Smelt Working Group
Tuesday, April 1, 2014

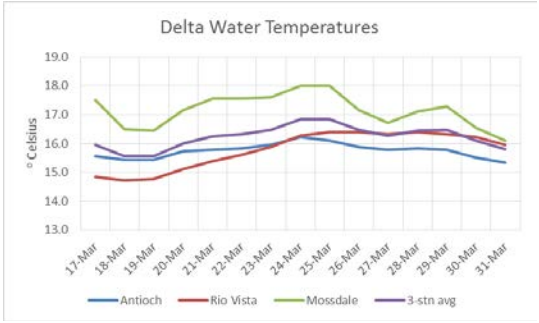
Meeting Summary:

The Working Group agreed given their present distribution, current salvage, and Delta conditions, there was no indication that projected exports (potentially resulting in OMR flows at approximately -4600 cfs daily average) need to be more restrictive for the protection of delta smelt adults and larvae. The Working Group also agreed that given their present distribution, existing constraining conditions were sufficient to protect longfin smelt from entrainment in the southern Delta. The next scheduled SWG meeting will be Monday, April 7.

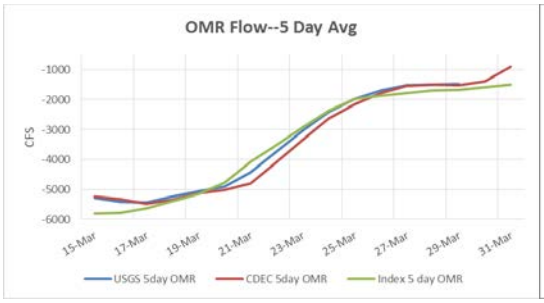
Reported Data:

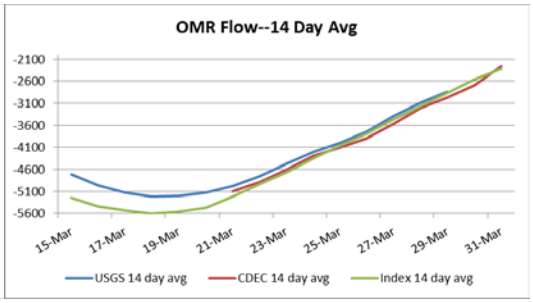
1. **Current environmental data:**

- **Water temperatures:**

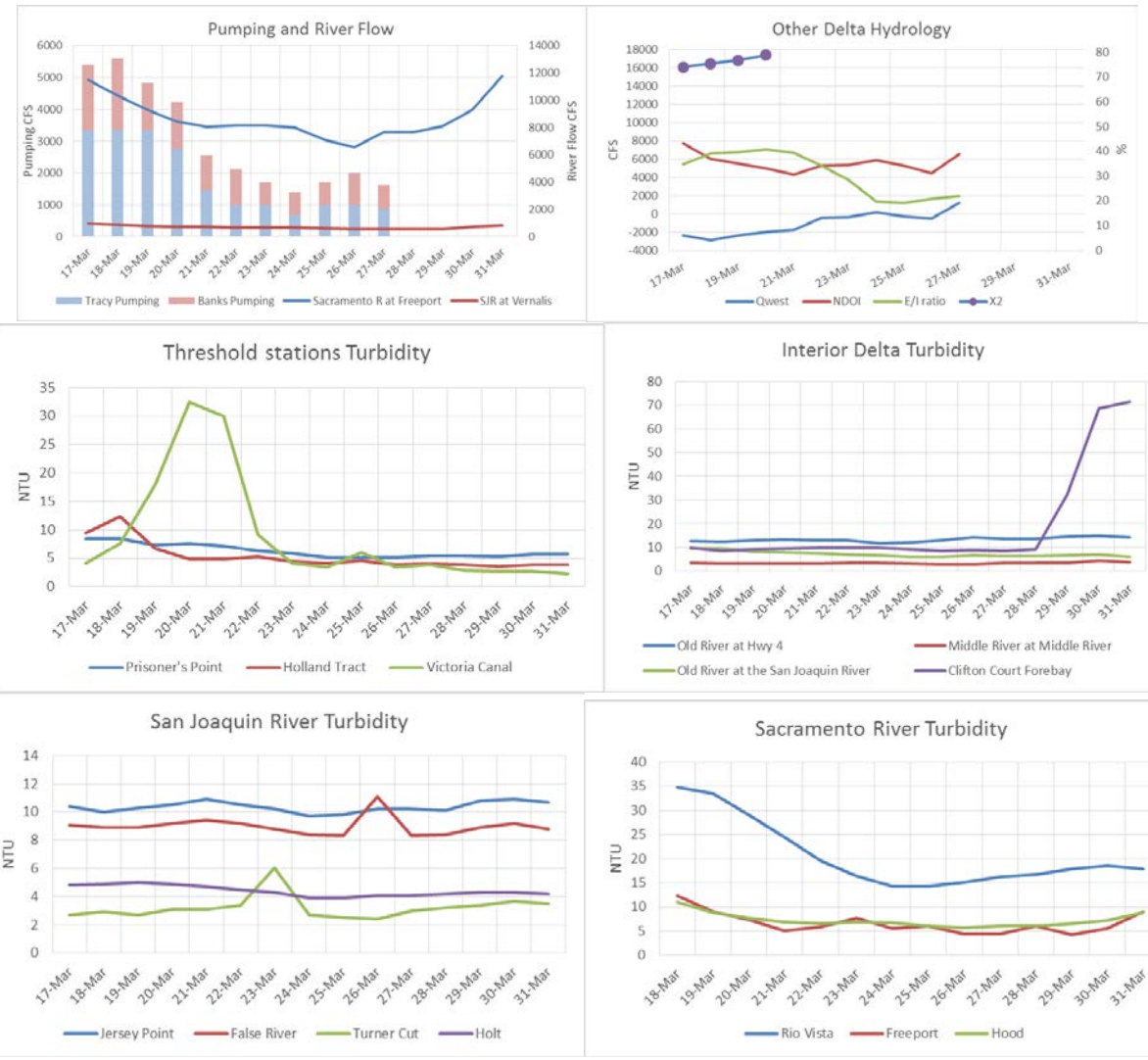


- **OMR flow:** USGS tidally averaged OMR flow 14-day and 5-day average for March 29 is listed as -2846 cfs and -1471 cfs. CDEC 14-day and 5-day average for March 31 is listed as -2263 cfs and -913 cfs. OMR Index Method 14-day average was reported as -2300 cfs and the 5-day average was reported as -1500 cfs.





- **Flow:** Sacramento River average daily flow for March 31 was 11,778 cfs and San Joaquin River average daily flow was 796 cfs. X2 calculation from CDEC was upstream of Colinsville (81km). The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group.



2. Delta Fish Monitoring:

The last Smelt Larval Survey was in the field the week of March 17. There will be no additional updates on this survey this season.

Spring Kodiak Trawl #4 is in the field the week of April 7.

20-mm Survey #1 was in the field the week of March 17. This survey did not include sites on the Napa River and one San Pablo Bay station. Processing is complete. Three delta smelt larvae were detected, with sizes ranging from 6 to 12 mm. The total longfin smelt larval count was not reported, but the majority of larvae were collected at the confluence. 20mm Survey #2 is in the field this week.

Jersey Point sampling is continuing for the Service's Early Warning Study. Catch increased on March 31 and April 1. Catch on March 31 was 17 adults, while catch on April 1 was 71. However, given the increased catch this morning, effort was cut short part way through the third trawl. Catch information will be distributed to the Working Group upon receipt by staff in the Bay-Delta FWO. Trawls are expected to be performed once per week until April 15 unless hydrology

changes significantly. Should hydrology change (river flow increase), trawls will be increased to daily for 14 consecutive days and then decrease to once per week until the next change in hydrology.

The 2013 Annual FMWT surveys have concluded. The Annual FMWT Index (based on all four months) for delta smelt is 18, the second lowest on record, and statistically indistinguishable from the lowest, 17, from 2009.

The 2013 Delta Smelt Recovery Index (based on September and October) is 4. More information on the Recovery Index can be found on the Bay-Delta Office's web site at http://www.fws.gov/sfbaydelta/species/delta_smelt.cfm. Results from CDFG surveys are available online at: http://www.dfg.ca.gov/delta/.

3. Salvage:

No adult delta smelt or longfin smelt have been observed in salvage in WY2014 thus far. No young of the year < 20 mm were observed in salvage from March 24 through 30. Longfin smelt < 20 mm were observed in salvage on March 20 and 25 at the SWP.

Tracy Fish Collection Facility was shut down for two hours on March 28 for work related to the replacement screens. Debris load was not discussed, although certain members expect debris will increase with the increased pumping level.

Larval sampling at the SWP fish salvage facility continues. Larval sampling at the CVP salvage facility has begun on March 13, but only during daytime hours from Monday through Friday. However, at this time, larval sampling at the CVP has been suspended due to worker safety concerns. It is unknown at this time when larval sampling will continue. Reclamation staff is still awaiting the repair of a fume hood for full larval sampling, which is necessary to process the preserved larval samples.

Current longfin smelt and delta smelt salvage information can be downloaded from DFG's salvage FTP site at ftp://ftp.dfg.ca.gov/salvage/Daily%20Smelt%20Summary/ or queried from DFG's salvage web page at http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx

4. **Expected Project Operations:**

Combined SWP/CVP exports are at 4900 cfs as of today. SWP exports are expected to remain at minimum levels for this week. The CVP exports are at maximum levels for this week.

Operators estimated that daily OMR flow levels for this week to be approximately -4600 cfs.

Although the rest of April is expected to be wetter than previous months, the current storms are expected to move out of the area tonight and remain dry for a few days. The DCC gate is closed.

The board's order from January 31, 2014 states that project operations must maintain a monthly net Delta outflow of no less than 3000 cfs and must not pump more than combined 1500 cfs. An addendum was submitted to the Board on February 7. This addendum allows the operators to revert to compliance with the monthly Outflow standard, and increase pumping

above the 1500 cfs included in the TUC petition. A request to extend the board's January 31, 2014 order was approved through the end of March. An additional addendum was approved to modify the number of days required to meet an X2 at Chipps Island (11,400 cfs on a 3-day running average) for the remainder of March. The projects will continue to meet X2 at Collinsville (7,100 cfs on a 3-day running average) prescribed in the Board's Plan.

5. **Particle Tracking Modeling:**
   No modeling runs were discussed.

6. **Turbidity Modeling:**
   No modeling runs were discussed.

7. **Assessment of Risk:**
   Background:
   RPA Component 1, Action 2: "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 OMR flows within this range are recommended by the SWG from the onset of Action 2 through its termination…" (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).

   "Upon completion of RPA Component 1 or when Delta water temperatures reach 12°C (based on a 3-station average of daily average water temperature at Mossdale, Antioch, and Rio Vista) or when a spent female delta smelt is detected in the trawls or at the salvage facilities, the projects shall operate to maintain OMR flows no more negative than -1,250 to -5000 cfs based on a 14-day running average with a simultaneous 5-day running average within 25 percent of the applicable 14-day OMR flow requirement. Depending on the extant conditions, the SWG shall make recommendations for the specific OMR flows within this range from the onset of implementing RPA Component 2 through its termination. The Service shall make the final determination regarding specific OMR flows. This action shall end June 30 or when the 3-day mean water temperature at Clifton Court Forebay reaches 25° C, whichever occurs earlier" (page 282).

   Discussion:
   The Working Group reviewed and discussed all relevant data from Delta monitoring, salvage, field surveys, and planned Project operations. Adult take limit is 155 with a concern level of 116 fish. Juvenile take limit is 1007 with a concern level of 671 fish. These numbers reflect the revised take estimate produced February 2013.

   With the increase in catch at Jersey Point yesterday and today members are concerned that additional spawning could take place in the central and southern Delta. Members are also

concerned with the large increase in exports this morning and dramatic increase in negative OMR flows expected later this week (and increasingly negative Qwest). Members are concerned that any larvae currently in the southern Delta will be drawn into the salvage facilities quickly and be followed with additional larvae from potential upcoming spawning events.

Working Group members expressed concern that CVP larval sampling has been suspended at this time. The SWG would like to emphasize the importance of larval sampling at this time and encourage the CVP facilities to continue larval sampling with whatever adjustments are needed to meet worker safety protocols. Historical data indicate that CVP larval sampling typically detects larvae prior to being detected at the SWP facility, further emphasizing the importance of this sampling.

Recent surveys have indicated the majority of the delta smelt population is likely out of the central and southern Delta and there has been zero salvage so far this season, which resulted in the Working Group determining there was insufficient evidence to recommend a change in expected operations for this week. However, given the high level of concern the group has for delta smelt, members will be watching conditions and data daily and available for a follow-up call that could occur later this week.

8. **Framework for providing advice to the Service:**
   No update was provided.

   The SWG will have the next meeting on April 8.

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

Advice for week of April 1, 2014:
The Smelt Working Group believes that current and planned export rates are protective of Longfin Smelt at this time.

Barker Slough operations advice has terminated for the year as of March 31.

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 (>=80mm) 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 31, 2014, no age-1 or adult Longfin Smelt have been salvaged for the water year. The Fall Midwater Trawl Longfin Smelt annual abundance index was 164. The total salvage level threshold for advice is >820 (see criterion in #1). No advice is warranted based on this criterion.

On February 24, the first Longfin Smelt larva was detected at the SWP and larvae were detected almost daily for about a week before declining (CVP started sampling for larvae as of March 13 on a day-time work-week schedule). On February 28, the first juvenile (age-0) Longfin Smelt was detected at the SWP; age-0 fish have been detected roughly every other day since. From March 17 and through March 23, no juvenile Longfin Smelt were collected at either facility and only a single larvae was collected at the SWP. This information is not related to a criterion and does not have a direct effect on advice.

2. December Fall Midwater Trawl and Bay Study sampling in December through March collected no Longfin Smelt in the central or south Delta, suggesting limited or no recent proximity to the export pumps. Distribution information does not indicate advice is warranted based on this criterion.

3 & 4. The sixth Smelt Larva Survey (SLS) of 2014 was conducted March 17-21, and will be the last for 2014. The larva distribution criterion (#3 above) was met during survey 3, but distribution diminished by survey 4 and again during survey 5 and survey 6 (cf., Table 1 and Basis for Advice #s 3 & 4 above). Except for station 809 in the lower San Joaquin River channel, central and south Delta larva densities remained very low during survey 6. Longfin Smelt larvae were detected at only 2 central and south Delta stations in survey 6, indicating low risk of entrainment.

5. The Barker Slough concern period ends for the water year on March 31. No additional advice will be given for this water year. Nonetheless, Barker Slough exports remain very low: ≤ 14 cfs for the past week.

Current conditions: Outflow declined slightly after March 23 from about 5,860 on the 24th to 4,477 on the 26th prior to climbing to 13,911 on the 31st. Combined State and federal exports have been close to or at health and safety minima, with a couple exceptions for the March 23-31 period. Qwest shifted from modestly negative prior to March 22, to weakly negative March 22-26, to increasingly positive since March 26. Qwest is expected to decline beginning today. CDEC OMR has been trending less negative since March 22, and is currently about -1000 cfs. The OMR index has been trending less negative: 5-day Index = about -1,500 and 14-day index = about -2,300 cfs.

Summary of Risk: Weakly negative to modestly positive Qwest and modestly negative OMR flows could put larvae hatching in central and south Delta at risk of entrainment; however, few larvae have been detected in the region (Table 1), so the overall risk is low.

The concern period for Barker Slough exports ended for the water year on March 31.

No adult Longfin Smelt have been detected to date in the central or south Delta by fish surveys or by salvage, and collections at Chipps Island dropped very low after early February with only a few collected in late February through late March. This suggests limited additional spawning, particularly in the central or south Delta. The small to modest numbers of larvae at only a two locations sampled in the central and south Delta support this conclusion. Current exports remain modest and will result in a negative OMR in the range of -4,500 to -4,600 cfs. Moreover, relatively few Longfin Smelt larvae remain vulnerable to entrainment in the south Delta. These circumstances all support the conclusion of low risk of entrainment.

Table 1. Longfin and Delta Smelt catch per station from 2014 Smelt Larva Survey, Survey 6.

Study Year	Survey #	SLS Station	Sample Status	Species	Smelt Catch	MinOfLength	MaxOfLength	AvgOfLength	
2014	6	340	Not yet processed						
2014	6	342	Not yet processed						
2014	6	343	Not yet processed						
2014	6	344	Not yet processed						
2014	6	345	Not yet processed						
2014	6	346	Not yet processed						
2014	6	347	Not yet processed						
2014	6	348	Not yet processed						
2014	6	349	Not yet processed						
2014	6	405	Not yet processed						
2014	6	411	Not yet processed						
2014	6	418	Not yet processed						
2014	6	501	Not yet processed						
2014	6	504	Not yet processed						
2014	6	508	Not yet processed						
2014	6	513	Not yet processed						
2014	6	519	Not yet processed						
2014	6	520	Not yet processed						
2014	6	602	Not yet processed						
2014	6	606	Not yet processed						
2014	6	609	Not yet processed						
2014	6	610	Not yet processed						
2014	6	703	Processed	Longfin Smelt	4	7	18	10.5	
2014	6	704	Processed		No Smelt Catch				
2014	6	705	Processed	Longfin Smelt	3	7	7	7.0	
2014	6	705	Processed	Delta Smelt	1	6	6	6.0	
2014	6	706	Processed	Longfin Smelt	5	6	7	6.6	
2014	6	706	Processed	Delta Smelt	1	5	5	5.0	
2014	6	707	Processed	Delta Smelt	3	5	6	5.7	
2014	6	711	Processed		No Smelt Catch				
2014	6	716	Processed	Longfin Smelt	1	7	7	7.0	
2014	6	723	Processed	Delta Smelt	4	5	6	5.3	
2014	6	801	Processed	Delta Smelt	1	6	6	6.0	
2014	6	801	Processed	Longfin Smelt	8	7	19	11.1	
2014	6	804	Processed		No Smelt Catch				
2014	6	809	Processed	Longfin Smelt	15	7	18	11.7	SWP ITP Criteria Stations
2014	6	809	Processed	Delta Smelt	3	5	7	6.0	
2014	6	812	Processed	Longfin Smelt	4	7	10	7.8	
2014	6	815	Processed		No Smelt Catch				
2014	6	901	Processed		No Smelt Catch				
2014	6	902	Processed		No Smelt Catch				
2014	6	906	Processed		No Smelt Catch				
2014	6	910	Processed		No Smelt Catch				
2014	6	912	Processed		No Smelt Catch				
2014	6	914	Processed		No Smelt Catch				
2014	6	915	Processed		No Smelt Catch				
2014	6	918	Processed		No Smelt Catch				
2014	6	919	Processed		No Smelt Catch				

Processing is complete through 3/20/14.

Figure 1. DFW's Smelt Larva Survey/20-mm Survey station locations.