

SMELT WORKING GROUP
Tuesday, April 2, 2013

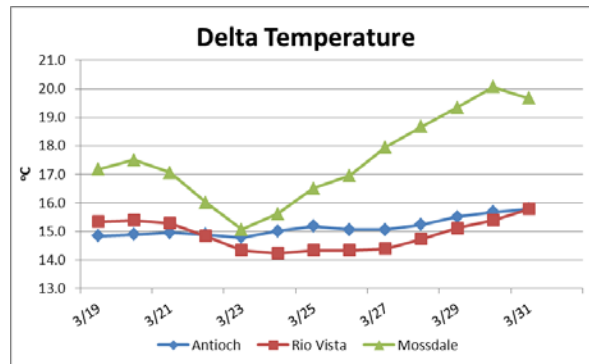
Meeting Summary:

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, April 8.

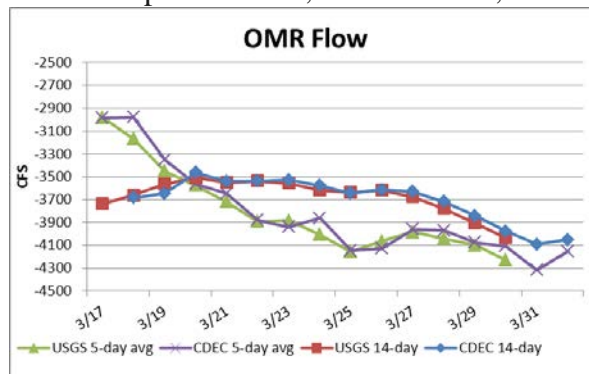
Reported Data:

1) Current environmental data:

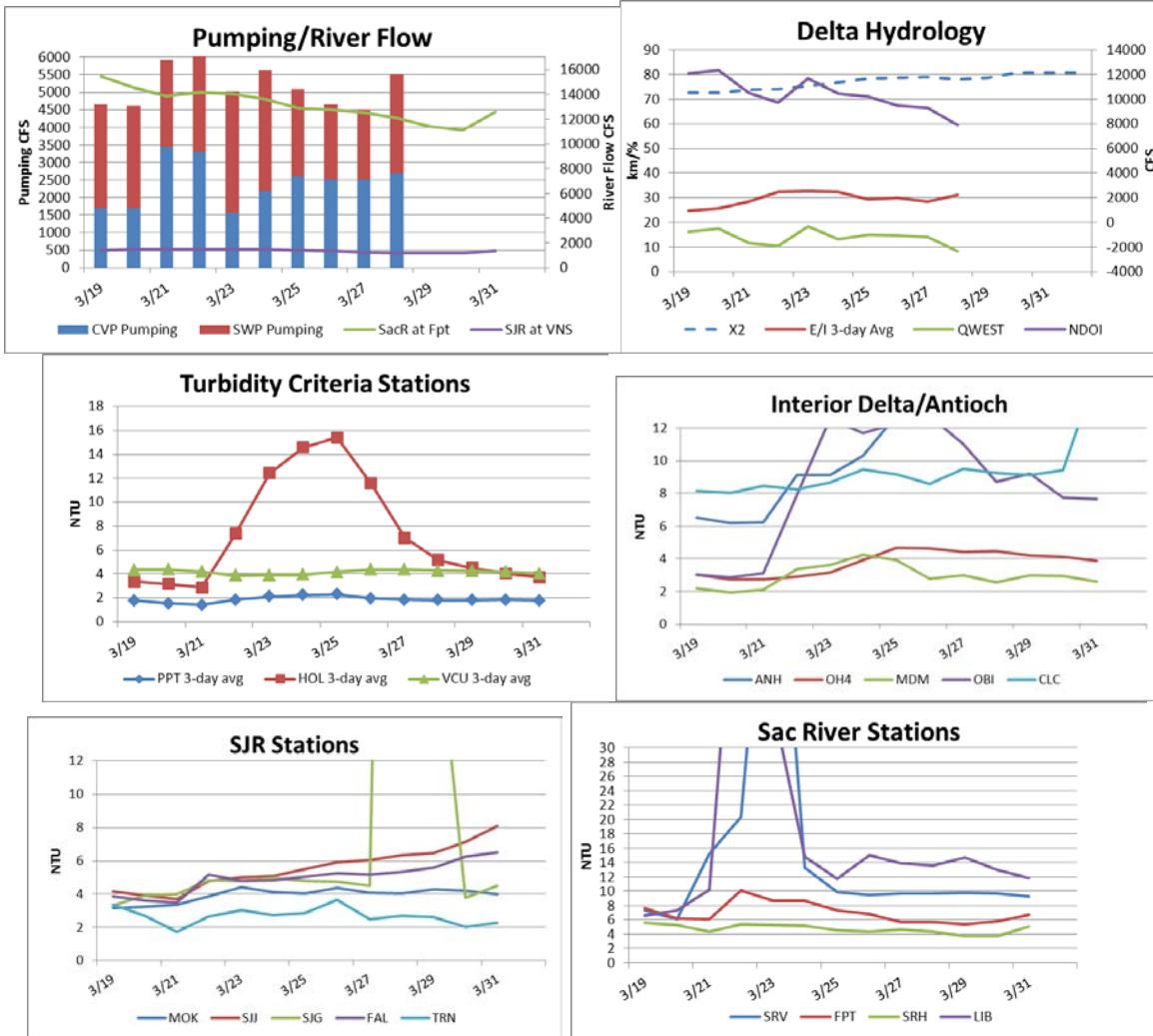
- **Water temperatures:**



- **OMR:** USGS tidally-averaged 5-day average OMR flow and 14-day average OMR flow on March 30 was -4,228 cfs and -4,034 cfs, respectively. CDEC 5-day average OMR flow and 14-day average OMR flow on April 1 was -4,153 cfs and -4,050 cfs.



- **Flow:** Sacramento River flows at Freeport are approximately 14,029 cfs and San Joaquin River at Vernalis is approximately 1,603 cfs on April 1. On April 1, X₂ was at 80.64km.



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 #2 was in the field last week. Current data have been uploaded to the 20-mm Survey webpage (<http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm>). Processing is ongoing (at least one tow has been processed at the central and southern Delta stations as well as the Sacramento River stations). So far, 5 delta smelt larvae were collected at stations in the central and southern Delta and four larvae collected in the Cache Slough region. The delta smelt larvae ranged in length from 8 to 15 mm in size.

Spring Kodiak Trawl #4 is in the field this week. 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/>.

1) Salvage:

Delta Smelt:

Four adult DS was salvaged at the CVP on 3/25. No adult DS have been salvaged since then and represent 6 straight days of zero salvage. The preliminary season total of adult DS is 260 and represents 72% of the 2013 ITL. DS larva (< 20 mm FL) was observed from the CVP on 3/26.

Longfin Smelt:

Young of the year (≥ 20 mm) LFS continued to be salvaged at the CVP. The first YOY of 2013 was salvaged at the SWP on 3/26. A total of 48 YOY LFS were salvaged during the reporting period. LFS larvae or post-larvae less than 20 mm were observed from the CVP and SWP on 3/25 and the CVP only on 3/28 and 3/31.

Yesterday's Preliminary Results:

No delta or longfin smelt was salvaged on 4/1/13.

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 1,500 cfs as of April 2. CVP pumping operations are shut down through April 15 for mechanical replacements and the entirety of Delta water is being pumped through the SWP facility. Current pumping levels support 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 for this week.

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.

With the detection of spent females in the SKT #3 (conducted during the week of March 4), 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 25 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 very low level of salvage of adult delta smelt for the previous month.

Daily OMR flows since March 19 have mostly ranged between approximately -3,500 and -5,000 cfs, and adult delta smelt salvage numbers have remained at or close to zero. This very low level of salvage with higher OMR flows may provide further indication of low densities of delta smelt in the southern Delta. OMR flow levels are anticipated to become more positive over the coming days as interior Delta flows adjust to the lower pumping levels. More positive OMR flows are anticipated to continue through May 31.

The Working Group expects to see low levels of larval and juvenile delta smelt salvage as OMR flow becomes more positive. Residence time is anticipated to increase, giving larvae more opportunity to grow and therefore, more likely to be detected by the salvage operations. The Working Group suspects these larvae were likely hatched in the southern Delta.

The Projects have salvaged a total of eight adult delta smelt since March 10, 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 reached the Incidental Take limit at this point in time (for WY 2013 revised to 362). 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. The Working Group's recommendation of -5,000cfs OMR flow is considered protective for both adult and larval delta smelt.

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

Advice for week of April 2, 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 low. The second 20mm Survey of the season detected few longfin smelt larvae in the central and south Delta (n = 15 plus 36 at 809), indicating that few additional larvae were in the vicinity to be entrained into the south Delta. As of April 1 Qwest changed from negative 1,000-2,500 to positive 4,351 and will likely remain at about that level while total exports match San Joaquin River inflow at about 1,500 cfs. The ITP concern period for Barker Slough ended March 31. Barker exports have been < 30 cfs since March 1 and mostly zero since March 18 indicating little risk of entrainment even though longfin smelt densities were relatively high based on 20-mm Survey #2 results for Station 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 1 an OMR of -5,000 was once again deemed protective. As of April 2 and similar to March 11, 18 & 25 OMR of -5,000 remained protective.

On March 31, the ITP advice period for Barker Slough ended. Even though longfin smelt larvae remain in the vicinity, Barker Slough exports remained very low since March 1 (< 30 cfs) and posed very 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. In the past week an additional 48 juvenile longfin smelt were salvaged, both facilities combined. More can be expected, 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 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 second 20mm Survey took place March 25-28 and longfin smelt larvae were detected in the central and south Delta (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) 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. 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, mostly zero recent export levels pose little risk.

(<http://www.water.ca.gov/swp/operationscontrol/docs/delta/DeltaHydrology.pdf>).

Current conditions: Net Delta outflow is about 10,000 cfs. X2 is currently about 81 km. Combined State and federal exports are currently at 1,500 cfs to match Vernalis flows for salmonids. CVP is not pumping to conduct maintenance for the next 2 weeks. Vernalis flows remain about 1,500 cfs. After running modestly negative, Qwest was 4,351 on April 1 and will remain at about this level.

Table 1. Longfin and delta smelt catch per station from 20mm Survey, survey 2, 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	2	323		0	Not Yet Processed	0				Suisun Bay & West
2013	2	340		0	Not Yet Processed	0				
2013	2	342		0	Not Yet Processed	0				
2013	2	343		0	Not Yet Processed	0				
2013	2	344		0	Not Yet Processed	0				
2013	2	345		0	Not Yet Processed	0				
2013	2	346		0	Not Yet Processed	0				
2013	2	405		0	Not Yet Processed	0				
2013	2	411		0	Not Yet Processed	0				
2013	2	418		0	Not Yet Processed	0				
2013	2	501	26-Mar-13	1	Longfin Smelt	11	10	19	12.64	
2013	2	504	26-Mar-13	1	Longfin Smelt	15	10	21	13.20	
2013	2	519		0	Not Yet Processed	0				
2013	2	602		0	Not Yet Processed	0				
2013	2	606	26-Mar-13	1	Longfin Smelt	281	12	25	16.12	
2013	2	609		0	Not Yet Processed	0				
2013	2	610		0	Not Yet Processed	0				
2013	2	508		0	Not Yet Processed	0				Confluence
2013	2	513		0	Not Yet Processed	0				
2013	2	520		0	Not Yet Processed	0				
2013	2	801		0	Not Yet Processed	0				
2013	2	804		0	Not Yet Processed	0				
2013	2	703	26-Mar-13	1	Longfin Smelt	13	9	16	11.54	Sac. River System
2013	2	704	26-Mar-13	1	Longfin Smelt	111	7	18	13.32	
2013	2	705	26-Mar-13	1	No Longfin Catch	0				
2013	2	706	26-Mar-13	1	Longfin Smelt	15	6	16	12.87	
2013	2	707	26-Mar-13	1	Longfin Smelt	5	6	15	8.40	
2013	2	711	25-Mar-13	1	No Longfin Catch	0				
2013	2	716	25-Mar-13	1	Longfin Smelt	7	9	18	13.57	
2013	2	718	25-Mar-13	1	Longfin Smelt	12	12	18	14.17	
2013	2	719	25-Mar-13	1	Longfin Smelt	3	9	19	13.00	
2013	2	720	25-Mar-13	1	Longfin Smelt	36	11	21	15.39	
2013	2	723	25-Mar-13	1	Longfin Smelt	1	14	14	14.00	
2013	2	724	25-Mar-13	1	No Longfin Catch	0				
2013	2	726	25-Mar-13	1	No Longfin Catch	0				
2013	2	809	25-Mar-13	1	Longfin Smelt	36	9	20	14.50	Central & South Delta
2013	2	812*	26-Mar-13	1	Longfin Smelt	1	10	10	10.00	
2013	2	815	26-Mar-13	1	No Longfin Catch	0				
2013	2	901	25-Mar-13	1	Longfin Smelt	4	12	17	13.75	
2013	2	902	25-Mar-13	1	Longfin Smelt	2	10	10	10.00	
2013	2	906	25-Mar-13	1	No Longfin Catch	0				
2013	2	910	25-Mar-13	2	No Longfin Catch	0				
2013	2	912	25-Mar-13	3	No Longfin Catch	0				
2013	2	914	25-Mar-13	1	No Longfin Catch	0				
2013	2	915	25-Mar-13	3	Longfin Smelt	8	9	14	11.63	
2013	2	918	27-Mar-13	1	No Longfin Catch	0				
2013	2	919	26-Mar-13	1	No Longfin Catch	0				

Processing complete through 3/28/13

*Five minute tows