

Smelt Working Group  
February 12, 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 cool, with no precipitation forecasted over the next few weeks. The 3-station average water temperature (Antioch, Rio Vista Bridge, and Mossdale) has remained over 12°C since 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.

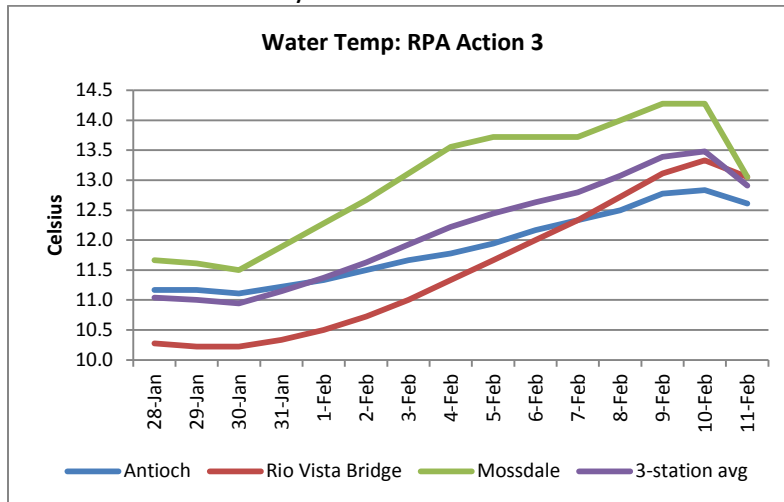
The Working Group does not believe that a recommendation under Action 1, Action 2 (adult pre-spawning Delta Smelt), or Action 3 (larval Delta Smelt) is necessary to protect Delta Smelt at this time. Although Action 3 could be considered, the SWG does not believe that larval Delta Smelt are currently 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. Due to the upcoming federal holiday next Monday, the group will meet again next Tuesday, February 20 at 1000 hours.

**Reported Data**

1. **Current environmental data**

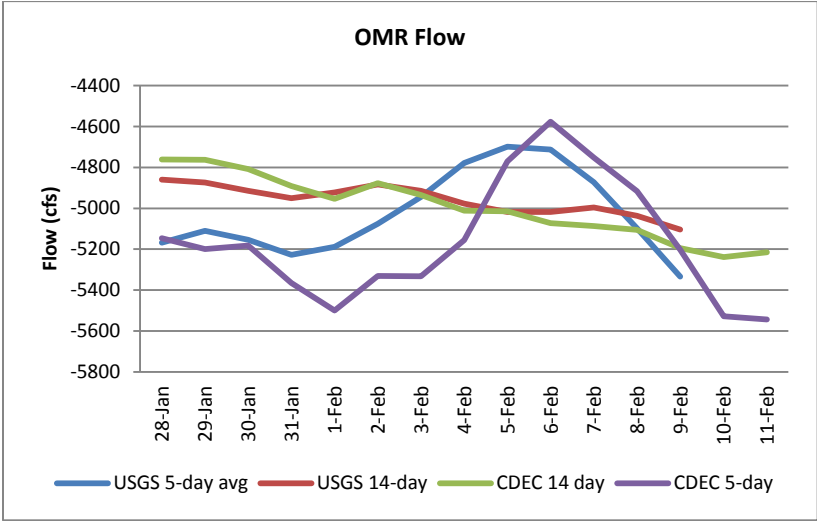
a. Temperature

Daily averages of the 3 Delta Stations (Antioch, Rio Vista Bridge, and Mossdale) was 12.9°C as of February 11.



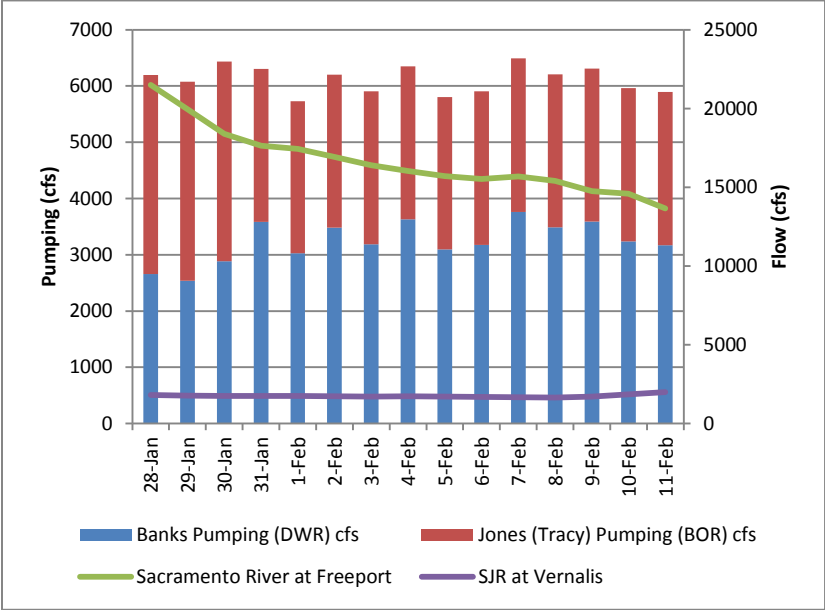
b. OMR flow

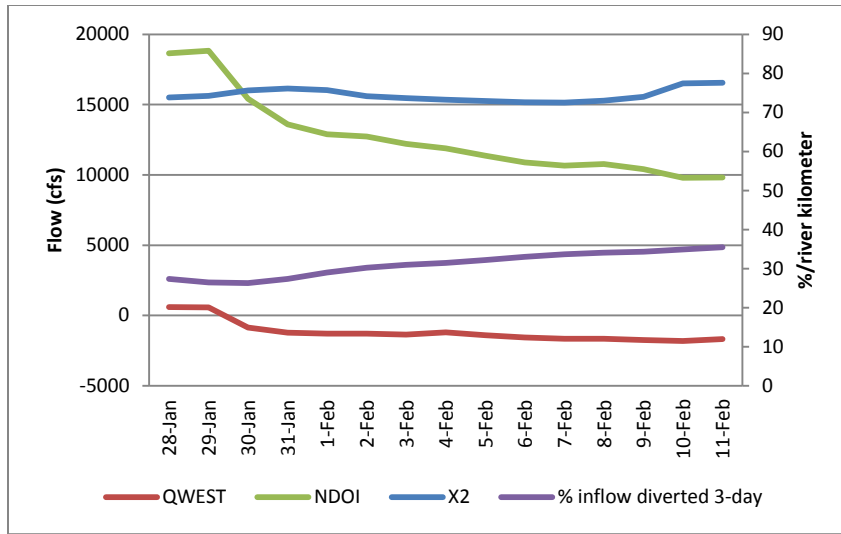
The CDEC daily average OMR flow for February 11 was -4,753 cfs. USGS daily average OMR flow for February 9 was -5,820 cfs.



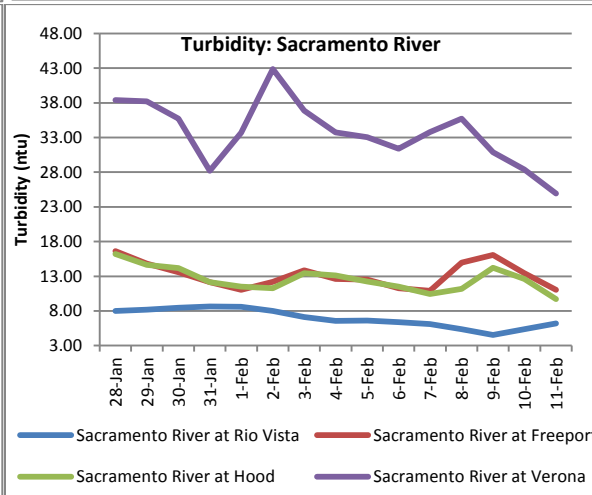
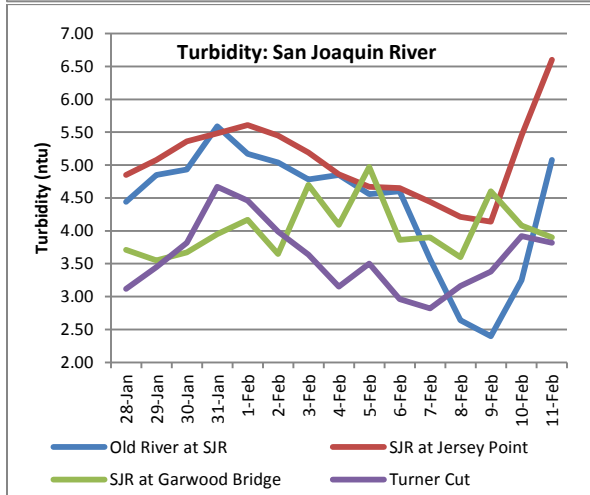
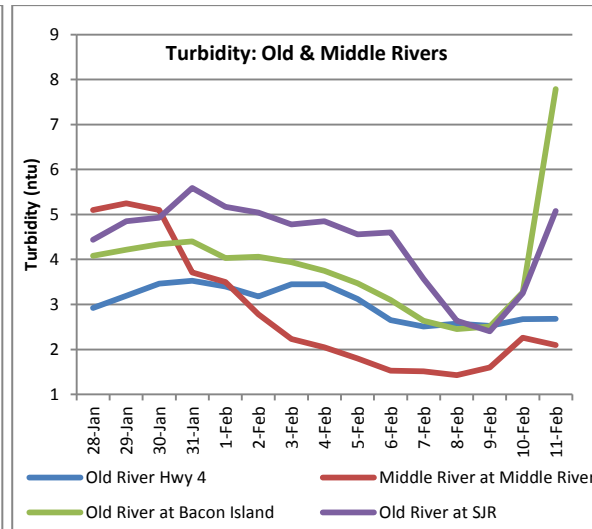
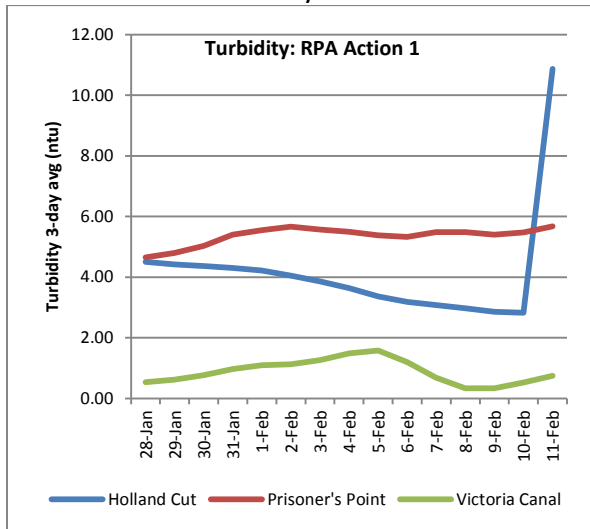
c. River flows and pumping

Sacramento River at Freeport flow for February 11 was approximately 13,657 cfs. San Joaquin River at Vernalis flow for February 11 was approximately 2,000 cfs. X2 was at 77.59 km as of February 11.





d. Turbidity



2. Delta fish monitoring

The samples for Smelt Larva Survey (SLS) #3, which was out in the field two weeks ago, have been fully processed. No larval Delta Smelt were observed and 279 larval Longfin Smelt were detected, ranging from 4-10 mm in length. SLS #4 is out in the field sampling this week.

Spring Kodiak Trawl (SKT) #2 was in the field sampling last week and detected 4 pre-spawning adult Delta Smelt ranging from 68-76 mm in length and 2 Longfin Smelt adults at 60 and 75 mm in length.

Enhanced Delta Smelt Monitoring (EDSM) was in the field last week and will be in the field this week. Last week, no Delta Smelt and 35 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). One group member asked when smelt larvae sampling should be initiated at the salvage facilities. Another group member responded that even with the early warming water temperature, historically Delta Smelt larvae do not show up at the salvage facilities until March. In addition, field monitoring efforts usually do not detect Delta Smelt larvae until 30 days after the spawning event, and current field survey results have not shown any gravid female Delta Smelt. Larvae trawls also detect the larvae first before the larvae end up at the salvage facilities. A third group member concurred that it is still too early in the season to be seeing any larvae at the salvage facilities until at least the end of the month. The overall group consensus was that the salvage facilities can hold off on larvae sampling.

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

Combined pumping for the Banks and Tracy pumping facilities on February 11 was 5,896 cfs, and Net Delta Outflow on February 11 was 9,809 cfs. Pumping is currently restricted by SWRCB D-1641 (Spring X2), which requires enhanced Delta outflow to meet water quality standards. As net Delta outflow has dropped significantly over the past weekend, the combined pumping will be reduced to 800 cfs at midnight tonight and back up to 3,000 cfs this Wednesday until net Delta outflow is sufficient enough to meet Spring X2 requirements.

Ambient temperatures are anticipated to remain cool 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 the recent hike in turbidity at Holland's Cut is likely due to this past Saturday's high winds, turbidity transects do not need to be considered at this time. One group member stated that at this late in the season, turbidity transects should not need to be constantly ready for deployment every week for the rest of the year. Another group member concurred, saying that turbidity transects likely do not carry significant utility value for the remainder of the water year. The SWG will re-visit this topic next week and will likely make a final decision on whether or not to include turbidity transect deployment considerations in future discussions.

#### **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 did not detect any larval Delta Smelt, and last week SKT #2 detected 4 adult pre-spawning Delta Smelt in Montezuma Slough, which is not within close proximity to the pumping facilities. EDSM did not detect any Delta Smelt last week. No fish salvaged as yet this season (WY 2018).

##### *Longfin Smelt Detections*

SLS #3 detected 279 Longfin Smelt, mostly in the Lower Sacramento River and only a few in the South and Central Delta. Last week, EDSM detected 35 adult Longfin Smelt centered around Suisun Bay, and SKT #2 detected 2 adult Longfin Smelt in Montezuma Slough, none of which are 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 increase as pumping operations are decreased to meet Spring X2 requirements. As the 3-station water temperature average has remained above 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.

One group member stated that the risk for Delta Smelt entrainment is low since SKT #2's Delta Smelt catches, which were all outside of the entrainment risk area, were all pre-spawning adults. The fish may not be making use of the elevated water temperatures yet, and spawning may end up occurring in Suisun Marsh as most of the Delta Smelt have been detected in that area. Another group member concurred that entrainment risk for Delta Smelt is very low, particularly with water export operations cutting back and the lack of Delta Smelt detections in the entrainment risk area. However, given the extremely low relative abundance of Delta Smelt, it is not possible to determine the extent to which Delta Smelt may have been entrained this season based on available salvage and survey data.

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 12, 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 WOMT 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 11, 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 start date announced for February sampling. No juvenile or adult Longfin Smelt were detected in the central Delta during January survey, but some were collected in the lower Sacramento River. 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 for Barker Slough 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 and has not yet been updated for February (<http://cdec.water.ca.gov/cgi-progs/iodir/WSI>). Currently, there is no concern. Nonetheless, a single Longfin Smelt larvae was detected at station 716 during survey 3, so risk remains low.

**Current conditions:** For February 11, Sacramento River at Freeport was 13,500 cfs and the San Joaquin was about 2,000 cfs. Clifton Court exports were 3,400 cfs and Tracy exports were 2,700 cfs; state exports will cease on February 13 while federal exports will drop to 800 cfs for the day. Thereafter, combined exports will be about 3,000 cfs to improve outflow and achieve X2 standards. The OMR index was -4,922 on February 11. Qwest was -1,700 cfs. Both will become more positive later this week. This should improve conditions for tidal dispersion downstream. In the north Delta, the most current water year designation remains at Above Normal, so no North Bay Aquaduct advice is warranted.

There is no new information on larval distribution in the central or south Delta and few LFS larvae were detected in the lower San Joaquin River. Planned reduced export levels will reduce risk.

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 will become more favorable in the coming week as export levels decline (less negative Qwest and OMR much more positive than -5,000). Current 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	716		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