

Smelt Working Group
March 19, 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 a storm event forecasted for tomorrow through Thursday. The 3-station average water temperature (Antioch, Rio Vista Bridge, and Mossdale) has remained above 12°C since March 8, which is the temperature indicative of spawning identified in the Biological Opinion and a trigger for the start of Action 3. One spawning female adult Delta Smelt was detected this morning in the Deepwater Shipping Channel. OMR indices are currently at approximately -4,000 cfs and expected to be more negative and held at -5,000 cfs to up to -5,700 cfs for the rest of the week. Based on Delta conditions, water export levels, and the survey data, the SWG concluded that Delta Smelt entrainment risk would be high for OMR flows of more negative than -5,000 cfs, medium for OMR flows of -3,500 to -5,000 cfs, and low at OMR flows of more positive than -3,500 cfs.

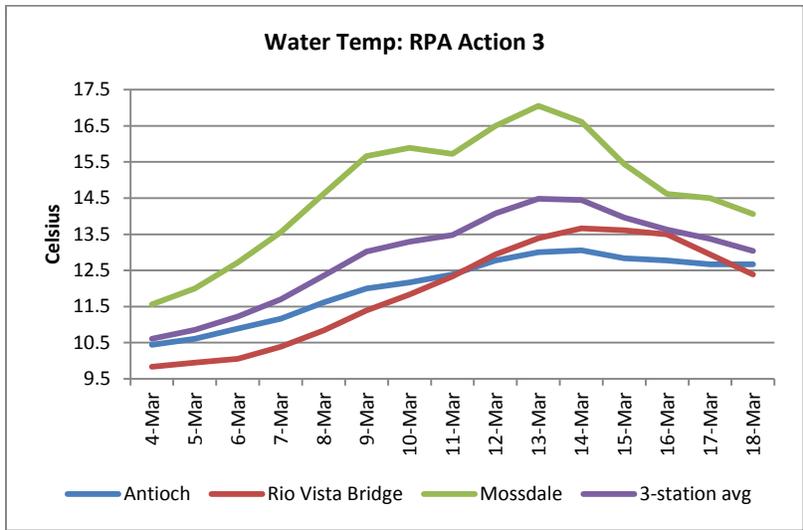
Action 3 (protections for larval Delta Smelt) has not been implemented yet as last week there were no biological or field indicators of spawning Delta Smelt. The Working Group will continue to monitor Delta Smelt survey and salvage data, Delta conditions, and this week’s forecasted precipitation. The group will meet again next Monday, March 26 at 1000 hours.

Reported Data

1. **Current environmental data**

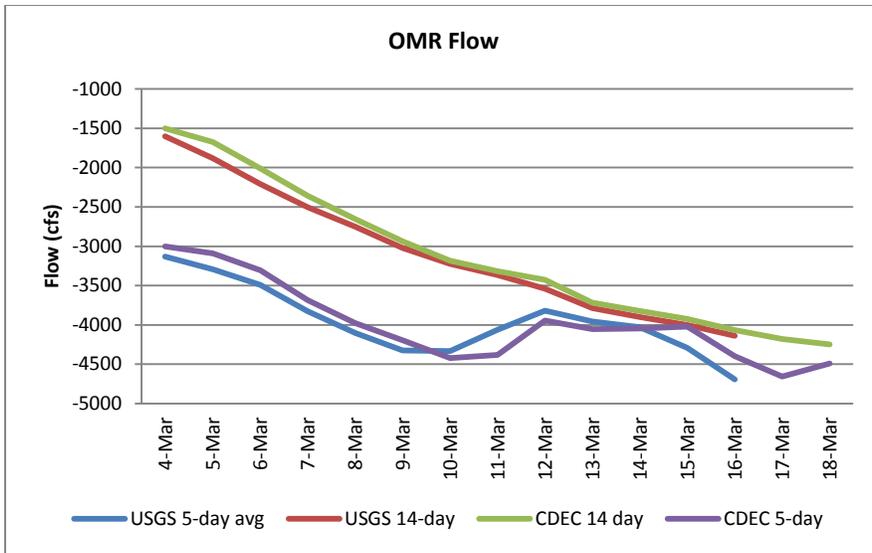
a. **Temperature**

Daily averages of the 3 Delta Stations (Antioch, Rio Vista Bridge, and Mossdale) was 13.0°C as of March 18.



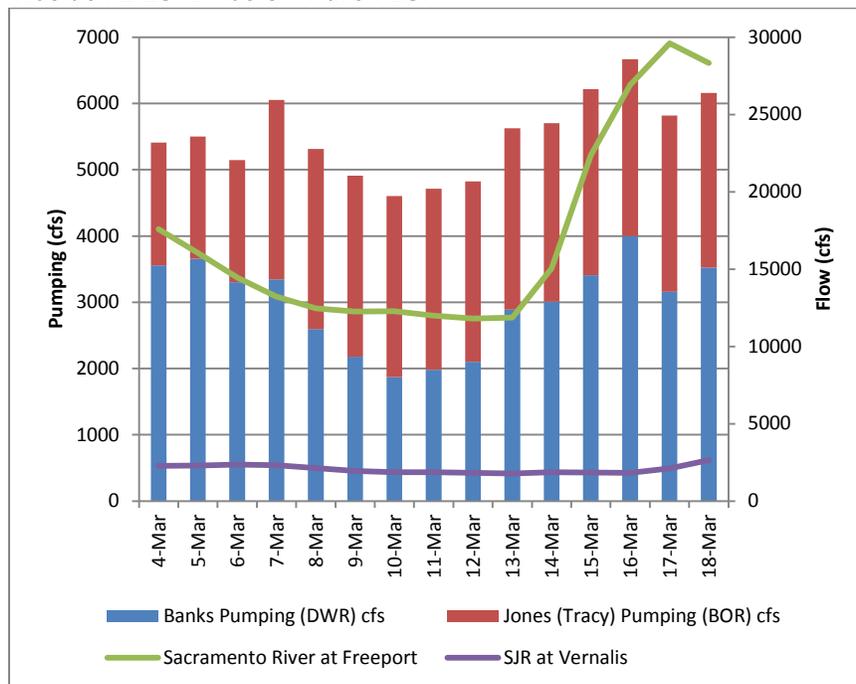
b. **OMR flow**

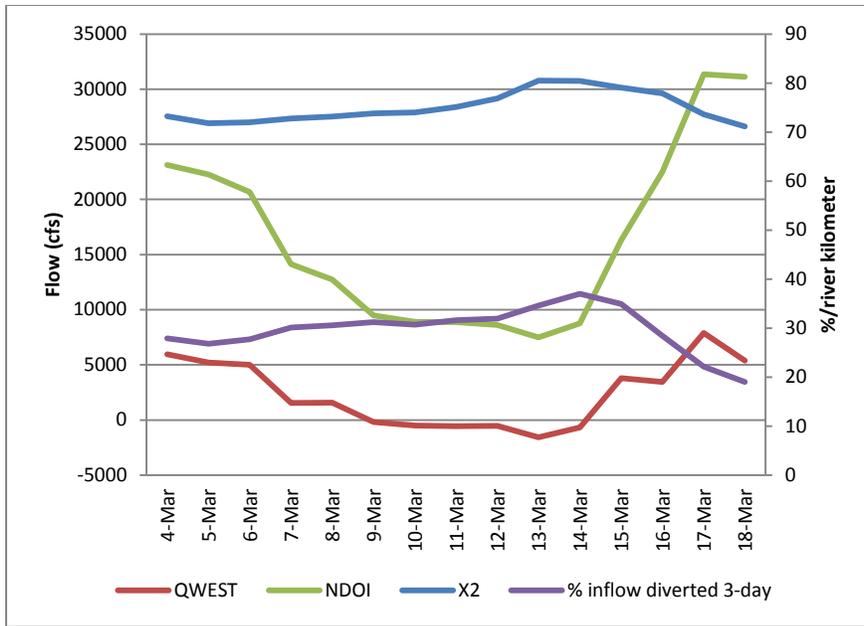
The CDEC daily average OMR flow for March 18 was -4,123 cfs. USGS daily average OMR flow for March 16 was -5,220 cfs.



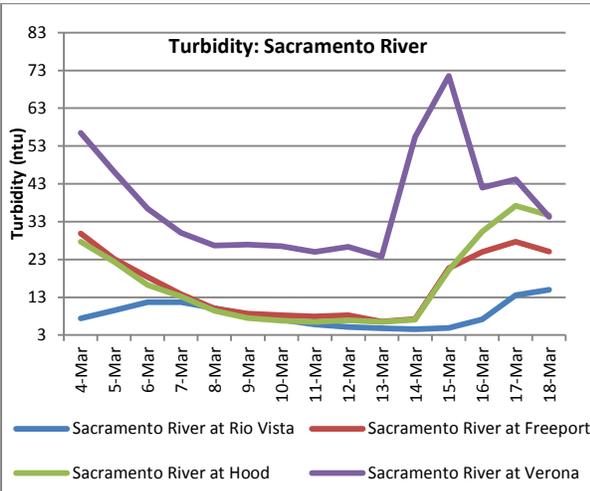
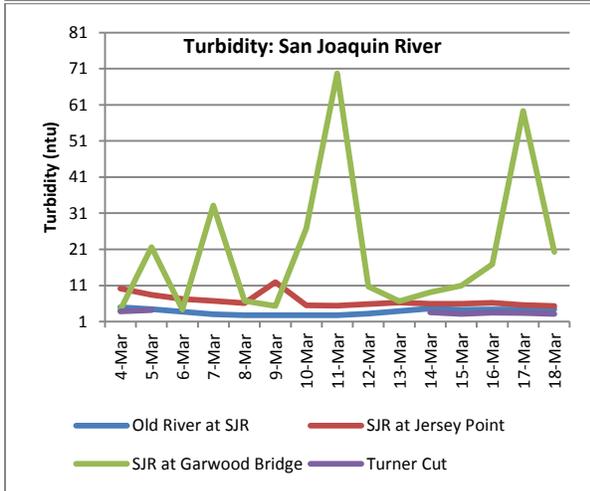
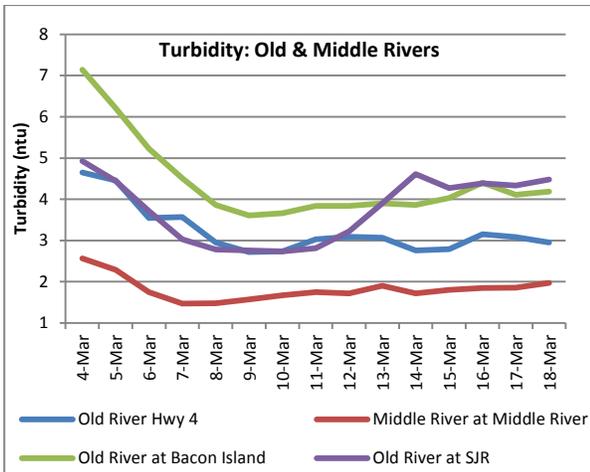
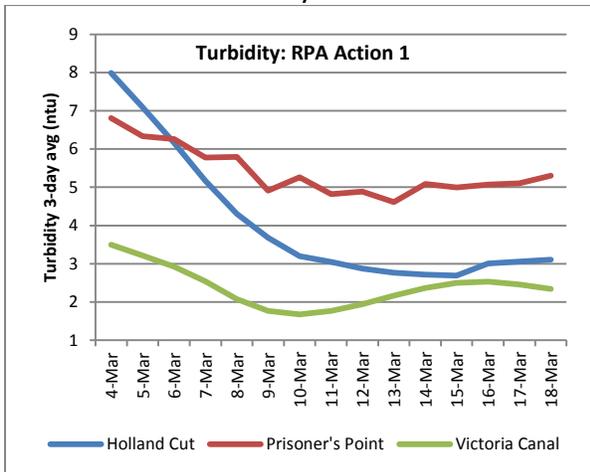
c. River flows and pumping

Sacramento River at Freeport flow for March 18 was approximately 28,329 cfs. San Joaquin River at Vernalis flow for March 18 was approximately 2,647 cfs. X2 was at 71.13 km as of March 18.





d. Turbidity



2. Delta fish monitoring

The first 20mm Survey of the season was out in the field last week, and 38% of the samples have been processed. Of the processed samples, 34 larval Longfin Smelt and no larval Delta Smelt have been detected. Longfin Smelt catches have been concentrated along the confluence. The final Smelt Larval Survey #6 is out in the field this week, and 20mm Survey #2 will be sampling again next week.

Enhanced Delta Smelt Monitoring (EDSM) was in the field last week and will be in the field this week. Last week, 2 adult Delta Smelt were detected. This morning, one spawning female Delta Smelt was 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 Longfin Smelt have been observed in salvage so far this season (WY 2018). Aside from the adult that was salvaged on March 9, no other adult or juvenile Delta Smelt have been salvaged. As the temperature is indicative of Delta Smelt spawning and this morning's EDSM field survey observed a spawning female Delta Smelt, the group consensus is that the fish salvage facilities should initiate larvae sampling.

5. Expected Project Operations

Combined pumping for the Banks and Tracy pumping facilities on March 18 was 6,159 cfs, and Net Delta Outflow on March 18 was 31,113 cfs. Pumping is currently restricted by NMFS RPA Action IV.2.3, which was initiated on January 1 and requires a 14-day running average OMR flow of no less negative than -5,000 cfs. OMR indices are currently at approximately -4,000 cfs and will become more negative and held at -5,000 cfs for the rest of the week. If a WIIN Act flex is implemented this week, OMR flows may be held at -5,700 cfs.

Ambient temperatures are relatively warm. Precipitation is forecasted starting tomorrow through 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, 20mm Survey #1 has not detected any larval Delta Smelt. Last week, EDSM caught a 66 mm pre-spawning adult Delta Smelt in the Deepwater Shipping Channel and a 73 mm pre-spawning adult Delta Smelt in Suisun Marsh. This morning, EDSM detected a 73 mm female adult Delta Smelt in the Deepwater Shipping Channel that was expressing eggs. No additional Delta Smelt were salvaged at either of the facilities this past week.

Longfin Smelt Detections

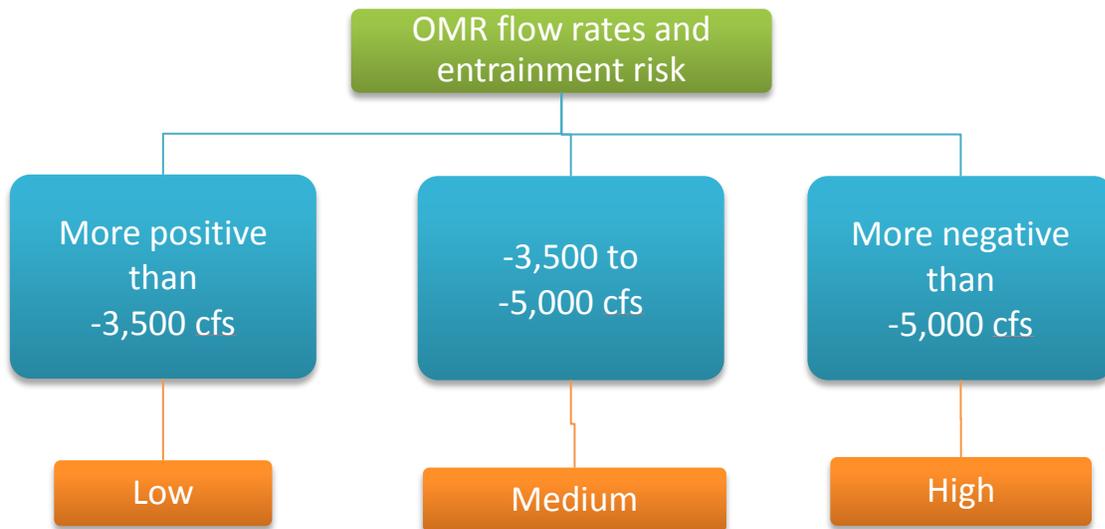
So far, 20 mm Survey #1 has detected 34 larval Longfin Smelt mostly concentrated at the confluence. EDSM did not detect any Longfin Smelt last week. No fish salvaged as yet this season (WY 2018).

Delta Smelt risk discussion

Last week, the SWG concluded that risk of entrainment would be high for OMR flows of more negative than -4,600 cfs, medium to high for flows between -3,500 and -4,600 cfs, and low for flows that are more positive than -3,500 cfs. The group was asked if their risk assessment had changed from last week, and several group members stated that as no Delta Smelt were salvaged this past week, QWEST had become more positive, and river flows have become generally more favorable as a result of the storm, the risk for this week is lower than it was for last week. However, one group member expressed caution and stated that the current risk assessment should be the same as last week even with more benign conditions since the fish are beginning to spawn.

The group was asked if they would like to adhere to their own flow bin categories or to stick with the traditional flow bins, which are -1,250 to -2,000 cfs, -2,000 to -3,500 cfs, and -3,500 to -5,000 cfs. The group felt comfortable with staying with the traditional flow bins while adding an assessment level for flows of more negative than -5,000 cfs. This was mainly because a potential WIIN Act flex for this coming week could bump OMR flows to -5,700 cfs. One group

member mentioned that even with OMR at -5,000 cfs, the entrainment field may not go all the way to the lower San Joaquin River as QWEST is more positive than 5,000 cfs. As there have been a turnaround in flows in the San Joaquin River, QWEST is no longer negative, and the Delta Smelt incidental take limit is less of a concern, the group consensus was that entrainment risk is low for OMR flows of more positive than -3,500 cfs, medium for -3,500 to -5,000 cfs, and high for flows of more negative than -5,000 cfs. One group member mentioned that the Delta Smelt salvage from two weeks ago could have been a result of the 80% decrease in OMR flows over the course of 2 days, cautioning that flows of more negative than -4,500 cfs could still be a high risk for entrainment.



Conditions in the Delta are currently relatively warm with precipitation forecasted starting tomorrow. River flows, which have been elevated due to last week's storm, will likely increase later in the week as a result of the storm, and OMR indices will likely be held at around -5,000 cfs or -5,700 cfs with a WIIN Act flex. As there have been no Delta Smelt detections at or near the entrainment risk areas, no Delta Smelt were salvaged this past week, and environmental conditions have become more favorable, the group consensus is that the risk for Delta Smelt entrainment is now less of a concern than it was for last week.

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

Advice for week of March 19, 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 dry ([as of March 1](#)), and triggers concern for Barker Slough; however, no larvae were detected at the criterion station, so there is little 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 March 18, 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 survey information of large juveniles and adults. Bay Study sampled the upper estuary the week of February 20 and 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 first 20-mm Survey detected no Longfin Smelt larvae at central or south Delta criteria stations (Table 1). Based on these criteria, no advice is warranted.
5. The Criteria for Barker Slough were initiated with the March 1 revision of the Sacramento Valley Index classifying 2018 as a “dry” year (<http://cdec.water.ca.gov/cgi-progs/iodir/WSI>). However, 20-

mm Survey #1 had not processed the sample from the [criterion station 716](#), so no advice is warranted.

Current conditions: For March 18, Sacramento River at Freeport was 28,109 cfs and the San Joaquin was about 2,647 cfs. Clifton Court exports were about 3591 cfs and Tracy exports were about 2,636 cfs. The OMR index was -4906. Qwest was 5,252 cfs and has been positive for four days. This would lead to modest transport into the western Delta if Longfin Smelt larvae were present.

No Longfin Smelt larvae were detected at 20-mm stations from the central or south Delta (Table 1). Current, export levels pose little risk of entrainment. Although the Sacramento Valley Index re-classified water year 2018 as a “dry” year, initiating Barker Slough protections, the most recent sample has yet to be processed for the criteria station 716.

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

No Longfin Smelt have been salvaged this water year.

Summary of Risk: Risk of entrainment is low due to no Longfin Smelt larvae, juveniles or adults detected in the central or south Delta, and no salvage. Hydraulic conditions are as benign as can be expected for this time of year (modestly positive Qwest and OMR less negative than -5,000). Current hydrodynamic conditions are expected to remain the same or slightly less favorable before runoff from storms predicted for later in the week through the weekend improve outflow.

Table 1. Longfin Smelt Larva catch by station in the 20-mm Survey, #1. Sample processing is incomplete.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length	
2018	1	323		0	Not Yet Processed	0				Suisun Bay & West
2018	1	340		0	Not Yet Processed	0				
2018	1	342		0	Not Yet Processed	0				
2018	1	343		0	Not Yet Processed	0				
2018	1	344		0	Not Yet Processed	0				
2018	1	345		0	Not Yet Processed	0				
2018	1	346		0	Not Yet Processed	0				
2018	1	405		0	Not Yet Processed	0				
2018	1	411		0	Not Yet Processed	0				
2018	1	418		0	Not Yet Processed	0				
2018	1	501	13-Mar-18	1	No Smelt Catch	0				
2018	1	504		0	Not Yet Processed	0				
2018	1	519		0	Not Yet Processed	0				
2018	1	602		0	Not Yet Processed	0				
2018	1	606		0	Not Yet Processed	0				
2018	1	609		0	Not Yet Processed	0				
2018	1	610		0	Not Yet Processed	0				
2018	1	508		0	Not Yet Processed	0				Confluence
2018	1	513		0	Not Yet Processed	0				
2018	1	520		0	Not Yet Processed	0				
2018	1	801	12-Mar-18	3	Longfin Smelt	33	6	10	7.15152	
2018	1	804	12-Mar-18	3	Longfin Smelt	1	7	7	7	
2018	1	703	12-Mar-18	3	No Smelt Catch	0				Sac. River System
2018	1	704	12-Mar-18	3	No Smelt Catch	0				
2018	1	705		0	Not Yet Processed	0				
2018	1	706	12-Mar-18	1	No Smelt Catch	0				
2018	1	707	13-Mar-18	3	No Smelt Catch	0				
2018	1	711		0	Not Yet Processed	0				
2018	1	716		0	Not Yet Processed	0				
2018	1	718		0	Not Yet Processed	0				
2018	1	719		0	Not Yet Processed	0				
2018	1	720		0	Not Yet Processed	0				
2018	1	723		0	Not Yet Processed	0				
2018	1	724		0	Not Yet Processed	0				
2018	1	726		0	Not Yet Processed	0				
2018	1	809	12-Mar-18	3	No Smelt Catch	0				Central & South Delta
2018	1	812*	13-Mar-18	3	No Smelt Catch	0				
2018	1	815	13-Mar-18	3	No Smelt Catch	0				
2018	1	901*	12-Mar-18	3	No Smelt Catch	0				
2018	1	902	12-Mar-18	3	No Smelt Catch	0				
2018	1	906	13-Mar-18	3	No Smelt Catch	0				
2018	1	910	12-Mar-18	3	No Smelt Catch	0				
2018	1	912	12-Mar-18	3	No Smelt Catch	0				
2018	1	914	12-Mar-18	3	No Smelt Catch	0				
2018	1	915	12-Mar-18	3	No Smelt Catch	0				
2018	1	918	12-Mar-18	3	No Smelt Catch	0				
2018	1	919	13-Mar-18	3	No Smelt Catch	0				

*Reduced tow time

Processing is complete through 3/16/2018