

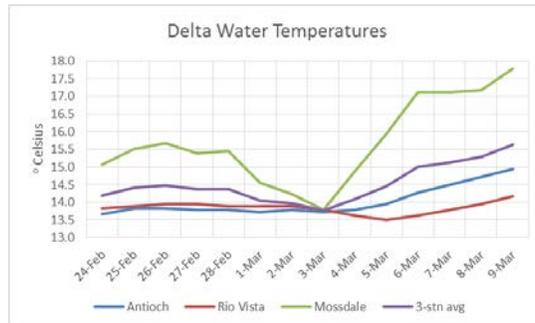
**Smelt Working Group  
Monday, March 10, 2014**

**Meeting Summary:**

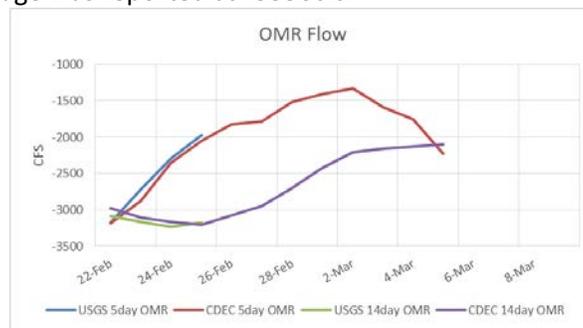
The Working Group agreed that given their present distribution, current salvage, and Delta conditions, the risk of entrainment of delta smelt remains low and therefore, the Working Group recommends that current conditions, including the reported projected operations, are adequately protective for delta smelt. 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 Working Group will continue to monitor salvage, turbidity, and other conditions and reconvene March 17.

**Reported Data:**

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



- **OMR flow:** USGS tidally averaged OMR flow 14-day and 5-day averages have been unavailable since February 25 (daily averages were reported on March 2 and 3). CDEC daily OMR flow has been unavailable since March 5. OMR Index Method 14-day average was reported as -3250cfs and the 5-day average was reported as -5550cfs.



- **Flow:** Sacramento River average daily flow for March 9 was 22,985 cfs and San Joaquin River average daily flow was 942 cfs. X2 calculation from CDEC was 71.29km. 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:**

3. Smelt Larval Survey #5 was in the field last week. Processing is ongoing with 32 stations' samples completed out of 44. Delta smelt larvae were collected for the first time this year. A total of eight delta smelt larvae ranging in size from 5-6 mm in length were reported from four stations (711, 716, 723, and 520). These stations are in the Cache Slough, Sacramento Deepwater Ship Channel, lower Sacramento River and confluence areas. A total of 349 longfin smelt larvae have been counted thus far from catch. Sizes ranged from 5-18 mm. SLS #6 is in the field next week.

Spring Kodiak Trawl #3 is in the field this week. Preliminary results for the southern and central Delta are expected before the end of the week.

20 mm Survey #1 and SLS 6 (the last SLS of the season) will be in the field next week.

Jersey Point sampling is continuing for the Service's Early Warning Study. Catch ranged from 2 to 15 delta smelt per day from March 3 through 9. Daily trawling is expected to continue through at least March 12, but potentially could continue daily for some period after that, due to the rain events that have resulted in increases in flow. The study is expected to run through April 15. Trawls are expected to be performed once per week 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/>.

#### **4. Salvage:**

No adult delta smelt or longfin smelt have been observed in salvage in WY2014 thus far. Young of the year longfin smelt (> 20 mm) were observed in salvage for four out of the last seven days. Longfin smelt < 20 mm were observed in salvage on March 3 and 5. Samples after that date are being processed or waiting identification verification.

Tracy Fish Collection Facility protocols have changed. Due to the continued issues with debris loads, they are cleaning the facility twice a day for a portion of the last week. During this last week, the bypass gate #4 failed and was closed for 18 hours.

Larval sampling at the SWP fish salvage facility has begun. Larval sampling at the CVP salvage facility has not begun. It was reported that Reclamation staff are awaiting the installation of a fume hood, 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>

#### **5. Expected Project Operations:**

Combined SWP/CVP exports are at 6800 cfs as of today. Operators indicated they were constrained by the OMR 14-day running average of -5000cfs, as cited in the RPAs for NMFS and the Service. Operators expect to be at this level of pumping until Wednesday, when pumping will be decreased slightly to remain within the 14-day -5000 cfs OMR flow limit. Operators indicated they were targeting a 5-day average of -6000 cfs OMR flow over the weekend (March 7, 8 and 9).

No precipitation is indicated for the next 7 to 10 days. The DCC gate is closed.

Operators also indicated they had increased the flows out of Goodwin on the Stanislaus River to meet the electrical conductivity standard at the San Joaquin River at Vernalis from 200 cfs to 450 cfs on March 7. Flows at Goodwin remain at 450 cfs.

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. DWR indicated that an additional request to the board is anticipated soon (potentially this week). This request would likely be 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 would continue to meet X2 at Collinsville (7,100 cfs on a 3-day running average) prescribed in the Board's Plan.

NMFS RPA IV.2.3 is in effect as of January 1, 2014, which restricts OMR flow to no more negative than -5,000 cfs.

**6. Particle Tracking Modeling:**

No PTM runs were requested for this week.

**7. Turbidity Modeling:**

No modeling runs were discussed this week.

**8. 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.

Index Method: Members expressed concern that the Service's letter to the Projects indicating approval to utilize this method did not reflect input from the Working Group, and that input was not requested from the Working Group pertaining to this specific request. Members indicated concerns that the Index Method will not reflect when OMR flows change abruptly (and for short duration), which is important information the members would like to see before making recommendations (and have historically been provided). In addition, some members questioned the usefulness of implementing a demonstration project during this year, which is characterized by extreme drought conditions

The Working Group discussed potential pumping and OMR flow levels if RPA restrictions were not in place (ie: OMR limit of no more negative than -5000 cfs). Operators provided a rough estimation that pumping could approximate 8000 cfs with a corresponding OMR flow of approximately -7000 cfs and last for approximately a week, before additional Board standards would begin to constrain operations.

Members discussed briefly that the Real-time Drought Operations Team (RTDOT) met last Friday and agreed to allow the Projects to target the 5-day OMR flow of -6250 cfs over the weekend. This group also discussed the potential request to the Board of allowing operations to be constrained by the 7100 cfs Outflow instead of the 11,400 cfs limit currently in place.

The Working Group discussed the continued catch of delta smelt from the Jersey Point sampling. The members indicated spawning likely has occurred in the lower San Joaquin River, and that larvae are expected to show up either in the field surveys or in the larval sampling at the salvage facilities in the coming weeks. Some members expressed their concern that we could see large numbers of larvae in larval salvage operations this year indicating the need for continued careful monitoring of salvage, distribution, and Delta conditions.

However, with Qwest hovering around zero and an Outflow greater than 20,000 cfs, the Working Group agreed there was no need to modify exports at this time to benefit delta or longfin smelt.

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

No update was provided.

The SWG will have the next meeting on March 17.

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

**Advice for week of March 10, 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 9, 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 (CVP is not sampling for larvae as of March 10), and larvae have been detected almost daily since. 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. 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 February and probably in 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 fifth Smelt Larva Survey (SLS) of 2014 was conducted March 3-5. The larva distribution criterion (#3 above) was met during survey 3, but distribution diminished by survey 4 and again during survey 5 (cf., Table 1 and Basis for Advice #s 3 & 4 above). Except for 1 station in the lower San Joaquin River channel, larva densities remained low during survey 5. Longfin Smelt larvae were detected at only 4 central and south Delta stations in survey 5, indicating low risk of entrainment.

5. The fifth SLS detected a single Longfin Smelt larvae at station 716 (and 2 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 a export pumping limit of 50 cfs as a 7-day mean. The SWG provides advice because larval density exceed the criterion. Since early February Barker Slough exports have remained below 40 cfs.

**Current conditions:** On February 27 outflow began to increase for the second time in February and reached more than 25,935 cfs on March 3 before dropping to 21,275 on March 9. X2 dropped to about 72 on March 9. Combined State and federal export reached 6,800 cfs on March 9 and will remain at this level for a few days prior to a planned drop; last night's rainfall in the upper Sacramento River is expected to result in a pulse of water reaching the Estuary late this week. Qwest was positive throughout February, jumped from < 2,000 cfs to > 6,000 cfs in early March and then dropped to slightly negative March 9. OMR index was trending less negative after February 26, but is currently being targeted at -5,000 cfs.

**Summary of Risk:** Strong positive Qwest flows February 10-11 and moderate positive flows March 1 - 3 appeared to reduce larva detections and densities in the central and south Delta (c.f. survey 3-5 results), thus lowering risk of entrainment. Current export rates increase potential risk of entrainment but few larvae remain vulnerable, so 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 since early February with only a slight increase in late February and early March. This suggests limited additional spawning in the central or south Delta. The small to modest numbers of larvae collected in the central and south Delta support this conclusion. Longfin Smelt larvae were collected in low densities at only 4 of 12 central and south Delta locations. Even though the current and predicted exports will result in an OMR targeting -5,000 cfs, 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 Smelt Larva Survey, Survey 5.

Study Year	Suney #	SLS Station	Sample Status	Species	Smelt Catch	MinOfLength	MaxOfLength	AvgOfLength
2014	5	340	Not yet processed					
2014	5	342	Not yet processed					
2014	5	343	Not yet processed					
2014	5	344	Not yet processed					
2014	5	345	Not yet processed					
2014	5	346	Not yet processed					
2014	5	347	Not yet processed					
2014	5	348	Not yet processed					
2014	5	349	Not yet processed					
2014	5	405	Not yet processed					
2014	5	411	Not yet processed					
2014	5	418	Processed	Longfin Smelt	14	6	10	7.6
2014	5	501	Processed	Longfin Smelt	31	7	12	8.9
2014	5	504	Not yet processed					
2014	5	508	Processed	Longfin Smelt	129	6	18	8.9
2014	5	513	Processed	Longfin Smelt	11	6	12	8.7
2014	5	519	Processed	Longfin Smelt	23	6	10	7.8
2014	5	520	Processed	Longfin Smelt	26	6	12	8.4
2014	5	520	Processed	Delta Smelt	1	5	5	5.0
2014	5	602	Processed	Longfin Smelt	9	7	10	8.8
2014	5	606	Processed	Longfin Smelt	5	7	11	9.0
2014	5	609	Processed	Longfin Smelt	5	7	15	9.8
2014	5	610	Processed	Longfin Smelt	4	5	9	6.5
2014	5	703	Processed	Longfin Smelt	5	7	10	8.8
2014	5	704	Processed	Longfin Smelt	3	8	12	10.0
2014	5	705	Processed	Longfin Smelt	6	7	11	9.0
2014	5	706	Processed	Longfin Smelt	2	6	8	7.0
2014	5	707	Processed		No Smelt Catch			
2014	5	711	Processed	Delta Smelt	2	6	6	6.0
2014	5	716	Processed	Delta Smelt	1	5	5	5.0
2014	5	716	Processed	Longfin Smelt	1	10	10	10.0
2014	5	723	Processed	Longfin Smelt	2	8	14	11.0
2014	5	723	Processed	Delta Smelt	4	5	6	5.5
2014	5	801	Processed	Longfin Smelt	21	5	12	8.5
2014	5	804	Processed	Longfin Smelt	4	6	6	6.0
2014	5	809	Processed	Longfin Smelt	28	6	17	10.5
2014	5	812	Processed	Longfin Smelt	8	6	16	9.8
2014	5	815	Processed	Longfin Smelt	2	10	11	10.5
2014	5	901	Processed	Longfin Smelt	10	6	14	9.2
2014	5	902	Processed		No Smelt Catch			
2014	5	906	Processed		No Smelt Catch			
2014	5	910	Processed		No Smelt Catch			
2014	5	912	Processed		No Smelt Catch			
2014	5	914	Processed		No Smelt Catch			
2014	5	915	Processed		No Smelt Catch			
2014	5	918	Processed		No Smelt Catch			
2014	5	919	Processed		No Smelt Catch			

SWP ITP Criteria Stations

Processing is complete through 3/7/14.

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

