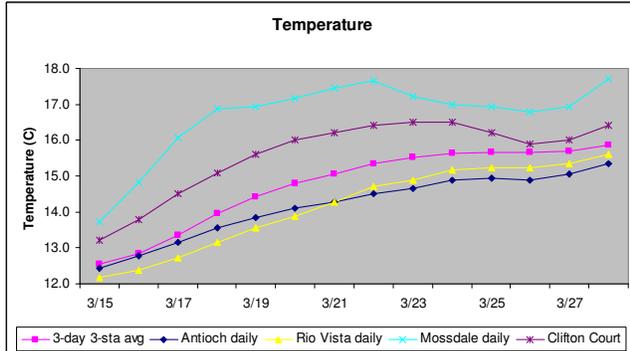
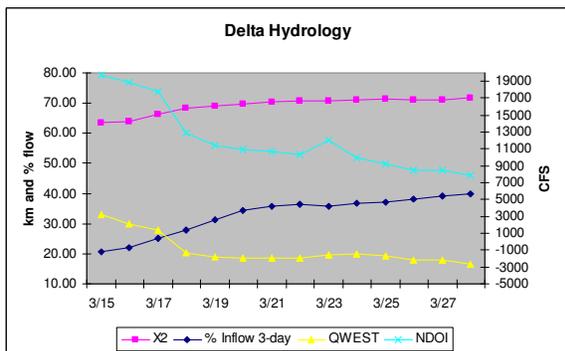
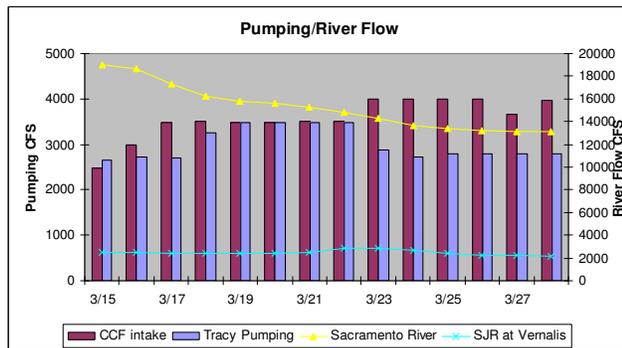
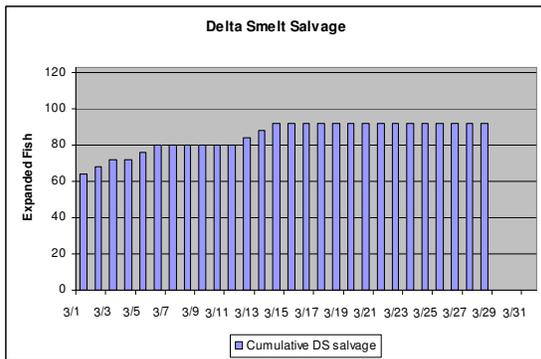


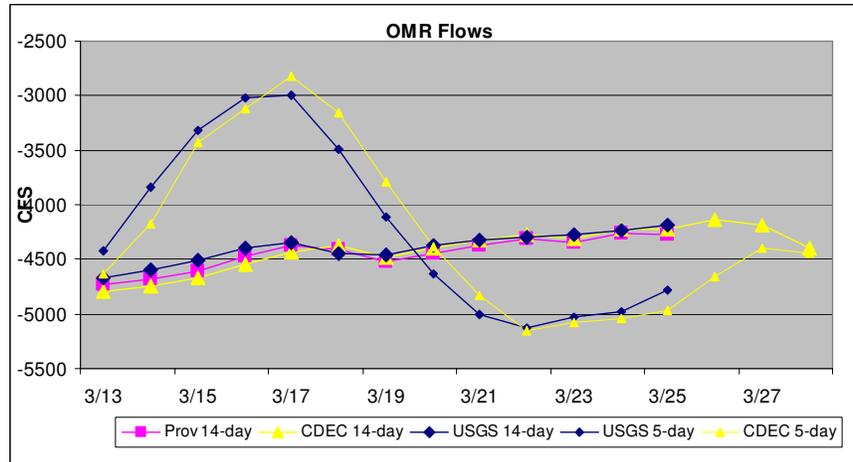
**Recommendation for the week of March 29, 2010:**

The SWG recommended OMR flows no more negative than -5,000 cfs. The Working Group agreed that the level of risk to adult and larval delta smelt was low, given that no salvage has occurred since March 14 and the latest survey data suggest that the greatest densities of delta smelt are in the Sacramento River and outside the influence of the pumps. The Working Group will continue to monitor salvage, survey data, and hydrological conditions and reconvene April 5, or earlier if deemed necessary.

1) Current environmental data.

- **Water temperature** for the 3-station average is 15.9°C.
- **OMR** USGS 14-day and 5-day tidally-averaged OMR as of March 25 is, respectively, -4,190 cfs and -4,780 cfs. The 14-day and 5-day OMR average estimate from CDEC as of March 28 is, respectively, -4,402 cfs and -4,442 cfs. The 14-day and 5-day provisional estimate of OMR flow as of March 28 is, respectively, -4,404 cfs and -4,443 cfs.
- **Flow** Sacramento River inflow is 13,155 cfs and San Joaquin 2,174 cfs. X<sub>2</sub> is 71.86km. As of March 25, E/I ratio is 40%, QWEST is -2,652 cfs and NDOI is 7,848 cfs. The graphs below show the most recent trends in delta smelt salvage, Delta hydrology, and water quality that were evaluated by the Working Group.





## 2) Delta fish monitoring:

20mm Survey 1 was in the field March 15 through 18. Sample processing is 96% complete. Four delta smelt larvae were collected from station #704 on the lower Sacramento River. The larvae ranged in size from 6 to 7mm in length. One adult delta smelt was collected in the SDWSC and one adult was collected from Lindsey Slough. The highest densities of longfin smelt larvae were west of the confluence in the Montezuma Slough complex and Suisun Bay. Smelt Larval Survey #6 was in the field March 23 and 24. Twelve of 35 stations have been processed, all in the central and southern Delta. No delta smelt larvae have been collected so far in SLS #6. The Spring Kodiak Trawl #4 will be in the field the week of April 5. Results from larval surveys, SKT, and 20mm Surveys are available online at: <http://www.delta.dfg.ca.gov/delta>.

## 3) Salvage

As of March 14, adult salvage has reached the concern level of 92. Since March 14, no additional delta smelt salvage has occurred at either the SWP or CVP. The season total of expanded salvage remains at 92. The total authorized take for adults under the Biological Opinion is 123, cumulative, for the season.

Larval sampling is ongoing at the CVP and SWP facilities. No longfin or delta smelt larvae have thus far been salvaged this season.

## 4) Expected Project Operations

The Projects are presently managing to meet the March inflow-to-export objective of 35%, as required by SWRCB Decision 1641 (revised). Should conditions change, the Projects expect to manage exports to maintain an OMR flow no more negative than -5,000 cfs. Combined exports are at 6,700 cfs today and are expected to drop to 1,500 cfs April 1.

## 5) Particle Tracking Modeling

The Working Group reviewed and discussed a March 18 PTM run for stations 711, 812, 815, 901, 902, and 915. Sacramento River was at 14,000 cfs and Vernalis flow was 2000 cfs. The OMR flow velocities analyzed were -2,000, -3,000, -4,000, and -5,000 cfs. The Working Group also reviewed and discussed PEI output for a range of OMR flows between -500 and -8,000 cfs. The calculated QWEST from PEI indicated 5,260 cfs at an OMR flow of -4,500 cfs. As of March 28, actual OMR flows are -4,400 cfs (14-day average, provisional estimate) and QWEST is -2,652 cfs. The difference between actual and PEI generated QWEST was discussed.

#### 6) Discussion for Recommendation

The Working Group reviewed and discussed all relevant data from fish surveys, Delta monitoring, salvage, and planned Project operations.

Delta temperatures have exceeded 12<sup>0</sup>C since February 14 and egg size in salvage- and survey-collected females is approximately 1 mm in diameter. Spent females were collected in SKT #3. Therefore, the juvenile protective phase of the biological opinion (RPA Component 2; Action 3 in Attachment B) is in effect. This action will continue until June 30 or when the 3-day mean water temperature at Clifton Court Forebay reaches 25<sup>0</sup>C, whichever occurs earlier.

Component 2, Action 3 of the biological opinion, which is intended to protect larvae and juvenile delta smelt, includes a range of OMR flow from -1,250 cfs to -5,000 cfs. The BO provides guidance for the assessment of the risk of entrainment of larvae and juveniles and for determining the appropriately-protective OMR flows within that range for any given week. The BO (pp 353-354) specifies that if entrainment risk is low, OMR flows could be expected to remain as negative as -5,000 cfs, but if entrainment risk is higher, OMR flows would be set so as to reduce that risk. The risk factors are (1) evidence (i.e., from survey data) that delta smelt are present in the South or Central Delta, and (2) evidence of ongoing entrainment. Because the Working Group believes hatching is still in its early stages and that relatively few larvae are as yet present in the system, combined with the current hydrological conditions, it remains appropriate to consider the low-entrainment risk scenario.

During last week's call, NMFS provided an update on the anticipated flows and pumping to begin April 1, 2010. As required in RPA action IV.2.1, minimum Vernalis flows from April 1 through May 31 will be 3000 cfs based on the New Melones Reservoir Index (page 642 of the June 2009, NMFS Biological Opinion). Vernalis flows will increase to 3,200 cfs for the VAMP period (April 22 through May 21) based on current projections. Combined pumping for the CVP and SWP will be 1,500 cfs during the 60-day implementation of the RPA action. The action is designed to protect emigrating steelhead smolts from the San Joaquin River Basin during the 60-day period of implementation.

The Working Group noted that the lack of adult delta smelt salvage since March 14 and the apparent distribution as exhibited by the SKT survey #3 indicate that the risk of entrainment of adult delta smelt is likely low. The Working Group also noted the absence of larval delta smelt in salvage operations so far for the season, nor have any been collected from central and south Delta stations during SLS or 20 mm Survey larval fish sampling. The Group also noted that spawning is still ongoing, and that adults are probably still in the central and southern Delta, but

in very low numbers. The Working Group agreed that -5,000 cfs OMR flow would be adequately protective for both adult and larval delta smelt for the next week.

The Group hopes to have additional data on larval distribution next week when a larger percentage of tows will be processed and released by CDFG for SLS #6, and tow 1 results (tow 1 of 3) should be available for central and south Delta stations, 20 mm Survey, survey #2. The Working Group anticipates that the additional data will assist in determining the relative risk to larval delta smelt.

The Working Group noted the results of longfin smelt larvae in SLS #6. Preliminary data exhibited relatively greater numbers of longfin smelt larvae collected at central and southern Delta stations as compared to past surveys this year (albeit still in small numbers). This could indicate that individuals are being pulled into the interior of the Delta from outside the central Delta. This could also mean that more larvae are being hatched in the interior Delta. Following the call, the SWG was notified via e-mail that the central and south Delta SLS longfin smelt length data for survey 6 did not support the conclusion that larvae were being drawn into the central and south Delta. Instead, longfin smelt larvae were 6-7 mm long, indicating they recently hatched. Nonetheless, PTM modeling and current hydrologic conditions indicate that a low level of entrainment from the Sacramento River into the central and south Delta is possible. The Working Group is unclear how this might manifest into relative entrainment risk for delta smelt. The Working Group will be watching survey data and salvage closely in the coming days and will reconvene prior to April 5 if deemed necessary.

**Next Meeting:** Monday, April 5, 2010 at 10 am

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

### **Advice for week of March 29:**

The Smelt Working Group provides no advice for longfin smelt and believes that OMR advice of -5,000 cfs or more positive for delta smelt will provide protection for longfin smelt.

### **Basis for advice:**

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

1. Adult Salvage – total adult ( $\geq 80$ mm) longfin smelt expanded 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 20mm 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).

4. Larva catch per tow exceeds 15 longfin smelt larvae or juveniles at 4 or more of the 12 survey stations listed.

### Current Information

No adult longfin smelt were salvaged in the past week and none have been salvaged since the December 1, 2009 criterion period for salvage began. Adult longfin smelt have only rarely been salvaged after mid-February.

No adult longfin smelt were collected upstream of the confluence by Bay Study in March.

The March 22-24 Smelt Larva Survey (survey 6), found longfin smelt larvae at 8 of 12 south and central Delta criteria stations (Table 1), an increase in frequency of occurrence of 2 stations from survey 5. All survey 6 longfin smelt were recently hatched, indicating a continued low hatch rate in the central and south Delta. Older longfin smelt larvae and juveniles were distributed downstream in Suisun Bay and Marsh. The 20mm Survey #1 (March 15-18) indicated the longfin smelt distribution centered in Suisun Bay ([http://www.dfg.ca.gov/delta/data/20mm/CPUE\\_Map3.asp](http://www.dfg.ca.gov/delta/data/20mm/CPUE_Map3.asp)). Since March 2, delta outflow has declined and as of March 18 Qwest has been consistently negative (Figure 1. see also Delta Hydrologic Conditions March 29; <http://www.water.ca.gov/swp/operationscontrol/deltaops.cfm>).

### Discussion

The distribution information above was used to develop OMR flow advice. Although there was a slight increase in the number of central and south Delta stations positive for longfin smelt larvae (Table1), relatively few remained in the Delta, and these were all recently hatched fish rather than larger fish drawn in from the north or west by negative flows. Recent 20 mm Survey (#1, March 15-18) data indicates longfin smelt larvae had a distribution centered downstream, well away from the Delta, and only 1 was caught in a central or south Delta criteria station. Qwest has been strongly negative since March 18, and could draw longfin smelt into the central and south Delta, but so far there is no evidence of this. Currently, the majority of the longfin smelt year class resides west of the Delta, away from entrainment risk in south Delta water export pumps.

Figure 1. Sacramento and San Joaquin river flows (cfs) and Clifton Court intake and Tracy exports (cfs) (Top). Position of X2 (km), percent of inflow diverted, Qwest and net delta outflow (cfs) (Bottom).

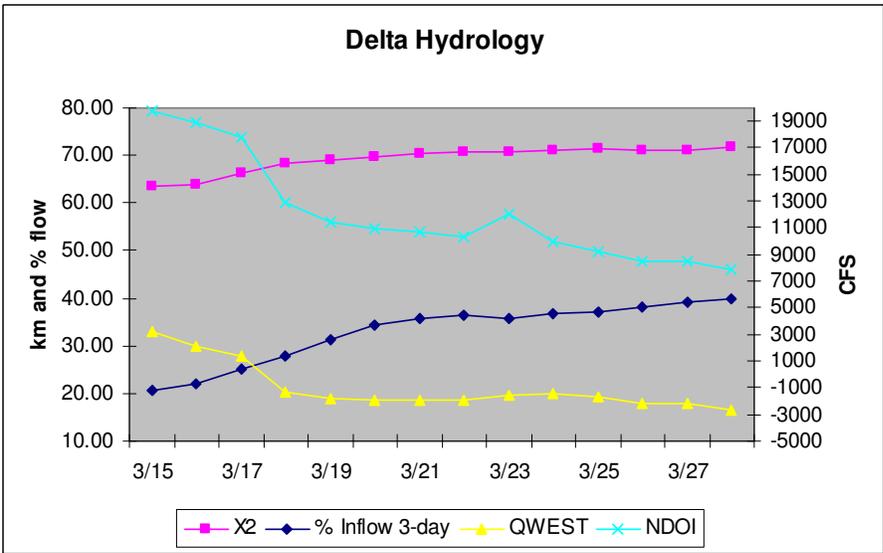
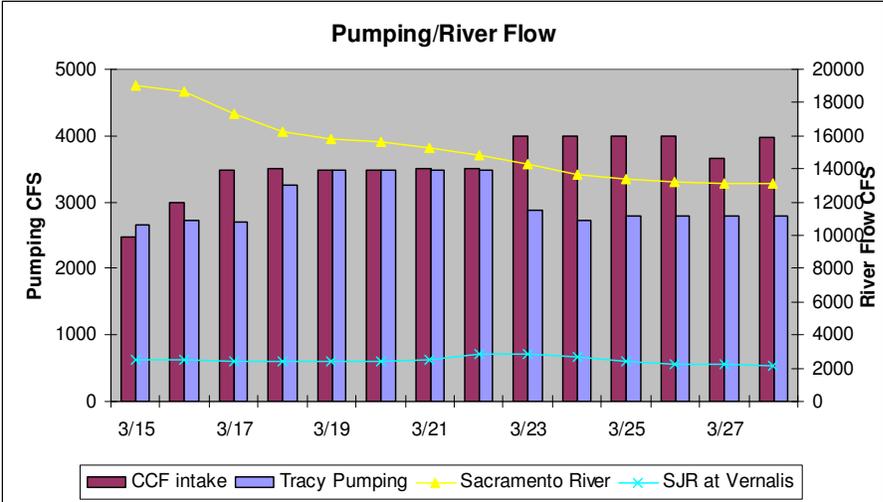


Table 1. Longfin smelt larva catch per station from Smelt Larva Survey sampling, survey 6 (March 22-25) processed through March 26, 2010. State Water Project ITP criteria stations are shaded.

Year	Survey	SLS Station	Sample Status	Species	Smelt Catch
2010	6	405	Not yet processed		
2010	6	411	Not yet processed		
2010	6	418	Not yet processed		
2010	6	501	Not yet processed		
2010	6	504	Not yet processed		
2010	6	508	Not yet processed		
2010	6	513	Not yet processed		
2010	6	519	Not yet processed		
2010	6	520	Not yet processed		
2010	6	602	Not yet processed		
2010	6	606	Not yet processed		
2010	6	609	Not yet processed		
2010	6	610	Not yet processed		
2010	6	703	Not yet processed		
2010	6	704	Not yet processed		
2010	6	705	Not yet processed		
2010	6	706	Not yet processed		
2010	6	707	Not yet processed		
2010	6	711	Not yet processed		
2010	6	716	Not yet processed		
2010	6	723	Not yet processed		
2010	6	801	Not yet processed		
2010	6	804	Not yet processed		
2010	6	809	Processed	Longfin Smelt	9
2010	6	812	Processed	Longfin Smelt	3
2010	6	815	Processed	Longfin Smelt	4
2010	6	901	Processed	Longfin Smelt	6
2010	6	902	Processed	Longfin Smelt	1
2010	6	906	Processed	Longfin Smelt	1
2010	6	910	Processed		No Smelt Catch
2010	6	912	Processed		No Smelt Catch
2010	6	914	Processed		No Smelt Catch
2010	6	915	Processed	Longfin Smelt	2
2010	6	918	Processed		No Smelt Catch
2010	6	919	Processed	Longfin Smelt	1

SWP ITP Criteria Stations

Processing as of 3/26/10. No delta smelt collected to date.