adults just upstream from the Antioch Bridge, suggesting that some additional spawning is taking place in the lower San Joaquin River. No other longfin smelt adults were detected in the central or south Delta.

January Bay Study sampling collected a single longfin smelt in the San Joaquin River at their Station 863 (Santa Clara Shoals, between Twitchell and Bradford Islands). In February, no longfin smelt were collected at central Delta sampling stations. On March 4, 3 longfin smelt were collected by Bay Study just upstream of the Antioch Bridge, suggesting spawning is not over in the San Joaquin River, but not suggesting any substantial additional risk. SLS #6 starting March 18 should detect any larvae hatching from spawning about March 4. Distribution information does not indicate advice is warranted based on this criterion.

3 & 4. The first 20mm Survey took place March 11-14 and collected only 12 larval longfin smelt in the central and south Delta (Table 1). Thus, there is no evidence of additional risk of entrainment into the south Delta and an OMR of -5000 remains protective at this time. The 6th and final Smelt Larva Survey of the year is in the field today and tomorrow.

The third SLS survey of 2013 was conducted January 28 and 29. During survey 3, longfin smelt larvae were collected at 9 of 12 central or south Delta stations, so the **distribution criterion was met**. During the 4th SLS survey the distribution criterion was again achieved, but the density criterion of ≥ 4 stations with > 15 larvae each was not. Typically, this second criterion would be necessary to warrant additional protections beyond -5,000 cfs OMR. However, the high catch at Station 809 (and moderate catch at Station 901) poses some additional risk for entrainment into the south Delta. Given these data and the likelihood that we're seeing the peak hatching, an OMR of no more negative than -4,000 cfs was deemed warranted on February 18. Catches from SLS survey #5 showed declines in the south Delta and the lower San Joaquin River (809), with some increases at stations 812 and 815. Survey 1 data (Table 1) from the 20mm Survey indicated that only 12 larvae were collected in the central and south Delta. These results indicate that fewer larvae are in and near the central Delta, and that an OMR of -5000 is protective.

5. Barker Slough Exports: current water type for the Sacramento River is Below Normal (http://cdec.water.ca.gov/cgi-progs/reports/EXECSUM), therefore even though numerous longfin smelt larvae are present at Station 716 and in Lindsay Slough, no advice is provided. Current exports are low (14-30 cfs) and don't pose a substantial risk to larvae in Barker Slough (http://www.water.ca.gov/swp/operationscontrol/docs/delta/DeltaHydrology.pdf).

Current conditions: Net Delta outflow increased to above 11,400 cfs needed to maintain X2 at Chipps Island. X2 is currently about 74 km. Combined State and federal exports are currently about 4,200 cfs, but will be fluctuating through this week as Tracy Fish Facility experiments are run using varying export levels. Sacramento River at Keswick releases are at 4,600 and will decline to 4,000 cfs through the week. Vernalis flows have remained about 1,500 cfs. Qwest was weakly positive March 13-17 and is now trending negative.

Table 2. Longfin smelt catch per station from 20mm Survey, survey 1, 2013. Processing is incomplete and data are preliminary and subject to change.

Year	Survey	Station	Date	# Tows Processed	Species_	Total Catch	Min Length	Max Length	Avg Length	
2013	1	323	13-Mar-13	1	No Longfin Catch	0				
2013	1	340	13-Mar-13	1	Longfin Smelt	4	8	19	13.50	
2013	1	342		0	Not Yet Processed	0				
2013	1	343	13-Mar-13	1	Longfin Smelt	55	10	25	15.26	
2013	1	344	13-Mar-13	1	Longfin Smelt	40	9	20	13.75	
2013	1	345		0	Not Yet Processed	0				
2013	1	346		0	Not Yet Processed	0				
2013	1	405	12-Mar-13	1	No Longfin Catch	0				
2013	1	411	12-Mar-13	1	Longfin Smelt	1	9	9	9.00	
2013	1	418	12-Mar-13	1	Longfin Smelt	1	11	11	11.00	
2013	1	501	13-Mar-13	1	Longfin Smelt	150	6	14	9.26	
2013	1	504	13-Mar-13	1	Longfin Smelt	243	8	19	10.64	
2013	1	519	13-Mar-13	1	Longfin Smelt	53	7	14	9.74	
2013	1	602	12-Mar-13	1	Longfin Smelt	47	7	19	10.66	
2013	1	606	12-Mar-13	1	Longfin Smelt	83	10	22	14.90	
2013	1	609	12-Mar-13	1	Longfin Smelt	24	9	18	12.21	
2013	1	610	12-Mar-13	1	Longfin Smelt	1	11	11	11.00	Suisun Bay & West
2013	1	508	13-Mar-13	1	Longfin Smelt	32	7	19	10.09	
2013	1	513	13-Mar-13	1	Longfin Smelt	114	7	19	10.62	
2013	1	520	13-Mar-13	1	Longfin Smelt	7	9	20	12.86	
2013	1	801	13-Mar-13	1	Longfin Smelt	5	11	16	12.60	
2013	1	804	11-Mar-13	3	Longfin Smelt	29	7	17	10.69	Confluence
2013	1	703	12-Mar-13	3	Longfin Smelt	9	7	17	9.78	
2013	1	704	12-Mar-13	3	Longfin Smelt	76	6	21	10.50	
2013	1	705	12-Mar-13	3	Longfin Smelt	1	11	11	11.00	
2013	1	706	12-Mar-13	3	Longfin Smelt	2	7	8	7.50	
2013	1	707	12-Mar-13	3	Longfin Smelt	8	6	9	7.50	
2013	1	711	11-Mar-13	2	No Longfin Catch	0				
2013	1	716	11-Mar-13	3	Longfin Smelt	11	7	19	13.00	
2013	1	718	14-Mar-13	2	Longfin Smelt	52	8	16	12.98	
2013	1	719	11-Mar-13	3	Longfin Smelt	9	7	13	9.33	
		720		0	Not Sampled	0				
2013	1	723	11-Mar-13	3	Longfin Smelt	5	6	9	7.20	
2013	1	724	11-Mar-13	2	Longfin Smelt	1	7	7	7.00	
2013	1	726	11-Mar-13	3	Longfin Smelt	1	9	9	9.00	Sac. River System
2013	1	809	11-Mar-13	3	Longfin Smelt	2	8	8	8.00	
2013	1	812	12-Mar-13	3	Longfin Smelt	2	8	8	8.00	
2013	1	815	12-Mar-13	3	Longfin Smelt	1	8	8	8.00	
2013	1	901*	11-Mar-13	3	No Longfin Catch	0				
2013	1	902	11-Mar-13	3	No Longfin Catch	0				
2013	1	906	12-Mar-13	3	Longfin Smelt	2	8	15	11.50	
2013	1	910	11-Mar-13	3	Longfin Smelt	2	10	10	10.00	
2013	1	912	11-Mar-13	3	Longfin Smelt	1	12	12	12.00	
2013	1	914	11-Mar-13	3	No Longfin Catch	0				
2013	1	915	11-Mar-13	3	Longfin Smelt	2	11	17	14.00	
2013	1	918	11-Mar-13	3	No Longfin Catch	0				
2013	1	919	12-Mar-13	3	No Longfin Catch	0				Central & South Delta

Processing complete through 3/15/13

*Five minute tows