

SMELT WORKING GROUP
Monday, March 4, 2013

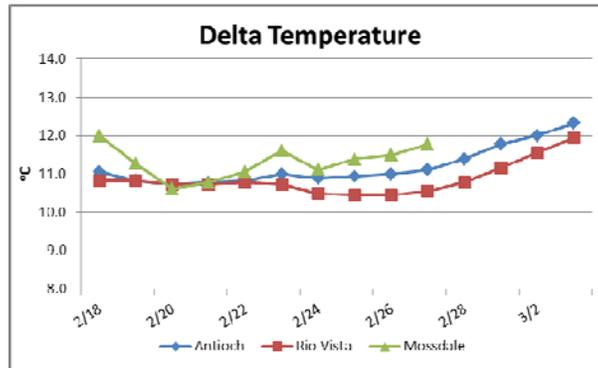
Meeting Summary:

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 agrees that there will be a need to reconvene immediately to assess the risk of delta smelt entrainment if there is a change in the current low salvage trend. The Working Group will continue to monitor salvage, turbidity, and other conditions, and will reconvene Monday, March 11.

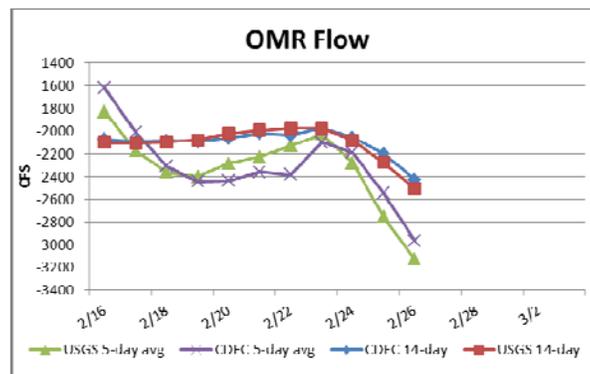
Reported Data:

1) Current environmental data:

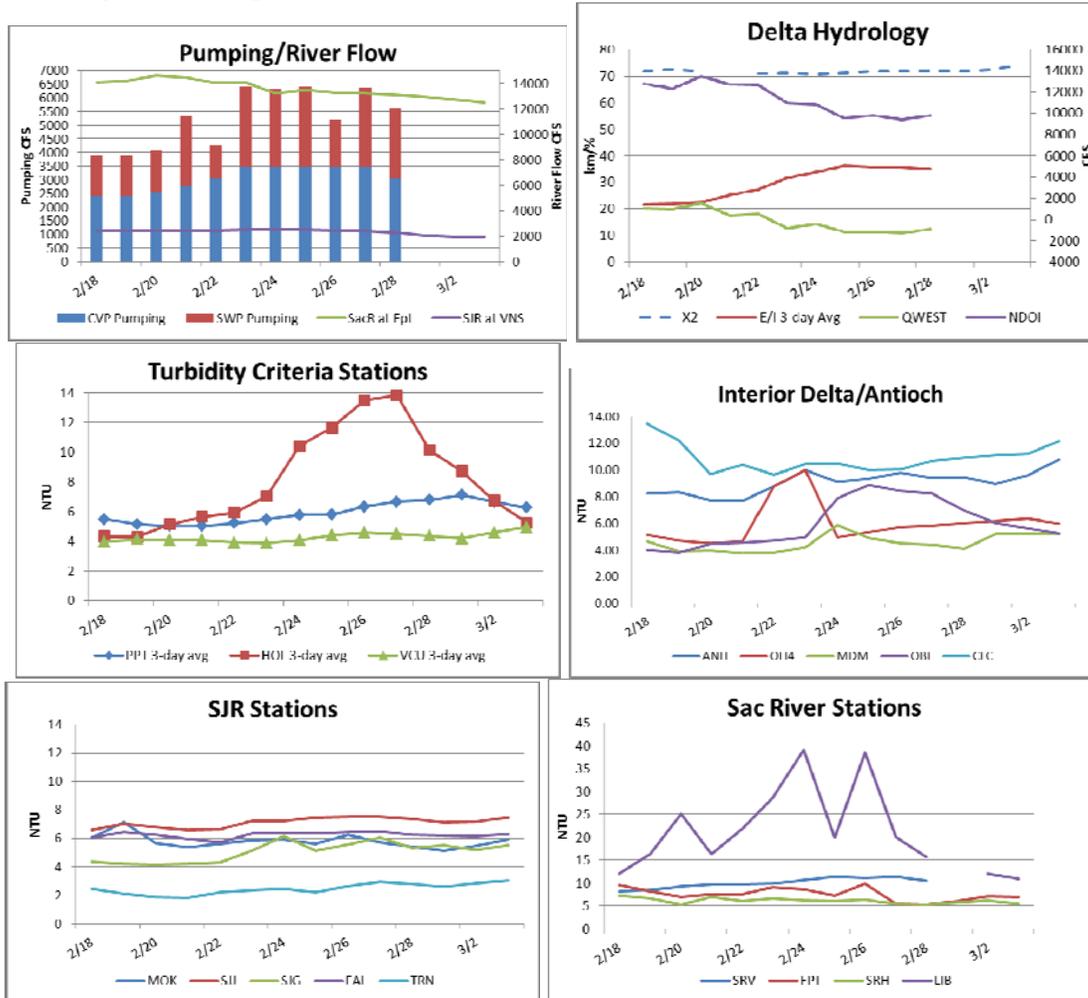
- **Water temperatures:**



- **OMR:** USGS tidally-averaged 5-day average OMR flow and 14-day average OMR flow is currently unavailable. USGS is currently updating their equipment and is experiencing technical issues. No indication on when OMR data will be available. Due to the equipment issues, the Projects have been utilizing the OMR Index Method to estimate flows between -4,000 and -5,000 cfs in the past few days. CDEC daily OMR estimates indicating -8,100 cfs on March 1 was likely based on partial data points, and not necessarily reflective of actual OMR flow. Operators indicated that OMR appears to be in an increasingly negative trend since February 24.



- **Flow:** Sacramento River flows at Freeport are approximately 12,499 cfs and San Joaquin River is 1,938 cfs. X₂ calculation from CDEC is at 74km.



Delta Fish Monitoring:

SKT #3 is in the field this week. Catch has been processed from stations 809, 812, 815, 902, and 915 only. A total of ten delta smelt were collected at station 809, including two spent females.

Smelt Larval Survey #5 was in the field last week. A total of 1,781 larval longfin smelt have been counted thus far (23 of 35 stations have been processed so far). No delta smelt larvae or adults have yet been detected. The survey did result in surpassing a distributional criterion for the State Water Project's longfin smelt ITP. One hundred thirteen longfin smelt larvae were collected at criteria stations in the central and southern Delta.

The first 20-mm survey of WY 2013 will commence March 11.

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 on February 27 as well as the 28 at the CVP facility. The total combined delta smelt salvage for the season is 238 (102 at the SWP and 136 at the CVP) as of March 3, or approximately 66% of the total allowable take of 362. No longfin smelt have been salvaged since January 21st. The total combined longfin smelt salvage for the season is 4.

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 5,400 cfs as of March 4, targeting an OMR of -4,500 cfs. Operators commented that at present, two factors could be potentially controlling pumping operations, OMR flow as per the Service BO and the export/inflow ratio as per the Delta standards (SWRCB). Operators estimate that OMR flow for the Service BO has controlled operations thus far 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 today, the Working Group will now look 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 1 recommendation, the Service’s March 1 determination of -4,500 cfs OMR flow target, the revised, increased WY 2013 adult delta smelt Incidental Take Limit, and the low salvage of adult delta smelt for the previous three weeks.

Members discussed the ten adult delta smelt collected at station 809 of the SKT #3, the only station to report catch of adult delta smelt in the central and southern Delta. Members anticipated that if additional adults had moved into the southern Delta from the San Joaquin River (or further downstream), this survey should have caught more adults at additional stations in this region. The Working Group suspects that if additional adults have moved into the southern Delta, they are not in large numbers.

The Working Group members discussed the revised 2013 WY remaining allowable take of 124 adult delta smelt, (362 adult delta smelt take limit minus the 238 cumulative total adult delta smelt salvaged to date). Considering April 6 as the average last date of adult delta smelt salvage (based on a review of salvage data over the last few years), there are approximately 34 days left until the probable end of the adult entrainment period. Given this information, the Projects could salvage 26 fish at a constant weekly rate and not exceed the adult delta smelt incidental take limit.

Since February 24th there has been a progressive increase in daily negative OMRs. During this time there were two consecutive days of salvage (4 fish on each of February 27 and 28) that were followed by three consecutive days of zero salvage, suggesting OMR flow has not resulted in an increase in salvage trend. Low weekly salvage since the second week of February further suggests that delta smelt densities in the south Delta are low.

Although the Working Group expects that salvage may continue as OMR becomes more negative, the Working Group considered that the projects are no longer 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, and 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 lack of distributional information regarding delta smelt larvae, the Working Group did not make a recommendation to protect that life stage at this time. Members indicated that the SLS starting March 18 should be the best opportunity to obtain distributional information on larvae prior to April.

The Working Group recommended to the Service that OMR flow could be increased to -5,000 cfs (14-day average). Should the facilities experience three consecutive days of salvage or exceed 26 fish for the weekly total, the Working Group will reconvene and reassess the assessment of risk and a potential new recommendation. The Working Group will closely monitor salvage and Delta conditions and reconvene on Monday, March 11.

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

Advice for week of March 4, 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. 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; larvae dispersed from Station 809, reducing the risk of entrainment into the south Delta. Previously, SLS survey #3 distribution numbers surpassed the criterion 3 threshold (see Basis for Advice below) and in SLS survey #4, 4 stations had double digit catches (or more) approaching the density criterion (i.e., catches > 15 at 4 or more stations). To limit south Delta entrainment of larvae from Station 809 and other San Joaquin River stations, OMR of no more negative than -4,000 cfs was advised. Recently, catches from SLS survey #5 declined rather than increased, so OMR of -5000 is once again protective. Qwest remains slightly negative. Currently X2 is at Chipps Island. Current conditions suggest that a few adult longfin smelt will move into the central and south Delta to spawn. 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.

Basis for advice:

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

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 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. 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. Distribution information does not indicate advice is warranted based on this criterion.

3 & 4. 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** (cf., Table 1 and Basis for Advice #s 3 & 4 above). 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. 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 longfin smelt larvae are present at Station 716, 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 declined steadily through mid-January, then fluctuated between 13,000 and 18,000 cfs through February 11, before dropping more recently to 9,800 cfs as of February 28. X2 is currently about 74 km. Combined State and federal exports are currently about 5,400 cfs. Qwest has been weakly negative since February 24 (-800 to -2000).

Current OMR advice for longfin smelt: -5000, see 3 & 4 above.

Table 1. Longfin smelt catch per station from 2013 Smelt Larva Survey, Survey 5.

Study Year	Survey #	SLS Station	Sample Status	Species	Smelt Catch
2013		405	Not yet processed		
2013		411	Not yet processed		
2013		418	Not yet processed		
2013		501	Not yet processed		
2013		504	Not yet processed		
2013		508	Not yet processed		
2013		513	Not yet processed		
2013		519	Not yet processed		
2013		520	Not yet processed		
2013		602	Not yet processed		
2013		606	Not yet processed		
2013		609	Not yet processed		
2013		610	Not yet processed		
2013		703	Not yet processed		
2013		704	Not yet processed		
2013		705	Not yet processed		
2013		706	Not yet processed		
2013		707	Not yet processed		
2013		711	Not yet processed		
2013		716	Not yet processed		
2013		723	Not yet processed		
2013		801	Not yet processed		
2013		804	Not yet processed		
2013	5	809	Processed	Longfin Smelt	44
2013	5	812	Processed	Longfin Smelt	14
2013	5	815	Processed	Longfin Smelt	27
2013	5	901	Processed	Longfin Smelt	6
2013	5	902	Processed	Longfin Smelt	11
2013	5	906	Processed		No Smelt Catch
2013	5	910	Processed		No Smelt Catch
2013	5	912	Processed		No Smelt Catch
2013	5	914	Processed		No Smelt Catch
2013	5	915	Processed	Longfin Smelt	4
2013	5	918	Processed	Longfin Smelt	2
2013	5	919	Processed	Longfin Smelt	5

SWP ITP Criteria Stations

Processing is complete through 2/28/13.

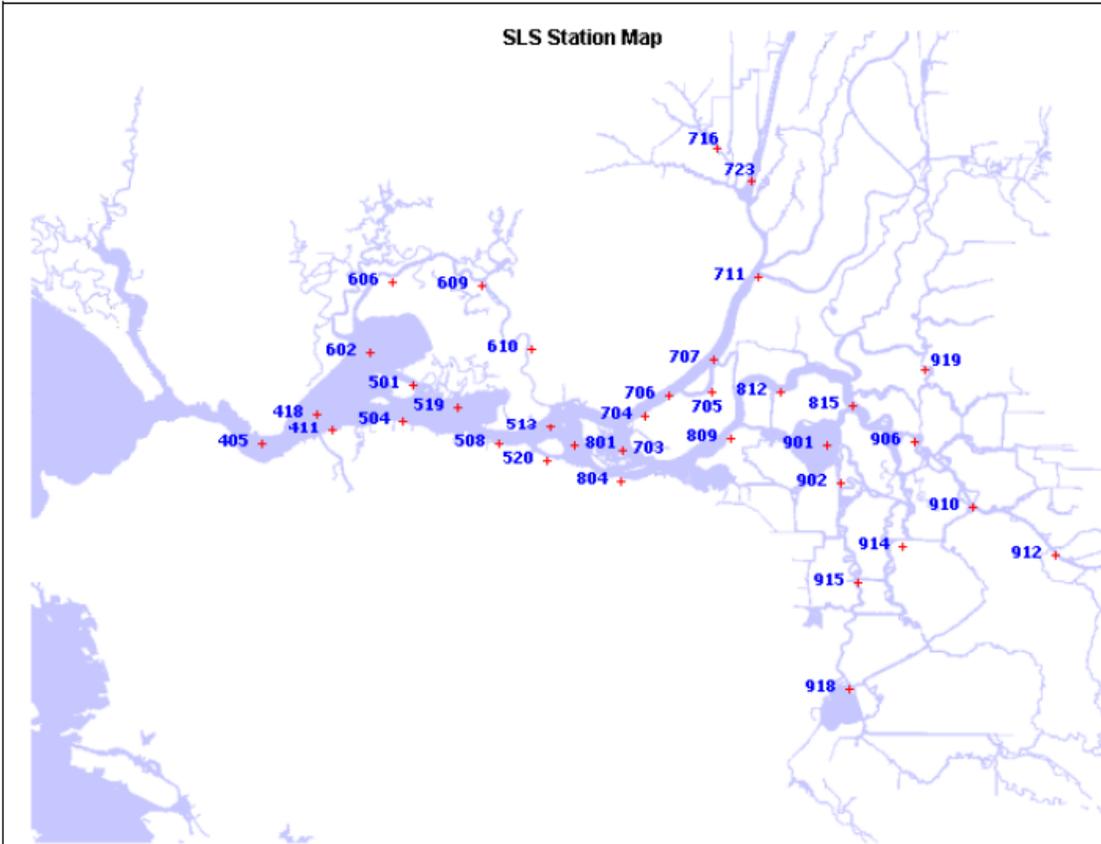


Figure 1. DFG's Smelt Larva Survey station locations.