

SMELT WORKING GROUP
Friday, March 1, 2013

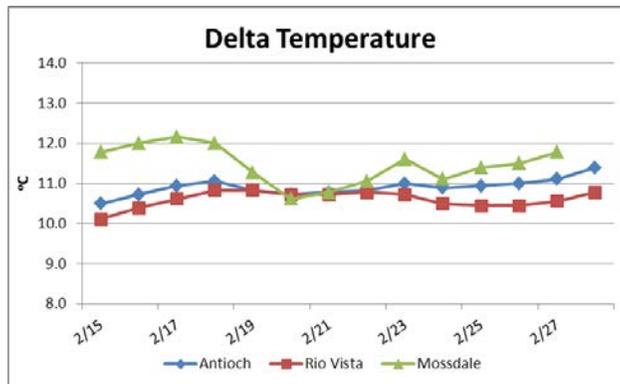
Meeting Summary:

The Working Group recommended that OMR flow should be set at a 14-day average flow of no more negative than -4,500 cfs with a corresponding 5-day average flow of no more negative than -5,625 cfs. The Working Group will continue to monitor salvage, turbidity, and other conditions, and will reconvene Monday, March 4.

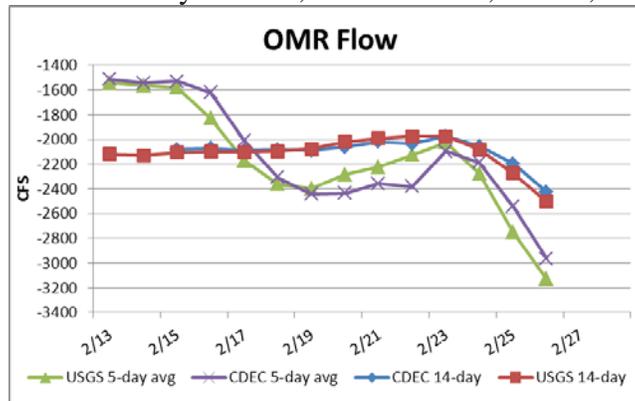
Reported Data:

1) Current environmental data:

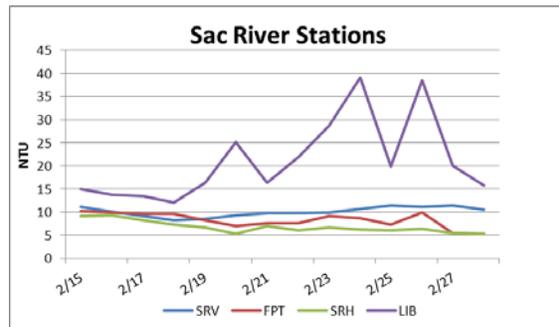
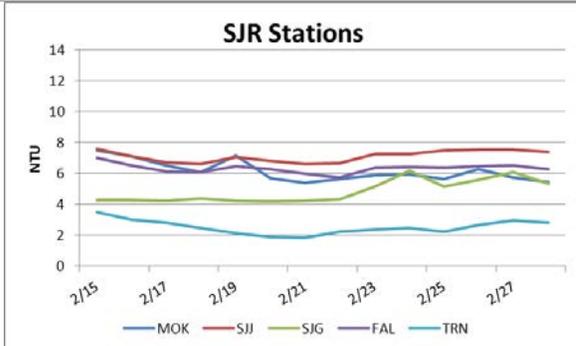
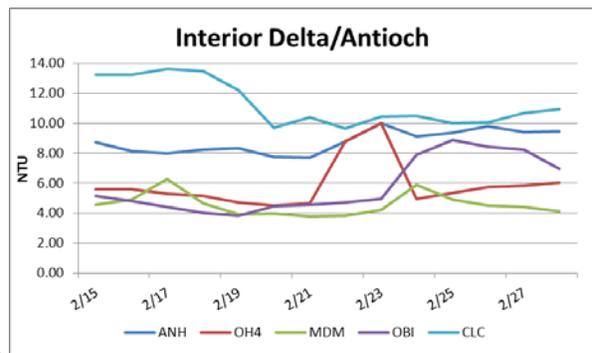
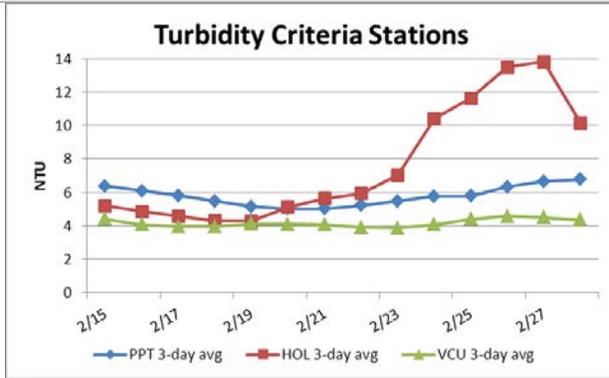
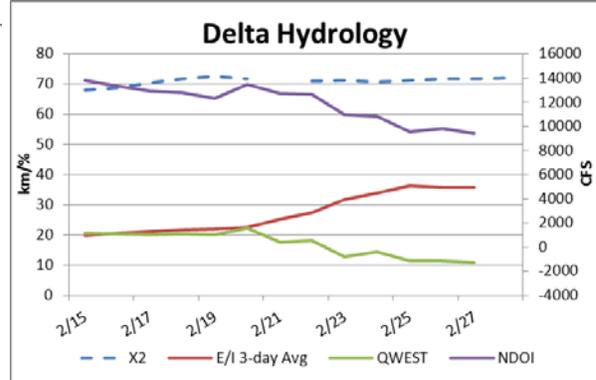
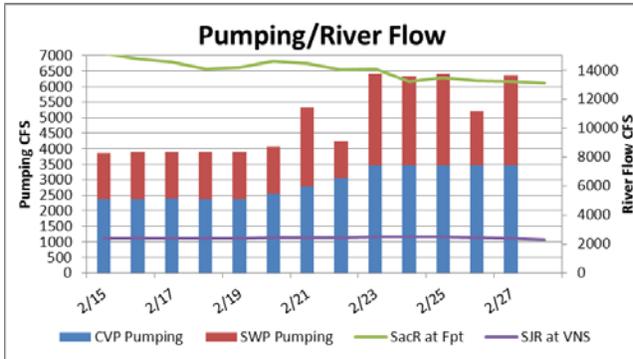
- **Water temperatures:**



- **OMR:** USGS tidally-averaged 5-day average OMR flow and 14-day average OMR flow on February 26 was -3,129 cfs and -2,505 cfs, respectively. CDEC 5-day OMR flow 14-day average OMR flow as of February 26 is -2,964 cfs and -2,425 cfs, respectively.



- **Flow:** Sacramento River flows at Freeport are approximately 13,120 cfs and San Joaquin River is 2,282 cfs. X₂ calculation from CDEC is at 72km.



Delta Fish Monitoring:

SKT #3 is in the field the week of March 4

Smelt Larval Survey #5 was in the field this week. A total of 462 larval longfin smelt have been counted thus 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 group was notified that delta smelt have been collected at the Yolo Bypass rotary screw trap since mid-January of this year (see table below). Beginning 2/20/13, crews have noted the expression of gametes by both males and females. Water temps at the trap are currently just above 11C.

2013 Delta Smelt Catch Summary				Beginning 2/20/13	Beginning 2/20/13
	Date first caught	Total Caught to date	Appox #/week	Males expressing milt	Females expressing eggs
Screw Trap	1/15/2013	68	9.7	10	11
Seine	1/17/2013	5	n/a	1	
	Total	73		11	11

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

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 305.

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 now 238 (102 at the SWP and 136 at the CVP) as of February 28, 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 5,200 cfs as of March 1, targeting an OMR of - 3,500cfs.

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).

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

The Working Group discussed its February 25 recommendation, the Service’s February 26 determination of -3,500 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.

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 37 days left until the probable end of the adult entrainment period. Given this information, the Projects could salvage 24 fish at a constant weekly rate and not exceed the adult delta smelt incidental take limit.

The Working Group discussed that daily OMR flows have been fluctuating between approximately -2000 cfs and -4000 cfs since February 21. Prior to February 24, daily OMRs had been more positive than the OMR target of -3500 cfs. From February 24 to February 26, the daily OMR became increasingly negative from -3218 cfs to -3941 cfs. The 5-day and 14-day OMR flows were -3129 cfs and -2505 cfs, respectively on February 28, which is the last day of posted OMR flow data.

There have been two consecutive days of salvage (4 fish on each of February 27 and 28), since the increase in daily OMRs. This demonstrates an increase in the weekly salvage since the beginning of February. However, this weekly salvage is relatively low, and indicates that there may be fewer delta smelt in the south Delta.

The Working Group expects that salvage may continue as OMR becomes more negative. The Working Group discussed that the projects are no longer at the Biological Opinion’s concern level (revised to 272), and that we are approaching the probable end of the adult entrainment risk period. 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 could cause the projects to approach the concern level, and potentially exceed the incidental take limit.

Delta smelt are likely to begin spawning in the near future based on rising water temperatures (~11°C in most areas of the Delta) and evidence of adult fish expressing gametes from the Yolo Bypass Screw Trap. Spawning has been observed to occur when water temperatures reach 12°C;

peak spawning occurs near 15°C. An analysis of hatch dates reported by Kimmerer (2008) shows that hatching can begin in early March.

The Working Group will closely monitor salvage and Delta conditions and reconvene on Monday, March 4.

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

Advice for week of March 1, 2013:

The Smelt Working Group believes that an OMR of -5,000 cfs is protective of longfin smelt at this time. The recent OMR advice for delta smelt of -4,500 cfs will provide additional protection for longfin smelt.

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 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 weakly negative, but trending toward positive. Currently X2 is located 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 (14-20 cfs) and don't pose a 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 has been in the vicinity of 72 km since early February and remained at 72 km as of March 1. Combined State and federal exports are currently about 5,200 cfs. Qwest has been weakly negative since February 24, but is trending more positive.

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.

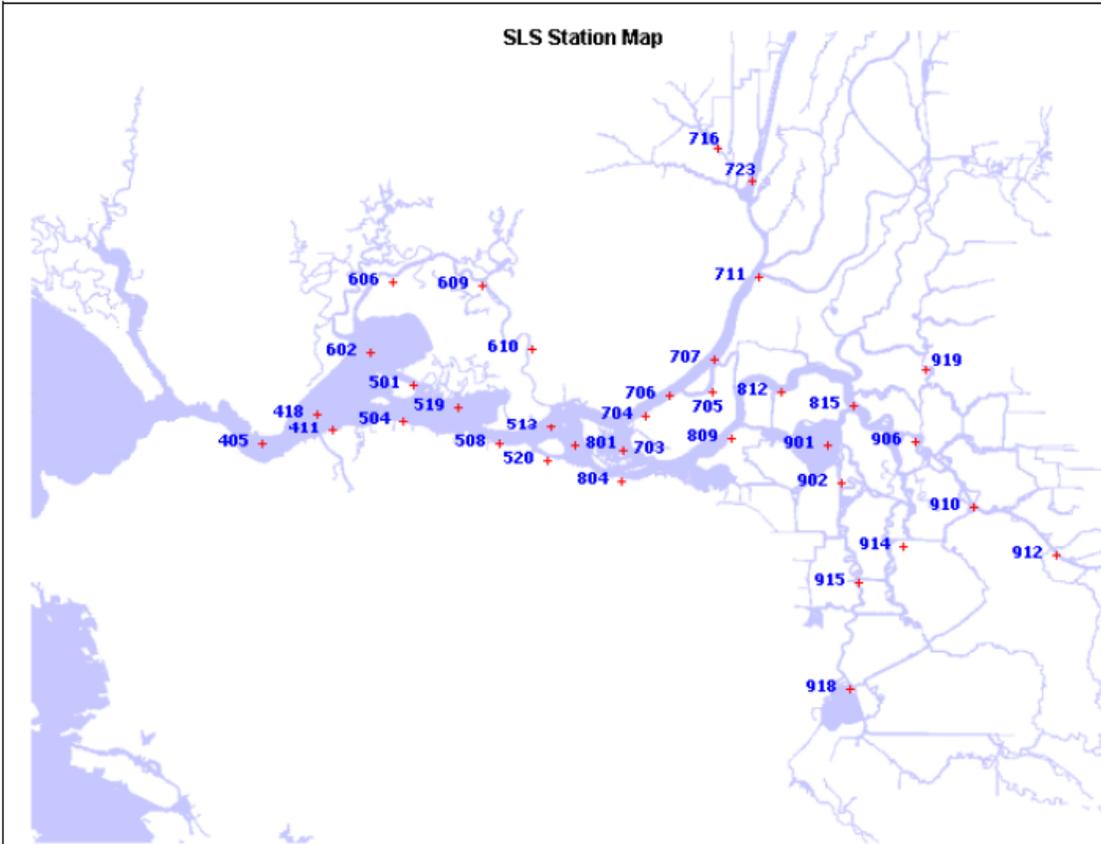


Figure 1. DFG's Smelt Larva Survey station locations.