

## SMELT WORKING GROUP

Monday, April 27, 2015

### Meeting Summary:

The Working Group agreed that given present distribution, current salvage, and Delta conditions, there was no indication that the projected combined exports of approximately 1500 cfs for the week (potentially resulting in daily average OMR flows of approximately -2000 cfs) need to 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).

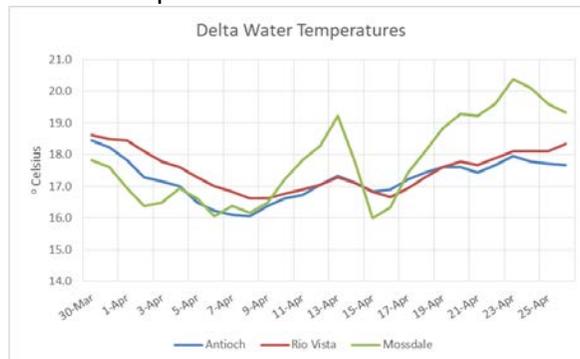
The Working Group also agreed that given their present distribution, existing constraining conditions were sufficient to protect longfin smelt from entrainment in the southern Delta.

The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, May 4, 2015 at 10 am.

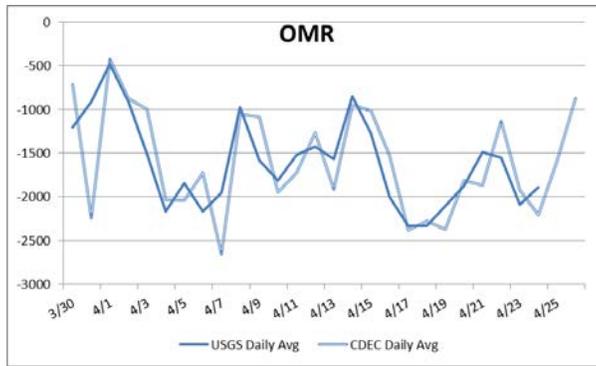
### Reported Data:

#### 1. Current environmental data:

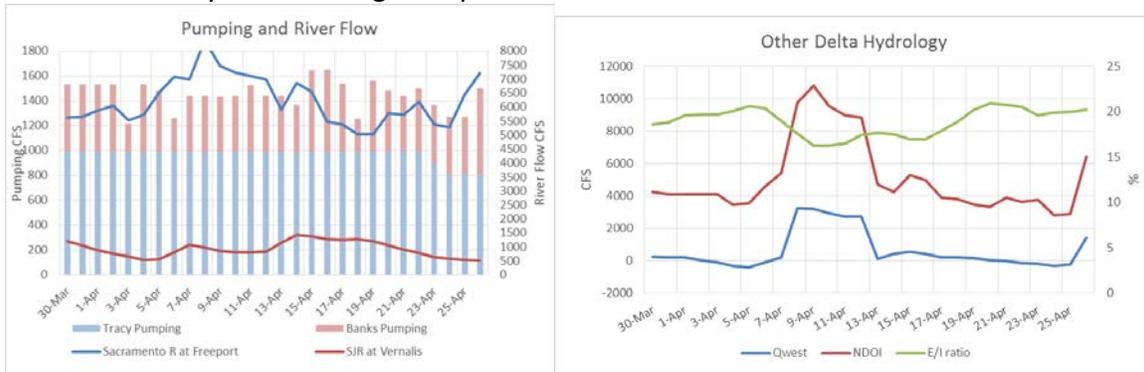
- Since February 3, it has been warm enough for Delta Smelt to spawn throughout much, or all of, the Delta. Water temperatures since March 30 are as follows:



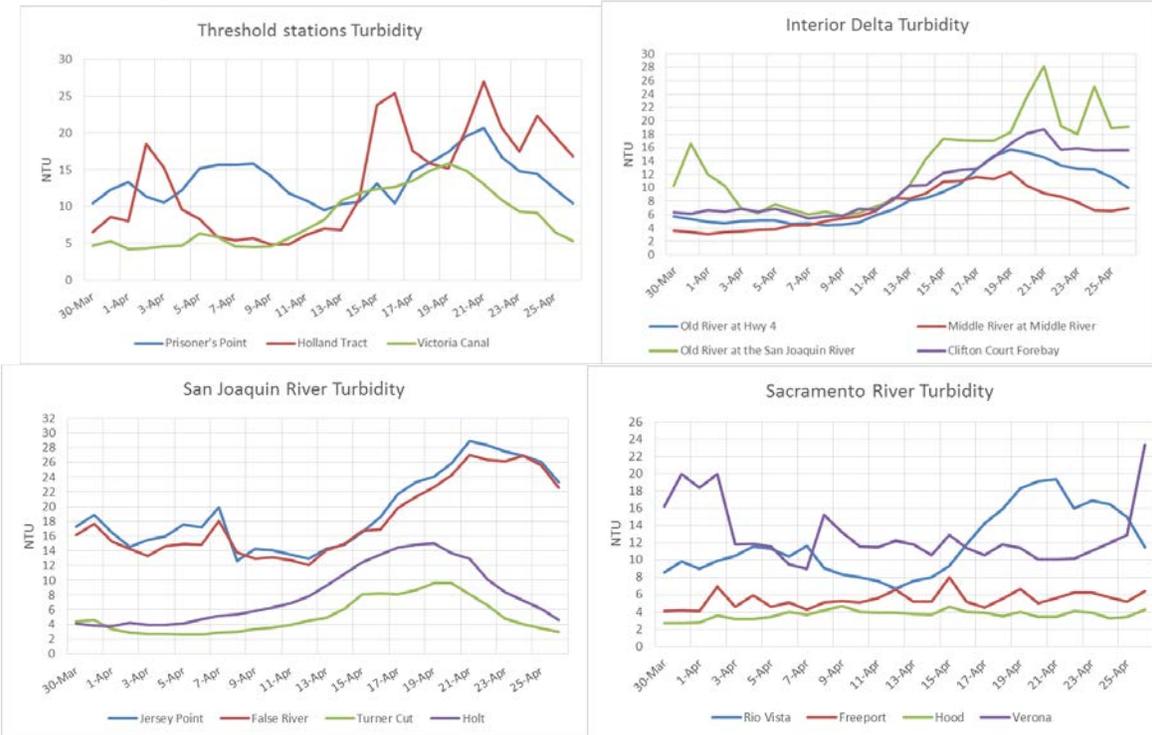
- OMR Flow: USGS tidally-averaged daily, 5-day, and 14-day average OMR flow for April 24 was -1893, -1780, and -1736 cfs, respectively. CDEC daily, 5-day average, and 14-day average OMR flow as of April 26 was -873, -1545, and -1703 cfs, respectively.



- River Flows: Sacramento River inflow is 7222 cfs and San Joaquin River is 506 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 #3 was in the field the week of April 13. Processing is ongoing. A total of 20 Delta Smelt was collected at stations 719 (18, 12-23mm) and 723 (2, 18mm). 20-mm Survey #4 is in the field this week.

Spring Kodiak Trawl #4 was in the field the week of April 6. A single ripe male (66 mm) Delta Smelt was caught at station 719. Upon verification, a previously reported 27mm Delta Smelt from the same station turned out to be a Wakasagi Smelt. SKT #5 is in the field starting May 4.

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. Young-of-year Longfin Smelt > 20 mm were salvaged from April 21 through 23. A total of 12 YOY Longfin Smelt were salvaged during this period. No larval Delta Smelt was reported for the last week although larval Longfin Smelt (< 20 mm) continue to be observed in larval fish collections at the SWP and CVP. Both the SWP and CVP operated their fish facilities with normal 30 minute counts this past week.

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

Combined SWP/CVP exports today are approximately 1500 cfs. Operators indicated that they expect the OMR flow to be approximately -1900 to -2000 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 might increase sufficiently such that exports could be increased by approximately 500cfs later in the week.

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

There was no advice for the SWG.

## **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 April 26 was 18.4<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 necessary for the protection of Delta Smelt. 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 4, 2015.

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

**Advice for week of April 27, 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 April 19, 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. Kodiak Trawl sampling tends to be inefficient for Longfin Smelt, but in February the USFWS detected four adult Longfin Smelt at Jersey Point, compared to two adult Longfin Smelt at that location in January; none have been caught at Prisoner's Point. No other detections were made in the San Joaquin River or south Delta in January. In early January Bay Study detected Longfin Smelt adults in the Sacramento River at Rio Vista (station 761), a juvenile and adult in the Sacramento River at Sherman Lake (station 736), none in the San Joaquin River, and juveniles ( $< 80$  mm) and adults throughout Suisun Bay. During mid- to late February, Chipps Island trawling caught modest numbers of Longfin Smelt (19 and 16 for Feb 15-21 and 22-28), indicating the spawning run continues. 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, though higher than the past, did not achieve either limit (Table 2, see Basis for Advice 2&3 above). 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. Between April 21 and 23, eight juvenile Longfin Smelt were salvaged at the CVP and four at the SWP. 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 is increasing modestly at about 7,000 cfs. X2 remains well above 81. Combined State and federal exports are currently about 1,500 cfs and will remain at that level into the future. The OMR is expected to range between -1,900 and -2,000 cfs in the next week. Qwest was slightly negative April 22 through 25, but turned positive April 26 due to local rainfall and will remain positive through Friday.

**Summary of Risk:**

Risk of entrainment is very low in the south Delta. 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 likely passed for the season. Larva densities decreased in the central Delta in 20-mm Survey 3 after they appeared to increase during Survey 2. Nonetheless, exports are very low (1,500 cfs combined) 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, 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 -1,900 and -2,000 for the week and slightly positive Qwest, indicate very little additional risk 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 3 2015. Sample processing is incomplete.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length	
2015	3	323	16-Apr-15	1	No Longfin Catch	0				Suisun Bay & West
2015	3	340		0	Not Sampled	0				
2015	3	342		0	Not Sampled	0				
2015	3	343		0	Not Sampled	0				
2015	3	344		0	Not Sampled	0				
2015	3	345		0	Not Sampled	0				
2015	3	346		0	Not Sampled	0				
2015	3	405	16-Apr-15	0	Not Yet Processed	0				
2015	3	411	16-Apr-15	0	Not Yet Processed	0				
2015	3	418	16-Apr-15	0	Not Yet Processed	0				
2015	3	501	14-Apr-15	3	No Longfin Catch	0				
2015	3	504	14-Apr-15	3	No Longfin Catch	0				
2015	3	519	14-Apr-15	3	No Longfin Catch	0				
2015	3	602	14-Apr-15	3	No Longfin Catch	0				
2015	3	606	14-Apr-15	3	Longfin Smelt	29	13	71	26.10	
2015	3	609	14-Apr-15	3	No Longfin Catch	0				
2015	3	610	14-Apr-15	3	Longfin Smelt	8	17	30	22.88	
2015	3	508	13-Apr-15	3	No Longfin Catch	0				Confluence
2015	3	513	13-Apr-15	3	Longfin Smelt	1	28	28	28.00	
2015	3	520	13-Apr-15	3	No Longfin Catch	0				
2015	3	801	13-Apr-15	3	No Longfin Catch	0				
2015	3	804	13-Apr-15	3	Longfin Smelt	1	20	20	20.00	
2015	3	703	13-Apr-15	3	No Longfin Catch	0				Sac. River System
2015	3	704	13-Apr-15	3	Longfin Smelt	7	19	32	26.57	
2015	3	705	16-Apr-15	1	Longfin Smelt	2	15	16	15.50	
2015	3	706	13-Apr-15	3	Longfin Smelt	10	17	23	20.50	
2015	3	707	16-Apr-15	1	Longfin Smelt	1	18	18	18.00	
2015	3	711	16-Apr-15	0	Not Yet Processed	0				
2015	3	716	16-Apr-15	0	Not Yet Processed	0				
2015	3	718		0	Not Sampled	0				
2015	3	719	16-Apr-15	3	Longfin Smelt	1	21	21	21.00	
2015	3	720		0	Not Sampled	0				
2015	3	723	16-Apr-15	3	No Longfin Catch	0				
2015	3	724		0	Not Sampled	0				
2015	3	726		0	Not Sampled	0				
2015	3	809	13-Apr-15	3	Longfin Smelt	10	10	20	14.80	Central & South Delta
2015	3	812*	15-Apr-15	1	No Longfin Catch	0				
2015	3	815*	15-Apr-15	3	No Longfin Catch	0				
2015	3	901	13-Apr-15	3	No Longfin Catch	0				
2015	3	902	13-Apr-15	3	Longfin Smelt	1	11	11	11.00	
2015	3	906*	15-Apr-15	2	No Longfin Catch	0				
2015	3	910*	15-Apr-15	2	No Longfin Catch	0				
2015	3	912	15-Apr-15	3	No Longfin Catch	0				
2015	3	914*	15-Apr-15	2	No Longfin Catch	0				
2015	3	915	13-Apr-15	2	No Longfin Catch	0				
2015	3	918*	15-Apr-15	1	No Longfin Catch	0				
2015	3	919*	15-Apr-15	1	No Longfin Catch	0				

Processing complete through 4/21/2015

\* Reduced tow times

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

