

SMELT WORKING GROUP
Monday, February 22, 2010

Recommendation for the week of February 22, 2010:

Delta temperatures have exceeded 12⁰C since last week and egg size in salvaged and survey females is approximately 0.9mm 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 25⁰C, whichever occurs earlier.

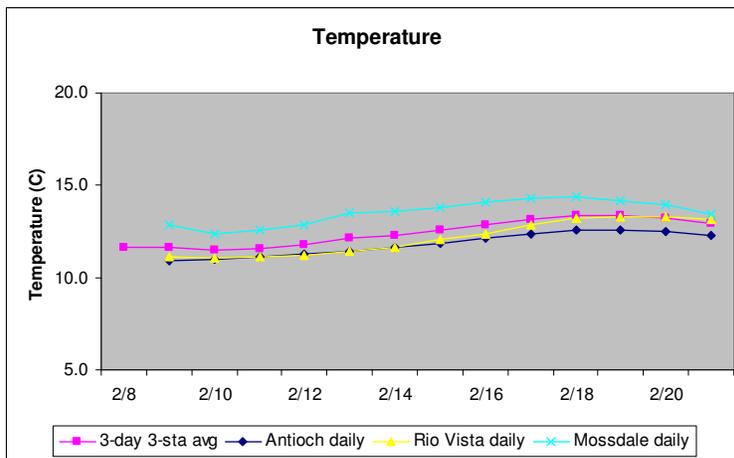
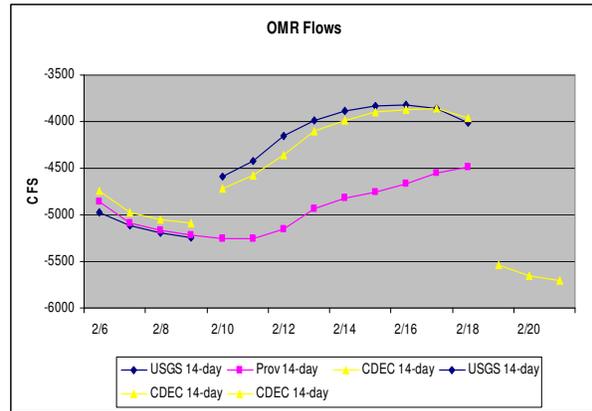
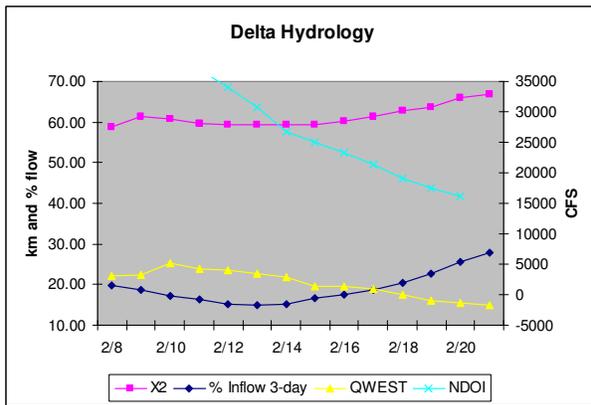
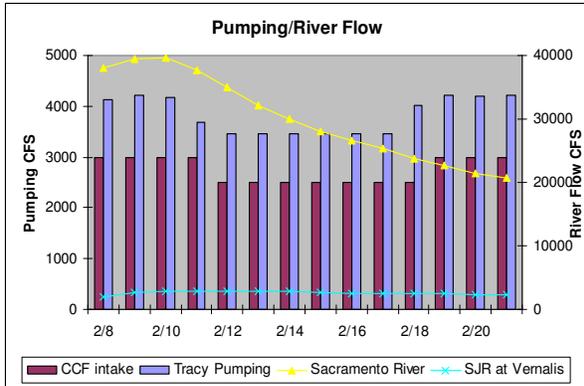
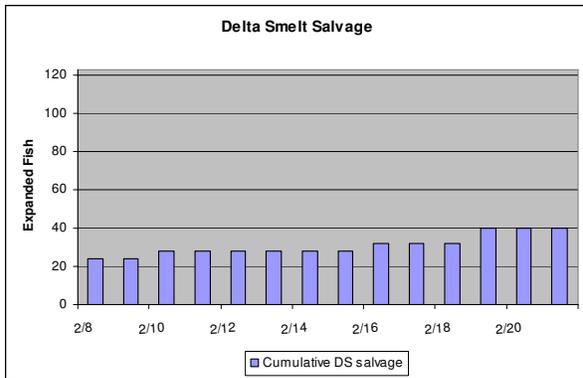
The three-day, three-station average water temperature exceeded 12⁰C on February 13 and is now at 13⁰C, indicating that temperatures are appropriate for spawning. Given incubation rates at 12-13⁰C, the Working Group does not expect that larvae will enter the water column for about 2 more weeks. Large fractions of annual larval production are not expected until temperatures reach 15⁰C.

The risk of adult entrainment remains low. Three adult delta smelt (12 expanded) have been salvaged at the CVP since February 16 and none at the SWP. Current hydrological conditions, preliminary results from the SKT #2, and the planned operations of the projects (approximately 6400 cfs combined exports), support this assessment. Cumulative salvage of adults is 40; the concern level is 92 and the reinitiation level is 123. If salvage rate increases markedly, the Working Group will reconvene for further discussion.

The SWG therefore recommends that OMR flow be no more negative than -5000 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 1 to discuss the potential to modify the recommendation.

1) Current environmental data

- **Temperature:** the 3 station average is 13⁰C.
- **OMR:** USGS tidally-averaged OMR as of February 18 is -4011 cfs (average from February 10 through 18). OMR estimate from CDEC from February 10-18 was -3955 cfs and from February 19 through 21 is -5702 cfs.
- **Flow:** Sacramento River inflow is 20,780 cfs and San Joaquin 2339 cfs. The Projects are targeting average February SJR flows of 2280 cfs by February 28. The E/I ratio is 27.9%, X₂ is 67 km, QWEST is -1651 cfs and NDOI is 16147 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 and 17. Preliminary results include stations throughout the Delta and eastern Suisun Bay. Western Suisun Bay and Montezuma Slough results are still pending. No delta smelt were collected. Longfin smelt larvae were detected at stations throughout the Delta and Suisun Bay. Spring Kodiak Trawl #2 was in the field February 8 through 11. Preliminary results include stations throughout the Delta and Suisun Bay. Western Suisun Bay and Montezuma Slough results are still pending. Preliminary results indicate that 57

fish 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. Results from larval surveys and the SKT are available online at: <http://www.delta.dfg.ca.gov/delta>.

3) Salvage

Two delta smelt were salvaged on February 19 (expanded to 8 fish) and one delta smelt was salvaged on February 16 (expanded to 4 fish) at the CVP. The two female delta smelt salvaged on February 19 had eggs 0.9mm in diameter. Eggs at approximately 1.0mm are considered ready to spawn (ripe). The cumulative total of delta smelt salvage (expanded) for the season is 40, 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.

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 6400 cfs.

5) Particle Tracking Modeling

PTM was not requested 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.

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 spawning is just getting underway and that few larvae are present in the system, it is appropriate to consider the low-entrainment risk scenario.

The Working Group discussed results from the 20mm Survey from 2009. 20mm Survey #3 from 2009 ran from April 6 through 9. This was the first survey in which larval delta smelt were collected. However, the size of the larvae (approximately 15mm) indicates that they were 2-3 weeks old at first detection. The Working Group felt this indicated the difficulty of detecting

individuals with the population level so low and that we should expect similar difficulties this year with detection.

The Working Group discussed the status of spawning for the species. The Group agreed that spawning may have already begun, but that eggs, if present, are mostly on the substrate and 1-2 weeks from hatching. Delta temperatures are 13°C. At that temperature, incubation will take approximately 2 weeks.

The Working Group determined that there was some 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, but that the risk to the overall population of delta smelt was very low. The Group felt that more protective actions might be warranted starting in the next couple of weeks.

Next Meeting: Monday, March 1, 2010 at 10 am

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

Advice for week of February 22:

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 (≥ 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 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 < 6% of the longfin smelt larvae caught during survey 4 (samples from 6 Suisun Bay and Marsh stations remained to be processed and will contain additional longfin smelt larvae).

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 -1250 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 (see Figure 1 and 2 below, 55,000 cfs for Sacramento River at Rio Vista; 8,000 for San Joaquin River at Vernalis).

Only a small fraction of the longfin smelt larvae was believed to be vulnerable to entrainment into the south Delta as long as OMR did not increase. Qwest was positive through February 18 (Figure 3), which 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. Maintaining OMR at -5000 cfs should affect <6% of the longfin smelt larvae based on SLS survey 4 data.

Particle tracking model output was not reviewed for this advice.

Figure 1. Tidally averaged discharge for Sacramento River at Rio Vista, posted as of February 22, 2010.

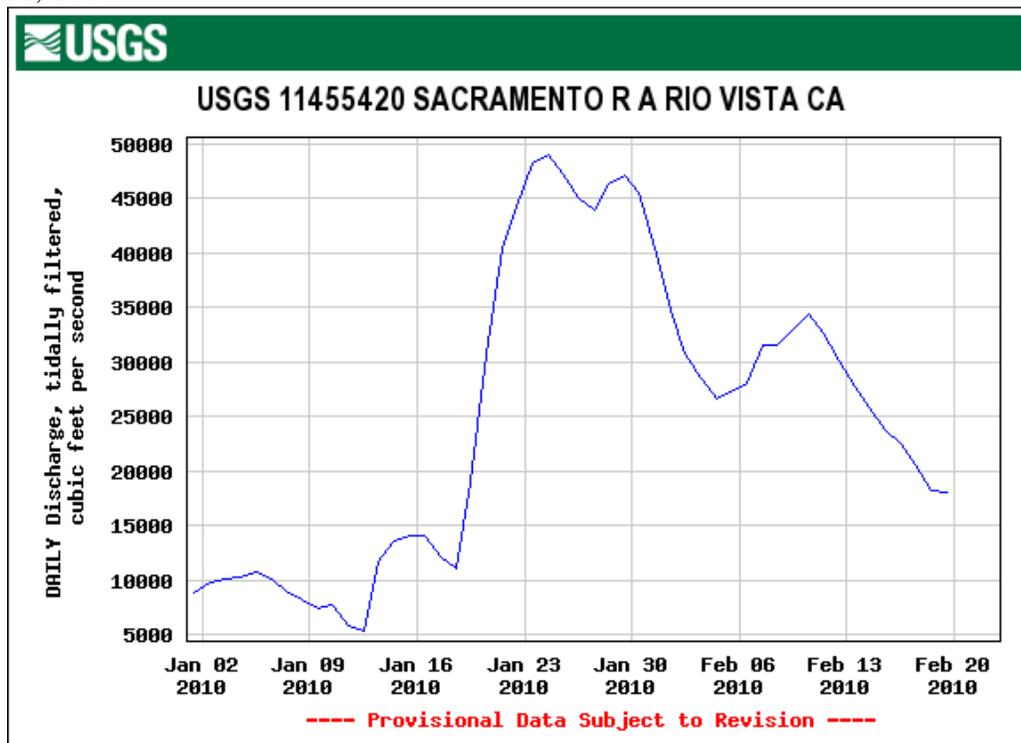


Figure 2. Clifton court intake, Tracy export pumping and daily river flows for the Sacramento River and San Joaquin River at Vernalis presented to the SWG February 22, 2010.

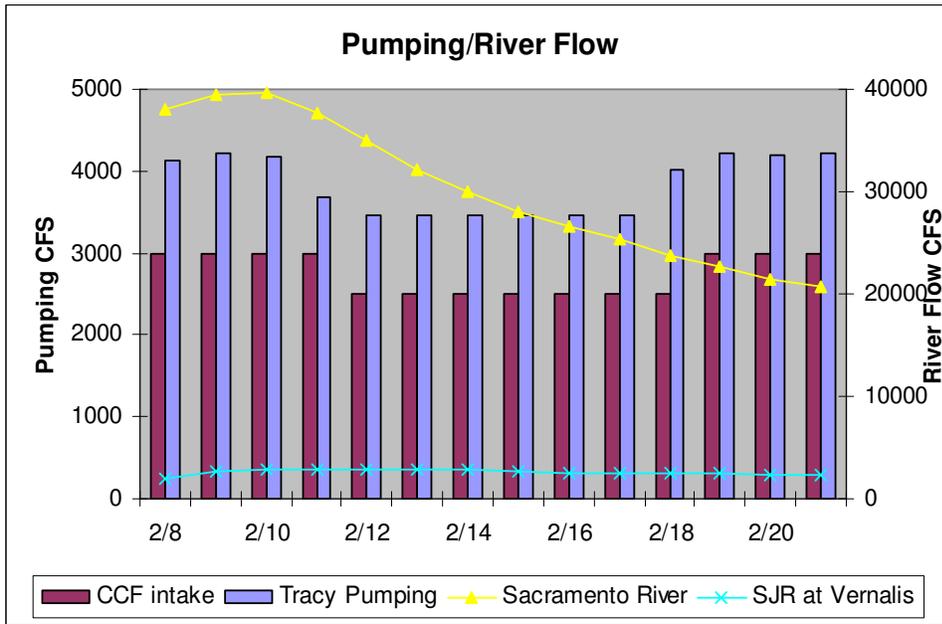


Figure 3. Location of X2, mean 3-day percent inflow diverted, Qwest and Net Delta Outflow Index presented to the SWG February 16, 2010.

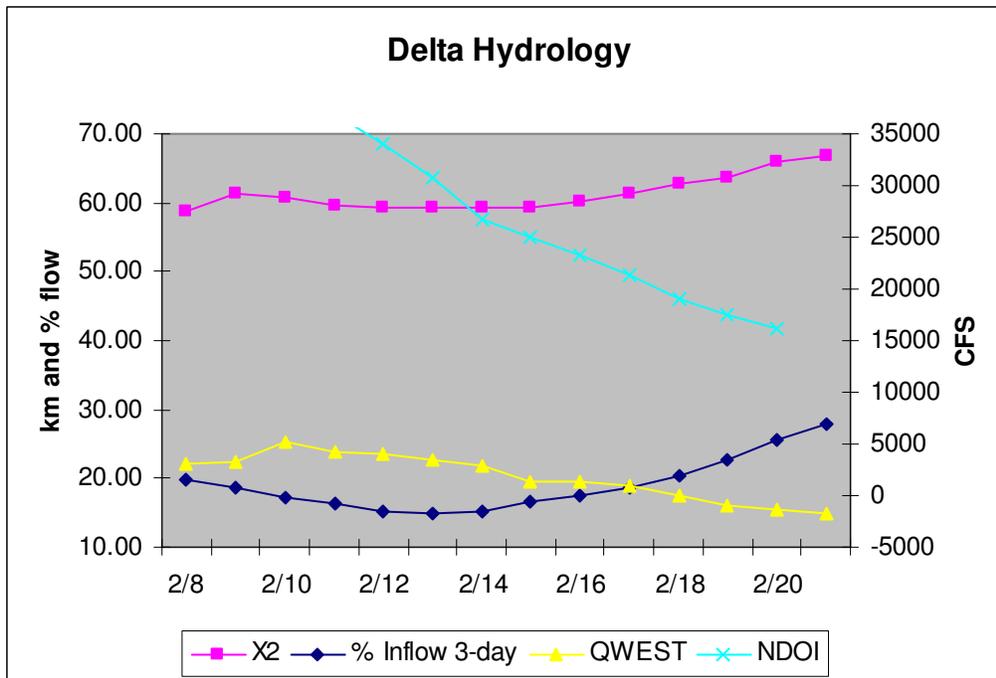


Table 1. Longfin smelt total catch by station for Smelt Larva Survey #4, February 16-17, 2010. Criteria stations for the State Water Project ITP are shaded.

Year	Survey	SLS Station	Sample Status	Species	Smelt Catch
2010	4	405	Not yet processed		
2010	4	411	Not yet processed		
2010	4	418	Processed	Longfin Smelt	209
2010	4	501	Processed	Longfin Smelt	88
2010	4	504	Not yet processed		
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	Not yet processed		
2010	4	606	Not yet processed		
2010	4	609	Not yet processed		
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
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