

Smelt Working Group
February 26, 2018

Meeting Summary

The Working Group reviewed current Delta conditions, survey data, current water project operations, and forecasted weather. Current weather conditions are rainy and cool, with significant precipitation forecasted on Thursday. The 3-station average water temperature (Antioch, Rio Vista Bridge, and Mossdale) has remained below 12°C since February 14, which is the temperature indicative of spawning identified in the Biological Opinion and a trigger for the start of Action 3. Current water exports have been kept to a minimum in an effort to increase and maintain Delta outflow. Based on Delta conditions, reductions in water exports, and the lack of recent detections of Delta Smelt from surveys within the entrainment risk area, the SWG concluded that the risk for Delta Smelt and Longfin Smelt entrainment is low. In addition, no larval Delta Smelt and no spawning adult Delta Smelt have been detected, which indicates that the spawning season likely has not yet begun.

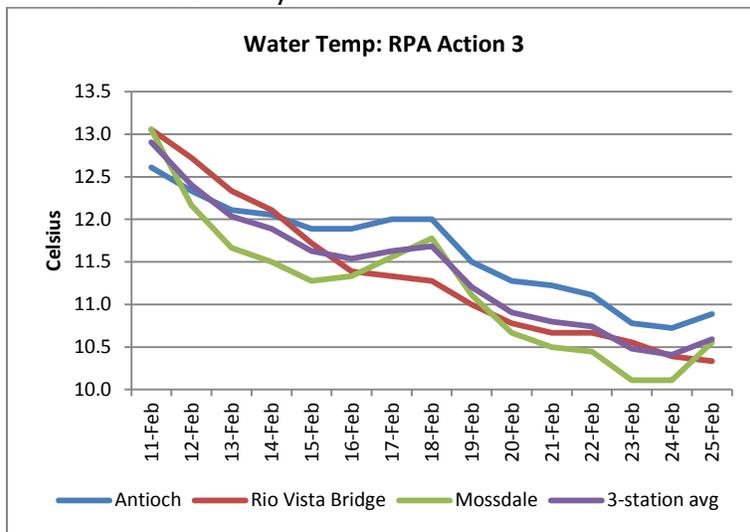
The Working Group does not believe that a recommendation under Action 2 (adult pre-spawning Delta Smelt) or Action 3 (larval Delta Smelt) is necessary to protect Delta Smelt at this time. The Working Group will continue to monitor Delta Smelt survey and salvage data, Delta conditions, and particularly this Thursday's forecasted precipitation. The group will meet again next Monday, March 5 at 1000 hours.

Reported Data

1. **Current environmental data**

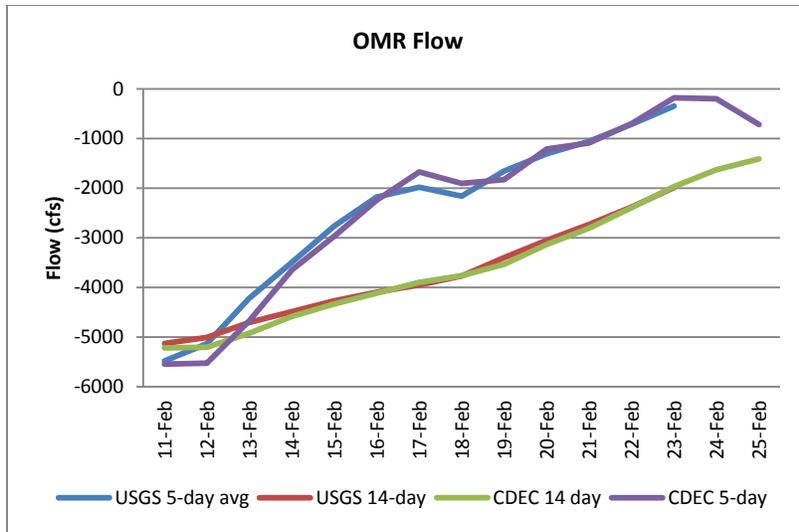
a. **Temperature**

Daily averages of the 3 Delta Stations (Antioch, Rio Vista Bridge, and Mossdale) was 10.6°C as of February 25.



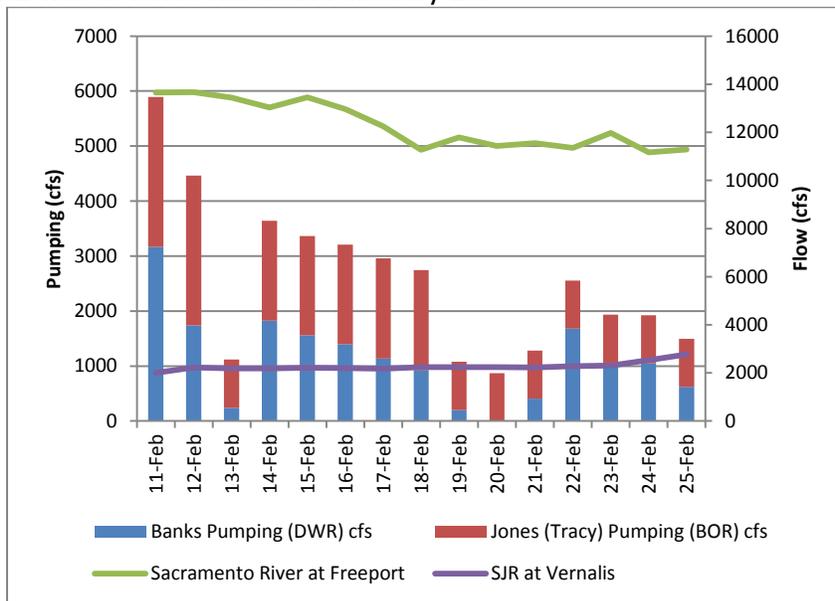
b. **OMR flow**

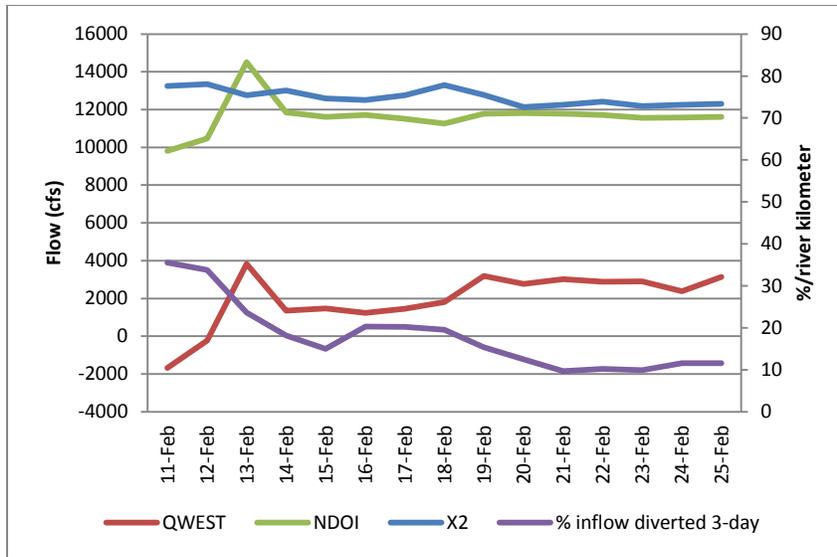
The CDEC daily average OMR flow for February 25 was -1,724 cfs. USGS daily average OMR flow for February 23 was -295.7 cfs.



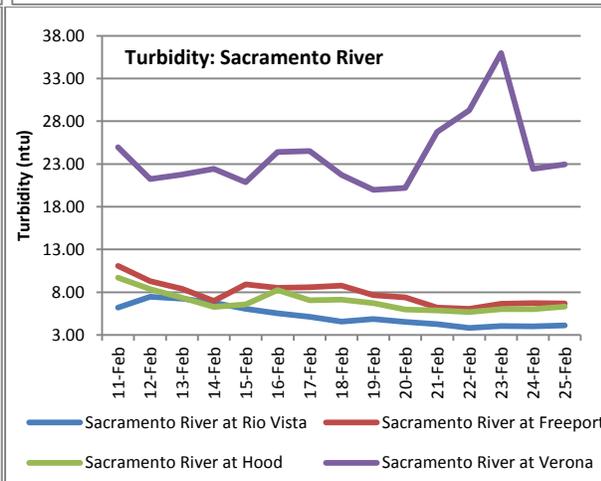
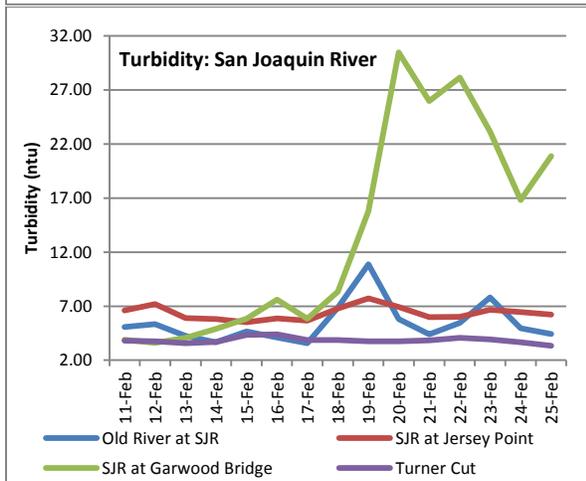
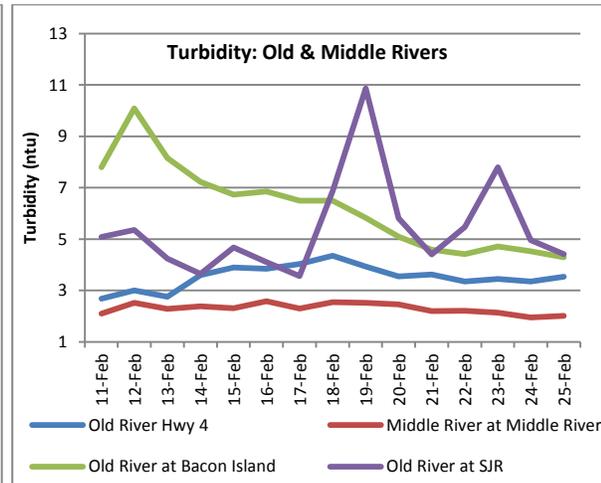
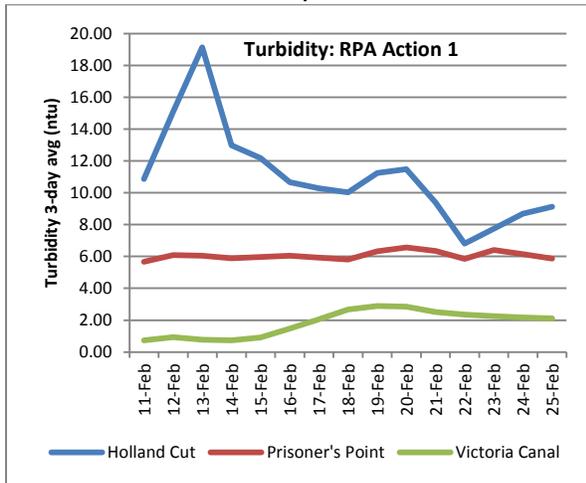
c. River flows and pumping

Sacramento River at Freeport flow for February 25 was approximately 11,281 cfs. San Joaquin River at Vernalis flow for February 25 was approximately 2,763 cfs. X2 was at 73.38 km as of February 25.





d. Turbidity



2. Delta fish monitoring

Approximately 66% of the samples from Smelt Larva Survey (SLS) #4, which was out in the field two weeks ago, have been processed. No larval Delta Smelt have been observed and 350 larval Longfin Smelt have been detected, ranging from 5-10 mm in length. SLS #5 will be surveying in the field this week and Spring Kodiak Trawl (SKT) #3 will be out in the field starting next Monday.

Enhanced Delta Smelt Monitoring (EDSM) was in the field last week and will be in the field this week. Last week, one adult Delta Smelt and 8 adult Longfin Smelt were detected. Complete EDSM catch reports are publicly available [here](#).

3. Modeling

No modeling or PTMs were performed over the past few weeks, and there were no new modeling requests. One group member mentioned that running a PTM would be logical if a WIIN Act flex were to occur, which is unlikely for this week.

4. Salvage

No adult or juvenile stages of Delta Smelt and Longfin Smelt have been observed in salvage so far this season (WY 2018).

5. Expected Project Operations

Combined pumping for the Banks and Tracy pumping facilities on February 25 was 1,495 cfs, and Net Delta Outflow on February 25 was 11,617 cfs. Pumping is currently restricted by SWRCB D-1641 (Spring X2), which requires enhanced Delta outflow to meet water quality standards. The Spring X2 controlling factor will be in effect through the end of February and for the first few days of March. Pumping may be increased depending on the magnitude of this week's forecasted rain, but OMR indices are expected to remain at around -1,200 cfs. One group member asked if a WIIN Act flex would be initiated this week due to the storm event. One of the water agency operators responded that as the weather has remained cold with little runoff, this week's storm event is unlikely to produce enough flow to warrant a WIIN Act flex.

Ambient temperatures are anticipated to remain cool this week. Precipitation is forecasted for today with a larger storm event coming in on Thursday.

6. Delta Conditions Team

The DCT met last week and did not have any recommendations for the SWG this week.

7. Biological Opinion Background:

RPA Component 1, Action 2 states, "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 4 OMR flows within

this range are recommended by the Working Group from the onset of Action 2 through its termination...”

The timing of Action 2 is immediately after Action 1. Before this date (in time for operators to implement the flow requirement) the SWG will recommend specific requirement OMR flows based on salvage and on physical and biological data on an ongoing basis. If Action 1 is not implemented, the SWG may recommend a start date for the implementation of Action 2 to protect adult Delta Smelt. (BiOp page 352).

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).

8. Assessment of Risk Discussion

Delta Smelt Detections

So far, SLS #4 has not detected any larval Delta Smelt. Last week, EDSM detected one pre-spawning adult Delta Smelt in the Lower Sacramento River just upstream of Broad Slough, which is not in close proximity to the pumping facilities. No fish salvaged as yet this season (WY 2018).

Longfin Smelt Detections

So far, SLS #4 has detected 350 larval Longfin Smelt, most of which were west of the confluence with only a few in the South and Central Delta. Last week, EDSM detected 8 adult Longfin Smelt, one which was expressing milt, in Suisun Marsh, which is not in close proximity to the pumping facilities. No fish salvaged as yet this season (WY 2018).

General discussion

Conditions in the Delta are currently cool and wet with another larger storm event forecasted for this Thursday. River flows are expected to increase a few days after the storm events, and pumping may be increased. However, OMR indices will likely be held at around -1,200 cfs to maintain Delta outflow under the Spring X2 requirement. As recent surveys have not detected any larval Delta Smelt or ripe female adult Delta Smelt, and all the adult Delta Smelt detected have been outside of the entrainment risk zone, the group consensus is that additional protections for larval smelt are not necessary at this time. One group member stated that although the storm events may increase turbidity levels in the lower San Joaquin River, recent Delta Smelt detections suggest that the fish may be mobilizing upstream in the Lower Sacramento River or Suisun Marsh for spawning. Another group member responded that the challenge lies in detecting the presence of a fish in very low population numbers, and that this week’s SLS #5 and next week’s SKT #3 could paint a clearer picture of Delta Smelt spawning presence and abundance. As water exports are relatively low due to the Spring X2 requirement until at least the beginning of March and because OMR is not expected to become much less

negative than the current flow, the overall group consensus is that the current risk of entrainment for Delta Smelt is very low.

The SWG determined that no recommendation was necessary this week for the protection of Delta Smelt.

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

Advice for week of February 26, 2018:

The Smelt Working Group has no advice for protection of Longfin Smelt.

No advice for Barker Slough operation. Current water year type for the Sacramento River is below normal (as of January 31), which does not trigger concern for Barker Slough risk of entrainment (see Basis for advice #5 below).

Basis for advice:

The 2009 State Water Project 2081 for Longfin Smelt states that advice to WOMT and the DFW 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 20mm Survey finds Longfin Smelt larvae present at 8 of 12 central and south Delta sampling stations in 1 survey (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. During the period January 15 through March 31 of a dry or critically dry water year only, advice for Barker Slough pumping plant operations may be warranted if larval Longfin Smelt are detected at station 716 and other information indicates risk of entrainment.

Discussion of Criteria

1. As of February 25, 2018, no Longfin Smelt have been salvaged for the water year. See current conditions discussion below. The 2017 Fall Midwater Trawl Survey annual abundance index for Longfin Smelt is 141, so the salvage threshold is 705. Advice is not warranted based on this criterion.
2. Bay Study sampling last week (week of February 20) detected only two Longfin Smelt within the Delta, both in the Sacramento River adjacent to Sherman Lake. The lack of detection of Longfin Smelt in the central or south Delta makes advice unwarranted.
- 3 & 4. The fourth Smelt Larva Survey (SLS) of 2018 detected two Longfin Smelt larvae at Jersey Point (Station 809) and only a single larvae at two other stations of the 12 central and south Delta criteria stations (Table 1). Based on these criteria, no advice is warranted.
5. Criteria for Barker Slough were scheduled to begin January 15th if the water year was classified as either dry and critical. Water year 2018 began classified as “above normal”, but as

of January 31 was reclassified as “below normal” (<http://cdec.water.ca.gov/cgi-progs/iodir/WSI>). Based on water year type there is no concern for entrainment of Longfin Smelt larvae. Nonetheless, SLS survey 4 collected no Longfin Smelt larvae at station 716 (Table 1).

Current conditions: For February 25, Sacramento River at Freeport was 11,111 cfs and the San Joaquin was about 2,763 cfs. Clifton Court exports were about 593 cfs and Tracy exports were about 872 cfs. Combined exports target to maintain X2 standards. The OMR index was -352. Qwest was +3,132 cfs. This should provide for transport/dispersion downstream. In the north Delta, the most current water year designation remains at “below normal”, so North Bay Aquaduct advice is not warranted.

Only four Longfin Smelt larvae were detected at stations from the central or south Delta (Table 1). Current, very low export levels pose very little risk of entrainment.

During sampling last week (week of February 20), two adult Longfin Smelt were collected by Bay Study in the lower Sacramento River, but none in the lower San Joaquin River.

Relatively low outflow and the need to maintain X2 at Chipps Island has led to reductions in export pumping and positive Qwest. Thus, even if additional spawning and hatching occurred in the lower San Joaquin River, larvae would likely be transported downstream toward Suisun Bay. No Longfin Smelt have been salvaged this water year.

Summary of Risk: Risk of entrainment is very low due to few Longfin Smelt larvae detected in the central or south Delta, and no juveniles or adults. Hydraulic conditions are as benign as can be expected for this time of year (positive Qwest and only weakly negative OMR). Current hydrodynamic conditions are expected to remain the same or slightly less favorable through the upcoming week: current rains are not expected to change river flows much and water operations in March will initially target X2 at Chipps Island, so exports will remain low.

Table 1. Longfin Smelt Larva catch by station in the Smelt Larva Survey, #4. Sample processing is incomplete.

Year	Survey #	SLS Station	Turbidity (NTU)	Sample Status	Species	Smelt Catch	Min Length	Max Length	Mean Length
2018	4	340	27.4	Processed	Longfin Smelt	1	8	8	8.0
2018	4	342		Not yet processed					
2018	4	343		Not yet processed					
2018	4	344	28.6	Processed	Longfin Smelt	1	8	8	8.0
2018	4	345		Not yet processed					
2018	4	346		Not yet processed					
2018	4	347		Not yet processed					
2018	4	348		Not yet processed					
2018	4	349		Not yet processed					
2018	4	405	20.4	Processed	Longfin Smelt	3	7	7	7.0
2018	4	411		Not yet processed					
2018	4	418		Not yet processed					
2018	4	501	28.3	Processed	Longfin Smelt	38	6	8	6.7
2018	4	504	20.0	Processed	Longfin Smelt	35	5	10	6.5
2018	4	508		Not yet processed					
2018	4	513	23.5	Processed	Longfin Smelt	68	5	10	6.6
2018	4	519	33.4	Processed	Longfin Smelt	150	6	9	7.1
2018	4	520	16.3	Processed	Longfin Smelt	15	5	7	6.3
2018	4	602		Not yet processed					
2018	4	606		Not yet processed					
2018	4	609		Not yet processed					
2018	4	610	40.4	Processed	Longfin Smelt	7	7	8	7.1
2018	4	703		Not yet processed					
2018	4	704	22.1	Processed	Longfin Smelt	8	5	9	6.4
2018	4	705	7.9	Processed	Longfin Smelt	1	6	6	6.0
2018	4	706	16.2	Processed	Longfin Smelt	5	5	6	5.8
2018	4	707	11.8	Processed		No Smelt Catch			
2018	4	711	10.2	Processed		No Smelt Catch			
2018	4	716	22.6	Processed		No Smelt Catch			
2018	4	723	12.7	Processed		No Smelt Catch			
2018	4	801	31.6	Processed	Longfin Smelt	11	5	7	6.0
2018	4	804	20.3	Processed	Longfin Smelt	3	7	7	7.0
2018	4	809	10.5	Processed	Longfin Smelt	2	6	7	6.5
2018	4	812	7.9	Processed		No Smelt Catch			
2018	4	815	6.7	Processed	Longfin Smelt	1	8	8	8.0
2018	4	901	9.2	Processed		No Smelt Catch			
2018	4	902	19.8	Processed	Longfin Smelt	1	8	8	8.0
2018	4	906	5.1	Processed		No Smelt Catch			
2018	4	910	6.1	Processed		No Smelt Catch			
2018	4	912	3.4	Processed		No Smelt Catch			
2018	4	914	3.8	Processed		No Smelt Catch			
2018	4	915	6.1	Processed		No Smelt Catch			
2018	4	918	3.9	Processed		No Smelt Catch			
2018	4	919	4.1	Processed		No Smelt Catch			

Barker ITP

SWP ITP Criteria Stations

Processing is complete through 02/22/2018