

SMELT WORKING GROUP

Monday, June 8, 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).

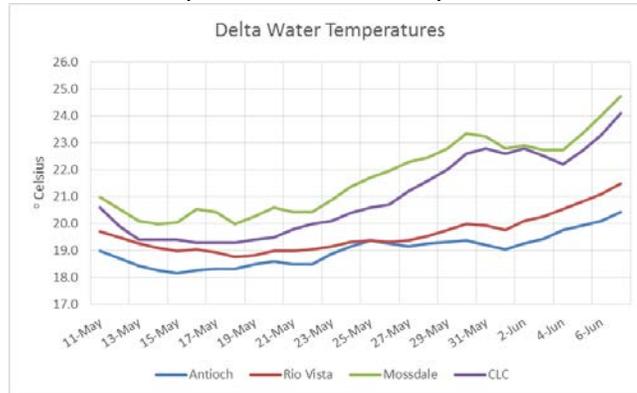
The Working Group agreed that given their present distribution, existing conditions were sufficient to protect longfin smelt from entrainment in the southern Delta.

The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, June 15, 2015 at 10 am.

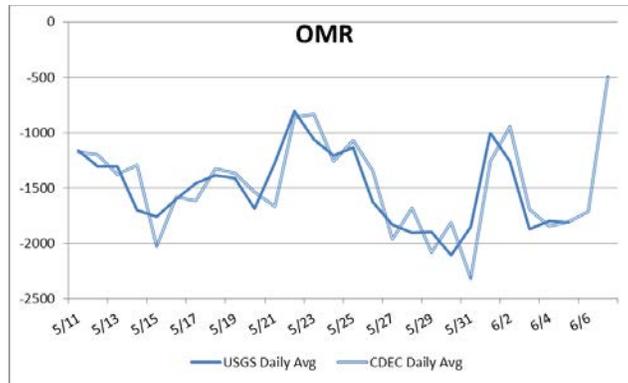
Reported Data:

1. Current environmental data:

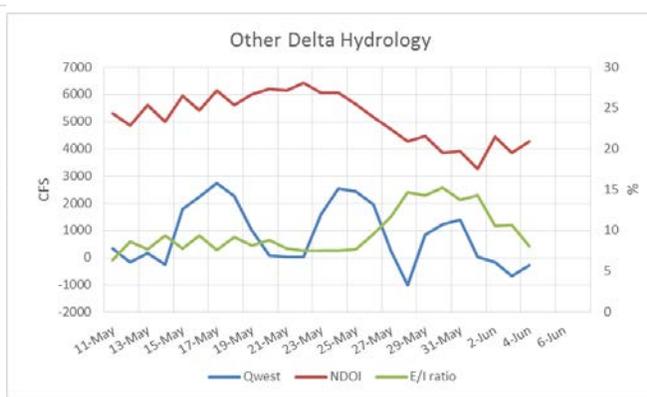
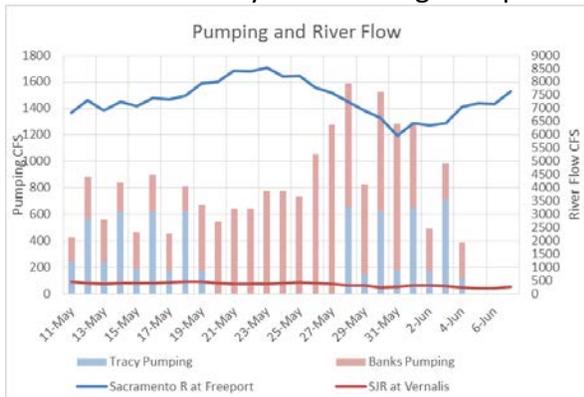
- Since February 3, it has been warm enough for Delta Smelt to spawn throughout much, or all of, the Delta. Water temperatures since May 11 are as follows:



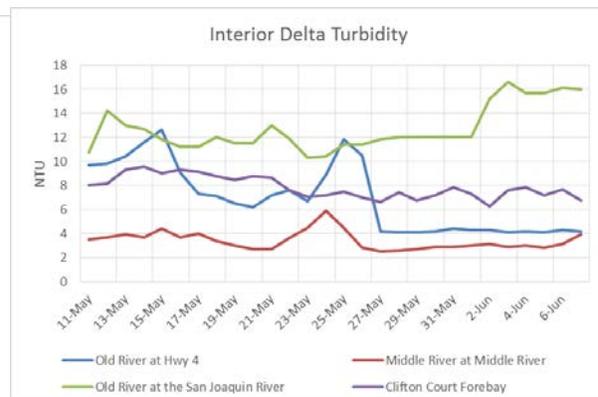
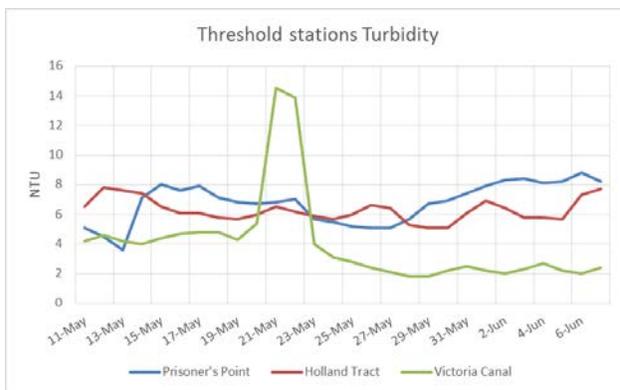
- OMR Flow: USGS tidally-averaged daily, 5-day, and 14-day average OMR flow for June 5 was -1813, -1550, and -1599 cfs, respectively. CDEC daily, 5-day average, and 14-day average OMR flow as of June 6 was -493, -1510, and -1573 cfs, respectively.

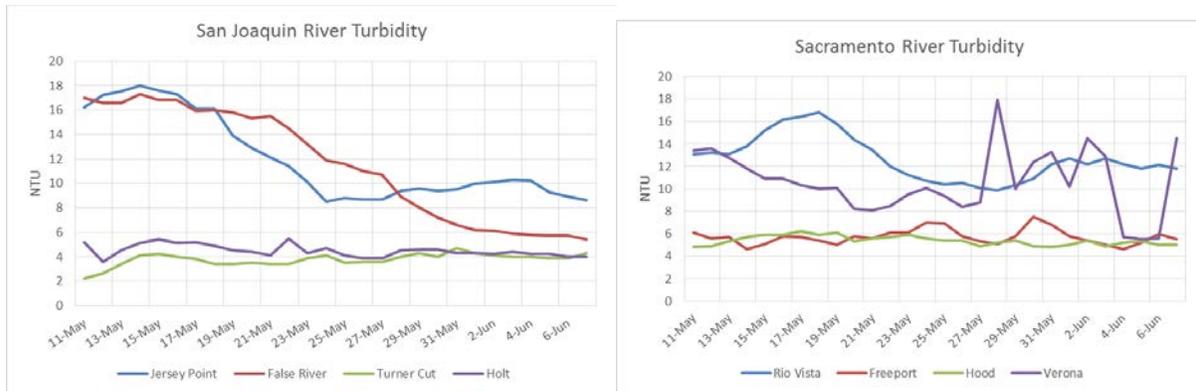


- River Flows: Sacramento River inflow is 7631 cfs and San Joaquin River is 259 cfs. X2 calculation from CDEC has been upstream of Collinsville since March 9. The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group



- 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 the week of May 26. Processing is 77% complete. Five Delta Smelt were collected, all from station 719. Sizes ranged from 28 to 34 mm. 20-mm Survey #7 is in the field starting June 8.

Summer Townet Survey (TNS) #1 was in the field last week. So far, a total of six Delta Smelt were collected, one at station 707 and five at 719. Some fish are still pending identification, although no Delta Smelt are anticipated from these fish.

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 or Longfin 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. 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 400 and 1200 cfs tomorrow. The CVP is cycling daily between 800 and off. Operators indicated that they expect the OMR flow to be approximately -1400 to -1700 cfs with the current levels of combined exports.

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°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 June 7 was 22.2°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 the previous weeks' advice for entrainment risk based upon the relatively positive OMR values expected for the week (-1400 to -1700 cfs), 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 as well as the TNS #1.

There was discussion about the possibility of nearing the end of the juvenile Delta Smelt entrainment period, given seasonal timing (in WY 2014 the last juvenile Delta Smelt salvage occurred on May 13, 2014), warming temperatures (the daily water temperature at Clifton Court Forebay on June 7 was 24.1°C), and the lack of juvenile Delta Smelt presence in the south and central Delta as indicated in 20-mm Survey #6 and TNS Survey #1. Given the 2015 low field catches or zero daily salvages, some members indicated their reservations about the sensitivity of current field and salvage monitoring to detect the presence or the export entrainment of Delta Smelt. Members indicated that as long as the survey data accurately represents the distribution and density of fish there was a low risk of entrainment for Delta Smelt.

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Monday, June 15, 2015, or sooner, if conditions warrant.

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

Advice for week of June 8, 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 June 7, 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 June sampling by Bay Study has yet to be reported, but detections of Longfin Smelt in the Delta become uncommon. In May, 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 Summer Towntnet Survey 1 caught no Longfin Smelt in the central or south Delta. The 20-mm Survey 6 sampling was completely 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). Clifton Court water temperature surpassed 22°C on May 30 and remained above that level since. Clifton Court and south Delta water temperature should spike above or near 25°C early this coming week. This should be the end of salvage for the current water year.

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

Current conditions: Sacramento River flow remained well above 7,000 cfs on June 7. X2 remains well above 81. Qwest was +2,514 on June 7, because of an open cross channel gate, thunder-storm induced flows in the Mokelumne River and trending neap-tide condition. Qwest is expected to go negative later this week. Federal exports are cycling on at 800 cfs today and off tomorrow. State exports will remain at 400 through the week. The OMR is expected to range between -1,400 and -1,700 cfs based on federal export level.

Summary of Risk:

Risk of additional Longfin Smelt entrainment into the south Delta is very low and essentially over for the season. No larval or juvenile Longfin Smelt were detected in the central or south Delta during sample processing for 20mm Survey 6 tows or in preliminary counts for Summer Towntnet Survey 1. There were no detections in salvage during the past week. This together with the increasing water temperatures $>22^{\circ}\text{C}$, make it unlikely that any more Longfin Smelt salvage will occur this season. 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 | 28-May-15 | 3 | No Longfin Catch | 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 | 29-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 501 | 27-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 504 | 27-May-15 | 3 | Longfin Smelt | 1 | 42 | 42 | 42.00 | |
| 2015 | 6 | 519 | 27-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 602 | 27-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 606 | 27-May-15 | 3 | Longfin Smelt | 4 | 25 | 32 | 29.25 | |
| 2015 | 6 | 609 | | 0 | Not Yet Processed | 0 | | | | |
| 2015 | 6 | 610 | | 0 | Not Yet Processed | 0 | | | | |
| 2015 | 6 | 508 | | 0 | Not Yet Processed | 0 | | | | |
| 2015 | 6 | 513 | 26-May-15 | 3 | Longfin Smelt | 1 | 42 | 42 | 42.00 | Confluence |
| 2015 | 6 | 520 | 26-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 801 | 26-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 804 | 26-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 703 | 26-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 704 | 26-May-15 | 3 | No Longfin Catch | 0 | | | | Sac. River System |
| 2015 | 6 | 705 | 27-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 706 | 27-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 707 | 27-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 711 | 26-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 716 | 28-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 718 | 28-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 719 | 28-May-15 | 3 | Longfin Smelt | 1 | 45 | 45 | 45.00 | |
| 2015 | 6 | 720 | 28-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 723 | 28-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 724 | 28-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 726 | 28-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 809 | 26-May-15 | 3 | No Longfin Catch | 0 | | | | Central & South Delta |
| 2015 | 6 | 812 | 27-May-15 | 3 | No Longfin Catch | 0 | | | | |
| 2015 | 6 | 815 | 27-May-15 | 3 | 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 | 27-May-15 | 3 | No Longfin Catch | 0 | | | | |

Processing complete through 06/05/2015

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

