SMELT WORKING GROUP
Monday, March 1, 2010

Recommendation for the week of March 1, 2010:

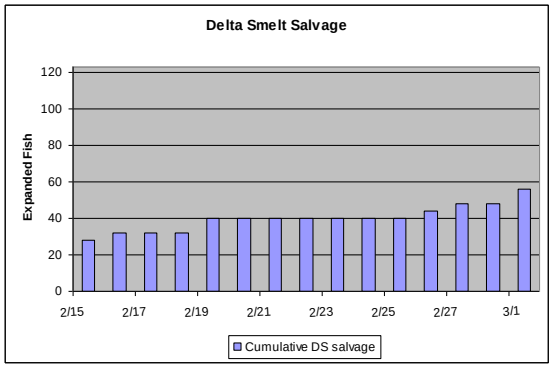
The SWG recommends that OMR flow be no more negative than -5,000 cfs on a 14-day average (no more negative than -6250 cfs on a 5-day average), as allowed under the RPA. The Working Group will continue to monitor salvage, survey data, and hydrological conditions and reconvene March 8 to discuss the potential to modify the recommendation.

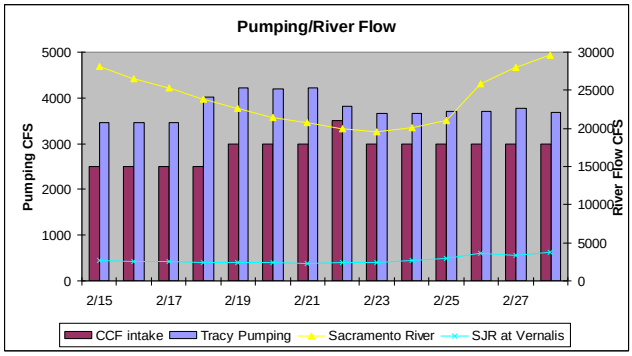
1) Current environmental data.

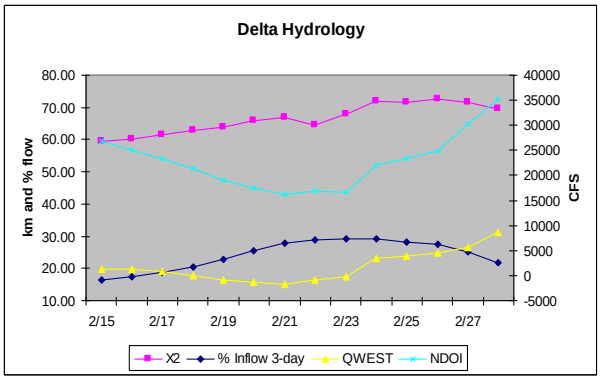
- **Temperature** for the 3 station average is 12.5°C.

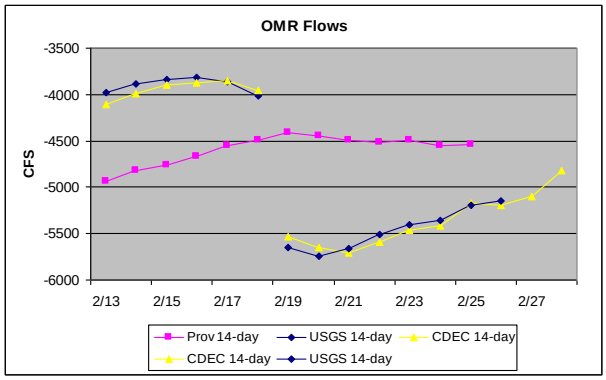
- **OMR** USGS tidally-averaged OMR as of February 26 is -5146 cfs (average from February 19 through 26). OMR estimate from CDEC from February 19-28 was -4825 cfs.

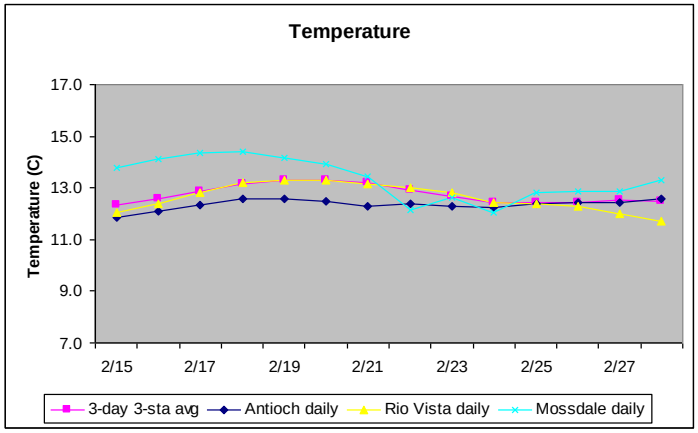
- **Flow** Sacramento River inflow is 29,615 cfs and San Joaquin 3688 cfs. The Projects targeted an average February SJR flow of 2280 cfs as of February 28. The actual average SJR February flow was 2529 cfs. The E/I ratio is 21.9%, X_2 is 69.5 km, QWEST is 8565 cfs and NDOI is 35252 cfs. The Graphs below 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:

Smelt Larval Survey #4 was in the field February 16 and17. Results indicate the greatest concentration of longfin smelt larvae at stations 405 and 411, with small numbers of larvae detected through the Delta. No delta smelt were collected. Smelt Larval Survey #5 is in the field today and tomorrow. Spring Kodiak Trawl #2 was in the field February 8 through 11. Results indicate 57 delta smelt were collected, 28 delta smelt from station 606, 10 from station 609, 7 from 715, 3 from 809, 2 each from 719, 716, and 513, and 1 each from 706, 519, and 418. Four ripe females were collected at Montezuma Slough stations 606 and 609. Spring Kodiak Trawl #3 is in the field next week. 20mm Survey begins March 15. Results from larval surveys and the SKT are available online at: http://www.delta.dfg.ca.gov/delta.

3) Salvage

One delta smelt was salvaged on February 26 (expanded to 4 fish), one delta smelt was salvaged on February 27 (expanded to 4 fish), and two fish were salvaged so far on March 1 (awaiting final count for March 1) at the CVP. The single fish on February 26 was considered a mature male. The single fish on February 27 was a 74 mm gravid female who was distended and full of eggs 0.9-1.0 mm in diameter. The two female delta smelt salvaged so far on March 1 were 67 and 77mm and had eggs 0.8-0.9 mm in diameter. Eggs at approximately 0.9 to1.0 mm are considered ready to spawn (ripe). The estimated cumulative total of delta smelt salvage (expanded) for the season is 56, all taken at the CVP. It is likely that delta smelt entrainment is also occurring at the SWP, but that mortality in Clifton Court Forebay prevents them from appearing in salvage. The total allowable take for adults under the Biological Opinion is 123, cumulative, for the season.

The Service notified CVP and SWP operators on February 19 that larval sampling as part of their salvage operations needs to begin. Larval sampling at the CVP and SWP has begun. No longfin or delta smelt larvae have been salvaged so far this season.

4) Expected Project Operations

The Projects expect to maintain export levels to maintain OMR at no more negative than -5000 cfs. Total exports are expected to remain at approximately 7700 cfs.

5) Particle Tracking Modeling

PTM was not requested or discussed for this week.

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 12^0C since February 14 and egg size in salvage- and survey-collected females is approximately 1 mm in diameter. Therefore, we are now in the juvenile protective phase of the biological opinion (RPA Component 2; Action 3 in Attachment B). This action will continue until June 30 or when the 3-day mean water temperature at Clifton Court Forebay reaches 25^0C, whichever occurs earlier.

Action 3 of the biological opinion, which is intended to protect larvae and juvenile delta smelt, includes a range of OMR flow from -1250 cfs to -5000 cfs. The BO also provides guidance to assist in the discussion of where to set the OMR flows within this 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 -5000 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 just getting underway and that few larvae are present in the system, combined with the current hydrological conditions, it is appropriate to consider the low-entrainment risk scenario.

The Working Group discussed the status of spawning for the species. Water temperatures in the Delta remain appropriate for spawning. The Group agreed that spawning likely has begun, and that eggs are likely on the substrate, with at least some larvae already hatched out. Delta temperatures are 12.5^oC. Given water temperature patterns over the past few weeks, it is possible that some delta smelt larvae have already entered the water column but have not yet been detected in sampling programs. However, large fractions of annual larval production are not expected until temperatures reach 15^0C.

The Working Group determined that the risk of entrainment for newly emerged larvae hatching in the lower San Joaquin River (if this is occurring) at the current level of OMR flow was low, and that the risk to the overall population of delta smelt was very low.

The SWG believes the risk of adult entrainment is relatively low under present conditions. Four adult delta smelt (estimated 16 expanded) have been salvaged at the CVP since February 22 and none have been salvaged at the SWP. Current hydrological conditions, results from the SKT #2, and the planned operations of the projects (approximately 7700 cfs combined exports ~ 22% export to inflow ratio) support this assessment.

Next Meeting: Monday, March 8, 2010 at 10 am

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

Advice for week of March 1:
The Smelt Working Group believes that OMR advice of -5000 cfs 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 (>=80mm) 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 February.

On February 16-17, longfin smelt larvae were found at 8 of 12 south and central Delta criteria stations during the fourth Smelt Larva Survey, but catches at these stations were declining (Table 1). Total catch at these central/south Delta stations represented about 1% of the longfin smelt larvae caught during survey 4 based on complete processing. Moreover, survey 4 data suggests that outflows distributed longfin smelt larvae west of the sampling area into San Pablo Bay. The survey 4 distribution mean was located at about rk 60 in the vicinity of stations 411 and 418 (http://www.dfg.ca.gov/delta/data/sls/CPUE_map.asp).

Discussion

The distribution information above was used to develop OMR flow advice. The larva criteria trigger occurred in SLS survey 2 and outflow has been insufficient to reset triggers. Based on a

larva/juvenile trigger, advice can restrict OMR flow levels to between -1,250 and -5000 cfs on a 14-day running average and the 5-day running average is within 25 percent of the required OMR flow. Outflows did not reach trigger re-set thresholds (55,000 cfs for Sacramento River at Rio Vista; 8,000 for San Joaquin River at Vernalis), but outflows were recently increasing in both rivers (see Figure 1 and 2 below). Qwest has been positive through February except for a few days from February 19 through the 23, and has been increasingly positive recently (Figure 3). A positive Qwest would have facilitated transport of longfin smelt larvae from the San Joaquin River and Franks Tract portion of the south Delta westward toward the confluence, reducing their risk of entrainment.

Only a small fraction of the longfin smelt larvae (ca 1% based on survey 4 results) was believed to be vulnerable to entrainment into the south Delta as long as OMR did not increase substantially.

Particle tracking model output was not reviewed for this advice.

Figure 1. Tidally averaged discharge for Sacramento River at Rio Vista, posted as of March 1, 2010.

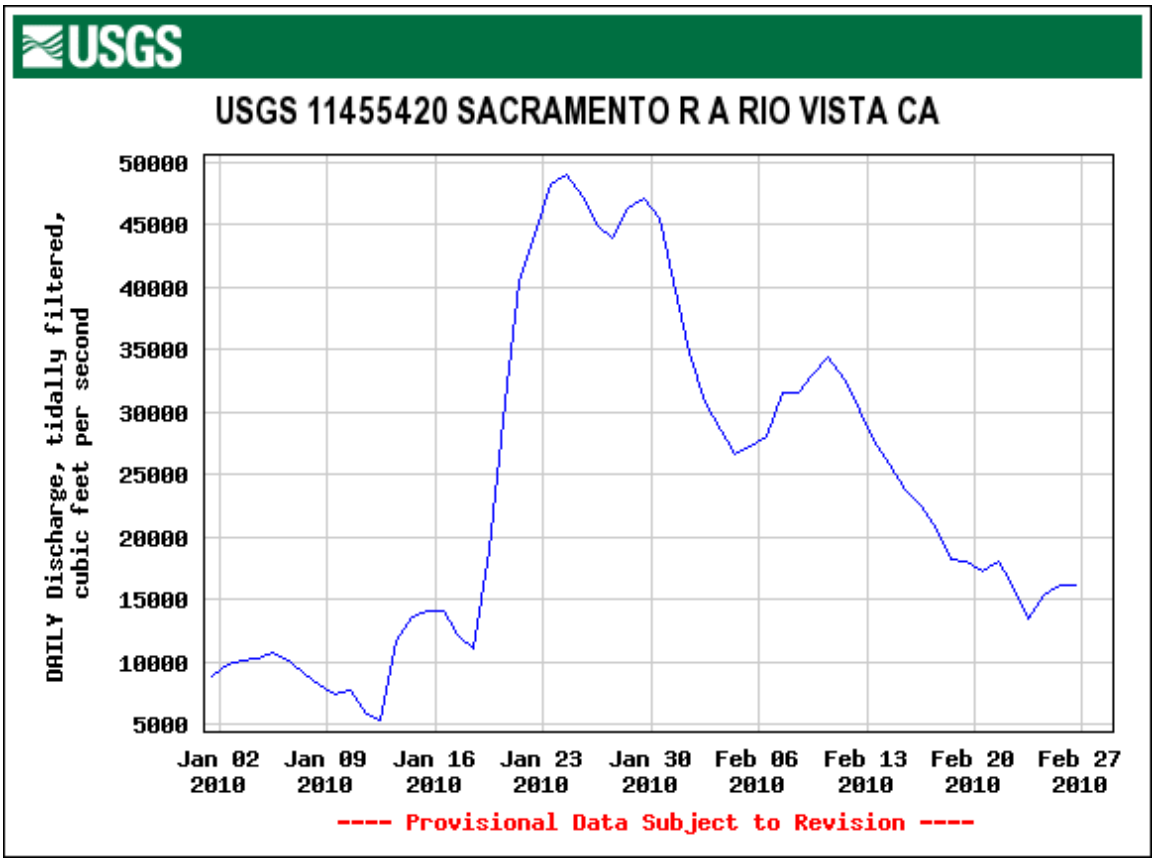


Figure 2. Clifton court intake, Tracy export pumping and daily river flows for the Sacramento River and San Joaquin River at Vernalis presented to the SWG March 1, 2010.

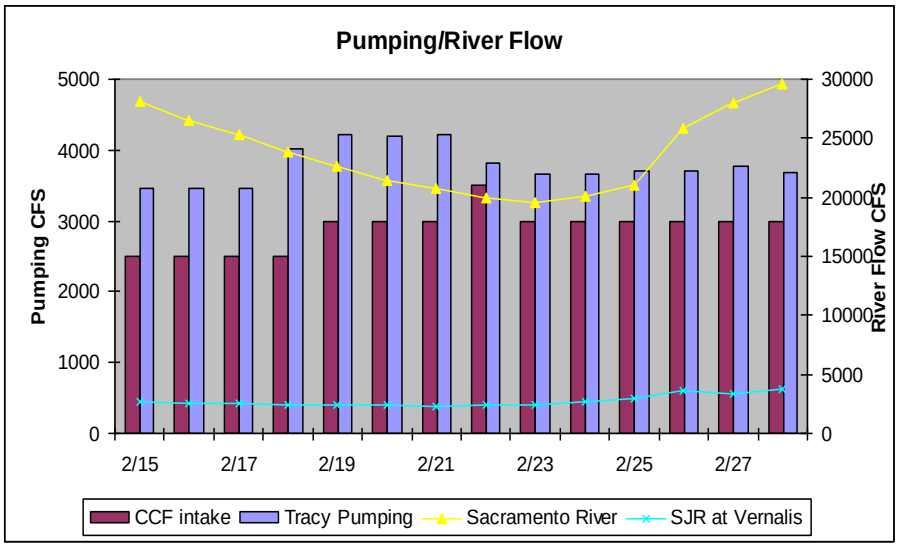


Figure 3. Location of X2, mean 3-day percent inflow diverted, Qwest and Net Delta Outflow Index presented to the SWG March 1, 2010.

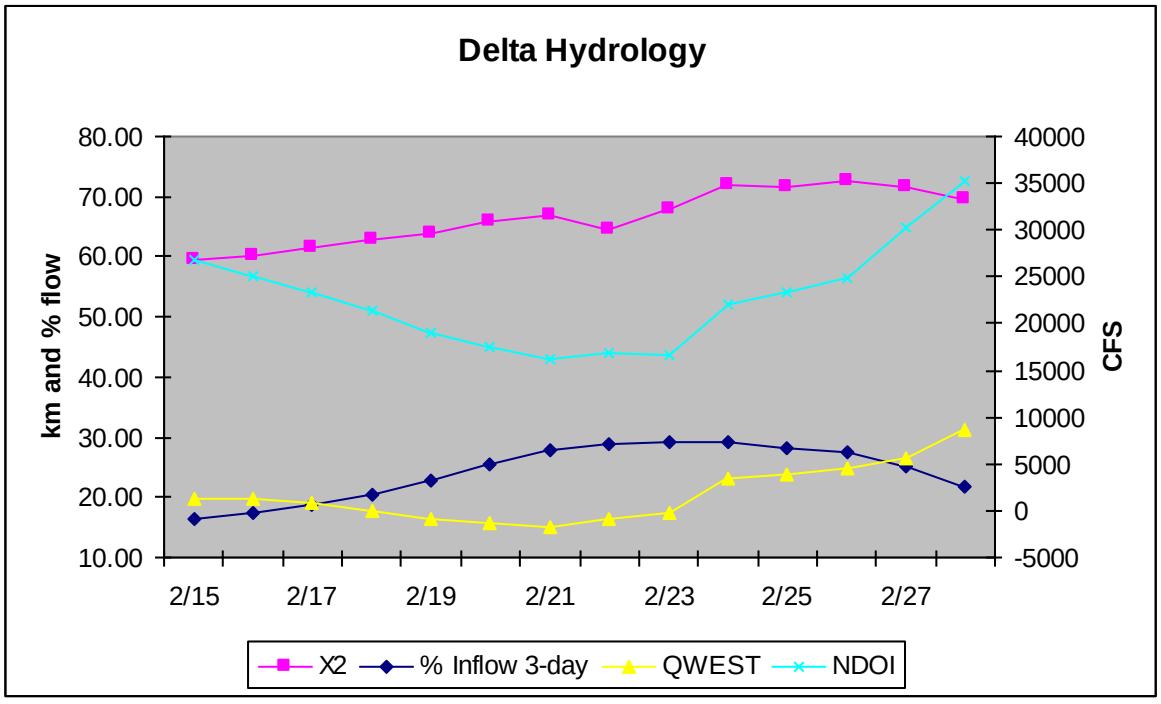


Table 1. Longfin smelt total catch by station for Smelt Larva Survey #4, February 16-17, 2010. Criteria stations for the State Water Project ITP are shaded.

Year	Survey	SLS Station	Sample Status	Species	Smelt Catch	
2010	4	405	Processed	Longfin Smelt	1346	
2010	4	411	Processed	Longfin Smelt	959	
2010	4	418	Processed	Longfin Smelt	209	
2010	4	501	Processed	Longfin Smelt	88	
2010	4	504	Processed	Longfin Smelt	192	
2010	4	508	Processed	Longfin Smelt	47	
2010	4	513	Processed	Longfin Smelt	57	
2010	4	519	Processed	Longfin Smelt	37	
2010	4	520	Processed	Longfin Smelt	59	
2010	4	602	Processed	Longfin Smelt	114	
2010	4	606	Processed	Longfin Smelt	505	
2010	4	609	Processed	Longfin Smelt	66	
2010	4	610	Processed	Longfin Smelt	27	
2010	4	703	Processed	Longfin Smelt	8	
2010	4	704	Processed	Longfin Smelt	64	
2010	4	705	Processed	Longfin Smelt	18	
2010	4	706	Processed	Longfin Smelt	45	
2010	4	707	Processed	Longfin Smelt	47	
2010	4	711	Processed	Longfin Smelt	1	
2010	4	716	Processed	Longfin Smelt	7	
2010	4	723	Processed	Longfin Smelt	3	
2010	4	801	Processed	Longfin Smelt	62	
2010	4	804	Processed	Longfin Smelt	65	
2010	4	809	Processed	Longfin Smelt	25	SWP ITP Criteria Stations
2010	4	812	Processed	Longfin Smelt	5	
2010	4	815	Processed	Longfin Smelt	5	
2010	4	901	Processed	Longfin Smelt	9	
2010	4	902	Processed	Longfin Smelt	3	
2010	4	906	Processed	Longfin Smelt	1	
2010	4	910	Processed		No Smelt Catch	
2010	4	912	Processed		No Smelt Catch	
2010	4	914	Processed		No Smelt Catch	
2010	4	915	Processed	Longfin Smelt	3	
2010	4	918	Processed	Longfin Smelt	1	
2010	4	919	Processed		No Smelt Catch	