

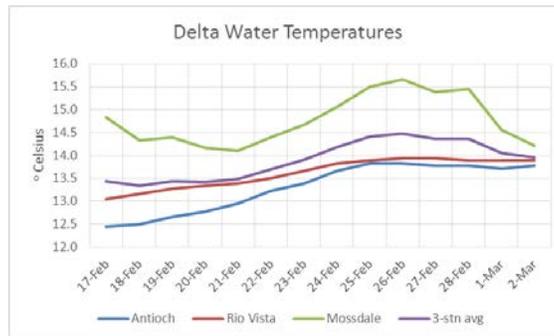
**Smelt Working Group
Monday, March 3, 2014**

Meeting Summary:

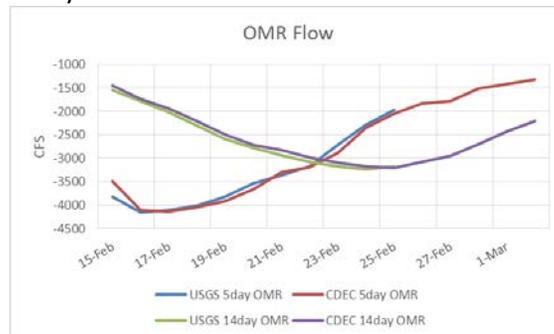
The Working Group agreed that given their present distribution, current salvage, and Delta conditions, the risk of entrainment of delta smelt remains low and therefore, the Working Group recommends that no change in projected operations is necessary to adequately protect delta smelt from entrainment. 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 10.

Reported Data:

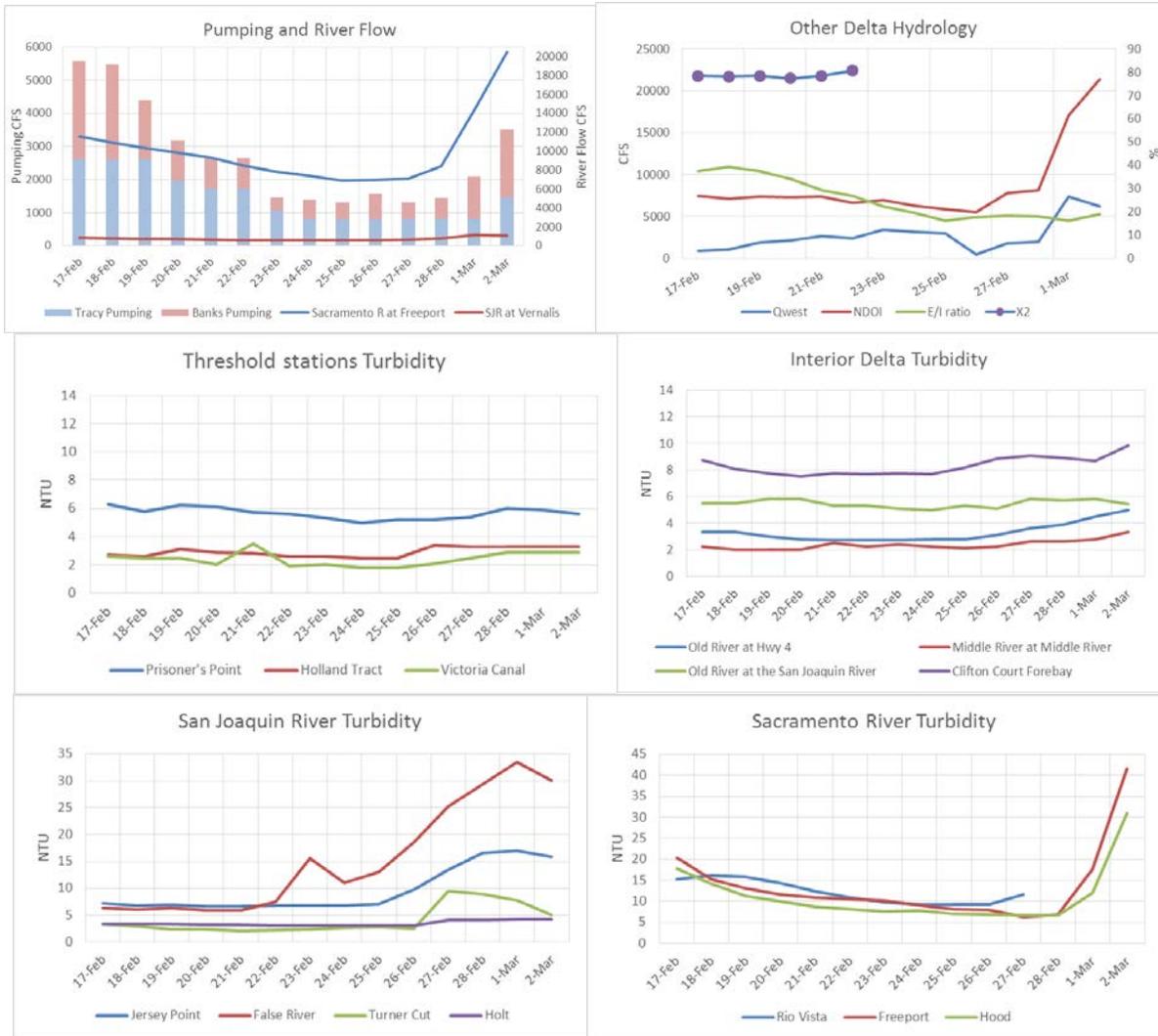
1. **Current environmental data:**
 - **Water temperatures:**



- **OMR flow:** USGS tidally averaged OMR flow has been unavailable since February 25. CDEC daily OMR flow as of March 2 was -1264 cfs, while the 5-day and 14-day average flows were -1331 cfs and -2214 cfs, respectively..



- **Flow:** Sacramento River average daily flow for March 2 was 20,457 cfs and San Joaquin River average daily flow was 1088 cfs. X2 calculation from CDEC was upstream of Collinsville (81km) as of February 23. 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 #4 was in the field the week of February 17. Processing is ongoing with 35 stations completed out of 44. No delta smelt larvae have been detected so far. A total of 646 longfin smelt larvae have been counted thus far from catch. Sizes ranged from 4-17 mm with the average as 7.5 mm. Stations process thus far include everything upstream of the confluence, and downstream stations up to Carquinez Strait. SLS #5 is in the field this week.

Spring Kodiak Trawl #3 is in the field the week of March 10. 20 mm Survey #1 and SLS # 6 are both the week of March 17.

Jersey Point sampling is continuing for the Service's Early Warning Study. Although catch was low on February 25 (two delta smelt), catch increased to 16 fish on February 27. Catch on subsequent days has decreased (three fish on Feb 28, six fish on March 1, and three fish on March 2). Trawling will continue daily through March 12, unless conditions warrant an early stop for this segment. 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,

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. Young of the year longfin smelt (> 20 mm) were observed in salvage on February 28. Longfin smelt < 20 mm were observed in salvage from February 24 through 26. Samples from February 27 on are being processed or waiting identification verification.

Tracy Fish Collection Facility protocols were reported to have returned to normal operations as of February 26 through March 2.

Larval sampling at the SWP fish salvage facility has begun. The status of larval sampling at the CVP salvage facility is unknown at this time. CVP staff are to update the group later this week.

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 4600 cfs as of today. Operators indicated they were constrained by the 14-day running average for the Export:Inflow ratio. Operators expect to be at this level of pumping for 5-7 days, although SWP operators indicated they will be adjusting their pumping as the E:I adjusts. The precipitation forecast is indicating some rain on Wednesday and Thursday of this week, but dry otherwise. 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 (3-day running average) 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.

Although not presently controlling operations, 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.

5. Particle Tracking Modeling:

No PTM runs were requested for this week.

6. Turbidity Modeling:

No modeling runs were discussed this week.

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.

Some members pointed out that even with a weakly negative OMR (as we currently have), delta smelt in the southern side of the San Joaquin River at Jersey could end up in the southern Delta. The Service’s more recent catches with the Early Warning Study show that most delta smelt are being caught in the northern lane of the San Joaquin River. Members indicated that as OMR adjusts to the increased pumping, we could see increased risk of salvage. However, with a moderately positive Qwest, the Working Group agreed there was no need to modify exports at this time to benefit delta or longfin smelt.

8. Framework for providing advice to the Service:

No update was provided.

The SWG will have the next meeting on March 10.

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

Advice for week of March 3, 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 the larva density increased substantially at station 716 (see #5 below in Discussion of Criteria).

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 (≥ 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 2, 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.
2. December Fall Midwater Trawl and December and both January and February Bay Study sampling 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 fourth Smelt Larva Survey (SLS) of 2014 was conducted February 17-19. The larva distribution criterion (#3 above) was met during survey 3, but distribution diminished by survey 4 (cf., Table 1 and Basis for Advice #s 3 & 4 above). Except for 2 stations in the lower San Joaquin River channel, larva densities remained low during survey 4.

5. The fourth SLS once again detected Longfin Smelt larvae at station 716, so export restriction advice continues (Table 1). Water year 2014 has been classified as critically dry and 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: Net Delta outflow peaked February 11 at 26,920 and then declined to below 6,000 cfs by February 24. On February 27 outflow began to increase and reached more than 21,000cfs on March 2. X2 dropped to 78.3 on February 17, but increased thereafter. Combined State and federal export reached 4,600 cfs on March 3. Qwest has been positive throughout February and jumped from < 2,000 cfs to > 6,000 cfs on March 1 and 2. OMR has been trending less negative after February 26, and is currently less negative than – 2,000 cfs.

Summary of Risk: Risk of entrainment for larvae in the central and south Delta was reduced by strong positive Qwest flows February 10-11 and moderate positive flows March 1 and 2. In February, positive Qwest appeared to reduce larva detections in the central and south Delta thus lowering risk of entrainment, and those in early March likely reduced subsequent densities somewhat as well. Current export rates suggest a low risk of entrainment and few larvae remain vulnerable. There was no discussion of increased exports in the near future. Current exports maintain a low risk of entrainment for any additional larvae hatching currently.

Substantial numbers of larvae in Barker Slough remain at risk, and 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. This suggests limited spawning in the central or south Delta. The small to modest numbers of larvae collected in the central and south Delta support this conclusion, though it is too early in the hatching season to predict this will be the case throughout. The current and predicted exports will result in an OMR much less negative than -2,500 cfs. Qwest has recently been of sufficient magnitude to move larvae downstream. These circumstances all support the conclusion of low risk of entrainment.

Table 1. Longfin Smelt catch per station from 2014 Smelt Larva Survey, Survey 4.

Study Year	Survey #	SLS Station	Sample Status	Species	Smelt Catch	MinOfLength	MaxOfLength	AvgOfLength
2014	4	340	Not yet processed					
2014	4	342	Not yet processed					
2014	4	343	Not yet processed					
2014	4	344	Not yet processed					
2014	4	345	Not yet processed					
2014	4	346	Not yet processed					
2014	4	347	Not yet processed					
2014	4	348	Not yet processed					
2014	4	349	Not yet processed					
2014	4	405	Not yet processed					
2014	4	411	Not yet processed					
2014	4	418	Not yet processed					
2014	4	501	Not yet processed					
2014	4	504	Not yet processed					
2014	4	508	Not yet processed					
2014	4	513	Processed	Longfin Smelt	33	5	10	7.4
2014	4	519	Not yet processed					
2014	4	520	Not yet processed					
2014	4	602	Not yet processed					
2014	4	606	Not yet processed					
2014	4	609	Not yet processed					
2014	4	610	Not yet processed					
2014	4	703	Processed	Longfin Smelt	18	6	14	7.8
2014	4	704	Processed	Longfin Smelt	30	5	11	7.1
2014	4	705	Processed	Longfin Smelt	15	7	13	8.9
2014	4	706	Processed	Longfin Smelt	23	5	7	6.2
2014	4	707	Processed	Longfin Smelt	21	5	10	6.2
2014	4	711	Processed		No Smelt Catch			
2014	4	716	Processed	Longfin Smelt	14	5	17	7.4
2014	4	723	Processed	Longfin Smelt	31	4	12	6.0
2014	4	801	Not yet processed					
2014	4	804	Processed	Longfin Smelt	3	7	8	7.7
2014	4	809	Processed	Longfin Smelt	64	6	13	8.1
2014	4	812	Processed	Longfin Smelt	15	6	12	8.5
2014	4	815	Processed	Longfin Smelt	4	7	10	8.3
2014	4	901	Processed	Longfin Smelt	2	6	8	7.0
2014	4	902	Processed	Longfin Smelt	4	7	10	8.5
2014	4	906	Processed		No Smelt Catch			
2014	4	910	Processed		No Smelt Catch			
2014	4	912	Processed		No Smelt Catch			
2014	4	914	Processed		No Smelt Catch			
2014	4	915	Processed		No Smelt Catch			
2014	4	918	Processed		No Smelt Catch			
2014	4	919	Processed		No Smelt Catch			

Processing is complete through 02/21/14

SWP ITP Criteria Stations

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

