

SMELT WORKING GROUP

Tuesday, May 26, 2015

Meeting Summary:

The Working Group reviewed the recent survey data, current salvage, and Delta conditions. Members indicated Delta Smelt had a low risk of entrainment for the OMR flow range of -1250 to -2000 cfs.

The Working Group is following guidance for entrainment protections from both Action 2 (adult Delta Smelt) and Action 3 (juvenile Delta Smelt).

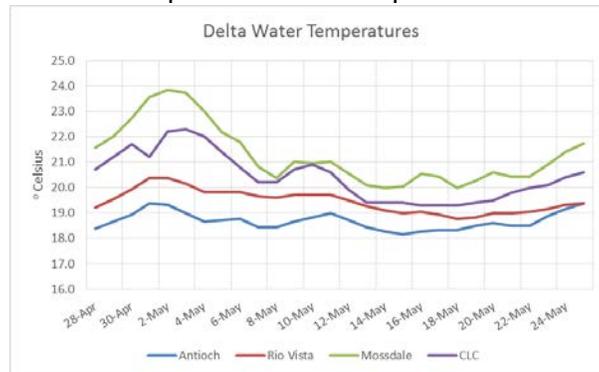
The Working Group agreed that given their present distribution, existing conditions were sufficient to protect longfin smelt from entrainment in the southern Delta.

The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, June 1, 2015 at 10 am.

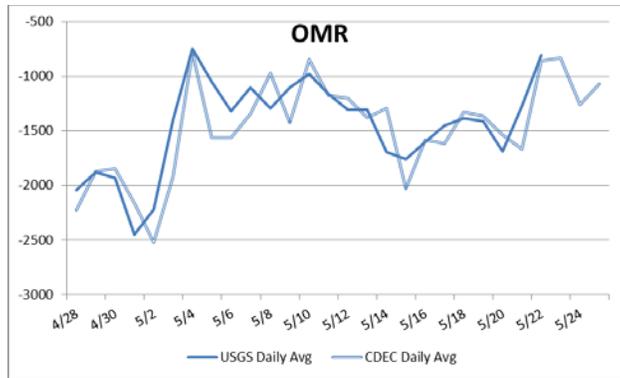
Reported Data:

1. Current environmental data:

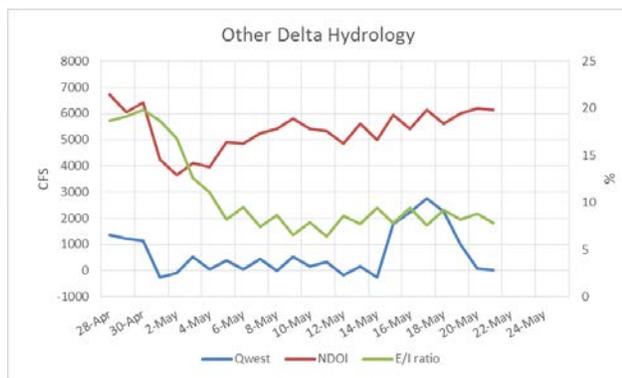
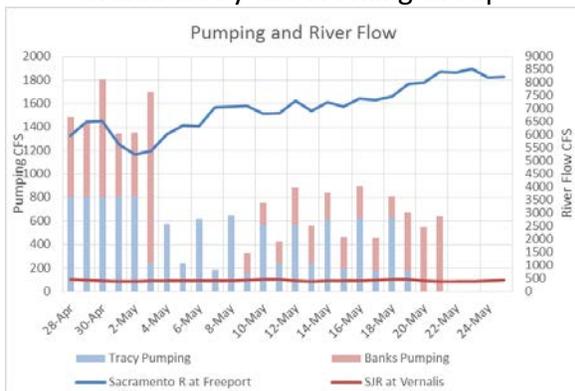
- Since February 3, it has been warm enough for Delta Smelt to spawn throughout much, or all of, the Delta. Water temperatures since April 28 are as follows:



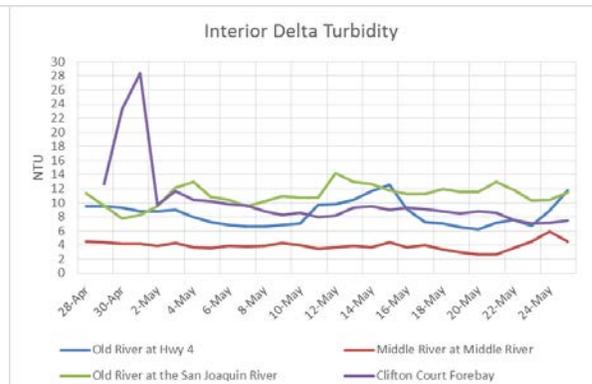
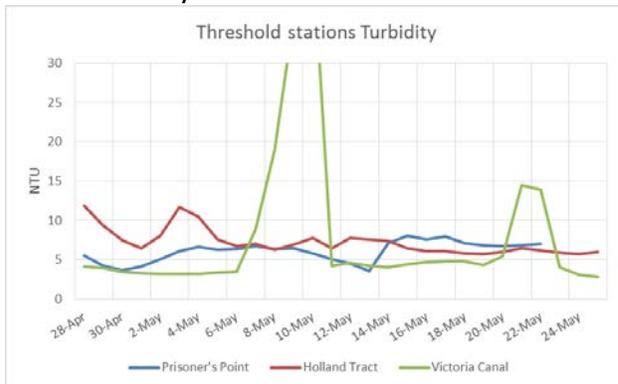
- OMR Flow: USGS tidally-averaged daily, 5-day, and 14-day average OMR flow for May 22 was -807, -1330, and -1352 cfs, respectively. CDEC daily, 5-day average, and 14-day average OMR flow as of May 25 was -1070, -1138, and -1358 cfs, respectively.

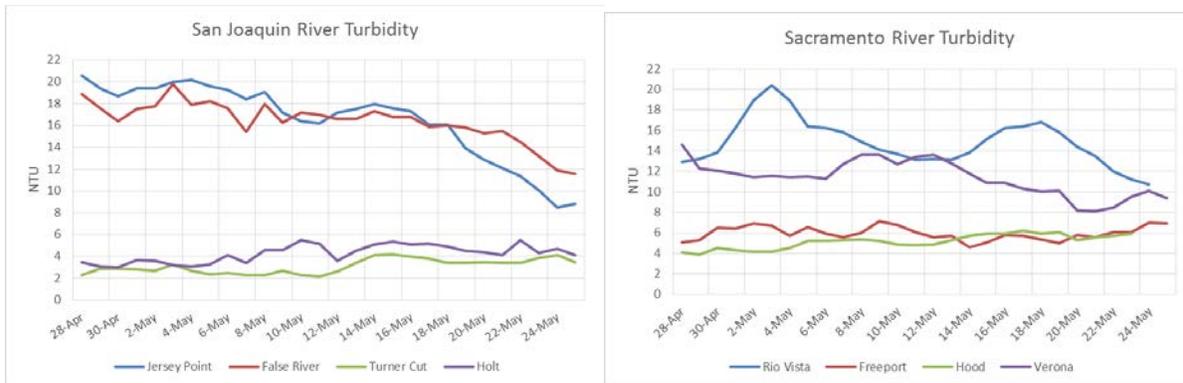


- River Flows: Sacramento River inflow is 8228 cfs and San Joaquin River is 434 cfs. X2 calculation from CDEC has been upstream of Collinsville since March 9. The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group



- Turbidity:





2. Delta Fish Monitoring:

The 2014 Fall Midwater Trawl Annual Index for Delta Smelt is 9. This is the lowest reported fall index since the beginning of this survey in 1967, and approximately one half of the previous lowest indices of 17 (2009) and 18 (2013).

The Service's Early Warning Survey concluded sampling for the season on March 31.

Spring Kodiak Trawl #5 was in the field the week of May 4. This is the final SKT of the season. Eight Delta Smelt were collected; five adults from stations 719 and 716 and three juveniles from station 719.

20-mm Survey #5 was in the field the week of May 11-14. Ninety percent of samples have been processed. A total of 38 Delta Smelt have been collected so far (1 from station 914, 1 from station 707, 1 from station 716, and 35 from 719). Sizes ranged from 12 to 36 mm. 20-mm Survey #6 is in the field starting today.

Summer Townet Survey #1 is in the field starting June 1.

3. Salvage:

Delta Smelt adults have not been observed in salvage counts since February 21. The estimated cumulative seasonal total (CVP and SWP combined) for adult Delta Smelt salvage is still 68. No adult Longfin Smelt has been observed in salvage counts during WY 2015. No juvenile Delta Smelt > 20 mm were salvaged at either facility during the week of May 18 through May 24. The season total of juvenile Delta Smelt > 20 mm is four. A total of 24 juvenile Longfin Smelt > 20 mm were salvaged from May 18 through 24 at the SWP. No larval Delta Smelt (< 20 mm) were reported for either the CVP or SWP fish facilities.

4. Expected Project Operations:

Combined SWP/CVP exports today are approximately 800 cfs, with the 400 cfs CVP share being exported through the SWP today and tomorrow. Starting on Thursday, May 28, the CVP will begin pumping 800 cfs and on Friday, May 29 will be shut down. The SWP will begin pumping 400 cfs on Thursday and hold at that level, pending ongoing discussions regarding salinity standards and combined export levels. Operators indicated that they expect the OMR flow to be approximately -1300 cfs with the current level of combined exports, and -2000 cfs if combined exports can increase to 1500 cfs. Operators indicated that salinity levels are restraining exports to the current levels.

5. Delta Conditions Team:

The last Delta Conditions Team call occurred on April 17, 2015.

6. Assessment of Risk:

Background:

RPA Component 1: "Beginning in December of each year, the Service shall review data on flow, turbidity, salvage, and other parameters that have historically predicted the timing of Delta Smelt migration into the Delta. On an ongoing basis, and consistent with the parameters outlined... [in the BO]...the SWG shall recommend to the Service OMR flows that are expected to minimize entrainment of adult Delta Smelt" (page 280).

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 Working Group 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).

Incidental Take: The Service presented its updated WY2015 adult Delta Smelt ITL (196 fish) and early warning level (78 fish) at the January 12 SWG meeting. The January 9, 2015 reinitiation memo regarding these updated levels has been posted to the Bay-Delta FWO website (<http://www.fws.gov/sfbaydelta/>). The WY 2015 juvenile Delta Smelt ITL is 504, based on a WY 2014 FMWT index of 9.

Discussion:

The Working Group reviewed and discussed all relevant data from Delta flow and water quality monitoring, salvage, field surveys, and planned Project operations.

Three-station average water temperature surpassed 12^o C as of February 3, 2015. The Working Group is now looking to Action 3 of the Biological Opinion as well as Action 2 in framing their advice to the Service. The 3-station average water temperature as of May 25 was 20.2^o C.

Based on a review of the current survey data, salvage data, current Delta conditions and projected operations, the SWG indicated that OMR flows in the -1250 to -2000 cfs range would be expected to have a low risk of entrainment.

Members expressed difficulty in assigning an entrainment category given the uncertainty associated with the application of both salvage and survey data. The apparent very low young-of-the-year population level, as indicated by few detections and generally low catches to date in the 20-mm Survey data, has also manifested as few central and south Delta detections and limited salvage at the facilities. The current infrequent and low survey catch numbers and salvage numbers raise concerns about whether either measure can be confidently used to assess entrainment risk. It is an accepted assumption that the Delta Smelt population has become exceedingly low; however, the number of field survey samples has remained the same, which results in a decreased confidence in the survey's ability to accurately measure relative abundance and describe distribution at lower densities. The frequency and effort of sampling at the salvage facilities is far greater than any of the field surveys, and is therefore, arguably somewhat better at determining presence of Delta Smelt. However, most of the exports for the past week have gone through Banks where, suspected high predation losses within the forebay results in reduced confidence that Delta Smelt survive to be observed in salvage. Members indicated that at the current very low export levels, the hydrological pull into the south and central Delta from the facilities is likely very low as well, and this may be the best measure of risk.

Some members indicated continued support for a medium risk of entrainment due to this year's consistent detection of Delta Smelt in the central and southern Delta, and low confidence in sampling efficiency, although the overall agreement in risk of entrainment was low.

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Monday, June 1, 2015, or sooner, if conditions warrant.

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

Advice for week of May 26, 2015:

The Smelt Working Group does not have any Longfin Smelt-related advice based on recent information.

Barker Slough operations advice is not warranted at this time. The concern period for Barker Slough ended on 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 (≥ 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 20-mm 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 May 17, 2015, no age-1 or adult Longfin Smelt have been salvaged for the water year. The Longfin Smelt adult salvage threshold for advice is > 80 (see criterion in #1 above), which is based on a combined September through December Fall Midwater Trawl Longfin Smelt index of 16. No advice is warranted based on this criterion.
2. Early May sampling by Bay Study detected no age-1 or adult Longfin Smelt in the San Joaquin River and only one age-1 fish in the Sacramento River. No other detections were made in the San Joaquin River or south Delta in early May. Current distribution information does not indicate advice is warranted based on this criterion.
- 3 & 4. The Survey 5 20-mm Survey sampling was processed for central and south Delta stations (Table 1, Figure 1) and no Longfin Smelt were detected, so this suggests very low risk of entrainment (see Basis for Advice 2&3 above). Salvage of juvenile Longfin Smelt increased to 24 for the week of May 18 through 24 after none were salvaged the week prior and a peak salvage of 52 for the week of April 27 through May 3. The earlier increase was expected as south Delta water warmed; this last repeated salvage was not expected. South Delta temperatures appeared to surpass 22° C in early May and may have caused mortality or stimulated migration. If that was the case, then future salvage will be more limited.
5. Entrainment concern for Longfin Smelt larvae in Barker Slough ceased on March 31.

Current conditions: Sacramento River flow increased to about 8,500 cfs on the 22 and dropped to about 8,100 on the 24th. X2 remains well above 81. Qwest has been modestly positive for May 23-25th and will remain until a change in export levels. Federal exports ceased May 19th while repairs to the facility are conducted. State exports targeted a daily average of 800 cfs and will continue that target during the CVP shut-down beginning May 19 and continuing through May 27. SWP and CVP will begin discussions for increasing exports to a combine 1,500 cfs. No start date has been set. The OMR is expected to range between -1,300 and -1,400 cfs while

exports remain at 800 cfs, but will increase to about 2,000 cfs if total exports increase to 1,500 cfs.

Summary of Risk:

Risk of additional Longfin Smelt entrainment into the south Delta is very low. No larval or juvenile Longfin Smelt were detected in the central or south Delta during sample processing for 20mm Survey 5 tows. Two detections totaling a salvage of 24 occurred during May 18-24. This together with the limited number of Longfin Smelt detected in the central and south Delta in 20-mm Survey 4 and past temperatures in the 22°C range suggest few remain. Current conditions, particularly OMR index projected between -1,300 and -1,400 for the week and positive Qwest, indicate very little additional risk of entrainment for fish within the central Delta. The overall risk of entrainment remains very low.

Table 1. Longfin Smelt catches by station in 20-mm Survey 5 2015. Sample processing is incomplete.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length	
2015	5	323	13-May-15	1	No Longfin Catch	0				Susun Bay & West
2015	5	340	13-May-15	0	Not Yet Processed	0				
2015	5	342	13-May-15	0	Not Yet Processed	0				
2015	5	343	13-May-15	0	Not Yet Processed	0				
2015	5	344	13-May-15	3	No Longfin Catch	0				
2015	5	345	13-May-15	3	No Longfin Catch	0				
2015	5	346	13-May-15	0	Not Yet Processed	0				
2015	5	405	14-May-15	3	No Longfin Catch	0				
2015	5	411	14-May-15	3	No Longfin Catch	0				
2015	5	418	14-May-15	3	No Longfin Catch	0				
2015	5	501	12-May-15	3	No Longfin Catch	0				
2015	5	504	12-May-15	3	Longfin Smelt	1	33	33	33.00	
2015	5	519	12-May-15	3	No Longfin Catch	0				
2015	5	602	12-May-15	3	No Longfin Catch	0				
2015	5	606	12-May-15	3	Longfin Smelt	1	35	35	35.00	
2015	5	609	12-May-15	3	Longfin Smelt	1	31	31	31.00	
2015	5	610	12-May-15	3	Longfin Smelt	12	24	32	28.17	
2015	5	508	11-May-15	3	Longfin Smelt	2	33	33	33.00	Confluence
2015	5	513	11-May-15	3	No Longfin Catch	0				
2015	5	520	11-May-15	3	No Longfin Catch	0				
2015	5	801	11-May-15	3	No Longfin Catch	0				
2015	5	804	11-May-15	3	No Longfin Catch	0				Sac. River System
2015	5	703	11-May-15	3	No Longfin Catch	0				
2015	5	704	11-May-15	3	Longfin Smelt	10	24	37	28.70	
2015	5	705	12-May-15	3	Longfin Smelt	1	28	28	28.00	
2015	5	706	11-May-15	3	Longfin Smelt	14	20	27	24.14	
2015	5	707	12-May-15	3	Longfin Smelt	3	23	26	24.67	
2015	5	711	12-May-15	3	No Longfin Catch	0				
2015	5	716	13-May-15	3	No Longfin Catch	0				
2015	5	718	12-May-15	3	No Longfin Catch	0				
2015	5	719	13-May-15	3	No Longfin Catch	0				
2015	5	720	13-May-15	3	No Longfin Catch	0				
2015	5	723	13-May-15	3	No Longfin Catch	0				
2015	5	724	13-May-15	3	No Longfin Catch	0				
2015	5	726	13-May-15	3	No Longfin Catch	0				Central & South Delta
2015	5	809	11-May-15	3	No Longfin Catch	0				
2015	5	812*	12-May-15	3	No Longfin Catch	0				
2015	5	815	12-May-15	3	No Longfin Catch	0				
2015	5	901*	11-May-15	3	No Longfin Catch	0				
2015	5	902	11-May-15	3	No Longfin Catch	0				
2015	5	906	12-May-15	3	No Longfin Catch	0				
2015	5	910	11-May-15	3	No Longfin Catch	0				
2015	5	912	11-May-15	3	No Longfin Catch	0				
2015	5	914	11-May-15	3	No Longfin Catch	0				
2015	5	915	11-May-15	3	No Longfin Catch	0				
2015	5	918	11-May-15	3	No Longfin Catch	0				
2015	5	919	12-May-15	3	No Longfin Catch	0				

Processing complete through 5/22/2015

* Reduced tow time

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

