SMELT WORKING GROUP

Monday, February 25, 2013

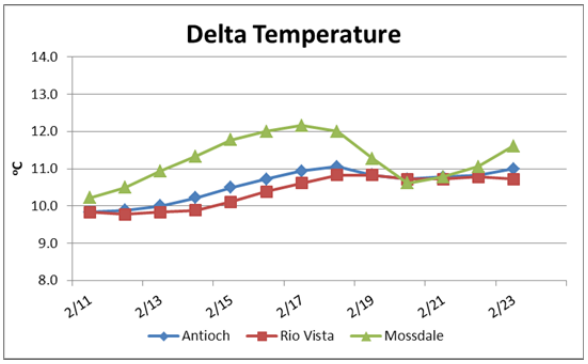
Meeting Summary:

The Working Group recommended that OMR flow should be set at a 14-day average flow of no more negative than -3,500 cfs with a corresponding 5-day average flow of no more negative than -4,375 cfs. The Working Group will continue to monitor salvage, turbidity, and other conditions, and will reconvene Friday, March 1 to conduct an entrainment risk assessment for delta smelt and review current longfin smelt distribution data.

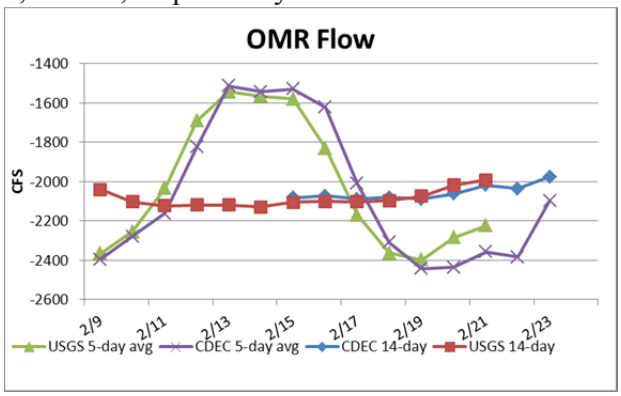
Reported Data:

1) Current environmental data:

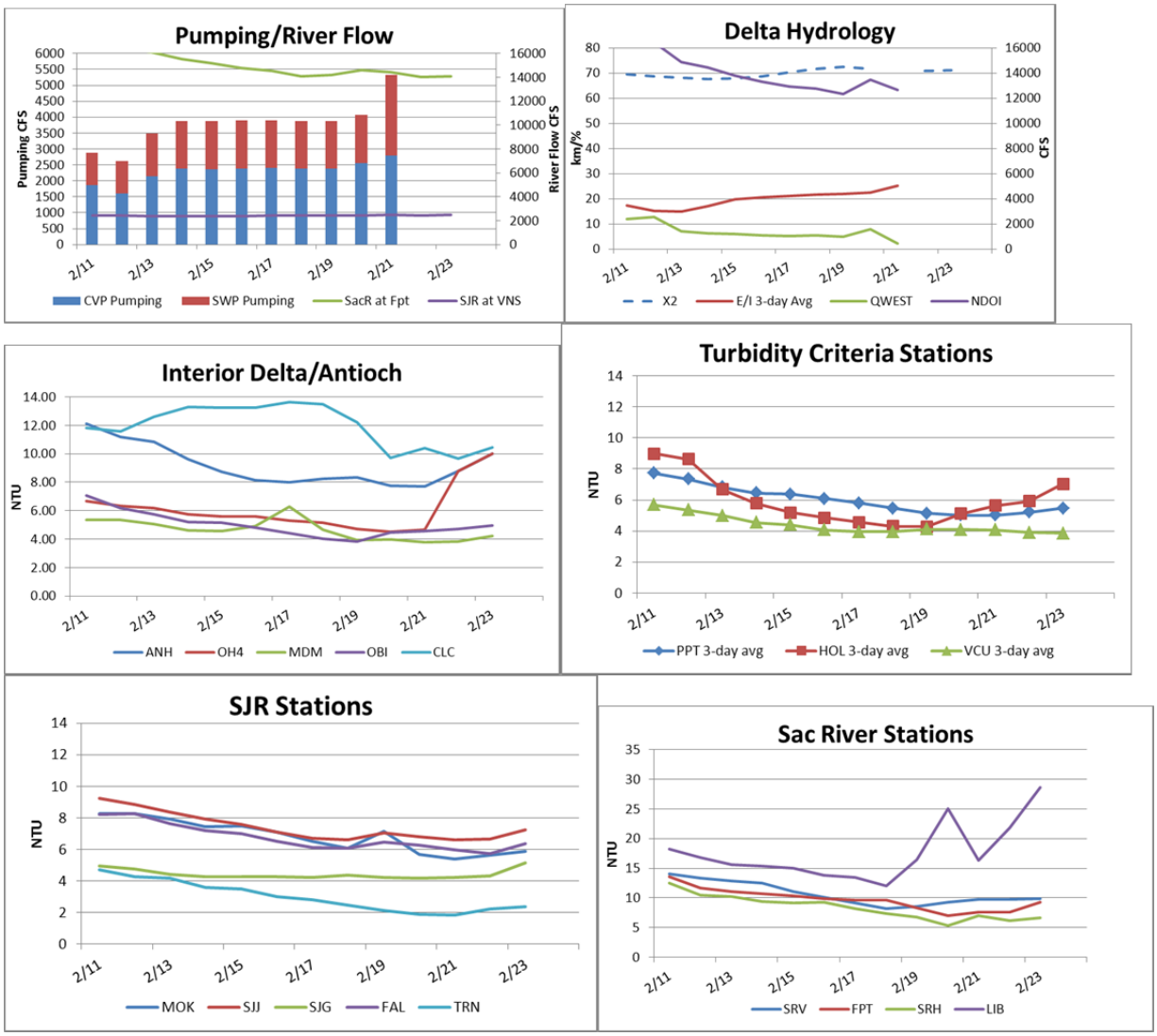
- **Water temperatures**: On February 23, 2013, water temperatures at Antioch, Rio Vista, and Mossdale were 10.9 °C, 10.5°C, and 11.1°C, respectively. The three station average was 10.8°C.



- **OMR:** The CDEC 5-day OMR flow and 14-day average OMR flow as of February 24 were -2,090 cfs and -2,021 cfs, respectively.



- **Flow:** Sacramento River flow at Freeport was approximately 13,300 cfs and San Joaquin River flow at Vernalis was approximately 2,500 cfs. X_2 calculation from CDEC was at 71km.



Delta Fish Monitoring:

CDFW has finished processing Smelt Larval Survey #4. A total of 9,917 longfin smelt larvae were counted. SLS #3 and #4 both resulted in surpassing the distributional criterion for the State Water Project's longfin smelt incidental take permit. No delta smelt adults or larvae were collected during SLS #4.

SLS #5 begins today (Febrary 25th), Spring Kodiak Trawl survey #3 is in the field the week of March 4 th, and the first 20 mm Survey of WY 2013 will commence March 11. CDFW survey data is available online at http://www.dfg.ca.gov/delta/.

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 has been revised as per the Service's February 22, 2013 Revised Incidental Take Calculation

Memorandum to BOR. The revised allowable take limit is 362 fish, and the associated concern level is 272 fish. 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.

2) Salvage:

Two adult delta smelt were salvaged at the SWP on February 21, 2013. Other than these 2 fish, no other adult delta smelt were salvaged during the period February 7 through midnight Sunday, February 24. The preliminary total adult delta smelt salvage for the season is 230 fish, which is approximately 63% percent of the revised WY 2013 adult delta smelt incidental take limit of 362 fish, and 42 fish short of the concern level. No longfin smelt have been salvaged since January 21st at either facility. 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 expected to be approximately 6,000 cfs for the week of February 25, 2013, targeting an OMR of -3,500cfs.

4) Particle Tracking Modeling:

No PTM runs were requested for this week. DFW has made a longfin smelt-related PTM request, the results of which will be available for discussion during the Friday (3/1/13) SWG call.

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 19 recommendation, the Service's February 20 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 18 days.

The Working Group reviewed the Service's changes to the 2008 BiOp take calculation. The revised WY 2013 incidental adult delta smelt take limit is 362; the concern level is 272. The revised WY 2013 incidental larval-juvenile delta smelt take limit is 2,350.

The Working Group members discussed the revised 2013 WY remaining allowable take of 132 adult delta smelt, (362 adult delta smelt take limit minus the 230 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 40 days left until the probable end of the adult entrainment period. Given this information, the Projects could salvage 23 fish at a constant weekly rate not exceed the adult delta smelt incidental take limit.

The SWG discussed that daily OMR flows have been fluctuating between approximately -1100 cfs and -3200 cfs since February 18th. The 5-day and 14-day OMR flows were -2090 cfs and -2021 cfs, respectively. The fluctuations in daily OMR flows could be a result of both the lunar and tidal cycle. Members noted that the daily OMR of -3218 cfs on February 24th was the most negative OMR that had been observed in the last couple of weeks, and that the water exports increase to 6000 cfs, CVP/SWP combined, has occurred only in the last few days. Therefore, though the projects have been targeting -3500 cfs flow, the apparent effects of the more negative OMR provided for by the Service's February 20 determination salvage are not yet discernible.

The Working Group also notes that an apparent increase in wind-driven turbidity on the Old River, a recent shift from positive to negative QWEST and rising water temperatures at the onset of spawning season may initiate additional delta smelt movement into the interior Delta.

The Working Group will closely monitor salvage and Delta conditions and reconvene on Friday, March 1 to conduct a delta smelt risk assessment after a total of five days with OMR flow close to -3,500 cfs. At the request of CDFW, the Working Group also will review current longfin smelt distribution data on Friday, March 1.

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

Advice for week of February 25, 2013:
The Smelt Working Group believes that an OMR of -4,000 cfs is protective of longfin smelt at this time. The recent OMR advice for delta smelt of -3,500 cfs will provide additional protection for longfin smelt**.**

Summary of Risk:
Risk of additional entrainment into the south Delta is low given the OMR advice for -3,500 cfs. Smelt Larva Survey (SLS) #4 results showed some double digit catches in the central Delta and a triple digit catch at Station 809. 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 is advised. Qwest conditions remained positive from survey #4 sampling dates (February 18-19) through February 22, enhancing downstream dispersal. Moreover, the past week's OMR target (-3,500 cfs) was only reached on a daily basis on February 24. Currently X2 is located west of 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. Smelt Larva Survey #5 is in the field today and tomorrow.

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 estimated 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 , 10 or more larvae were detected at 4 locations, 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 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. On February 25, no new survey information was available, so the advice will remain the same pending review of survey 5 information on March 1.

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 10,800 cfs as of February 25. X2 has been in the vicinity of 72 km since early February and remained at 71 km as of February 25. Combined State and federal exports are currently about 6,000 cfs. Qwest has been slightly positive since January 24 and remained positive through February 22 and is now weakly negative, -420 cfs as of February 24.

Current OMR advice for delta smelt: On February 25, the SWG recognized that the Service approved OMR target of -3,500 cfs had only been approximately achieved on February 24, so the limited delta smelt salvage of the previous week (2) was not indicative of the target condition. Therefore, the SWG determined that target -3,500 cfs should remain and the SWG reconvene on Friday March 1 to review new data.

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

Table 1. Longfin smelt catch per station from 2013 Smelt Larva Survey, Survey 4.

Study Year	Survey #	SLS Station	Sample Status	Species	Smelt Catch	
2013	4	405	Processed	Longfin Smelt	616	
2013	4	411	Processed	Longfin Smelt	536	
2013	4	418	Processed	Longfin Smelt	535	
2013	4	501	Processed	Longfin Smelt	1303	
2013	4	504	Processed	Longfin Smelt	1206	
2013	4	508	Processed	Longfin Smelt	450	
2013	4	513	Processed	Longfin Smelt	202	
2013	4	519	Processed	Longfin Smelt	236	
2013	4	520	Processed	Longfin Smelt	159	
2013	4	602	Processed	Longfin Smelt	286	
2013	4	606	Processed	Longfin Smelt	152	
2013	4	609	Processed	Longfin Smelt	28	
2013	4	610	Processed	Longfin Smelt	81	
2013	4	703	Processed	Longfin Smelt	46	
2013	4	704	Processed	Longfin Smelt	1678	
2013	4	705	Processed	Longfin Smelt	122	
2013	4	706	Processed	Longfin Smelt	490	
2013	4	707	Processed	Longfin Smelt	483	
2013	4	711	Processed	Longfin Smelt	38	
2013	4	716	Processed	Longfin Smelt	428	
2013	4	723	Processed	Longfin Smelt	105	
2013	4	801	Processed	Longfin Smelt	226	
2013	4	804	Processed	Longfin Smelt	44	
2013	4	809	Processed	Longfin Smelt	368	SWP ITP Criteria Stations
2013	4	812	Processed	Longfin Smelt	3	
2013	4	815	Processed	Longfin Smelt	8	
2013	4	901	Processed	Longfin Smelt	40	
2013	4	902	Processed	Longfin Smelt	13	
2013	4	906	Processed	Longfin Smelt	11	
2013	4	910	Processed	Longfin Smelt	1	
2013	4	912	Processed		No Smelt Catch	
2013	4	914	Processed	Longfin Smelt	2	
2013	4	915	Processed	Longfin Smelt	9	
2013	4	918	Processed	Longfin Smelt	7	
2013	4	919	Processed	Longfin Smelt	5	

Processing is complete through 2/22/13.

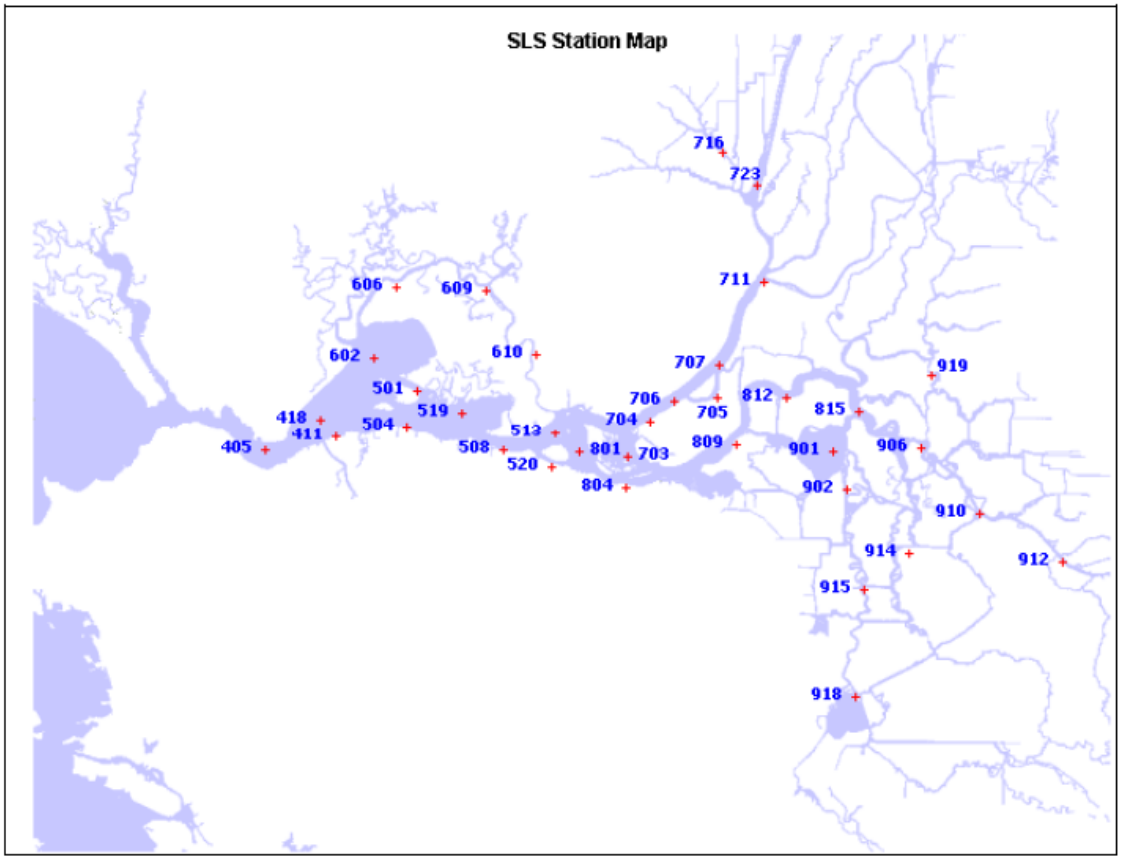


Figure 1. DFG's Smelt Larva Survey station locations.