

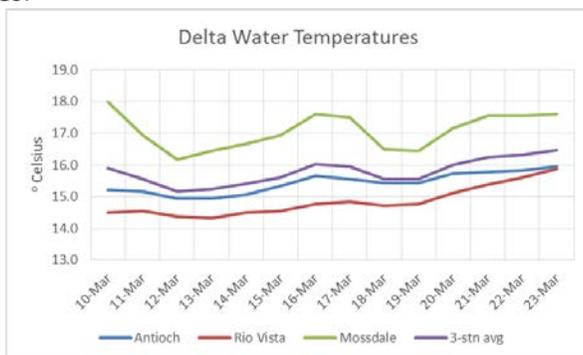
**Smelt Working Group  
Monday, March 24, 2014**

**Meeting Summary:**

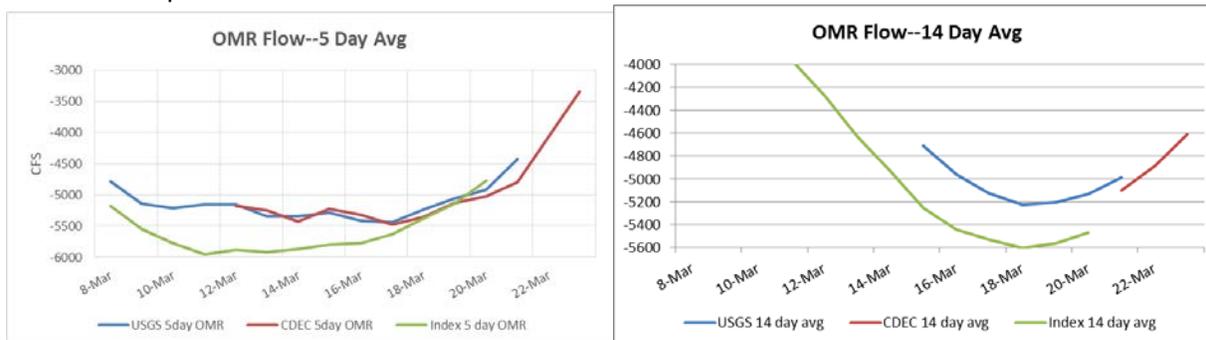
The Working Group agreed given their present distribution, current salvage, and Delta conditions, there was no indication that projected exports (potentially resulting in OMR flows at approximately -2000 cfs daily average) need to be more restrictive for the protection of delta smelt adults and larvae. 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. Barker Slough operations are to target 50 cfs exports, as the longfin smelt larva density at Station 716 exceeded the ITP criteria. The next scheduled SWG meeting will be Tuesday, April 1.

**Reported Data:**

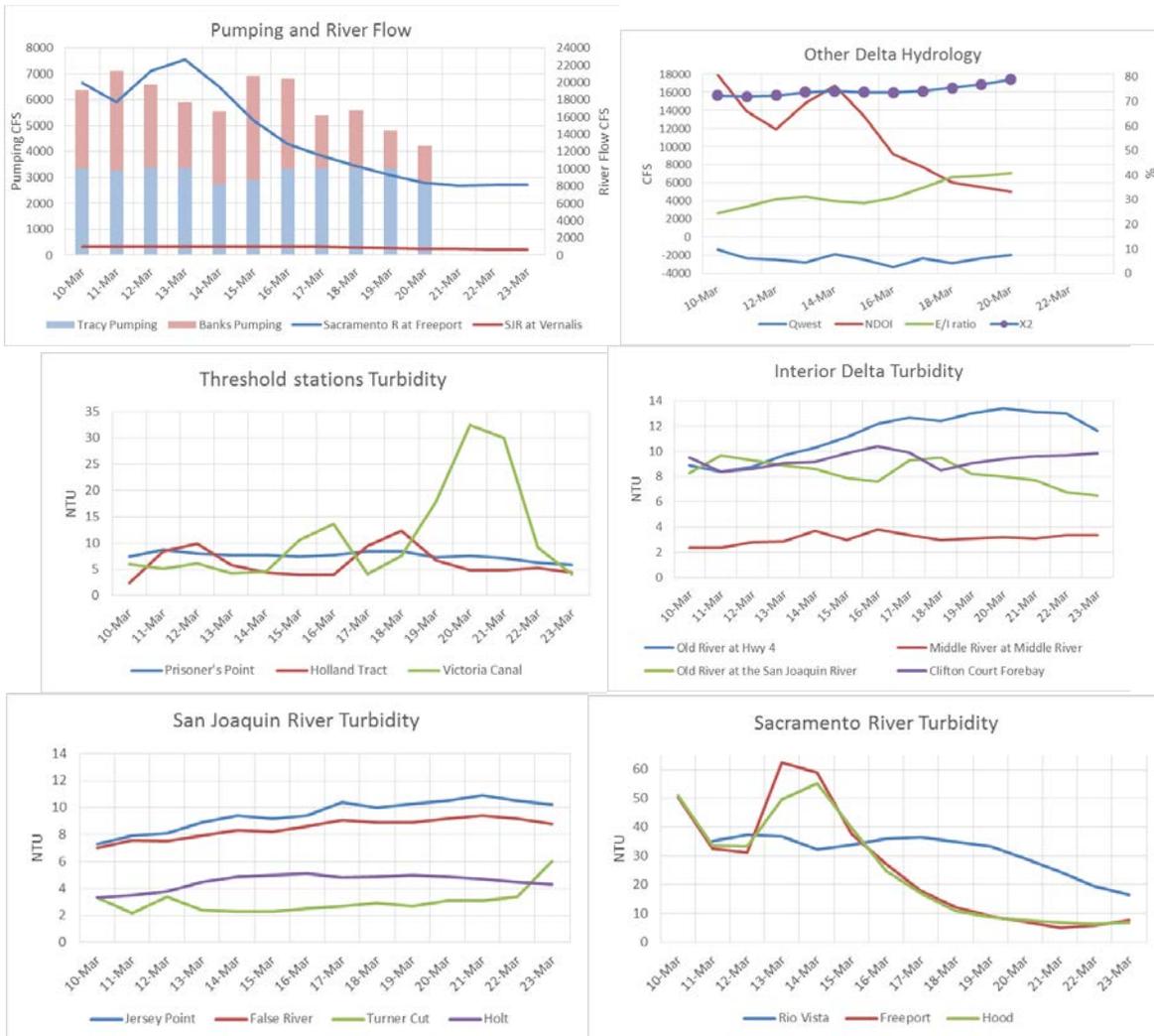
1. **Current environmental data:**
  - **Water temperatures:**



- **OMR flow:** USGS tidally averaged OMR flow 14-day and 5-day average for March 20 is listed as -4984 cfs and -4422 cfs. CDEC 14-day and 5-day average for March 23 is listed as -4608 cfs and -3343 cfs. OMR Index Method 14-day average was reported as -4700 cfs and the 5-day average was reported as -3100 cfs.



- **Flow:** Sacramento River average daily flow for March 23 was 8158 cfs and San Joaquin River average daily flow was 657 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:

Smelt Larval Survey #6 was in the field the week of March 17. Processing is ongoing with 26 stations (all stations upstream of confluence plus 1-2 stations at the confluence) completed. A total of 13 delta smelt larvae have been reported from samples so far, with sizes ranging from 5-7 mm. A total of 40 longfin smelt larvae have been counted thus far from catch. Sizes ranged from 6-19 mm. This is the final SLS of the year.

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 ongoing with a total of 37 tows from 23 stations complete. No delta smelt have been detected so far. A total of 148 longfin smelt have been reported so far, the majority at station #809 (98 fish), with an average length of 16 mm. 20mm Survey #2 is in the field next week.

Jersey Point sampling is continuing for the Service's Early Warning Study on March 25. 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](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  $\leq 20$  mm were observed in salvage from March 17 through 23. Longfin smelt  $< 20$  mm were observed in salvage on March 19 at the SWP.

Tracy Fish Collection Facility was shut down for two hours on both March 19 and 20 for work related to the replacement screens. Debris load was not discussed.

Larval sampling at the SWP fish salvage facility continues. Larval sampling at the CVP salvage facility has begun on March 13, but is occurring only during daytime hours from Monday through Friday. It was reported that Reclamation staff are awaiting the repair of a fume hood prior to the start of 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 1700 cfs as of today. SWP exports could increase this week in response to changing salinity levels, which are the current constraint on operations.

Operators estimated that daily OMR flow levels for this week to be approximately -2000 cfs.

Some precipitation is indicated in the next couple of days, although total amounts are not expected to exceed a couple hundredths of an inch. An additional storm is expected this coming weekend, with greater rainfall levels expected. 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:**

Modeling runs were discussed this week. Requested parameters included injection points at stations 707, 809, 812, and 815 (injected on March 9 and 16) as well as flux through 3-mile slough. Hydrological assumptions were held constant for the model runs. No additional runs were requested for the next Working Group meeting.

**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 last February.

Members indicated that it is very likely larvae have hatched or will hatch in the lower San Joaquin River. However, with OMR flow estimated to be approximately -2000 cfs this week, an increasingly positive Qwest, zero salvage so far this season, and favorable distributions from surveys, the Working Group did not determine there was sufficient evidence to recommend a more positive OMR than is currently planned by operators.

**8. Framework for providing advice to the Service:**

No update was provided.

The SWG will have the next meeting on April 1.

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

**Advice for week of March 24, 2014:**

The Smelt Working Group believes that current and planned export rates are protective of Longfin Smelt at this time.

Barker Slough operations advice is provided by the Smelt Work Group to target 50 cfs exports, because Longfin Smelt larva remain present at station 716.

**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 March 23, 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 sixth SLS detected a single Longfin Smelt larvae at station 716 (and none at 723); the export restriction advice continues while larvae are present (Table 1). Water year 2014 has been classified as critically dry. During Smelt Larval Survey #2, 62 Longfin Smelt larva were collected at 716 and a similar number at 723. The export target if larval smelt are present at station 716 is an export pumping limit of 50 cfs as a 7-day mean. The SWG provides advice because larval density exceeds the criterion. Since early February Barker Slough exports have remained below 40 cfs.

**Current conditions:** Outflow declined after March 16 from just over 9,000 cfs to just over 5,000 cfs on March 23. Combined State and federal exports declined as well, from about 6,800 cfs combined on March 16 to about 1,700 on March 23. Qwest has been negative since early March, peaking at -3,333 cfs on March 16 and trending slightly more positive since. The OMR index has been trending less negative: 5-day Index about -3,100 cfs and 14-day index about 4,700 cfs.

**Summary of Risk:** Modestly to weakly negative 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.

Only one larvae was detected at station 716 near Barker Slough, so risk of entrainment is low; nonetheless, advice is to continue export restrictions.

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 and early March. This suggests limited additional spawning 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 and predicted exports are relatively low and will result in a less negative OMR (less negative than -2,000 cfs) for the end of March. Moreover, 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
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			

SWP ITP Criteria Stations

Processing is complete through 3/20/14.

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

