

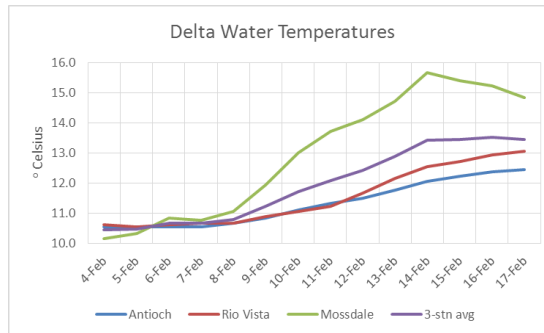
**Smelt Working Group
Tuesday, February 18, 2014**

Meeting Summary:

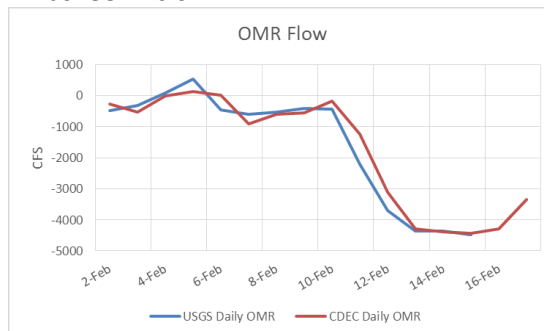
The Working Group agreed that given their present distribution, current salvage, and Delta conditions, the risk of entrainment of delta smelt remains low and therefore, the Working Group recommends that no change in projected operations is necessary to adequately protect delta smelt from entrainment. 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 February 24.

Reported Data:

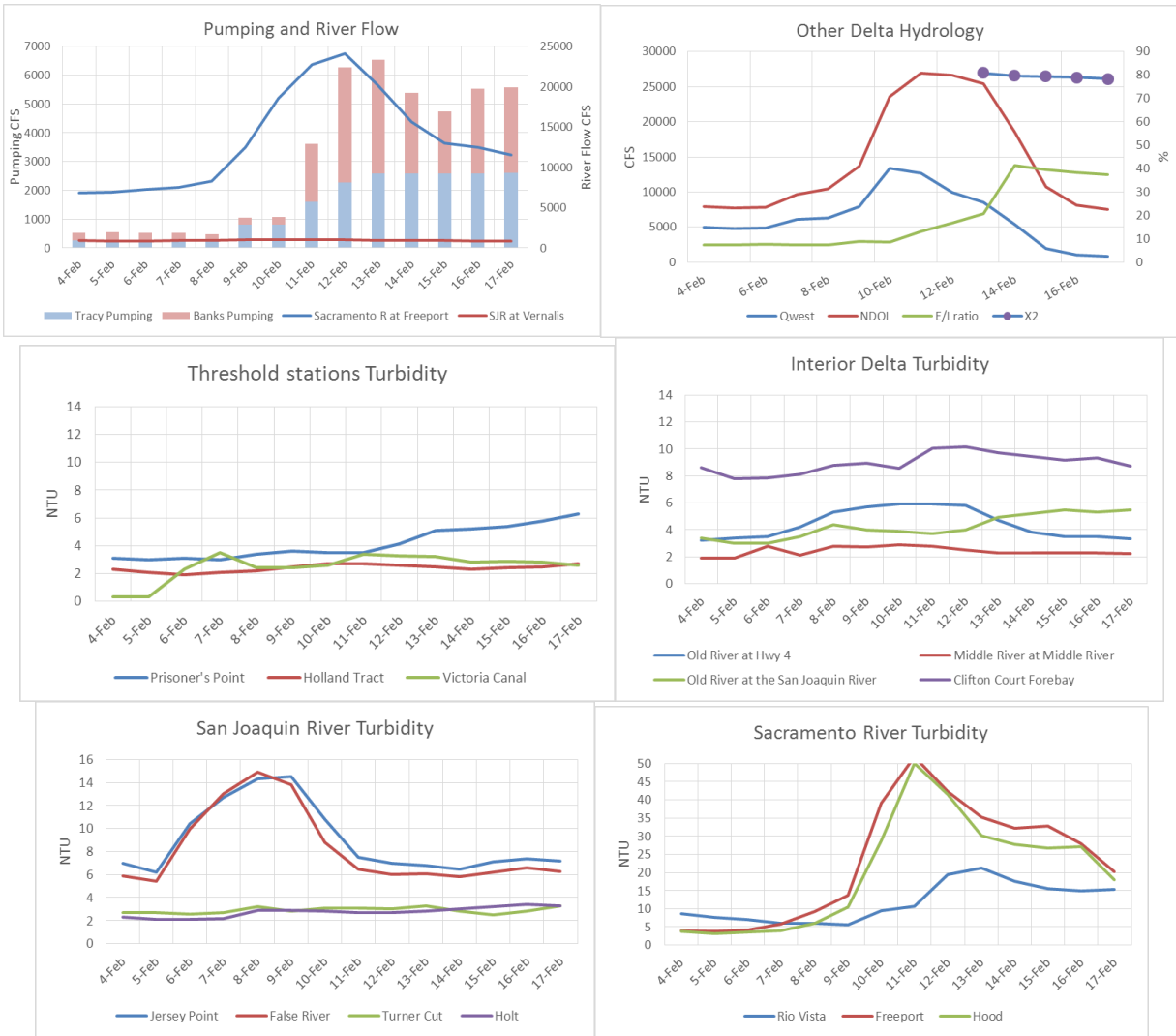
1. **Current environmental data:**
 - **Water temperatures:**



- **OMR flow:** USGS tidally averaged daily OMR flow on February 15 was -4490 cfs. CDEC daily OMR flow as of February 17 was -3341 cfs.



- **Flow:** Sacramento River average daily flow for February 17 was 11579 cfs and San Joaquin River average daily flow was 846 cfs. X2 calculation from CDEC was 78.3 km as of yesterday. 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 is in the field this week. SLS #3 was in the field the week of February 3. Processing is ongoing with 37 out of the 44 stations processed. Complicating the processing is the large catch of herring that occurred during that week. No delta smelt larvae were collected. A total of 3056 longfin smelt larvae have been counted thus far from catch from 30 stations. Sizes ranged from 5-12 mm. The highest density of catch was in the Sacramento River stations.

Spring Kodiak Trawl #2 was in the field last week. A total of 55 adult delta smelt were collected, with sizes ranging from 55-84 mm. All 32 females were in prespawn condition, while 4 of the males caught were ripe. Station 609 (Montezuma Slough) had the highest density.

Jersey Point sampling has been ongoing daily for the Service's Early Warning Study. Catch has dropped off since February 6 (24 delta smelt) to a few fish each day (as of yesterday). In response to queries from Working Group members last week, the Service provided additional details regarding study protocols. The current end date for the study is February 23.

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 delta smelt or longfin smelt have been observed in salvage in WY2014 thus far.

Tracy Fish Collection Facility is experiencing high debris load (vegetation) and has shut down the first two bypass gates, leaving the last two gates open for operation. Bob Fujimura provided the group with a detailed description of TFCF operating status by e-mail prior to the meeting. The Working Group assumes this lowers the salvage efficiency of the facility, although a current efficiency for the facility is unknown. Service staff will follow up with USBR regarding debris effects on operations efficiency. It was reported after the call that SWP Skinner facility operations were not being hampered by debris.

The initiation of larval sampling at the facilities was briefly discussed. Last year larval sampling began when the first spent female was collected. The Working Group will plan to discuss larval sampling in more detail during the next meeting.

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 expected to be approximately 3500 cfs starting February 20, and are expected to drop further as Delta flows recede. The precipitation forecast is dry through the end of the month. Operators estimated exports to be controlled by the Delta Outflow standard for February (7100 cfs Outflow). 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 February Outflow standard of 7100 cfs, and increase pumping above the 1500 cfs included in the TUC petition.

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.

Operators estimated that by February 20, OMR would be approximately -3000 cfs. Working Group members expressed concern at the decrease in salvage efficiency this week. Members expressed concern that given possibly poor salvage efficiency and low population abundance levels, some delta smelt may have passed through the facilities undetected, or may pass through in the very near future. Members discussed that greater densities of delta smelt in the lower San Joaquin River at Jersey Point than in the south Delta are likely. Since catch has dropped at Jersey Point (since the initial catch of 24 on February 6), members noted that additional movement into either Old or Middle Rivers from the mainstem is less likely. The possibility that delta smelt might have avoided these two corridors altogether (due to low turbidity levels) and chose to remain in the mainstem or move into the Mokelumne River was a

possibility. The Working Group agreed there was no need to modify exports at this time to benefit delta or longfin smelt, due to the results of surveys and hydrology.

Some members requested the Service consider future triggers based on the catch from the Early Warning Study.

8. Framework for providing advice to the Service:

Service management anticipated providing an update this week to the Working Group.

The SWG will have the next meeting on February 24.

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

Advice for week of February 18, 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 February 16, 2014, no Longfin Smelt have not been observed in salvage 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 third Smelt Larva Survey (SLS) of 2014 was conducted February 3-5. The larva distribution criterion (#3 above) was met during survey 3 met (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.
5. The third 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 larvae 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 densities exceeded the criterion and recent exports have surpassed the export target. Since then Barker Slough exports declined sharply from 58 cfs January 30 to 21 cfs February 1.

Current conditions: Recent net Delta outflow peaked February 11 at 26,920 and has been declining since. As of February 17 it returned to 7,469 cfs. X2 dropped to 78.3 on February 17. Combined State and federal export ramped up to about 5,500 cfs on February 12 and have remained at that level, but will drop in parallel with outflow. Qwest was briefly strongly positive on February 10 and 11th at 13,420 and 12,633 cfs, respectively; it has declined steadily since then to 841 on February 17th. OMR became progressively more negative after February 11th, reaching about -4,500 February 13 and remaining at that level through the 16th, before turning slightly more positive on the 17th.

Summary of Risk: Risk of entrainment for larvae in the central and south Delta was reduced last week by strong positive Qwest flows, which likely moved many westward away from risk of entrainment. Though current export rates suggest a moderate risk of entrainment, few larvae are expected to remain vulnerable and exports are planned to drop by 1,000 cfs in each of the next 2 days, reducing risk substantially for any hatching currently or in the near future.

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. 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 -3,800 cfs. Currently, X2 located in the lower Sacramento and San Joaquin rivers, which suggest that some adult Longfin Smelt might move into the central and south

Delta to spawn. 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 3.

Study Year	Survey #	SLS Station	Sample Status	Species	Smelt Catch	MinOfLength	MaxOfLength	AvgOfLength
2014	3	340	Not yet processed					
2014	3	342	Not yet processed					
2014	3	343	Not yet processed					
2014	3	344	Not yet processed					
2014	3	345	Processed		No Smelt Catch			
2014	3	346	Processed		No Smelt Catch			
2014	3	347	Not yet processed					
2014	3	348	Processed		No Smelt Catch			
2014	3	349	Processed	Longfin Smelt	1	7	7	7
2014	3	405	Not yet processed					
2014	3	411	Not yet processed					
2014	3	418	Processed	Longfin Smelt	85	6	11	7.44
2014	3	501	Processed	Longfin Smelt	71	6	10	7.5
2014	3	504	Processed	Longfin Smelt	361	6	9	7.5
2014	3	508	Processed	Longfin Smelt	37	5	11	7.7
2014	3	513	Processed	Longfin Smelt	105	6	11	8.1
2014	3	519	Processed	Longfin Smelt	86	6	9	7.4
2014	3	520	Processed	Longfin Smelt	33	6	9	7.4
2014	3	602	Processed	Longfin Smelt	77	6	11	7.8
2014	3	606	Processed	Longfin Smelt	55	7	11	7.7
2014	3	609	Processed	Longfin Smelt	44	6	10	7.6
2014	3	610	Processed	Longfin Smelt	6	7	10	8.5
2014	3	703	Processed	Longfin Smelt	45	6	9	7.4
2014	3	704	Processed	Longfin Smelt	329	6	10	7.7
2014	3	705	Processed	Longfin Smelt	195	6	9	7.3
2014	3	706	Processed	Longfin Smelt	397	6	11	7.8
2014	3	707	Processed	Longfin Smelt	663	5	9	7.2
2014	3	711	Processed	Longfin Smelt	201	6	9	7.5
2014	3	716	Processed	Longfin Smelt	50	5	9	6.2
2014	3	723	Processed	Longfin Smelt	25	5	10	6.4
2014	3	801	Processed	Longfin Smelt	47	6	10	7.2
2014	3	804	Processed	Longfin Smelt	18	6	8	7.2
2014	3	809	Processed	Longfin Smelt	79	5	12	7.0
2014	3	812	Processed	Longfin Smelt	15	6	8	6.7
2014	3	815	Processed	Longfin Smelt	8	7	10	8.6
2014	3	901	Processed	Longfin Smelt	9	6	8	6.7
2014	3	902	Processed	Longfin Smelt	1	8	8	8.0
2014	3	906	Processed	Longfin Smelt	4	8	9	8.8
2014	3	910	Processed		No Smelt Catch			
2014	3	912	Processed		No Smelt Catch			
2014	3	914	Processed	Longfin Smelt	1	9	9	9.0
2014	3	915	Processed	Longfin Smelt	8	8	12	9.1
2014	3	918	Processed		No Smelt Catch			
2014	3	919	Processed		No Smelt Catch			

Processing is complete through 2/14/14.

SWP ITP Criteria Stations

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

