

Smelt Working Group  
February 5, 2018

**Meeting Summary**

The Working Group reviewed current Delta conditions, survey data, current water project operations, and forecasted weather. Current weather conditions are sunny and relatively warm, with no precipitation forecasted over the next few weeks. The 3-station average water temperature (Antioch, Rio Vista Bridge, and Mossdale) rose to over 12°C on February 4, which is the temperature indicative of spawning identified in the Biological Opinion and a trigger for the start of Action 3. Based on Delta conditions, the forecasted weather, 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, all of the Delta Smelt detected from recent surveys have been pre-spawning adults, which indicates that the spawning season likely has not yet begun.

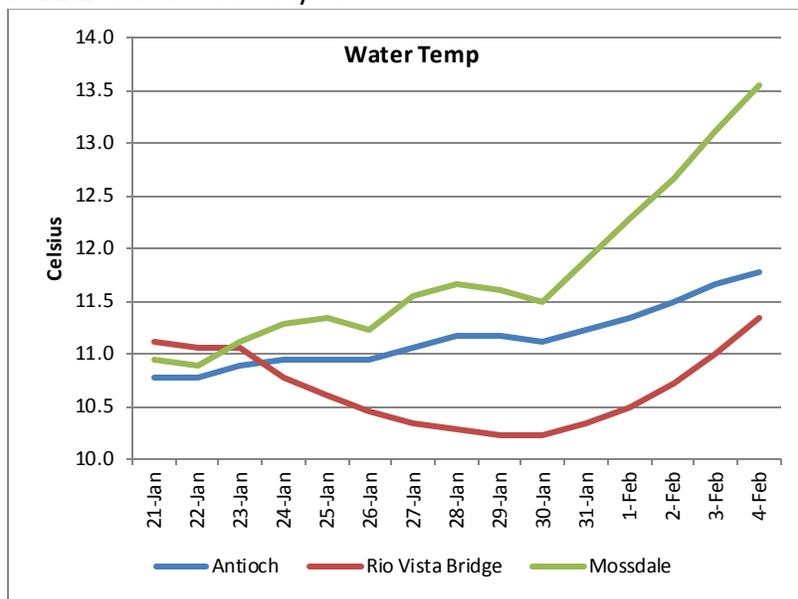
The Working Group does not believe that a recommendation under Action 1, Action 2 (adult pre-spawning Delta Smelt), or Action 3 (larval Delta Smelt) is necessary to protect Delta Smelt at this time. Although Action 3 could be considered, the SWG does not believe that larval Delta Smelt are currently present in the South and Central Delta or any of the entrainment risk areas as recent surveys have shown no evidence of the fish spawning. The Working Group will continue to monitor Delta Smelt survey and salvage data, Delta conditions, and this week's forecasted weather. The group will meet again next Monday, February 12 at 1000 hours.

**Reported Data**

1. **Current environmental data**

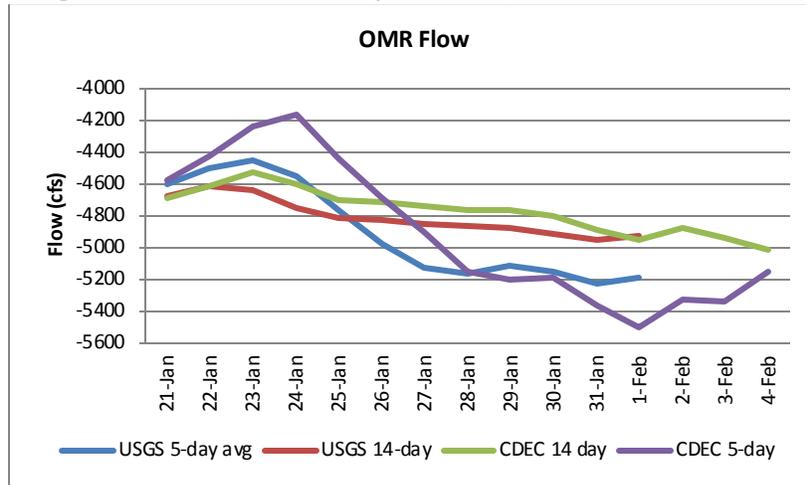
a. Temperature

Daily averages of the 3 Delta Stations (Antioch, Rio Vista Bridge, and Mossdale) was 12.2°C as of February 4.



b. OMR flow

The CDEC daily average OMR flow for February 4 was -4,801 cfs. USGS daily average OMR flow for February 1 was -4,790 cfs.

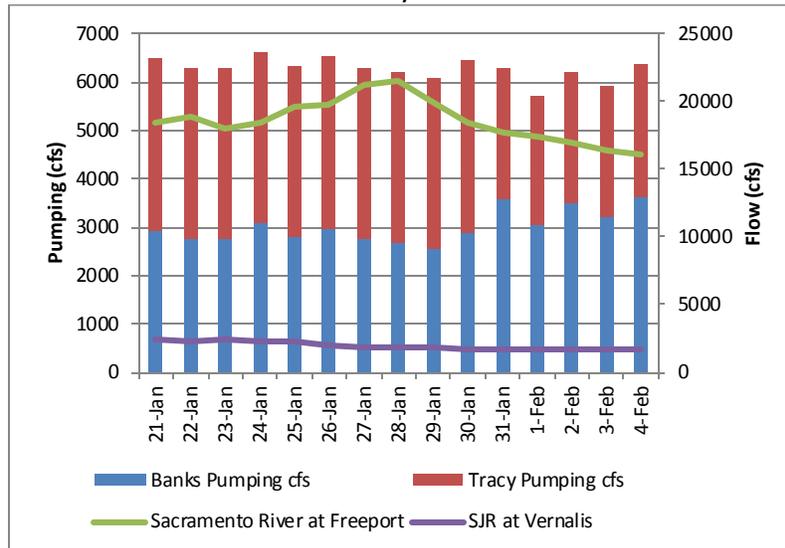


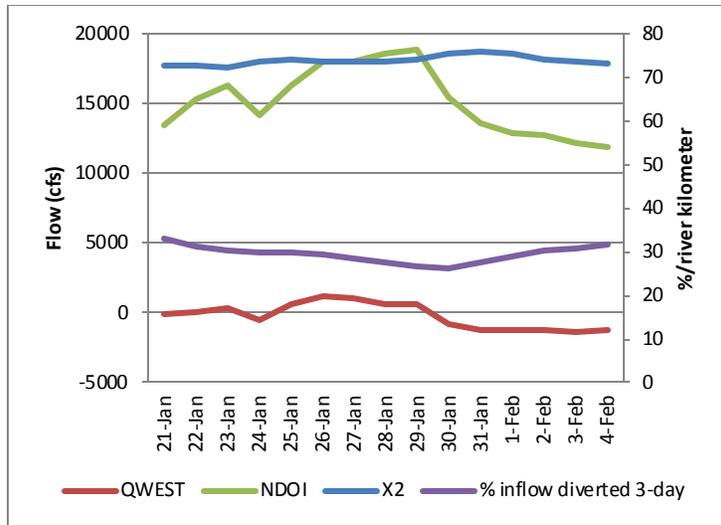
c. River flows and pumping

Sacramento River at Freeport flow for February 4 was approximately 16,030 cfs.

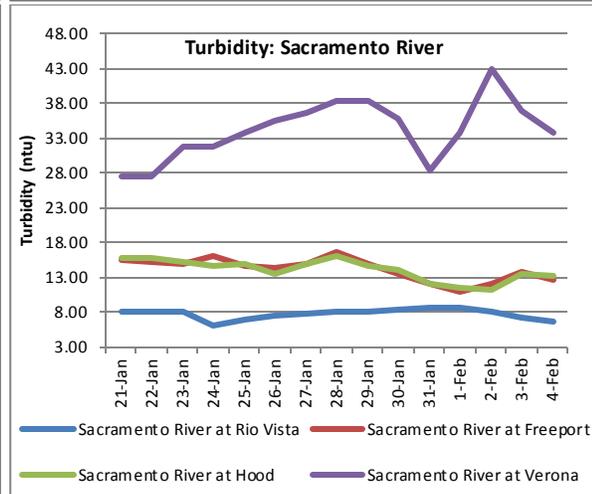
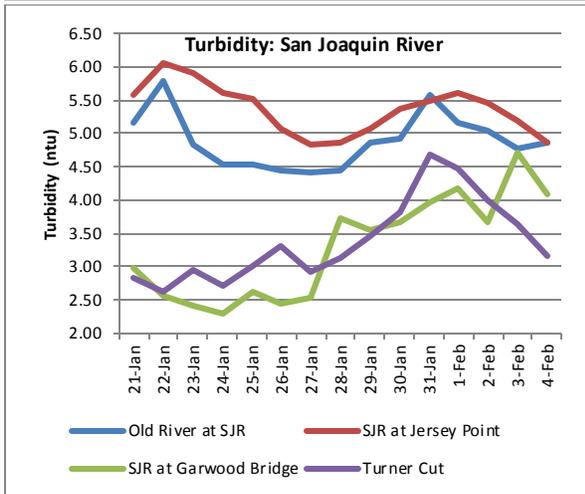
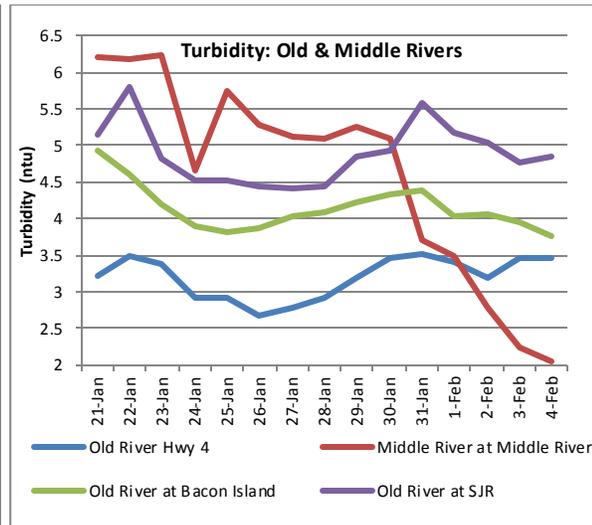
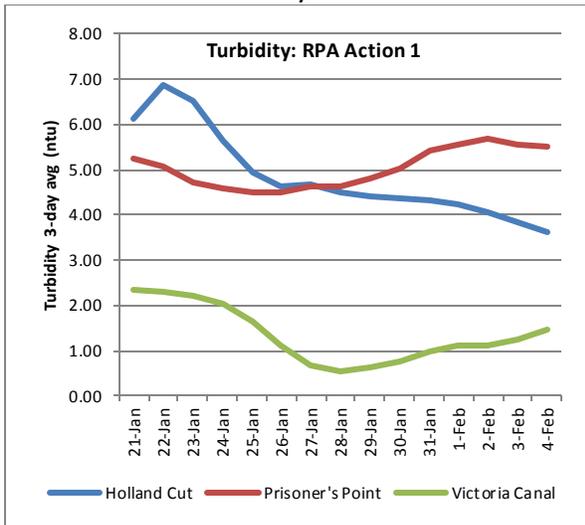
San Joaquin River at Vernalis flow for February 4 was approximately 1,728 cfs.

X2 was at 73.29 km as of February 4.





d. Turbidity



2. Delta fish monitoring

Smelt Larva Survey (SLS) #3 was out in the field last week, and approximately 36% of the samples have been processed. Of the processed samples, no larval Delta Smelt have been observed and 26 larval Longfin Smelt were detected, ranging from 5-9 mm in length. Three of the 26 were in the South and Central Delta.

Enhanced Delta Smelt Monitoring (EDSM) was in the field last week and will be in the field this week. Last week, 1 Delta Smelt and 8 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.

### **4. Salvage**

No adult or juvenile stages of Delta Smelt and Longfin Smelt have been observed in salvage so far this season (WY 2018). On January 29, the Tracy facility underwent a scheduled 90-minute outage, and the affiliated agencies were all previously notified. One group member mentioned that based on this water year's salvage results, the scheduled outage would unlikely have made a difference in smelt fish counts.

### **5. Expected Project Operations**

Combined pumping for the Banks and Tracy pumping facilities on February 4 was 6,351 cfs, and Net Delta Outflow on February 4 was 11,893 cfs. Pumping is currently restricted by NMFS RPA Action IV.2.3, which was initiated on January 1, 2018. Index OMR values will be maintained at around -5,000 cfs to comply with the RPA, which is the current controlling factor on Delta operations. In about 2 or 3 days, project operations will be decreasing pumping by a few hundred cfs in order to meet upcoming Spring X2 requirements at Chipps Island. Index OMR values are expected to be slightly less negative as a result.

Ambient temperatures are anticipated to increase this week. Precipitation is not forecasted for the coming weeks.

### **6. Delta Conditions Team**

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

### **7. DWR Turbidity Transects**

No turbidity transects have been performed to date. Since recent turbidity at Holland's Cut, Prisoner's Point, and Victoria Canal have all remained well under 8 NTU with no upcoming rain forecasted, the SWG agreed that turbidity transects are not required at this time. One group member questioned the importance of turbidity transects now that the forecasted weather is dry and that water temperature is a more suitable indicator for Delta Smelt movement and spawning. Another group member also stated that the smelt will move regardless of turbidity, but that detection remains challenging. A third group member said that although Action 1 is less relevant in current dry conditions, no ripe Delta Smelt females have been detected yet, so

turbidity transects should not be discounted entirely yet. Turbidity transects discussion will remain on the SWG agenda until further notice in case of unexpected rises in Delta turbidity.

#### **8. 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).

#### **9. Assessment of Risk Discussion**

##### *Delta Smelt Detections*

SLS #3 so far has not detected any larval Delta Smelt, and last week EDSM detected 1 adult Delta Smelt in the Lower Sacramento River, which was not within close proximity to the pumping facilities. No fish salvaged as yet this season (WY 2018).

##### *Longfin Smelt Detections*

SLS #3 so far has detected 26 larval Longfin Smelt, but only a few in the South and Central Delta, and last week EDSM detected 8 adult Longfin Smelt in Suisun Marsh, which are 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 sunny with no precipitation forecasted for the coming weeks. The river flows are expected to remain stable and net Delta outflow may slightly increase as pumping operations are reduced to meet upcoming Spring X2 requirements. As the 3-station water temperature average has surpassed 12°C, Action 3 can now be considered for the protection of larval Delta Smelt. But as recent surveys have not detected any larval Delta

Smelt or ripe female adult Delta Smelt, the group consensus is that additional protections for larval smelt are not necessary at this time.

Recent Delta Smelt detections have been outside of the entrainment risk area. One group member mentioned that the temperature, which may exceed 18°C by next month, may significantly shorten the Delta Smelt spawning window timeframe. If the Delta Smelt are not afforded a suitable spawning window opportunity, then this would have a significantly negative impact on the species resiliency. Another group member agreed and stated that in order to address the effects of this repetitive early warming trend, the low forecasted precipitation, and the steep decline in Delta Smelt relative abundance since the previous year, alternative actions to promote resilience of Delta Smelt could be considered aside from just controlling entrainment risk.

One group member asked if there is any evidence that Delta Smelt may be moving into the entrainment zone. Another group member responded that it is difficult to predict as zero detections from survey data could mean many things. A third group member stated that with turbidity at Jersey Point remaining below 5 NTU and with the absence of Delta Smelt catch data, Delta Smelt are probably and hopefully choosing to move towards the Sacramento River instead of the San Joaquin River. Another group member agreed with the reasoning, and the SWG consensus is that the assessment of risk is likely 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 5, 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 above normal, 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 WOMET and the DFW Director shall be based on:

1. Adult Salvage – total adult ( $\geq 80$ 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 4, 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. No new juvenile or adult distribution information for February. January Bay Study sampling was discontinued due to boat issues after sampling within the Delta. No juvenile or adult Longfin Smelt were detected in the central Delta, but some were collected in the lower Sacramento River; exact numbers and locations are not available at this time. The lack of detection of Longfin Smelt in the central or south Delta makes advice unwarranted.
- 3 & 4. The third Smelt Larva Survey (SLS) of 2018 detected single Longfin Smelt larvae at three of 12 central and south Delta criteria stations (Table 1). Based on these criteria, no advice is warranted.

5. Criteria were scheduled to begin January 15<sup>th</sup> and only go into effect during dry and critical water years. Water year 2018 is classified above normal as of January 1 (<http://cdec.water.ca.gov/cgi-progs/ioidir/WSI>). Currently, there is no concern. Nonetheless, a couple Longfin Smelt larvae were detected at station 716 during survey 2 and three larva at station 723 (proximal to 716; Table 1), so risk remains low.

**Current conditions:** For February 4, Sacramento River at Freeport was 16,030 cfs and the San Joaquin was at 1,728 cfs. Clifton Court exports were 3,395 cfs and Tracy exports were 2,721 cfs. The OMR index was -5,033. Qwest for February 4 was -1,200 cfs; although unfavorable for tidal dispersion downstream, few LFS larvae were detected in the lower San Joaquin River.

There have been no recent distribution data for juvenile and adult Longfin Smelt. In January, age-1 and older Longfin Smelt were collected by Bay Study in the lower Sacramento River, but not in the lower San Joaquin River. During SLS 3, single larvae were present at only three stations in the central and south Delta (Table 1). The number of adults returning to spawn in February is expected to peak. To date, sampling of adult Longfin Smelt has been insufficient to support or refute the expectation. Increased outflow in January lowered X2 and likely reduced the fraction of the Longfin Smelt population entering and spawning within the Delta. X2 increased slightly through the end of January and then declined a little. No Longfin Smelt have been salvaged this water year.

**Summary of Risk:** Risk of entrainment is low due to few Longfin Smelt larvae detected in the central or south Delta, and no juveniles or adults. Hydraulic conditions have become less favorable in the past week (negative Qwest and OMR about -5,000), but not so much to increase risk of entrainment by affecting larvae in the Sacramento River. Current adverse hydrodynamic conditions are expected to become more benign as river flows continue to diminish and water operations target maintaining X2 at Chipps Island.

Table 1. Longfin Smelt Larva catch by station in the Smelt Larva Survey, #3. Sample processing is incomplete.

Year	Survey #	SLS Station	Turbidity (NTU)	Sample Status	Species	Smelt Catch	Min Length	Max Length	Mean Length
2018	3	340		Not yet processed					
2018	3	342		Not yet processed					
2018	3	343		Not yet processed					
2018	3	344		Not yet processed					
2018	3	345		Not yet processed					
2018	3	346		Not yet processed					
2018	3	347		Not yet processed					
2018	3	348		Not yet processed					
2018	3	349		Not yet processed					
2018	3	405		Not yet processed					
2018	3	411		Not yet processed					
2018	3	418		Not yet processed					
2018	3	501		Not yet processed					
2018	3	504		Not yet processed					
2018	3	508		Not yet processed					
2018	3	513		Not yet processed					
2018	3	519		Not yet processed					
2018	3	520		Not yet processed					
2018	3	602		Not yet processed					
2018	3	606		Not yet processed					
2018	3	609		Not yet processed					
2018	3	610		Not yet processed					
2018	3	703		Not yet processed					
2018	3	704	20.4	Processed	Longfin Smelt	5	5	8	7.0
2018	3	705	13.1	Processed	Longfin Smelt	1	6	6	6.0
2018	3	706	15.6	Processed	Longfin Smelt	10	6	7	6.5
2018	3	707	12.3	Processed	Longfin Smelt	7	6	7	6.1
2018	3	711		Not yet processed					
2018	3	718		Not yet processed					
2018	3	723		Not yet processed					
2018	3	801		Not yet processed					
2018	3	804		Not yet processed					
2018	3	809	7.9	Processed	Longfin Smelt	1	7	7	7.0
2018	3	812	8.1	Processed		No Smelt Catch			
2018	3	815	5.0	Processed		No Smelt Catch			
2018	3	901	6.2	Processed	Longfin Smelt	1	7	7	7.0
2018	3	902	6.7	Processed		No Smelt Catch			
2018	3	906	4.9	Processed		No Smelt Catch			
2018	3	910	5.2	Processed		No Smelt Catch			
2018	3	912	4.2	Processed		No Smelt Catch			
2018	3	914	2.9	Processed		No Smelt Catch			
2018	3	915	3.7	Processed		No Smelt Catch			
2018	3	918	3.7	Processed	Longfin Smelt	1	9	9	9.0
2018	3	919	4.7	Processed		No Smelt Catch			

Barker ITP

SWP ITP Criteria Stations

Processing is complete through 02/2/2018