

## SMELT WORKING GROUP

Monday, May 4, 2015

### Meeting Summary:

The Working Group agreed that given present distribution, current salvage, entrainment risk and Delta conditions, there was no indication that the projected combined exports of approximately 1100 cfs for today and 300 cfs for tomorrow (potentially resulting in daily average OMR flows of approximately -1400 cfs) can be modified for the protection of Delta Smelt adults and larvae.

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

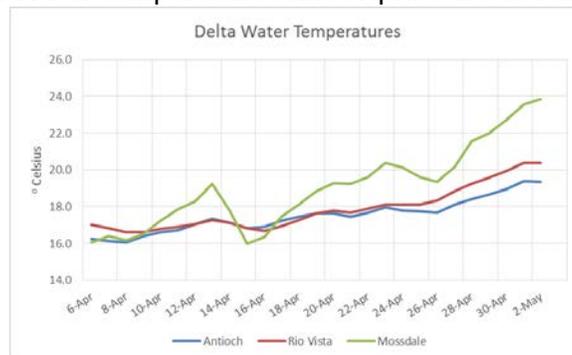
The Working Group also agreed that given their present distribution, existing constraining conditions were sufficient to protect longfin smelt from entrainment in the southern Delta.

The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, May 11, 2015 at 10 am.

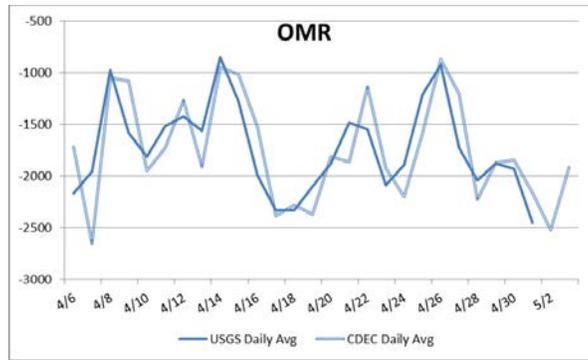
### Reported Data:

#### 1. Current environmental data:

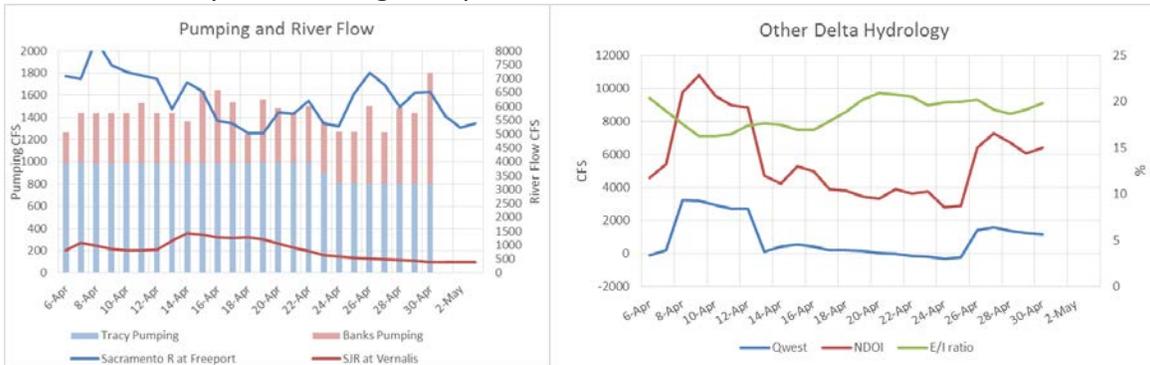
- Since February 3, it has been warm enough for Delta Smelt to spawn throughout much, or all of, the Delta. Water temperatures since April 6 are as follows:



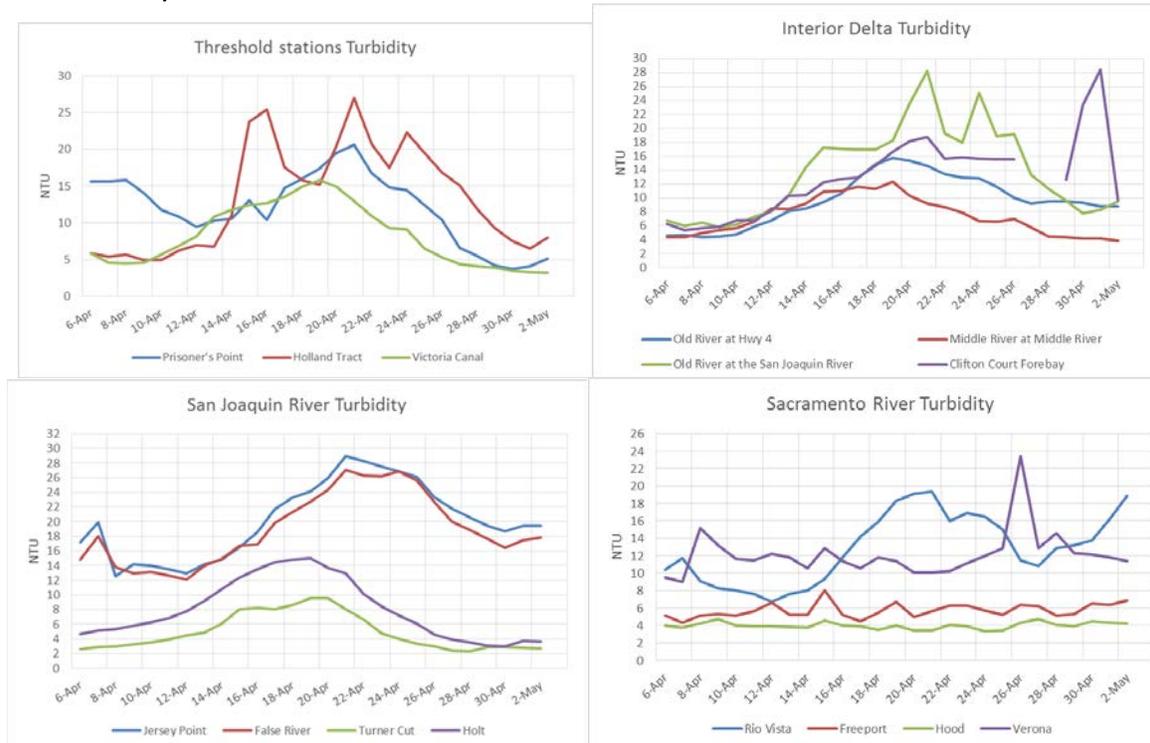
- OMR Flow: USGS tidally-averaged daily, 5-day, and 14-day average OMR flow for May 1 was -2450, -2006, and -1821 cfs, respectively. CDEC daily, 5-day average, and 14-day average OMR flow as of May 3 was -1920, -2063, and -1796 cfs, respectively.



- River Flows: Sacramento River inflow is 5382 cfs and San Joaquin River is 397 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).

20-mm Survey #4 was in the field last week. Processing is 20% complete. So far a total of three Delta Smelt were collected, all from station 719 (15 to 23 mm). 20-mm Survey #3 was in the field the week of April 13. Processing is ongoing. A total of 20 Delta Smelt were collected at stations 719 (18, 12-23mm) and 723 (2, 18mm).

Spring Kodiak Trawl #5 is in the field this week.

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

## **3. Salvage:**

Delta Smelt 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. A total of 52 young-of-year Longfin Smelt > 20 mm were salvaged from April 27 through May 3. One larval Delta Smelt was reported at the SWP on April 23. The CVP had short daily power outages on April 27 and 29 to repair the Hydrolux screen.

There was some discussion of potential salvage of three Delta Smelt > 20mm on April 29. This information was gathered from an independent query of the CDFW salvage database. Confirmation was made soon after the call that three >20mm Delta Smelt were observed at the Tracy Fish Collection Facility (TFCF) on April 29. They were collected during a primary channel CO2 treatment and reported separately as experimental take.

Listed species taken at the TFCF during authorized experiments have separate federal take permits and are not reported as salvage or take associated with normal CVP export operations.

## **4. Expected Project Operations:**

Combined SWP/CVP exports today are approximately 1100 cfs. Tomorrow, combined exports are anticipated to be approximately 300cfs. CVP exports are cycling between 800 cfs and off on a daily basis. Operators indicated that they expect the OMR flow to be approximately -1000 to -1400 cfs for the week. Combined exports are restricted by the Temporary Urgency Change Petition, which restricts pumping to 1500 cfs when water quality standards have been exceeded. Operators indicated that the Outflow requirement of 4000 cfs (under the TUCP) and salinity levels are restraining exports to the current levels.

## **5. Delta Conditions Team:**

There was no Delta Conditions Team call on May 1, 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).

#### Discussion:

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

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.

Three-station average water temperature surpassed 12<sup>o</sup> 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 2 was 21.2<sup>o</sup> C.

Based on a review of the Delta Smelt distribution and salvage data, current Delta conditions and projected operations, the SWG agreed that no change in operations is feasible under the existing conditions for the protection of Delta Smelt. Members did make a note of the single Delta Smelt larva

from April 23, as well as the three Delta Smelt observed during the primary channel CO2 treatment, providing that this is evidence of entrainment. These collections occurred despite at or below minimum exports levels, as defined in the Biological Opinion; OMR flows were also at or close to the most positive flows indicated in the Biological Opinion. The SWG will continue to monitor turbidity, salvage and survey data through this week, and will request a call to discuss Delta Smelt entrainment risk, should one be necessary.

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Monday, May 11, 2015.

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

### **Advice for week of May 4, 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 ( $\geq 80$  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 4, 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. No new adult distribution information. Early April 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 April. Current distribution information does not indicate advice is warranted based on this criterion.

3 & 4. The most recent 20-mm Survey sampling has yet to be processed for all central and south Delta stations (Table 1, Figure 1) and the distribution and abundance results, have not achieved either limit (see Basis for Advice 2&3 above). Salvage of juvenile Longfin Smelt increased to 52 for the week of April 27 through May 3. Some increase was expected as south Delta water warmed. Between April 13 and 15, four juvenile Longfin Smelt were salvaged at the CVP and 12 at the SWP, at the same time, a single larva was observed in the larval fish samples at the CVP and four larvae at the SWP. During the period of April 17 through 23, seven Longfin Smelt larvae were observed at the SWP and one larva at the CVP in larval fish collections. Continued collections in salvage are expected. Overall, catches in the central and south Delta were not sufficient to reach concern levels based on density or distribution.

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

**Current conditions:** Sacramento River flow dropped to about 5,400 cfs. X2 remains well above 81. Combined State and federal exports are currently varying daily between 300 and 1,100 cfs, as the CVP cycles on and off every other day, and will remain at that level into the future. The OMR is expected to range between -1,100 and -1,400 cfs in the next week. Qwest was slightly positive April 26 through 30, but positive flows are declining and should reach zero today.

#### **Summary of Risk:**

Risk of additional entrainment into the south Delta is very low. This results from past and recent low densities of larvae (except at 809 in 20-mm Survey 2) and low exports in the south Delta. Risks of additional adult influx have passed for the season. Larva densities decreased in the central Delta in 20-mm Survey 3 and perhaps Survey 4 after they appeared to increase during Survey 2. Exports are very low (1,100 cfs combined, 300 when only SWP exports) and most larvae appear to be outside of the region of entrainment, so risk of entrainment remains very low. Nonetheless, Longfin Smelt larvae and small juveniles will continue to be detected at the salvage facilities until water temperatures surpass 22 deg C.

The limited number of Longfin Smelt larvae and post-larvae detected in the central and south Delta in 20-mm Survey 3 (processing for Survey 4 is too limited, the absence adults collected in the San Joaquin River or central Delta fish surveys and the absence of adult Longfin Smelt in salvage samples to date suggests few fish have moved into the central or south Delta for spawning. Current conditions, particularly OMR index projected between -1,100 and -1,400 for the week and neutral to slightly negative Qwest, indicate very little additional risk of entrainment for fish hatch within the central Delta. The overall risk of entrainment remains very low.

Table 1. Longfin Smelt catches by station in 20-mm Survey 4 2015. Sample processing is incomplete.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length	
2015	4	323	29-Apr-15	0	Not Yet Processed	0				Suisun Bay & West
2015	4	340	29-Apr-15	0	Not Yet Processed	0				
2015	4	342	29-Apr-15	0	Not Yet Processed	0				
2015	4	343	29-Apr-15	0	Not Yet Processed	0				
2015	4	344	29-Apr-15	0	Not Yet Processed	0				
2015	4	345	29-Apr-15	0	Not Yet Processed	0				
2015	4	346	29-Apr-15	0	Not Yet Processed	0				
2015	4	405	30-Apr-15	0	Not Yet Processed	0				
2015	4	411	30-Apr-15	0	Not Yet Processed	0				
2015	4	418	30-Apr-15	0	Not Yet Processed	0				
2015	4	501	28-Apr-15	1	No Longfin Catch	0				
2015	4	504	28-Apr-15	1	No Longfin Catch	0				
2015	4	519	28-Apr-15	0	Not Yet Processed	0				
2015	4	602	28-Apr-15	1	No Longfin Catch	0				
2015	4	606	28-Apr-15	1	Longfin Smelt	1	25	26	25.00	
2015	4	609	28-Apr-15	1	No Longfin Catch	0				
2015	4	610	28-Apr-15	1	No Longfin Catch	0				
2015	4	508	27-Apr-15	0	Not Yet Processed	0				Confluence
2015	4	513	27-Apr-15	0	Not Yet Processed	0				
2015	4	520	27-Apr-15	0	Not Yet Processed	0				
2015	4	801	27-Apr-15	1	No Longfin Catch	0				
2015	4	804	27-Apr-15	1	Longfin Smelt	2	16	28	22.00	Sac. River System
2015	4	703	27-Apr-15	1	No Longfin Catch	0				
2015	4	704	27-Apr-15	0	Not Yet Processed	0				
2015	4	705	28-Apr-15	1	No Longfin Catch	0				
2015	4	706	27-Apr-15	1	Longfin Smelt	14	18	30	24.50	
2015	4	707	28-Apr-15	0	Not Yet Processed	0				
2015	4	711	28-Apr-15	1	No Longfin Catch	0				
2015	4	716	29-Apr-15	1	No Longfin Catch	0				
2015	4	718	29-Apr-15	1	No Longfin Catch	0				
2015	4	719	29-Apr-15	1	No Longfin Catch	0				
2015	4	720	29-Apr-15	1	No Longfin Catch	0				
2015	4	723	29-Apr-15	1	No Longfin Catch	0				
2015	4	724	29-Apr-15	1	No Longfin Catch	0				
2015	4	726	29-Apr-15	1	No Longfin Catch	0				
2015	4	809	27-Apr-15	1	Longfin Smelt	2	15	16	15.50	
2015	4	812	28-Apr-15	1	No Longfin Catch	0				
2015	4	815	28-Apr-15	1	No Longfin Catch	0				
2015	4	901	27-Apr-15	1	Longfin Smelt	2	15	19	17.00	Central & South Delta
2015	4	902	27-Apr-15	3	No Longfin Catch	0				
2015	4	906	28-Apr-15	1	No Longfin Catch	0				
2015	4	910	27-Apr-15	1	No Longfin Catch	0				
2015	4	912	27-Apr-15	1	No Longfin Catch	0				
2015	4	914	27-Apr-15	1	No Longfin Catch	0				
2015	4	915	27-Apr-15	1	No Longfin Catch	0				
2015	4	918	27-Apr-15	1	No Longfin Catch	0				
2015	4	919	28-Apr-15	1	No Longfin Catch	0				

Processing complete through 5/1/2015

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

