

SMELT WORKING GROUP Monday, April 22, 2013

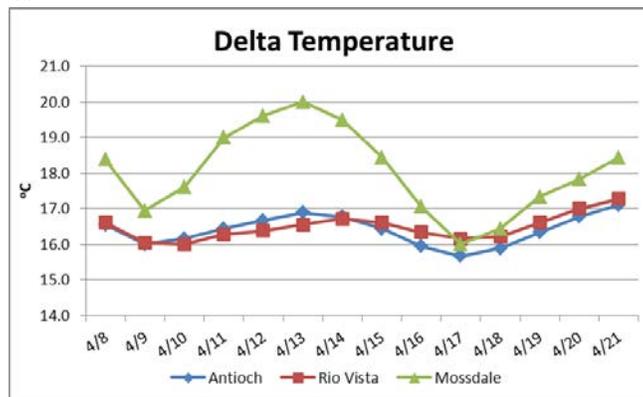
Meeting Summary:

The Working Group agreed that given their present distribution, current salvage, and Delta conditions, risk of entrainment of delta smelt remains low and therefore, the Working Group recommends that no change in operations is necessary to adequately protect delta smelt from entrainment. The Working Group also agreed that given their present distribution, existing constraining conditions were sufficient to protect longfin smelt. The Working Group will continue to monitor smelt salvage, adult and larval smelt survey data, and Delta hydrological conditions and will reconvene April 29, 2012, at 10 am.

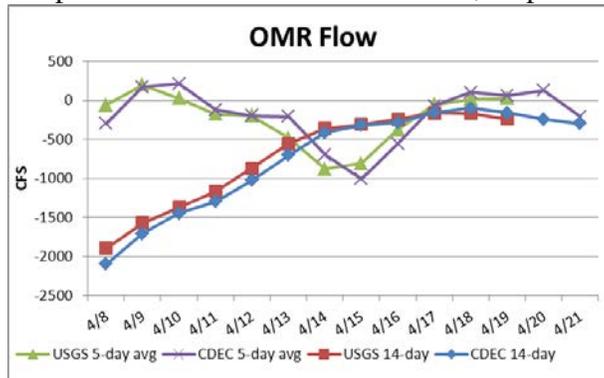
Reported Data:

1) Current environmental data:

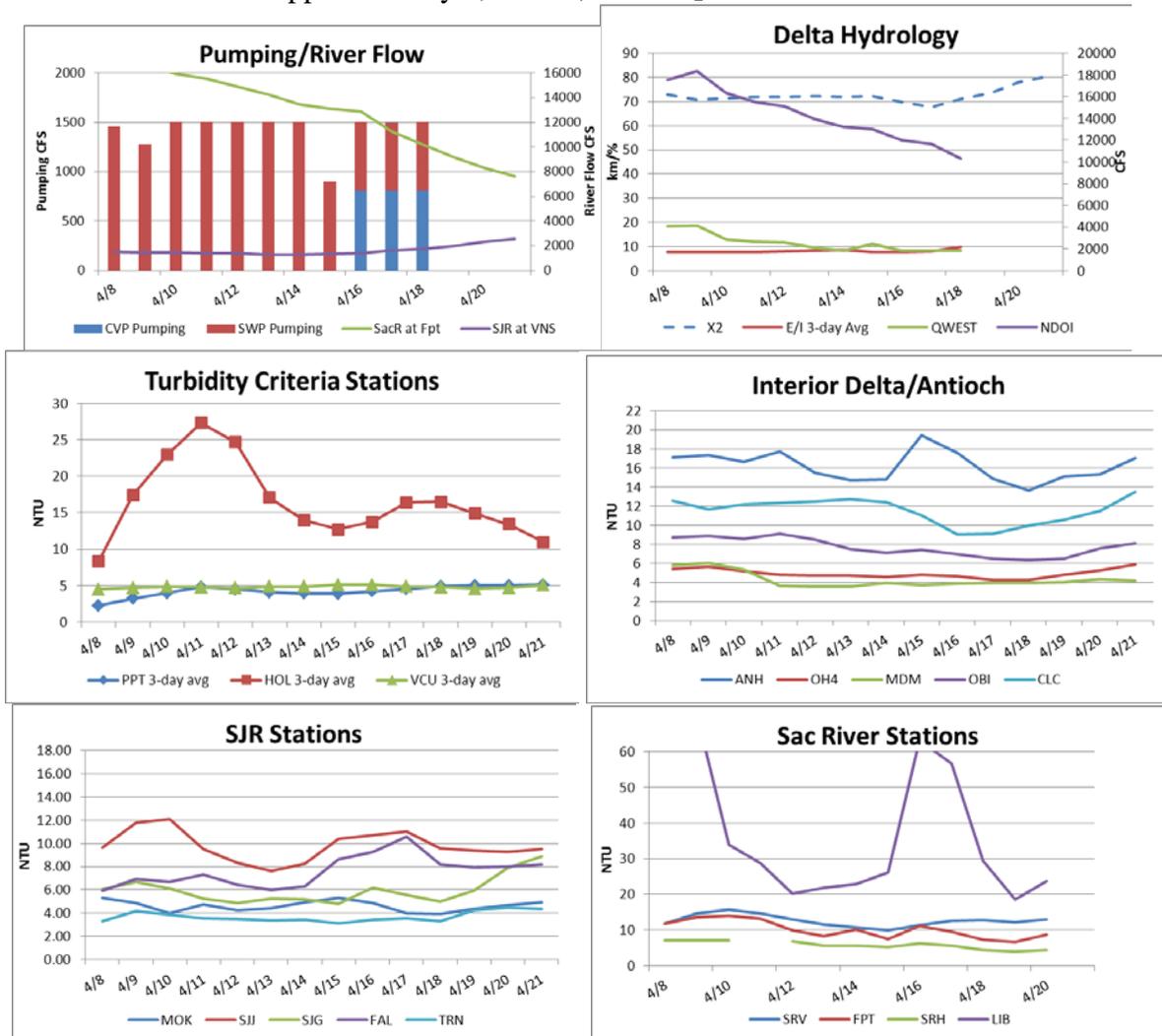
- Water temperatures:



- **OMR:** USGS tidally-averaged 5-day average OMR flow and 14-day average OMR flow on April 19 was +28 cfs and -237 cfs, respectively. CDEC 5-day average OMR flow and 14-day average OMR flow on April 21 was -208 cfs and -297 cfs, respectively.



- **Flow:** Sacramento River flows at Freeport are approximately 7,605 cfs and San Joaquin River at Vernalis is approximately 2,543 cfs, while X₂ was at 80.39km.



Delta Fish Monitoring:

Current data for the Smelt Larval Survey (including distribution maps) have been uploaded to the SLS webpage (<http://www.dfg.ca.gov/delta/projects.asp?ProjectID=SLS>). This survey has completed for the 2013 season.

20-mm Survey #4 is in the field this week. Preliminary results are anticipated prior to the 04/29 Working Group call. A total of 29 delta smelt were collected during 20-mm Survey #2 (in the field 03/25-03/27); sample processing is approximately 84% complete. Sizes of larvae collected from Survey #2 ranged from 5 to 15 mm. Sample processing from 20-mm Survey #3 (in the field from 04/08 to 04/11) is ongoing; approximately 22% of all samples have been processed. Preliminary results continue to indicate a widespread low level of catch across the central, southern, and northern Delta and the confluence area. Areas further downstream have not been processed as yet. Sizes of larvae ranged from 7 to 20 mm. Updated 20-mm Survey #2 indicate a similar distribution as Survey #3. Updated data have been uploaded to the 20-mm Survey

webpage (<http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm>). Processing is on-going for 20-mm Surveys #2 and 3.

Spring Kodiak Trawl #5 will start on April 29. CDFW Stockton office moved locations in the last two weeks, so lab processing for survey samples has been delayed.

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 combined SWP and CVP total allowable take for larval-juvenile delta smelt for the WY 2013 following the formula in Table C-4 of the BO is 2,350 (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/>.

1) Salvage:

Delta Smelt:

No adult delta smelt (DS) have been salvaged since March 25. The preliminary season total of adult DS is 260, or 72% of the 2013 ITL. Young of the year delta smelt of salvageable size (≥ 20 mm) was observed at the CVP fish facility on April 16 and 20. The season total for juvenile delta smelt ≥ 20 mm is now 8. Delta smelt larvae less than 20 mm were observed from larval fish samples taken at the SWP on April 16.

Longfin Smelt:

A total of 16 young of the year (≥ 20 mm FL) longfin smelt (LFS) was salvaged for the reporting period: eight at the CVP on April 16, and eight at the SWP on April 21. LFS post-larvae less than 20 mm were observed at both facilities from April 15 through 18 and at the CVP on April 20. No adult LFS was salvaged last week.

Salvage Operations

One of the two CVP salvaged fish release sites will be out of commission starting on May 1 for repairs.

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>

2) Expected Project Operations:

Combined CVP/SWP exports are approximately 2,500 cfs as of today. Projected operations are expected to target a combined 2,500 cfs through April 24 and potentially beyond, in support of the NMFS RPA requirement of 1:1 pumping with the flow at the San Joaquin River at Vernalis. This RPA requirement continues from April 1 through May 31.

3) Particle Tracking Modeling:

No PTM runs were requested or discussed.

4) Turbidity Modeling:

No turbidity modeling was discussed today.

5) 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 -5,000 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.

The Working Group continues to assess the risk of entrainment to adults and is following the guidance provided in Action 3 of the RPA for assessing the risk of entrainment to juveniles. The Working Group discussed its April 15 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, the recent delta smelt distribution data from field surveys, and the low level of salvage of juvenile and larval delta smelt and zero adult delta smelt for the previous month. The Working Group recommends to the Service that planned operations and OMR flows presently are sufficiently protective of delta smelt. Should projected operations deviate from what was reported, resulting in OMR flows becoming increasingly negative (approaching -2,500 to -3,000 cfs), the Working Group would like to reconvene to review new available data and review the entrainment risk to delta smelt.

The Projects have not salvaged adult delta smelt since March 25, 2013. In past years, adult salvage significantly tapers off by the end of March and early April. Although a few adult smelt may be expected in salvage between now and June, the Working Group believes it would be highly unlikely if the cumulative seasonal total of adult delta smelt salvage approached or exceeded the Incidental Take limit at this point in time (for WY 2013, [revised] 362 adult delta smelt). The Working Group expects that this year's adult delta smelt salvage season has come to a close and does not anticipate making further recommendations for that life stage in subsequent weeks. The Working Group's current recommendation is considered protective for larval and post-larval delta smelt.

Daily OMR flows since April 14 have ranged between approximately -1,400 and +1,800 cfs, and adult delta smelt salvage numbers have remained at zero since March 25, while larvae of salvageable size were first detected on April 16 and again on April 20. Similarly positive OMR flows are anticipated to continue through May 31, which is the end of the NMFS BO's San Joaquin River flow RPA requiring a 1:1 ratio of exports to flows at Vernalis in critically dry water year types. The daily OMR flows have been mostly more protective than the range of 14-day average OMR target flows required in the Service's BO RPA Action 3 for larval and juvenile delta smelt (-1,250 to -5,000 cfs).

Based on the samples that have been processed so far from 20-mm Surveys #2 and 3, it appears that larvae hatching in the central and south Delta may be occurring in the same (or slightly lower) proportion than in the north Delta. The Working Group will continue to monitor this pattern of fish distribution, and review updated data from 20-mm Surveys #2 and 3, and new data from the upcoming 20-mm Survey #4 (in the field beginning today, 04/22) as they becomes available. Based on sample processing to date, one 20 mm delta smelt was observed during Survey #3 (at Station #718). More ≥ 20 mm individuals are expected from the remaining 20-mm Survey #3 samples, although in very low numbers.

Given the increasing water temperatures in the central and southern Delta, the Working Group expects to see a larger proportion of salvageable size delta smelt in subsequent survey efforts as well as greater overall numbers of delta smelt. Some members cautioned that should the overall numbers of detected delta smelt remain similarly low in subsequent surveys; the low numbers observed in field data to date will be of greater level of importance than currently presumed. Members noted that catches of delta smelt in field surveys this year have been low. Based on the preliminary results from 20-mm Surveys #2 and 3, members cautioned that an OMR flow of -

5,000 cfs may not be adequately protective of larval delta smelt.

Members were concerned regarding the limited distributional information (i.e., continued low catches) from 20-mm Surveys #2 and 3. With a nearly equal proportion of larvae in the central and southern Delta as in the north Delta, the Working Group was concerned even modest salvage later in the year could represent a sizable portion of the population. However, the Working Group agreed that current data and information were insufficient to be able to predict the extent of salvage and its impact on the population. Some members were cautious regarding the data available thus far for juvenile delta smelt noting that additional survey efforts may also not provide more than low to modest catches in the central and south Delta, which may nonetheless represent a sizable fraction of the detected juvenile population; such an outcome might prove challenging to justify a protective recommendation. Members agreed that there was sufficient evidence to suggest that -5,000 cfs OMR flow currently would not be protective of delta smelt juveniles. The Working Group agreed that should OMR flows become increasingly negative, approaching the -2,500 to -3,000 cfs range (daily value), we will need to reconvene to discuss a potential update to our recommendation to the Service.

Members acknowledged that at the present low pumping rates at both facilities create a circumstance where salvage operations are not optimized, and detection efficiency is anticipated to be lower than at higher pumping rates.

The Working Group expects to see continued low levels of larval and juvenile delta smelt salvage between now and May 31. The Working Group expects that salvage will increase with any increase in pumping. With the current season total salvage of juvenile delta smelt of 8 or 62% of the April Concern Level (13), it was pointed out that continued salvage of juveniles would likely exceed this level before April 30 although these numbers are relatively small compared the annual ITL of 2,350. Residence time in the Delta is anticipated to be much longer at current OMR flow levels than when OMR is closer to -5,000 cfs, giving larvae more opportunity to grow and therefore, more likely to be detected as larger individuals by future salvage operations. The Working Group suspects these larvae were likely hatched in the southern Delta.

Based on the review of current delta smelt distribution and salvage data, current Delta conditions and projected operations, the Working Group agrees that projected operations are sufficiently protective of delta smelt. As projected operations are anticipated to change in the next two to three weeks, the Working Group will continue to monitor Delta conditions and surveys data. Should OMR flow become increasingly negative, the Working Group will meet to conduct an additional delta smelt entrainment risk assessment.

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

Advice for week of April 22, 2013:

The Smelt Working Group believes that an OMR of -5,000 cfs is protective of longfin smelt at this time. No advice for Barker Slough operations is necessary at this time.

Summary of Risk:

Risk of additional entrainment into the south Delta is very low. Few longfin smelt larvae remain in the central Delta (little new information since last week), and current hydrologic conditions are very favorable. Qwest remains positive at about +1,313 cfs soon and should hold positive (or only weakly negative) while total exports match San Joaquin River inflow at about 2,500 cfs. Thus there's little risk of additional larva entrainment into the south Delta even though some longfin smelt larvae remain in the San Joaquin River and Franks Tract. Within the south Delta, OMR has been slightly negative (more positive than -1,000 cfs). The longfin smelt ITP concern period for Barker Slough ended March 31. Barker exports have been < 35 cfs since March 1 and only jumped to 50 on April 18; risk of entrainment is low even though longfin smelt densities were relatively high based on 20-mm Survey #2 results for Stations 718 and 720.

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 4 an OMR of -5,000 was once again deemed protective. Since then central and south Delta larva numbers have remained low. As of April 8 and similar to March and early April reviews, OMR of -5,000 was deemed protective.

On March 31, the ITP advice period for Barker Slough ended. Even though longfin smelt larvae remain in the vicinity, Barker Slough exports have remained low from March 1 (< 30 cfs) through April 17 and only increased to 50 cfs on the 18th, posing little risk for longfin smelt larvae.

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 31 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. Sixteen juvenile longfin smelt were salvaged during the period of April 14-21, and smaller larvae were detected regularly. Due to warming water temperatures, it is unlikely that any more adult longfin smelt will be salvaged this year. More juvenile longfin smelt can be expected in salvage, but no ITP criterion exists for juvenile longfin smelt.

On January 20 and 21, 2013, adult 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. Longfin smelt spawning is likely over for 2013. In early March Bay Study collected 3 longfin smelt adults just upstream from the Antioch Bridge, suggesting that some additional spawning took place in the lower San Joaquin River. No other longfin smelt adults were detected in the central or south Delta since then.

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 third 20-mm Survey took place April 8-11 and longfin smelt larvae were detected in low numbers in and near Franks Tract and little new information has been added since last week (Table 1). With the exception of Station 809, few larvae remain in the region. The last Smelt Larva Survey of the year (Survey #6) took place March 18-19. Central and south Delta larva catches (densities) declined in Survey #6 compared to Survey #5, indicated that hatching is waning for the year. The first 20-mm Survey took place March 11-14 and collected only 12 larval longfin smelt in the central and south Delta. Thus, there is no evidence of additional risk of entrainment into the south Delta and an OMR of $-5,000$ remains protective at this time.

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 pose 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. The first 20-mm Survey indicated that only 12 larvae were collected in the central and south Delta. The last SLS Survey #6 occurred March 18 & 19, and provided results similar to the 20-mm Survey #1. These results

indicate that fewer larvae are in and near the central Delta, and that an OMR of -5,000 is protective.

5. Barker Slough Exports: The ITP period of concern ended March 31. Even though numerous longfin smelt larvae are present at Station 716 and at 718 and 720 in Lindsay Slough, the recent low export levels pose little risk and the increase to 50 cfs April 18 is still low. (<http://www.water.ca.gov/swp/operationscontrol/docs/delta/DeltaHydrology.pdf>).

Current conditions: Net Delta outflow has declined rapidly to about 6,800 cfs on April 21. X2 increased to about 80 km. Combined State and federal exports are currently at 2,500 cfs to match Vernalis flows (ca. 3,000) for salmonids. Vernalis flows are about 2,500 cfs, but are scheduled to increase with increased releases on the Stanislaus River from 1,500 to 3,000 cfs today. After running modestly negative, Qwest was +3,946 on April 7 and declined slowly to +1,871 on April 14 and to +1,313 on April 21.

Table 1. Longfin and delta smelt catch per station from 20-mm Survey, Survey #3, 2013. Processing is partial and data are preliminary and subject to change.

Year	Survey	Station	Date	# Tows Processed	Species_	Total Catch	Min Length	Max Length	Avg Length	
2013	3	323		0	Not Yet Processed	0				Suisun Bay & West
2013	3	340		0	Not Yet Processed	0				
2013	3	342		0	Not Yet Processed	0				
2013	3	343		0	Not Yet Processed	0				
2013	3	344		0	Not Yet Processed	0				
2013	3	345		0	Not Yet Processed	0				
2013	3	346		0	Not Yet Processed	0				
2013	3	405		0	Not Yet Processed	0				
2013	3	411		0	Not Yet Processed	0				
2013	3	418		0	Not Yet Processed	0				
2013	3	501		0	Not Yet Processed	0				
2013	3	504	9-Apr-13	1	Longfin Smelt	77	8	24	16.62	
2013	3	519	9-Apr-13	1	Longfin Smelt	531	12	29	19.36	
2013	3	602		0	Not Yet Processed	0				
2013	3	606		0	Not Yet Processed	0				
2013	3	609		0	Not Yet Processed	0				
2013	3	610		0	Not Yet Processed	0				
2013	3	508		0	Not Yet Processed	0				
2013	3	513		0	Not Yet Processed	0				
2013	3	520	10-Apr-13	1	Longfin Smelt	228	10	22	15.54	Confluence
2013	3	801	10-Apr-13	1	Longfin Smelt	219	9	20	15.66	
2013	3	804	10-Apr-13	1	Longfin Smelt	15	10	19	13.87	
2013	3	703	10-Apr-13	1	Longfin Smelt	226	10	21	15.98	
2013	3	704		0	Not Yet Processed	0				Sac. River System
2013	3	705	09-Apr-13	1	No Longfin Catch	0				
2013	3	706	09-Apr-13	1	Longfin Smelt	2	19	21	20.00	
2013	3	707	09-Apr-13	1	No Longfin Catch	0				
2013	3	711	08-Apr-13	1	No Longfin Catch	0				
2013	3	716	08-Apr-13	1	Longfin Smelt	42	12	29	20.26	
2013	3	718	08-Apr-13	1	Longfin Smelt	96	13	27	20.26	
2013	3	719	08-Apr-13	1	Longfin Smelt	6	13	19	16.33	
2013	3	720		0	Not Sampled	0				
2013	3	723	08-Apr-13	1	Longfin Smelt	2	21	26	23.50	
2013	3	724	08-Apr-13	1	Longfin Smelt	1	16	16	16.00	
2013	3	726	08-Apr-13	1	No Longfin Catch	0				
2013	3	809	08-Apr-13	1	Longfin Smelt	28	11	18	14.21	Central & South Delta
2013	3	812	09-Apr-13	1	Longfin Smelt	5	11	17	13.80	
2013	3	815	09-Apr-13	1	No Longfin Catch	0				
2013	3	901	08-Apr-13	1	Longfin Smelt	15	10	18	13.73	
2013	3	902	08-Apr-13	1	Longfin Smelt	2	9	12	10.50	
2013	3	906	09-Apr-13	1	No Longfin Catch	0				
2013	3	910	08-Apr-13	1	No Longfin Catch	0				
2013	3	912	08-Apr-13	1	No Longfin Catch	0				
2013	3	914	08-Apr-13	2	No Longfin Catch	0				
2013	3	915	08-Apr-13	3	No Longfin Catch	0				
2013	3	918	08-Apr-13	1	No Longfin Catch	0				
2013	3	919	09-Apr-13	1	No Longfin Catch	0				

Processing complete through 4/22/2013