

Smelt Working Group
January 8, 2018

Meeting Summary

The Working Group reviewed current Delta conditions, survey data, expected water project operations, and forecasted weather. Current conditions are wet, and precipitation is forecasted through tomorrow. Flows in the Sacramento and San Joaquin Rivers are expected to be elevated later this week. 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.

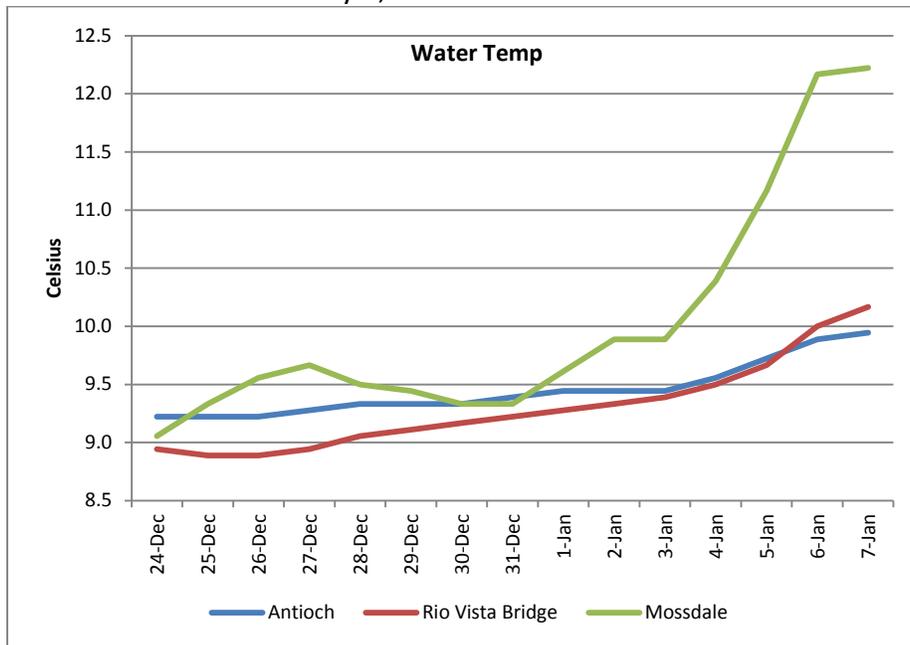
The Working Group does not believe that a recommendation under Action 1 or Action 2 (adult pre-spawning Delta Smelt) is necessary to protect Delta Smelt at this time. The Working Group will continue to monitor Delta Smelt survey and salvage data, Delta conditions, and particularly this week's forecasted precipitation and turbidity. Due to the upcoming federal holiday on Monday, January 15, 2018, the group will meet again on Tuesday, January 16, 2018.

Reported Data

1. **Current environmental data**

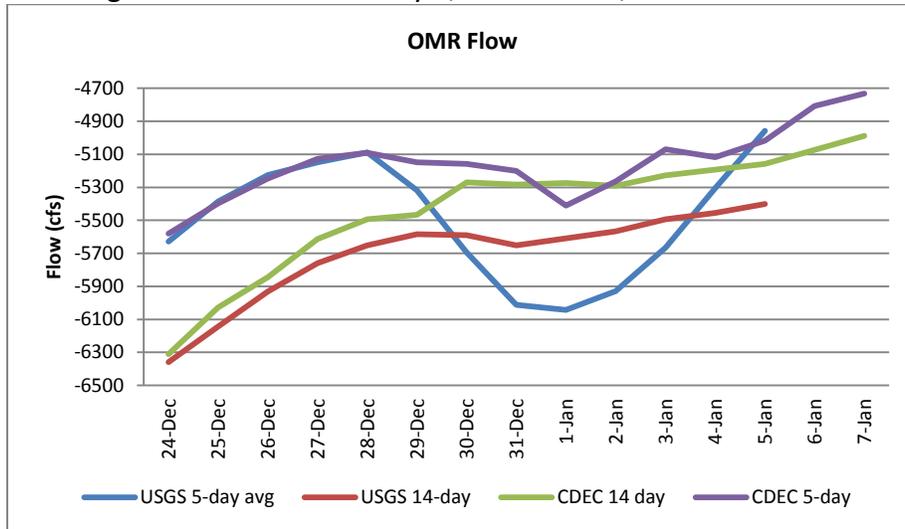
a. **Temperature**

Daily averages of the 3 Delta Stations (Antioch, Rio Vista Bridge, and Mossdale) was 10.8°C as of January 7, 2018.



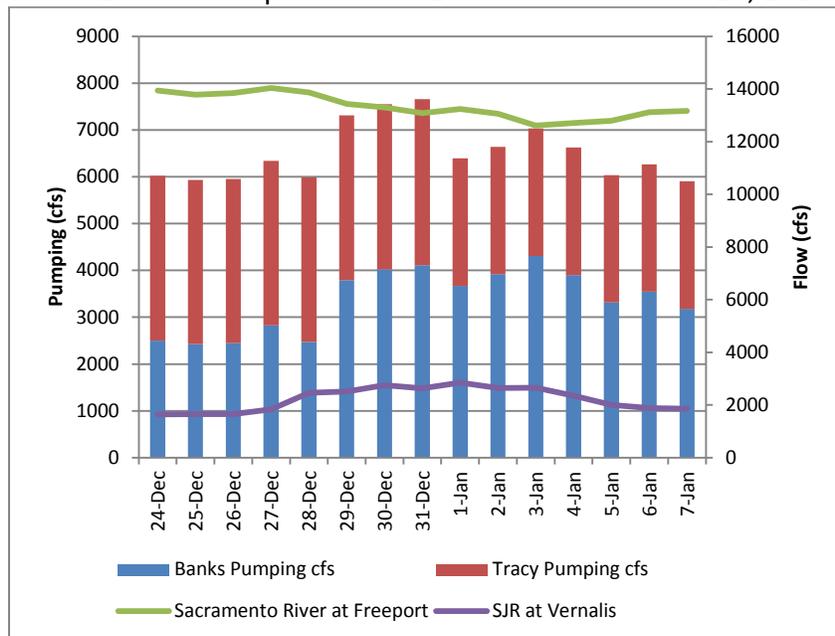
b. OMR flow

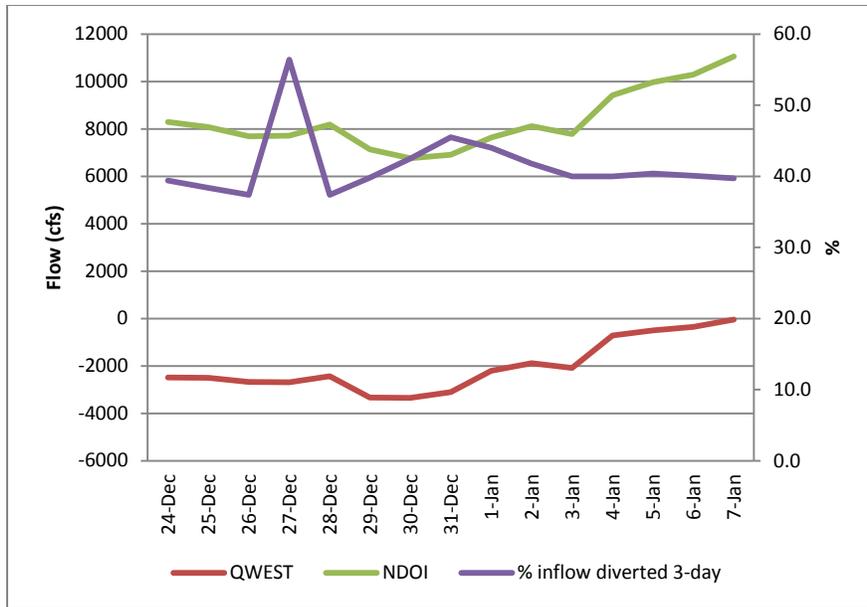
The CDEC daily average OMR flow for January 7, 2018 was -4,411 cfs. USGS daily average OMR flow for January 5, 2017 was -4,610 cfs.



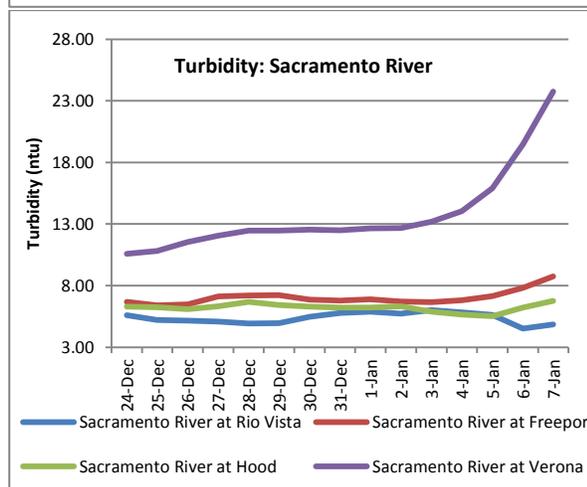
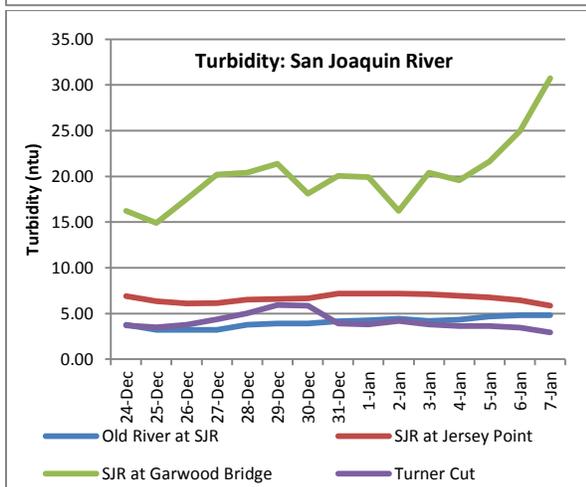
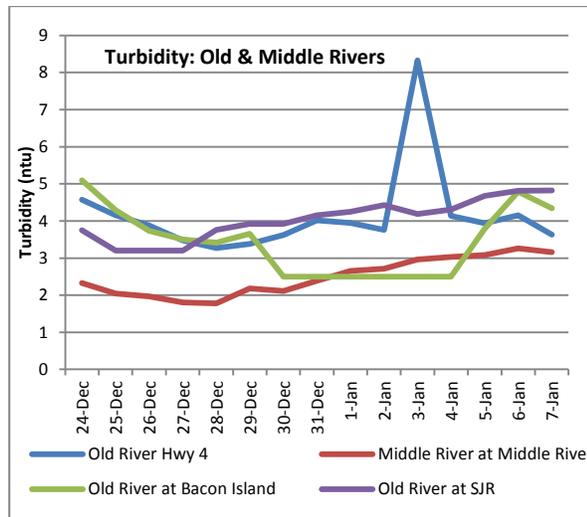
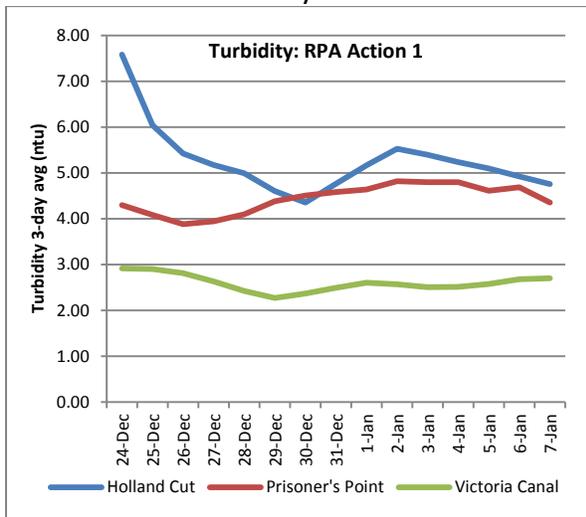
c. River flows and pumping

Sacramento River at Freeport flow for January 7, 2018 was approximately 13,168 cfs and expected to rise to up to 24,000 cfs later in the week due to the current rain event. San Joaquin River at Vernalis flow for January 7, 2018 was approximately 1,859 cfs and expected to rise to around 2,400 cfs later in the week. X2 has been upstream of 81 km since November 23, 2017.





d. Turbidity



2. Delta fish monitoring

The first Smelt Larva Survey (SLS) was completed last week. Approximately 75% of the samples have been processed, and no Delta Smelt larvae have been detected yet. 87 larval Longfin Smelt have been processed. SLS will sample again starting next Tuesday and again starting on January 29. The first Spring Kodiak Trawl (SKT) begins today and will run through Thursday.

Enhanced Delta Smelt Monitoring (EDSM) was in the field last week and will be in the field this week. Last week, 3 Delta Smelt and 5 Longfin Smelt were detected. Complete EDSM catch reports are publicly available [here](#).

3. Modeling

No modeling was performed from the previous week. Today, one member requested modeling for particle tracking at the lower Sacramento and San Joaquin Rivers at Stations 707 and 801. The requested model could provide a picture of downstream movement of particles into the Delta that may affect Longfin Smelt.

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 January 7, 2018 was 5,903 cfs, and Net Delta Outflow on January 7, 2018 was 11,058 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.

Ambient temperatures are anticipated to remain cool through the week. Precipitation is expected to conclude tomorrow.

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. Although turbidity levels at the Holland's Cut station have been well below 8 ntu, turbidity may increase due to the current rain event. The group will monitor delta turbidity readings closely this week in anticipation of the increased flows and particle transport. The group will decide on Thursday afternoon or Friday if turbidity transect deployment will be necessary based on the actual Delta conditions. Should the need arise, the turbidity transects can be deployed next Tuesday.

8. Biological Opinion Background:

RPA Component 1, Action 1: “Low-entrainment risk period: Delta Smelt salvage has historically been low between December 1 and December 19, even during periods when first flush conditions (i.e., elevated river inflow and turbidity) occurred. During the low-entrainment risk period, the SWG shall determine if the information generated by physical (i.e. turbidity and river inflow) and biological (e.g., salvage, DFG trawls) monitoring indicates that Delta Smelt are vulnerable to entrainment or are likely to migrate into a region where future entrainment events may occur. If this occurs, the Service shall require initiation of Action 1 as described in Attachment B. Action 1 shall require the Projects to maintain OMR flows no more negative than -2,000 cfs (14-day average) with a simultaneous 5-day running average flow no more negative than -2,500 cfs to protect adult Delta Smelt for 14 days.” (page 281).

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).

9. Assessment of Risk Discussion

Delta Smelt Detections

No fish have yet been detected in the SLS and SKT surveys. EDSM detected 3 Delta Smelt last week in Suisun Marsh and the Deepwater Shipping Channel, which are not in close proximity to the pumping facilities. No fish salvaged as yet this season (WY 2018).

Longfin Smelt Detections

EDSM detected 5 Longfin Smelt last week in Suisun Marsh and the Western Delta, 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 wet with precipitation forecasted through tomorrow. The river flows are expected to rise near the end of the week. It is unclear exactly how high turbidity levels will rise as a result of the increased flows, so the SWG meeting will continue to monitor turbidity level and flow levels closely.

Recent Delta Smelt detections have been outside of the entrainment risk area. One group member mentioned that although the lower San Joaquin River has exhibited high turbidity, surveys have not detected the presence of Delta Smelt in the area. As there have been ample efforts to sample for Delta Smelt with no detections in the at-risk areas, one group member said that the results can be taken at their face value. The lack of detections is a strong indicator that the Delta Smelt population is at a record low.

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

10. Other Items

One group member asked what the relationship is between the SWG and WIIN Act implementation since there appears to be an inevitable tie-in. The response was that the SWG is just tasked at looking at the BiOp for now until further guidance is obtained from the USFWS.

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

Advice for week of January 8, 2018:

The Smelt Working Group has no advice for Longfin Smelt

No Barker Slough operations advice. The Smelt Work Group meeting occurred prior to concern period beginning January 15 (see #5 below), nonetheless, no larvae were detected at station 716, which suggests low current risk of entrainment.

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 January 7, 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. There is no new midwater or otter trawl sampling information. December Bay Study and Fall Midwater Trawl sampling collected no Longfin Smelt in the San Joaquin River or south Delta. December Bay Study and Fall Midwater Trawl did detect Longfin Smelt in the Sacramento River as high as station 750 (Bay Study) and 703 (FMWT), both adjacent to Sherman Lake, indicating that Longfin Smelt adults are entering the Delta. Presence of adult Longfin Smelt in the Sacramento River increases concern, but the lack of detection of Longfin Smelt in the central or south Delta makes advice unwarranted.

3 & 4. The first Smelt Larva Survey (SLS) of 2018 detected Longfin Smelt larvae at only two of 12 central and south Delta criteria stations and neither of the catches exceeded 15 (Table 1). Based on these criteria, no advice is warranted.

5. Criteria does not begin until January 15th, and is only in effect during dry and critical water years. Nonetheless, no Longfin Smelt larvae were detected at station 716, and only a single larva at station 723 (proximal to 716; Table 1), so risk remains low.

Current conditions: As of January 7, Sacramento River at Freeport was 13,168 cfs and the San Joaquin was at 1,859 cfs. Clifton Court exports were 2,500 cfs increasing to about 3,000 and Tracy exports will target 3,500 cfs. The OMR index was -4900. Qwest for January 7 was -43 cfs, which is favorable for tidal dispersion downstream of LFS larvae detected in the lower San Joaquin River.

In December, Longfin Smelt were collected in the lower Sacramento River by both Bay Study and Fall Midwater Trawl. These collections indicate the start of the spawning migration and likely spawning: temperature at Rio Vista declined below the 12-13°C spawning threshold during the first week in December. Larvae present in the lower Sacramento and San Joaquin rivers indicate the start of hatching; more is expected. The number of adults entering the Delta is expected to increase into and through January. No Longfin Smelt have been salvaged this water year.

Summary of Risk: Risk of entrainment is low due no salvage or adult detection in the central or south Delta and to minimal detection of larvae in the central or south Delta.

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

Year	Survey #	SLS Station	Turbidity (NTU)	Sample Status	Species	Smelt Catch
2018		340		Not yet processed		
2018		342		Not yet processed		
2018		343		Not yet processed		
2018		344		Not yet processed		
2018		345		Not yet processed		
2018		346		Not yet processed		
2018		347		Not yet processed		
2018		348		Not yet processed		
2018		349		Not yet processed		
2018		405		Not yet processed		
2018		411		Not yet processed		
2018	1	418	148	Processed	Longfin Smelt	1
2018		501		Not yet processed		
2018		504		Not yet processed		
2018	1	508	12.9	Processed	Longfin Smelt	34
2018	1	513	10.7	Processed	Longfin Smelt	11
2018	1	519	13.5	Processed	Longfin Smelt	5
2018	1	520	15.2	Processed	Longfin Smelt	1
2018	1	602	11.8	Processed	Longfin Smelt	3
2018		606		Not yet processed		
2018		609		Not yet processed		
2018	1	610	19.4	Processed	Longfin Smelt	2
2018	1	703	10.5	Processed	Longfin Smelt	1
2018	1	704	11	Processed	Longfin Smelt	1
2018	1	705	8	Processed	Longfin Smelt	2
2018	1	706	13.1	Processed	Longfin Smelt	4
2018	1	707	8.1	Processed	Longfin Smelt	6
2018	1	711	6.9	Processed	Longfin Smelt	1
2018	1	716	5.8	Processed		No Smelt Catch
2018	1	723	8.2	Processed	Longfin Smelt	1
2018	1	801	9.3	Processed	Longfin Smelt	6
2018	1	804	9.3	Processed	Longfin Smelt	2
2018	1	809	6.6	Processed	Longfin Smelt	4
2018	1	812	6.5	Processed	Longfin Smelt	1
2018	1	815	6.6	Processed		No Smelt Catch
2018	1	901	6.6	Processed		No Smelt Catch
2018	1	902*	5.6	Processed		No Smelt Catch
2018	1	906	4.9	Processed		No Smelt Catch
2018	1	910	17.2	Processed		No Smelt Catch
2018	1	912	3.6	Processed		No Smelt Catch
2018	1	914	3.3	Processed		No Smelt Catch
2018	1	915	4.4	Processed		No Smelt Catch
2018	1	918	5.5	Processed		No Smelt Catch
2018	1	919	3.9	Processed		No Smelt Catch

Processing is complete through 01/08/2018

*Reduced tow time