

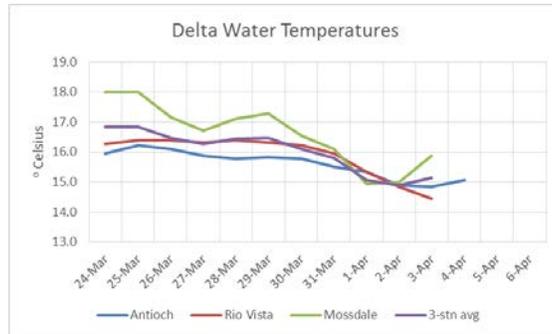
Smelt Working Group  
Monday, April 7, 2014

Meeting Summary:

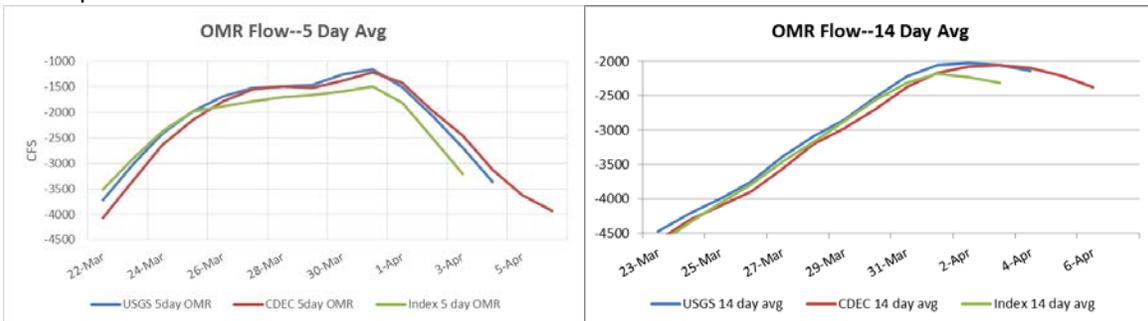
The Working Group agreed given their present distribution, current salvage, and Delta conditions, there was no indication that projected exports (potentially resulting in OMR flows at approximately -4500 to -5000 cfs daily average) need to be more restrictive for the protection of delta smelt adults 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 14.

Reported Data:

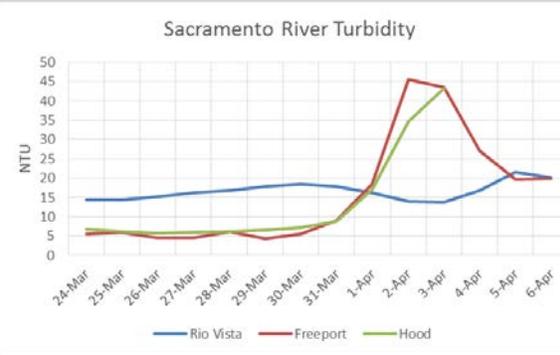
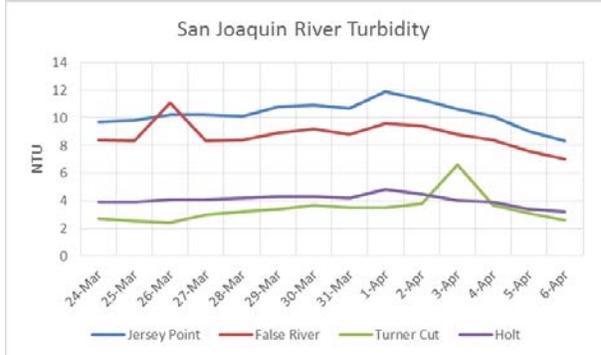
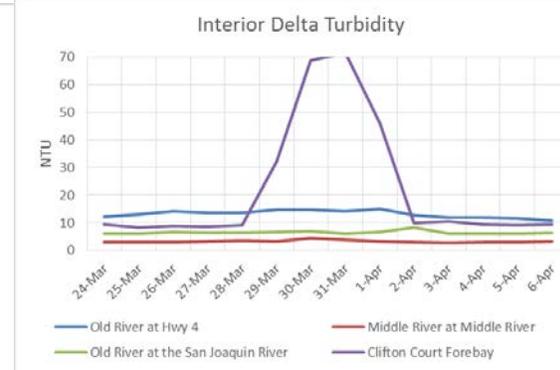
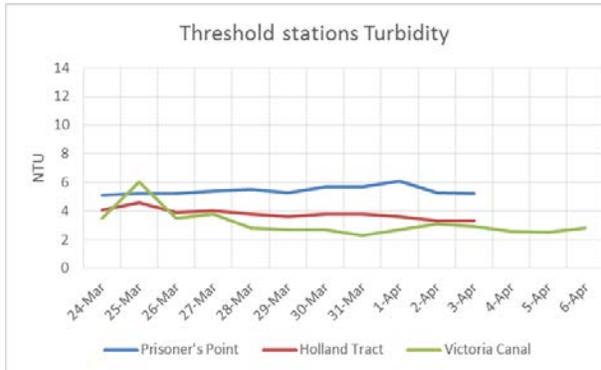
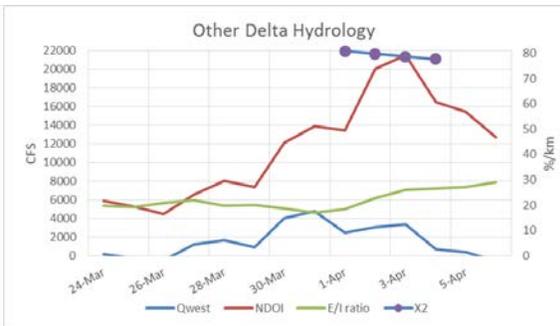
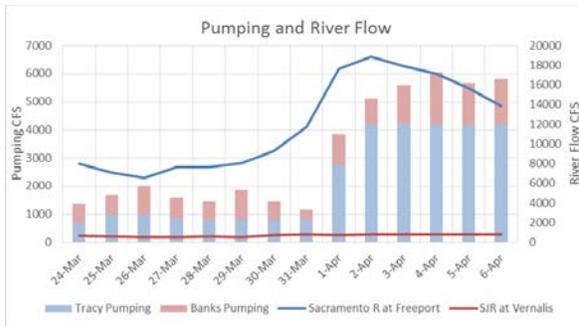
1. Current environmental data:
  - Water temperatures:



- **OMR flow:** USGS tidally averaged OMR flow 14-day and 5-day average for April 4 is listed as -2138 cfs and -3363 cfs. CDEC 14-day and 5-day average for April 6 is listed as -2378 cfs and -3936 cfs. OMR Index Method 14-day average was reported as -2900 cfs and the 5-day average was reported as -5000 cfs.



- **Flow:** Sacramento River average daily flow for April 6 was 13,898 cfs and San Joaquin River average daily flow was 824 cfs. X2 calculation from CDEC was unavailable. 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.

Spring Kodiak Trawl #4 is in the field this week. Station 809 was sampled this morning and reported a catch of zero delta smelt.

20-mm Survey #2 was in the field last week. A total of 47 stations were sampled. Processing is 50% complete. One delta smelt larva was detected (station 906) so far with a size of 12 mm. A total of 172 longfin smelt larvae have been collected so far, with an average length of 20 mm. 20-mm Survey #3 is in the field next week.

Jersey Point sampling is continuing for the Service's Early Warning Study. After catch increased on March 31 and April 1, catch varied between one and 14 each day through April 6. Catch information will be distributed to the Working Group upon receipt by staff in the Bay-Delta FWO. The survey is expected to continue through April 15..

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. One larval delta smelt (12 mm) was processed in the larval collection at the SWP on April 2. No longfin smelt < 20 mm or  $\geq$  20 mm were observed in salvage for the reporting period of April 1 through 4.

Tracy Fish Collection Facility resumed their routine (4 x per day, 7-d per week) larval fish monitoring on April 1st. The planned closure of the CVP pumping facility to provide screen maintenance in April has been postponed until May or June.

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 5400 cfs as of today. SWP exports will drop to 700 cfs tomorrow and might drop lower on Wednesday, due to concerns with the Export/Inflow ratio standard. The CVP exports are at maximum levels for this week.

Operators estimated that daily OMR flow levels for this week to be approximately -4500 to -5000 cfs.

No rain is anticipated this week. 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.

The only delta smelt larva to be collected so far in 20-mm Survey #2 was at station 906, however, the Working Group believes most larvae or young juveniles have not reached sufficient size to be efficiently collected by this gear. Previous survey efforts indicated the majority of the delta smelt population was likely out of the central and southern Delta. There has been zero adult salvage so far this season, except for the one larva (collected April 2) observed in larval fish collections. It was noted it is unlikely that juvenile ( $\geq 20$  mm) delta smelt would be salvaged this week. Based on the current information the Working Group concluded there was insufficient evidence to recommend a change in expected operations for this week.

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

No update was provided.

The SWG will have the next meeting on April 14.

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

### **Advice for week of April 7, 2014:**

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

Barker Slough operations advice 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 ( $\geq 80$ 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 April 6, 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. From March 31 and through April 6, no larvae or juvenile Longfin Smelt were collected at either facility. 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 second 20mm Survey of 2014 was conducted March 31-April 5. Longfin Smelt larvae were detected at only 4 central and south Delta stations and 3 of 4 detections involved only a single larvae. Moreover, larva density at station 809 declined compared to survey 2. Together these data indicate low risk of entrainment.

5. The Barker Slough concern period ended for the water year on March 31. No additional advice will be given for this water year.

**Current conditions:** Outflow declined slightly after March 23 from about 5,860 on the 24<sup>th</sup> to 4,477 on the 26<sup>th</sup> prior to climbing to 13,911 on the 31<sup>st</sup>. 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:** Qwest ranged from modestly positive in late March (+4,792 on March 31) then declined to neutral over this past week (-556 on April 6), while OMR flows were negative throughout the period (CDEC 5-day OMR: ca. -1,200 on March 31 to -4,000 cfs on April 6). These hydrodynamics put any larvae hatching in central and south Delta at risk of entrainment; however, few Longfin Smelt 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 (exception 65 mm in 20mm Survey 2) or by salvage, and collections at Chipps Island dropped very low after early February with only a few collected in late February through early April. This suggests limited additional spawning, particularly in the central or south Delta. The small to modest numbers of larvae collected at only a four locations sampled in the central and south Delta support this conclusion. Current exports remain just over 5,000 cfs and will result in a negative OMR at about -5,000 cfs as well. 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 Smelt catch per station from 2014 20mm Survey, Survey 2. These data are preliminary and subject to change.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length	
2014	2	323		0	Not Yet Processed	0				Suisun Bay & West
2014	2	340		0	Not Yet Processed	0				
2014	2	342		0	Not Yet Processed	0				
2014	2	343		0	Not Yet Processed	0				
2014	2	344		0	Not Yet Processed	0				
2014	2	345		0	Not Yet Processed	0				
2014	2	346		0	Not Yet Processed	0				
2014	2	405		0	Not Yet Processed	0				
2014	2	411		0	Not Yet Processed	0				
2014	2	418		0	Not Yet Processed	0				
2014	2	501		0	Not Yet Processed	0				
2014	2	504	2-Apr-14	1	Longfin Smelt	38	15	30	23.66	
2014	2	519		0	Not Yet Processed	0				
2014	2	602		0	Not Yet Processed	0				
2014	2	606		0	Not Yet Processed	0				
2014	2	609	02-Apr-14	1	Longfin Smelt	8	17	27	22.25	
2014	2	610	02-Apr-14	2	Longfin Smelt	20	8	28	19.00	
2014	2	508		0	Not Yet Processed	0				Confluence
2014	2	513	03-Apr-14	1	Longfin Smelt	35	11	29	20.74	
2014	2	520		0	Not Yet Processed	0				
2014	2	801	03-Apr-14	1	Longfin Smelt	2	10	27	18.50	
2014	2	804	03-Apr-14	1	Longfin Smelt	2	17	23	20.00	
2014	2	703	03-Apr-14	1	Longfin Smelt	2	15	17	16.00	Sac. River System
2014	2	704	03-Apr-14	1	Longfin Smelt	10	10	26	21.10	
2014	2	705	02-Apr-14	2	Longfin Smelt	2	14	15	14.50	
2014	2	706	02-Apr-14	1	No Longfin Catch	0				
2014	2	707	02-Apr-14	1	Longfin Smelt	1	18	18	18.00	
2014	2	711	01-Apr-14	3	No Longfin Catch	0				
2014	2	716	01-Apr-14	3	Longfin Smelt	3	16	32	22.33	
2014	2	718	01-Apr-14	3	No Longfin Catch	0				
2014	2	719	01-Apr-14	3	Longfin Smelt	8	17	26	21.88	
2014	2	720	01-Apr-14	3	Longfin Smelt	1	25	25	25.00	
2014	2	723	01-Apr-14	3	Longfin Smelt	1	29	29	29.00	
2014	2	724	01-Apr-14	3	No Longfin Catch	0				
2014	2	726	01-Apr-14	3	No Longfin Catch	0				
2014	2	809	01-Apr-14	3	Longfin Smelt	37	8	65	18.51	Central & South Delta
2014	2	812	02-Apr-14	2	Longfin Smelt	1	9	9	9.00	
2014	2	815	02-Apr-14	2	No Longfin Catch	0				
2014	2	901	01-Apr-14	3	No Longfin Catch	0				
2014	2	902	01-Apr-14	3	No Longfin Catch	0				
2014	2	906	02-Apr-14	3	Longfin Smelt	1	15	15	15.00	
2014	2	910	01-Apr-14	3	No Longfin Catch	0				
2014	2	912	01-Apr-14	3	No Longfin Catch	0				
2014	2	914	01-Apr-14	3	Longfin Smelt	1	12	12	12.00	
2014	2	915	01-Apr-14	3	No Longfin Catch	0				
2014	2	918	01-Apr-14	3	No Longfin Catch	0				
2014	2	919	02-Apr-14	2	No Longfin Catch	0				

Processing complete through 04/04/2014

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

