

**Smelt Working Group  
Monday, April 28, 2014**

**Meeting Summary:**

The Working Group agreed that given their present distribution, current salvage, and Delta conditions, there was no indication that projected exports (potentially resulting in OMR flows as negative as approximately -3000 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, May 5.

**Reported Data:**

**1. Current environmental data:**

- **OMR flow:** Daily CDEC OMR flows were reported as -2842 cfs (04/25), -2627 cfs (04/26), and -2915 cfs (04/28). The 04/27 OMR Index value for the 14-day average was reported as -3000 cfs and the 5-day average was reported as -3100 cfs. Comparing OMR indexed values to gauge OMR values on 04/25 indicate that the 5-day index value is tracking approximately -500cfs over the gauge value, and the 14-day index value is tracking approximately -300cfs over the gauge value.
- **Flow:** Sacramento River average daily flow for April 27 was approximately 6400 cfs and San Joaquin River average daily flow was 3035 cfs. X2 calculation from CDEC was upstream of Collinsville (81 km). Outflow is approximately 8600 cfs, and E/I is 28.5% on a 14-day average.
- The weather forecast for this week is dry and unseasonable warm, with air temperatures nearing 95 degrees F.

**2. Delta Fish Monitoring:**

20-mm Survey #3 was in the field the week of April 14. A total of 47 stations were sampled, and laboratory processing is complete. A total of 21 Delta Smelt larvae were observed in the samples processed, sizes ranging from 7 to 20 mm. The majority of larvae were collected from stations in the Cache Slough/Sacramento Deepwater Shipping Channel (SDWSC), the confluence area and lower Sacramento River. Fourteen of 21 Delta Smelt were caught at a single station (719) in the SDWSC. One Delta Smelt larva was detected in the central Delta at the Jersey Point station (809) with a size of 7 mm. A total of 461 Longfin Smelt were collected, sizes ranging from 9 to 34mm (one at 74mm).

20-mm Survey #4 is in the field this week.

SKT Survey # 5 (the final SKT of WY 2014) will commence May 5.

Jersey Point sampling concluded for the Service's Early Warning Study on April 10.

The 2013 Annual FMWT surveys concluded December 2013. 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:**

Reporting for the period of April 21 to 27, an estimated 20 juvenile Delta Smelt were salvaged at the SWP and CVP (see Table 1). No adult Delta Smelt and no adult or juvenile Longfin Smelt were salvaged at either facility for the same period.

Table 1. Estimated SWP and CVP juvenile Delta Smelt and Longfin Smelt salvage (>20 mm) from the SWP and CVP for the reporting period of 04/21 through 04/27.

	SWP	CVP
Delta Smelt	16	4
Longfin Smelt	0	0

Larval Delta Smelt (<20mm) were observed in the larval collection at the SWP on April 18, 19, 21, and 22. Larval Delta Smelt (<20mm) were observed in the larval collection at the CVP on April 19 and 24. Larval Longfin Smelt < 20 mm were observed in the larval collection at the CVP on April 21.

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

**4. Expected Project Operations:**

Exports at the CVP are targeting 2500 cfs; exports at the SWP are targeting 500 cfs. Combined exports should remain at approximately 3000 cfs through the week, to comply with the San Joaquin River inflow to export ratio of 1:1 for April 15 through May 15 (NMFS RPA IV.2.1).

Operators estimated that daily OMR flow levels for this week will be approximately -3000 cfs.

The DCC gate is closed.

The State Water Board's (Board) 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 Temporary Urgency Change Petition

(TUCP). 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. An addendum was submitted and approved on April 9, 2014 to allow the projects to continue with their drought operations as approved by the Board through the month of April. An addendum submitted and approved on April 18, 2014 allows the projects to match the 1:1 Vernalis inflow to export pumping ratio (and exceed the 1500 cfs pumping restrictions as per earlier TUCP orders) during the NMFS RPA and D-1641 Stanislaus River pulse flow.

**5. Particle Tracking Modeling:**

No modeling runs were discussed.

**6. Turbidity Modeling:**

No modeling runs were discussed.

**7. Assessment of Risk:**

**Background:**

The timing for RPA Component 1, Action 1 has passed. The SWG is following the guidance for RPA Component 1, Actions 2 and 3, as described below.

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 SWG reviewed and discussed all relevant data from Delta monitoring, salvage, field surveys, and planned Project operations. The adult incidental take limit is 155 with a concern level of 116 fish. The juvenile incidental take limit is 1007 with a concern level of 671 fish. These numbers reflect the revised incidental take calculation, as reported in the Service's February 2013 memorandum.

Catch data from 20-mm Survey # 3 indicate that the majority of larval/juvenile Delta Smelt are located out of the south and central Delta, though Delta Smelt have not yet fully recruited to the 20-mm gear. 20-mm Survey # 4 is in the field this week, and will provide additional information regarding distribution. Jersey Point early warning study catch data indicated that adults were in the vicinity of the central Delta in late March, and members discussed that if these individuals did spawn, their offspring are now hatched and vulnerable to entrainment (and may be too small to be detected well by the 20-mm Survey).

Salvage of Delta Smelt juveniles has increased this week; 20 juvenile Delta Smelt were salvaged from April 23 through April 27. As members indicated last week, the SWG anticipates that small numbers of juvenile Delta Smelt will continue to be salvaged over the next week. Members indicated that salvage data over the next few weeks may be very helpful in determining entrainment risk as they will be available prior to distribution data from the 20-mm Survey #4.

The SWG discussed that temperatures are expected to increase to unseasonably warm levels this week, which could coincide with decreased flows at Vernalis. As temperatures increase, Delta Smelt could become more active, which could result in increased salvage, if there are larvae in the central and south Delta. Members expect that were it later in the season, when Delta Smelt are larger, it could cue an emigration out of the south Delta. It was pointed out that in some years juvenile Delta Smelt could still be vulnerable to entrainment and detected in salvage after completion of RPA Component 2, Action 3.

OMR flows are expected to remain around -3000 cfs on a daily basis for at least the remainder of the week, as projects are constrained by the San Joaquin inflow to export ratio of 1:1 (NMFS RPA IV.2.1 San Joaquin River inflow to export ratio; critical water year criteria) until flows on the San Joaquin River drop according to the tributary pulse flow schedule later this week. Additionally, Qwest is positive at approximately 3300 cfs.

Based on this review of the Delta Smelt distribution and salvage data, current Delta conditions and projected operations, the SWG agreed that no change in operations is necessary to adequately protect Delta Smelt from entrainment. The SWG will continue to monitor turbidity, salvage and survey data through this week, and will request a call to discuss Delta Smelt entrainment risk, should one be necessary.

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

No update was provided.

The SWG will have the next meeting on May 5.

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

### **Advice for week of April 28, 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 20, 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 April 21 and through April 27, no juvenile Longfin Smelt were collected at either facility. Only a single Longfin Smelt larvae was collected at the CVP on April 21; that's been the only the second Longfin Smelt larvae detected at either facility since early April. 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 third 20mm Survey of 2014 was conducted April 14-17. Longfin Smelt larvae were detected at only 2 central and south Delta stations and 1 of 2 detections involved only a single larva (Table 1). 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 fluctuated between 4,834 and 6,281 cfs from April 21-25 and then increased to over 8,000 cfs on April 26. Combined State and federal exports are stable at 3,000 cfs and will remain at about this level to match San Joaquin River at Vernalis flows. Qwest shifted from weakly positive (+600-900 cfs) April 21-25 to modestly positive (>3,000 cfs) on April 26. CDEC 5-day OMR was -3,100 April 27. Currently, Vernalis flows are a little over 3,000 cfs.

**Summary of Risk:** Qwest trended from slightly positive to modestly positive. OMR flows will be approximately -3,000 for the next week. Exports will match Vernalis flow for the coming weeks. These hydrodynamics though improved will continue to put larvae in central and south Delta at some risk of entrainment; however, few Longfin Smelt larvae have been detected in the region (Table 1) and no additional larvae are expected to hatch this season, so the overall risk is low.

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

Table 1. Longfin Smelt catch per station from 2014 20mm Survey, Survey 3. These data are preliminary and subject to change.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length	
2014	3	323	16-Apr-14	3	No Longfin Catch	0				Suisun Bay & West
2014	3	340	16-Apr-14	3	No Longfin Catch	0				
2014	3	342	16-Apr-14	3	No Longfin Catch	0				
2014	3	343	16-Apr-14	3	No Longfin Catch	0				
2014	3	344	16-Apr-14	3	No Longfin Catch	0				
2014	3	345	16-Apr-14	3	No Longfin Catch	0				
2014	3	346	16-Apr-14	3	No Longfin Catch	0				
2014	3	405	17-Apr-14	3	Longfin Smelt	2	27	74	60.50	
2014	3	411	17-Apr-14	3	Longfin Smelt	2	13	29	21.00	
2014	3	418	17-Apr-14	3	Longfin Smelt	14	12	33	25.50	
2014	3	501	15-Apr-14	3	Longfin Smelt	21	9	32	23.00	
2014	3	504	15-Apr-14	3	Longfin Smelt	3	20	27	24.33	
2014	3	519	15-Apr-14	3	Longfin Smelt	8	17	29	22.63	
2014	3	602	15-Apr-14	3	Longfin Smelt	30	13	34	25.27	
2014	3	606	15-Apr-14	3	Longfin Smelt	68	15	30	22.85	
2014	3	609	15-Apr-14	3	Longfin Smelt	33	15	30	21.85	
2014	3	610	15-Apr-14	3	Longfin Smelt	9	21	33	25.56	
2014	3	508	16-Apr-14	3	Longfin Smelt	26	14	32	23.69	
2014	3	513	16-Apr-14	3	Longfin Smelt	41	11	34	21.98	
2014	3	520	16-Apr-14	3	Longfin Smelt	77	11	28	20.52	
2014	3	801	16-Apr-14	3	Longfin Smelt	84	11	32	21.89	
2014	3	804	16-Apr-14	3	No Longfin Catch	0				
2014	3	703	16-Apr-14	3	Longfin Smelt	2	17	21	19.00	
2014	3	704	16-Apr-14	3	Longfin Smelt	12	12	28	23.00	
2014	3	705	15-Apr-14	3	No Longfin Catch	0				
2014	3	706	15-Apr-14	3	Longfin Smelt	2	20	26	23.00	
2014	3	707	15-Apr-14	3	Longfin Smelt	1	16	16	16.00	
2014	3	711	14-Apr-14	3	No Longfin Catch	0				
2014	3	716	14-Apr-14	3	No Longfin Catch	0				
2014	3	718	14-Apr-14	3	No Longfin Catch	0				
2014	3	719	14-Apr-14	3	Longfin Smelt	4	17	21	18.25	
2014	3	720	14-Apr-14	3	Longfin Smelt	1	16	16	16.00	
2014	3	723	14-Apr-14	3	Longfin Smelt	1	15	15	15.00	
2014	3	724	14-Apr-14	2	No Longfin Catch	0				
2014	3	726	14-Apr-14	2	No Longfin Catch	0				
2014	3	809	14-Apr-14	3	Longfin Smelt	19	11	27	18.58	
2014	3	812	15-Apr-14	3*	No Longfin Catch	0				
2014	3	815	15-Apr-14	3	No Longfin Catch	0				
2014	3	901	14-Apr-14	3	Longfin Smelt	1	12	12	12.00	
2014	3	902	14-Apr-14	3	No Longfin Catch	0				
2014	3	906	15-Apr-14	3	No Longfin Catch	0				
2014	3	910	14-Apr-14	3	No Longfin Catch	0				
2014	3	912	14-Apr-14	3	No Longfin Catch	0				
2014	3	914	14-Apr-14	3	No Longfin Catch	0				
2014	3	915	14-Apr-14	3	No Longfin Catch	0				
2014	3	918	14-Apr-14	3	No Longfin Catch	0				
2014	3	919	15-Apr-14	3	No Longfin Catch	0				

Processing complete through 04/23/2014

\*Five minute tows

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

