SMELT WORKING GROUP

Monday, June 1, 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).

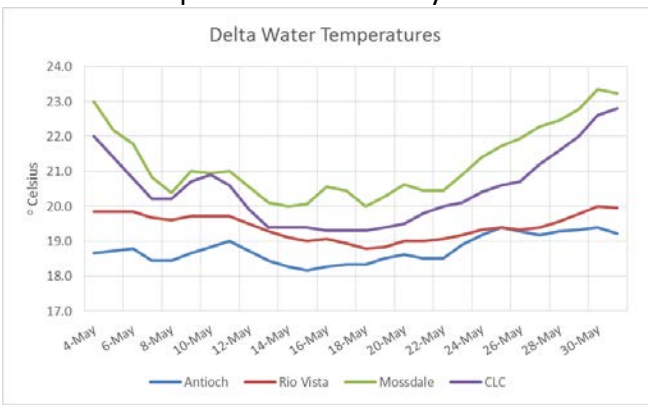
The Working Group agreed that given their present distribution, existing conditions were sufficient to protect longfin smelt from entrainment in the southern Delta.

The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, June 8, 2015 at 10 am.

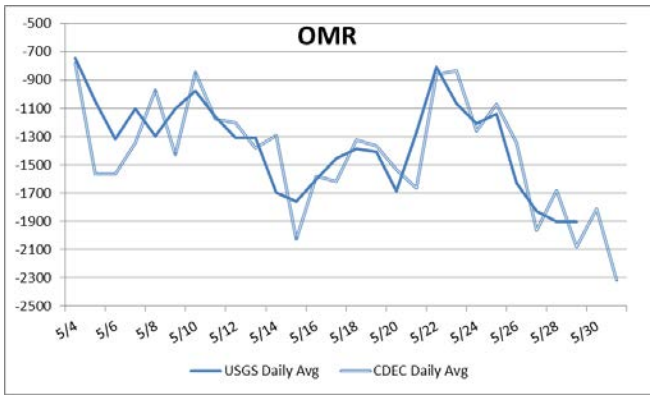
Reported Data:

1. **Current environmental data:**

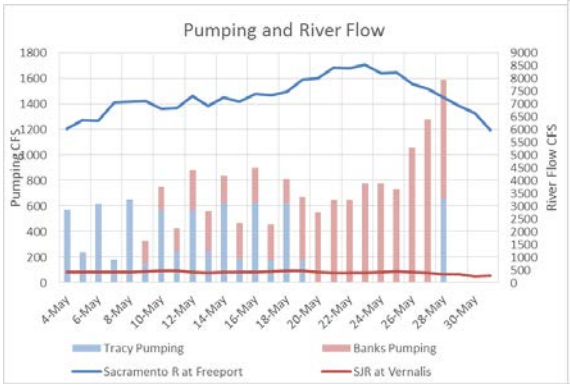
- Since February 3, it has been warm enough for Delta Smelt to spawn throughout much, or all of, the Delta. Water temperatures since May 4 are as follows:

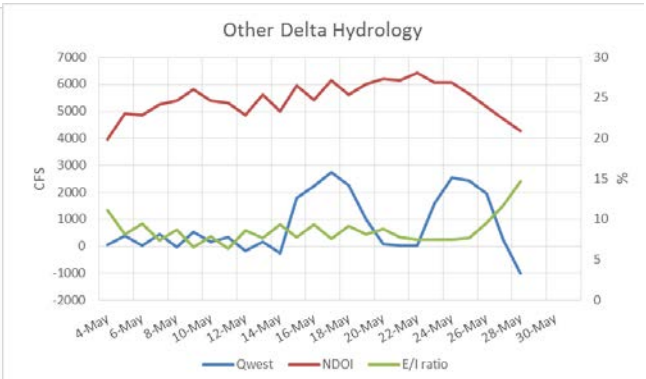


- OMR Flow: USGS tidally-averaged daily, 5-day, and 14-day average OMR flow for May 29 was -1900, -1680, and -1450 cfs, respectively. CDEC daily, 5-day average, and 14-day average OMR flow as of May 31 was –2319, -1971, and -1509 cfs, respectively.

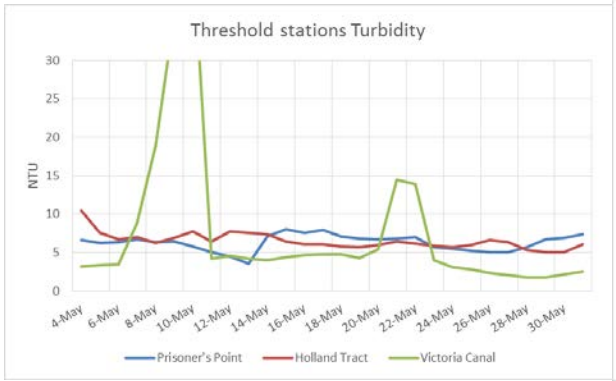


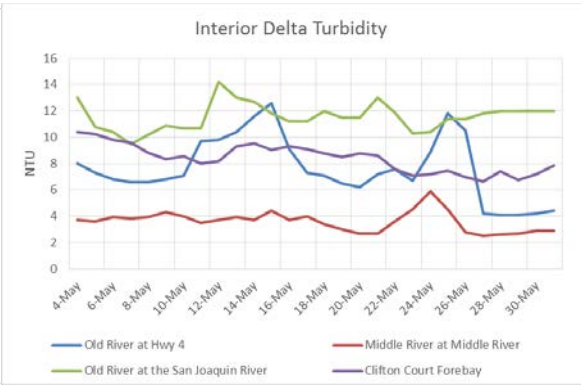
- River Flows: Sacramento River inflow is 5963 cfs and San Joaquin River is 280 cfs. X2 calculation from CDEC has been upstream of Collinsville since March 9. The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group

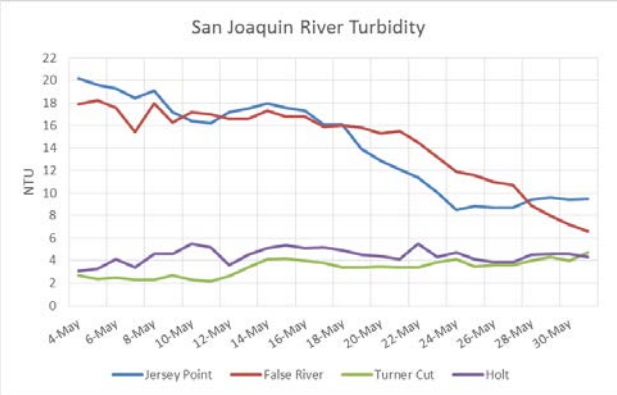


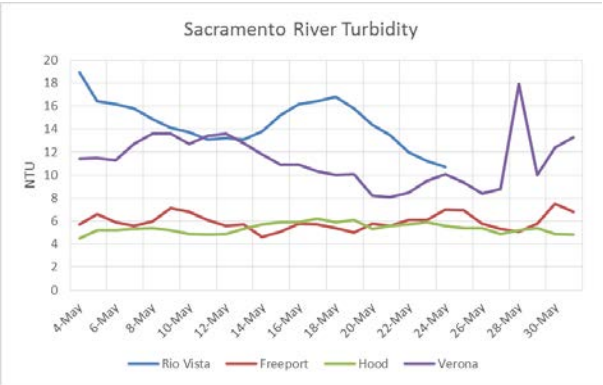


- Turbidity:









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 was 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 #6 was in the field last week. Processing is 23% complete. No Delta Smelt catch thus far in the south and central Delta. 20-mm Survey #7 is in the field starting June 8.

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

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 25 through May 31. The season total of juvenile Delta Smelt > 20 mm is four. A total of 10 juvenile Longfin Smelt > 20 mm were salvaged from May 25 through 31 at the SWP. No larval Delta Smelt or Longfin Smelt (< 20 mm) were reported for either the CVP or SWP fish facilities.

4. **Expected Project Operations:**

Combined SWP/CVP exports today are approximately 1200 cfs and 400 cfs tomorrow. The CVP is cycling daily between 800 and off. Operators indicated that they expect the OMR flow to be approximately -1300 to -1600 cfs with the current levels of combined exports. Operators indicated that increased reservoir releases may become necessary this week to maintain Delta water quality standards.

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 31 was 20.8^{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 maintained last week's advice for entrainment risk discussion on the relatively positive OMR values for the week of -1300 to -1600cfs, the continued lack of Delta Smelt observed in both salvage and the larval fish sampling at the salvage facilities, and the lack of Delta Smelt in the south and central Delta stations in 20-mm Survey #6. It was noted that the processing of20-mm Survey #6 samples is ongoing, and therefore, not all relative abundance and distribution data from this survey is available. .

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Monday, June 8, 2015, or sooner, if conditions warrant.

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

Advice for week of June 1, 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 20-mm Survey 6 sampling was mostly processed for central and south Delta stations (Table 1, Figure 1) and no Longfin Smelt were detected. This suggests very low risk of entrainment (see Basis for Advice 2&3 above). Salvage of juvenile Longfin Smelt dropped to 10 for the week of May 25-31. This after an increase to 24 for the week of May 18 through 24 and none salvaged the week prior. A peak salvage of 52 occurred the week of April 27 through May 3. We expected the late April increase because of increased water temperatures (>22° C) in south Delta; these more recent repeated salvage events were not expected. South Delta temperatures again increased above 22° C this past weekend. This is expected to stimulate Longfin Smelt emigration and result in reduced salvage in the future.

5. Entrainment concern for Longfin Smelt larvae in Barker Slough ceased on March 31.

Current conditions: Sacramento River flow remained about 6,100 cfs on May 31. X2 remains well above 81. Qwest was +1,557 on May 30, but is expected to go slightly negative later in the week with the closing of the cross channel gate today and Delta filling. Federal exports are cycling on at 800 cfs today and off tomorrow. State exports increased to 900 over the weekend but will drop to 400 today and remain steady. Increased river flow will be needed to reach TUCP monthly outflow criteria in light of current levels and expected within-Delta increases in gross channel depletion later this month. The OMR is expected to range between -1,300 and -1,600 cfs based on federal export level.

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 6 tows. Two detections totaling a salvage of 10 occurred during May 25-31. 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 -1,400 and -1,600 for the week and positive to slightly negative 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 6 2015. Sample processing is incomplete.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length	
2015	6	323		0	Not Yet Processed	0				Suisun Bay & West
2015	6	340		0	Not Yet Processed	0				
2015	6	342		0	Not Yet Processed	0				
2015	6	343		0	Not Yet Processed	0				
2015	6	344		0	Not Yet Processed	0				
2015	6	345		0	Not Yet Processed	0				
2015	6	346		0	Not Yet Processed	0				
2015	6	405		0	Not Yet Processed	0				
2015	6	411		0	Not Yet Processed	0				
2015	6	418		0	Not Yet Processed	0				
2015	6	501		0	Not Yet Processed	0				
2015	6	504		0	Not Yet Processed	0				
2015	6	519		0	Not Yet Processed	0				
2015	6	602		0	Not Yet Processed	0				
2015	6	606		0	Not Yet Processed	0				
2015	6	609		0	Not Yet Processed	0				
2015	6	610		0	Not Yet Processed	0				
2015	6	508		0	Not Yet Processed	0				Confluence
2015	6	513		0	Not Yet Processed	0				
2015	6	520		0	Not Yet Processed	0				
2015	6	801	26-May-15	2	No Longfin Catch	0				
2015	6	804	26-May-15	1	No Longfin Catch	0				
2015	6	703		0	Not Yet Processed	0				Sac. River System
2015	6	704		0	Not Yet Processed	0				
2015	6	705		0	Not Yet Processed	0				
2015	6	706		0	Not Yet Processed	0				
2015	6	707		0	Not Yet Processed	0				
2015	6	711		0	Not Yet Processed	0				
2015	6	716		0	Not Yet Processed	0				
2015	6	718		0	Not Yet Processed	0				
2015	6	719		0	Not Yet Processed	0				
2015	6	720		0	Not Yet Processed	0				
2015	6	723		0	Not Yet Processed	0				
2015	6	724		0	Not Yet Processed	0				
2015	6	726		0	Not Yet Processed	0				
2015	6	809	26-May-15	3	No Longfin Catch	0				Central & South Delta
2015	6	812	27-May-15	1	No Longfin Catch	0				
2015	6	815	27-May-15	1	No Longfin Catch	0				
2015	6	901	26-May-15	3	No Longfin Catch	0				
2015	6	902	26-May-15	3	No Longfin Catch	0				
2015	6	906	27-May-15	3	No Longfin Catch	0				
2015	6	910	26-May-15	3	No Longfin Catch	0				
2015	6	912	26-May-15	3	No Longfin Catch	0				
2015	6	914	26-May-15	3	No Longfin Catch	0				
2015	6	915	26-May-15	3	No Longfin Catch	0				
2015	6	918	26-May-15	3	No Longfin Catch	0				
2015	6	919		0	Not Yet Processed	0				

Processing complete through 5/29/2015

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