

**SMELT WORKING GROUP**  
**Monday, March 25, 2013**

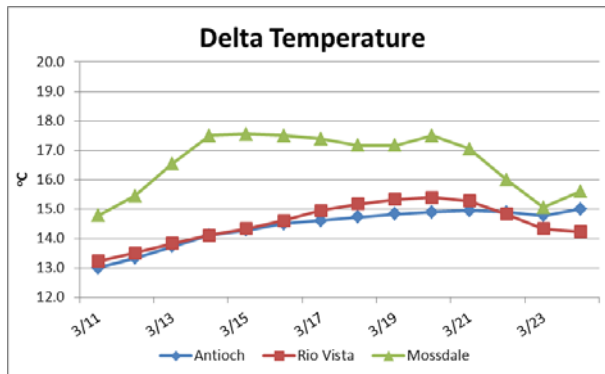
**Meeting Summary:**

The Working Group recommended that OMR flow should be set at a 14-day average flow of no more negative than -5,000 cfs with a corresponding 5-day average flow of no more negative than -6,250 cfs. The Working Group will continue to monitor salvage, turbidity, and other conditions, and will reconvene Tuesday, April 2.

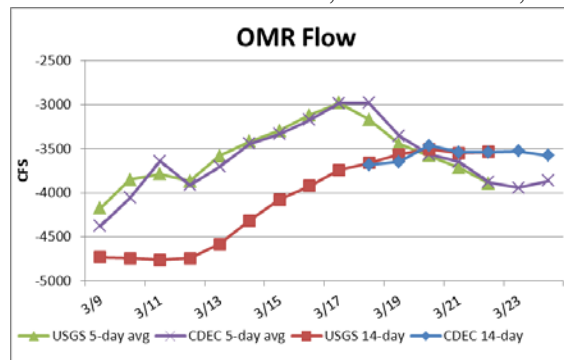
**Reported Data:**

**1) Current environmental data:**

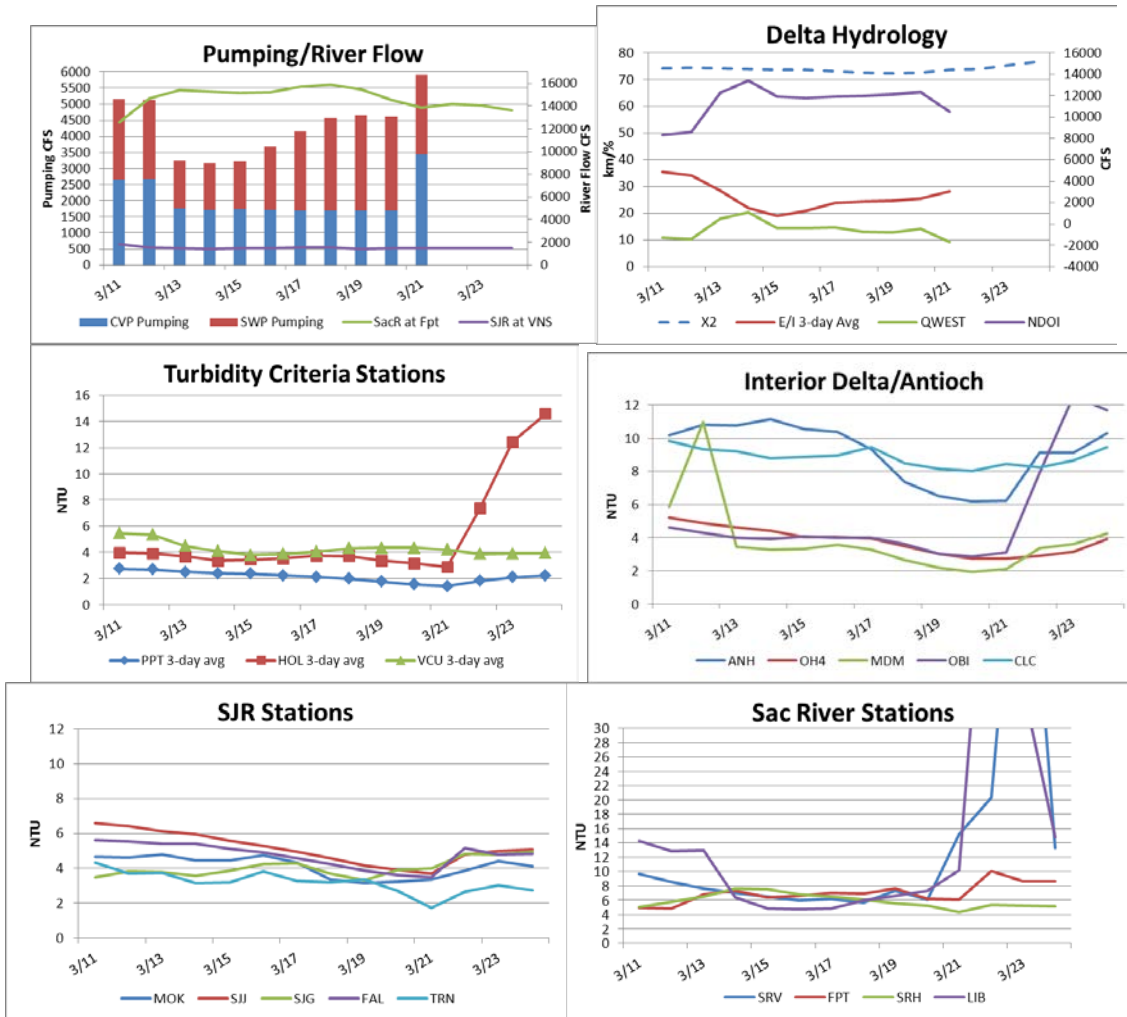
- **Water temperatures:**



- **OMR:** USGS tidally-averaged 5-day average OMR flow and 14-day average OMR flow on March 22 was -3,892 cfs and -3,534 cfs, respectively. CDEC 5-day average OMR flow and 14-day average OMR flow on March 24 was -3,864 cfs and -3,577 cfs.



- **Flow:** Sacramento River flows at Freeport are approximately 13,600 cfs and San Joaquin River at Vernalis is approximately 1,454 cfs. On March 24, X<sub>2</sub> was at 76.73km.



**Delta Fish Monitoring:**

The final Smelt Larval Survey of the season (SLS 6) was in the field last week. Preliminary information indicates delta smelt larvae presence in the south and central Delta stations, but the highest abundance was in the confluence and north Delta stations. A total of 109 delta smelt larvae were collected, with size ranging from 5-10mm. Longfin smelt are distributed throughout the estuary, a total of 2990 were collected ranging in size from 6-20mm. An additional 28 unidentified Osmerids were collected in the lower Sacramento River. Current data (including distribution maps) have been uploaded to the SLS webpage (<http://www.dfg.ca.gov/delta/projects.asp?ProjectID=SLS>).

20-mm Survey #2 is in the field this week. Current data have been uploaded to the 20-mm survey webpage (<http://www.dfg.ca.gov/delta/projects.asp?ProjectID=20mm>). Processing for 20-mm Survey #1 is on-going (65% of samples have been processed), no delta smelt have yet been collected, but a total of 1,322 longfin smelt ranging in size from 6-25mm (including one adult at 110mm) were collected.

Spring Kodiak Trawl #4 is in the field the week of April 1. The 2012 annual Fall Midwater Trawl Index (September through December) is 42. The combined SWP and CVP total allowable take

for adult delta smelt for the WY 2013 as calculated from the FMWT Index using the formula prescribed in the BO is 362 (revised).

The 2012 Delta Smelt Recovery Index (based on September and October) is 13. More information on the Recovery Index can be found on the Bay-Delta Office's web site at [http://www.fws.gov/sfbaydelta/species/delta\\_smelt.cfm](http://www.fws.gov/sfbaydelta/species/delta_smelt.cfm). Results from CDFW surveys are available online at: <http://www.dfg.ca.gov/delta/>.

### **1) Salvage:**

No adult delta smelt have been salvaged at either facility since March 14. The total combined delta smelt salvage for the season is 256 (112 at the SWP and 144 at the CVP) as of March 24, or approximately 71% of the total allowable take of 362. Twenty-three longfin smelt young of the year were salvaged at the CVP over the reporting period of March 18 through 24. The total combined longfin smelt adult salvage for the season is 4; the total combined young of the year longfin smelt salvage for the season is 55.

One larval delta smelt (< 20 mm FL) was salvaged at the CVP on March 18 in the larval fish samples. Young of the year longfin smelt ( $\geq$  20 mm FL) were salvaged at the CVP on March 18 and 19. On March 20, the SWP fish salvage facility experienced a power outage for approximately three hours.

Current longfin smelt and delta smelt salvage information can be downloaded from DFG's salvage FTP site at <ftp://ftp.dfg.ca.gov/salvage/Daily%20Smelt%20Summary/> or queried from DFG's salvage web page at <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

### **2) Expected Project Operations:**

Combined CVP/SWP exports are approximately 4,500 cfs as of March 25. Operators commented that current pumping levels support the NMFS RPA requirement of -3,500 cfs OMR flow rate. This requirement stems from a loss-density trigger being met or exceeded at the fish salvage facilities in the Delta for steelhead. The operators expect this requirement to cover the five day period from March 23 through 27.

### **3) Particle Tracking Modeling:**

No PTM runs were requested for this week.

### **4) Turbidity Modeling:**

No turbidity modeling was discussed today.

### **5) Assessment of Risk:**

### **Background:**

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 35).

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 -5,000 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 monitoring, salvage, field surveys, and planned Project operations.

With the detection of spent females in the SKT #3 (conducted during the week of March 4), the Working Group looks to Action 3 of the RPAs for guidance on assessing the risk of entrainment to juveniles as well as continuing to assess the risk of entrainment to adults. The Working Group discussed its March 18 recommendation, the Service’s March 12 determination of -5,000 cfs OMR flow target, the WY 2013 adult and juvenile delta smelt Incidental Take Limit, the recent delta smelt distribution data from field surveys, and the absence of salvage of adult delta smelt for the previous ten days.

Daily OMR flows since March 11 have ranged between approximately -2,400 and -4,300 cfs, and adult delta smelt salvage numbers have remained at or close to zero. Zero weekly salvage for the past ten days further suggests that adult delta smelt densities in the south Delta are low.

The Projects have not salvaged an adult delta smelt since March 14, 2013. In past years, adult salvage significantly tapers off by the end of March and early April. Although a few adult smelt may be expected in salvage between now and June, the Working Group believes it would be highly unlikely if the cumulative seasonal total of adult delta smelt salvage reached the Incidental

Take limit at this point in time (for WY 2013 revised to 362). However, the Working Group will continue to monitor Delta conditions, delta smelt salvage, and survey data to determine if the salvage trend could be expected to increase to a level that would cause the projects to approach the concern level, and potentially exceed the incidental take limit. The Working Group's recommendation of -5,000cfs OMR flow is considered protective for both adult and larval delta smelt.

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

### **Advice for week of March 25, 2013:**

The Smelt Working Group believes that an OMR of -5,000 cfs is protective of longfin smelt at this time. No advice for Barker Slough operations is necessary at this time.

### **Summary of Risk:**

Risk of additional entrainment into the south Delta is low. Smelt Larva Survey (SLS) #6 detected few longfin smelt larvae in the central and south Delta (n = 27), suggesting that hatching is on the decline for this year. Although Qwest was negative for the past week, few longfin smelt larvae remain in the vicinity to be entrained into the south Delta. Barker Slough criteria are only in effect during "Dry" and "Critical" water years, and took effect after March 1 with the determination of "dry" for the Sacramento River. Barker exports have been < 30 cfs since March 1, indicating little risk of entrainment even though longfin smelt densities were relatively high based on 20-mm Survey #1 results for Station 718.

### **Summary of Advice:**

Previously, SLS Survey #3 distribution numbers triggered Longfin Smelt Incidental Take Permit advice from the SWG on February 4 to limit OMR flows to -5,000 cfs (see criterion 3 below). On February 19, to limit south Delta entrainment of larvae from Station 809 and other San Joaquin River stations, an OMR of no more negative than -4,000 cfs was advised. On February 25 and 26, SLS Survey #5 central and south Delta catches from declined rather than increased, so as of March 1 an OMR of -5,000 was once again deemed protective. As of March 25 and similar to March 11 & 18, OMR of -5,000 remained protective.

On March 1, the water year designation for the Sacramento River was adjusted to "dry", triggering advice for Barker Slough. This change was not noted or discussed by the Smelt Working Group (SWG). Nonetheless, Barker Slough exports remained very low since March 1 (< 30 cfs) and posed very little risk for longfin smelt larvae. For this reason, no advice for change would likely have come from the SWG.

### **Basis for advice:**

The 2009 State Water Project 2081 for longfin smelt states that advice to the DFG Director shall be based on the following criteria:

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 (Stations 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. For Barker Slough Exports only: between January 15 and March 31 of Critically Dry or Dry water years only (Sacramento River), based on abundance and distribution and detection of longfin smelt larvae at Station 716.

### **Discussion of Criteria**

1. On March 13, the first juvenile longfin smelt of the year was salvaged. Since then 59 juveniles (cumulative total both facilities) have been salvaged. More can be expected, but no ITP criterion exists for juvenile longfin smelt.

On January 20 and 21, 2013, adult longfin smelt salvage occurred at the SWP for a total salvage of 4. This was the first and only instance of adult longfin smelt salvage this water year. The Fall Midwater Trawl longfin smelt annual abundance index has completed and is 61. The total salvage level threshold for advice is > 305 (see criterion in #1). No advice is warranted based on this criterion.

2. In early March Bay Study collected 3 longfin smelt adults just upstream from the Antioch Bridge, suggesting that some additional spawning is taking place in the lower San Joaquin River. No other longfin smelt adults were detected in the central or south Delta.

January Bay Study sampling collected a single longfin smelt in the San Joaquin River at their Station 863 (Santa Clara Shoals, between Twitchell and Bradford Islands). In February, no longfin smelt were collected at central Delta sampling stations. On March 4, 3 longfin smelt were collected by Bay Study just upstream of the Antioch Bridge, suggesting spawning is not over in the San Joaquin River, but not suggesting any substantial additional risk. SLS #6 starting March 18 should detect any larvae hatching from spawning about March 4. Distribution information does not indicate advice is warranted based on this criterion.

3 & 4. The last Smelt Larva Survey of the year (Survey #6) took place March 18-19. Central and south Delta larva catches (densities) declined in Survey #6 compared to Survey #5, indicated that hatching is waning for the year. The first 20-mm Survey took place March 11-14 and collected only 12 larval longfin smelt in the central and south Delta. Thus, there is no evidence of additional risk of entrainment into the south Delta and an OMR of -5,000 remains protective at this time.

The third SLS survey of 2013 was conducted January 28 and 29. During Survey #3, longfin smelt larvae were collected at 9 of 12 central or south Delta stations, so the **distribution criterion was met**. During the 4<sup>th</sup> SLS survey the distribution criterion was again achieved, but the density criterion of  $\geq 4$  stations with > 15 larvae each was not. Typically, this second

criterion would be necessary to warrant additional protections beyond -5,000 cfs OMR. However, the high catch at Station 809 (and moderate catch at Station 901) poses some additional risk for entrainment into the south Delta. Given these data and the likelihood that we're seeing the peak hatching, an OMR of no more negative than -4,000 cfs was deemed warranted on February 18. Catches from SLS Survey #5 showed declines in the south Delta and the lower San Joaquin River (809), with some increases at Stations 812 and 815. The first 20-mm Survey indicated that only 12 larvae were collected in the central and south Delta. The last SLS Survey #6 occurred March 18 & 19, and provided results similar to the 20-mm Survey #1. These results indicate that fewer larvae are in and near the central Delta, and that an OMR of -5,000 is protective.

5. Barker Slough Exports: current water type for the Sacramento River was changed to Dry in the March determination (<http://cdec.water.ca.gov/cgi-progs/reports/EXECSUM>). Even though numerous longfin smelt larvae are present at Station 716 and in Lindsay Slough, no advice was provided in part because the water year change was not detected and in part because low export rates (10 - 30 cfs) posed little risk to longfin smelt larvae. More recently (March 19) Barker Slough exports have dropped to zero (<http://www.water.ca.gov/swp/operationscontrol/docs/delta/DeltaHydrology.pdf>).

Current conditions: Net Delta outflow dropped to about 10,000 cfs after X2 days at Chipps Island were reached. X2 is currently about 77 km. Combined State and federal exports are currently about 4,500 cfs to maintain OMR at -3500 for salmonids. Vernalis flows have remained about 1,500 cfs. Qwest has been negative since March 15.

Table 1. Longfin and delta smelt catch per station from Smelt Larva Survey, survey 6, 2013. Processing is almost complete and data are preliminary and subject to change.

Study Year	Survey #	SLS Station	Sample Status	Species	Smelt Catch
2013	6	405	Processed	Longfin Smelt	1
2013	6	411	Processed	Longfin Smelt	10
2013	6	418	Processed	Longfin Smelt	3
2013	6	501	Processed	Longfin Smelt	44
2013	6	504	Processed	Longfin Smelt	1000
2013	6	508	Processed	Longfin Smelt	1043
2013	6	513	Processed	Longfin Smelt	112
2013	6	513	Processed	Delta Smelt	14
2013	6	519	Processed	Longfin Smelt	319
2013	6	520	Processed	Longfin Smelt	89
2013	6	520	Processed	Delta Smelt	1
2013	6	602	Processed	Longfin Smelt	31
2013	6	606	Processed	Longfin Smelt	8
2013	6	609	Processed	Longfin Smelt	9
2013	6	610	Processed	Longfin Smelt	2
2013	6	703	Processed	Longfin Smelt	138
2013	6	704	Processed	Longfin Smelt	6
2013	6	704	Processed	Delta Smelt	8
2013	6	705	Processed	Longfin Smelt	3
2013	6	705	Processed	Delta Smelt	26
2013	6	706	Processed	Longfin Smelt	64
2013	6	707	Processed	Delta Smelt	9*
2013	6	711	Processed	Delta Smelt	1
2013	6	716	Processed	Delta Smelt	15
2013	6	723	Processed	Longfin Smelt	2
2013	6	723	Processed	Delta Smelt	20
2013	6	801	Processed	Longfin Smelt	38
2013	6	801	Processed	Delta Smelt	4
2013	6	804	Processed	Longfin Smelt	41
2013	6	809	Processed	Longfin Smelt	11
2013	6	812	Processed	Longfin Smelt	5
2013	6	812	Processed	Delta Smelt	10
2013	6	815	Processed	Delta Smelt	2
2013	6	901	Processed	Longfin Smelt	4
2013	6	902	Processed	Longfin Smelt	1
2013	6	902	Processed	Delta Smelt	3
2013	6	906	Processed	Delta Smelt	3
2013	6	910	Processed	Longfin Smelt	3
2013	6	912	Processed		No Smelt Catch
2013	6	914	Processed		No Smelt Catch
2013	6	915	Processed	Longfin Smelt	3
2013	6	918	Processed		No Smelt Catch
2013	6	919	Processed	Delta Smelt	2

SWP ITP Criteria Stations

Processing is complete through 3/25/13.

\*28 unidentified Osmerids were also caught at this station.



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