

SMELT WORKING GROUP Monday, April 16, 2012

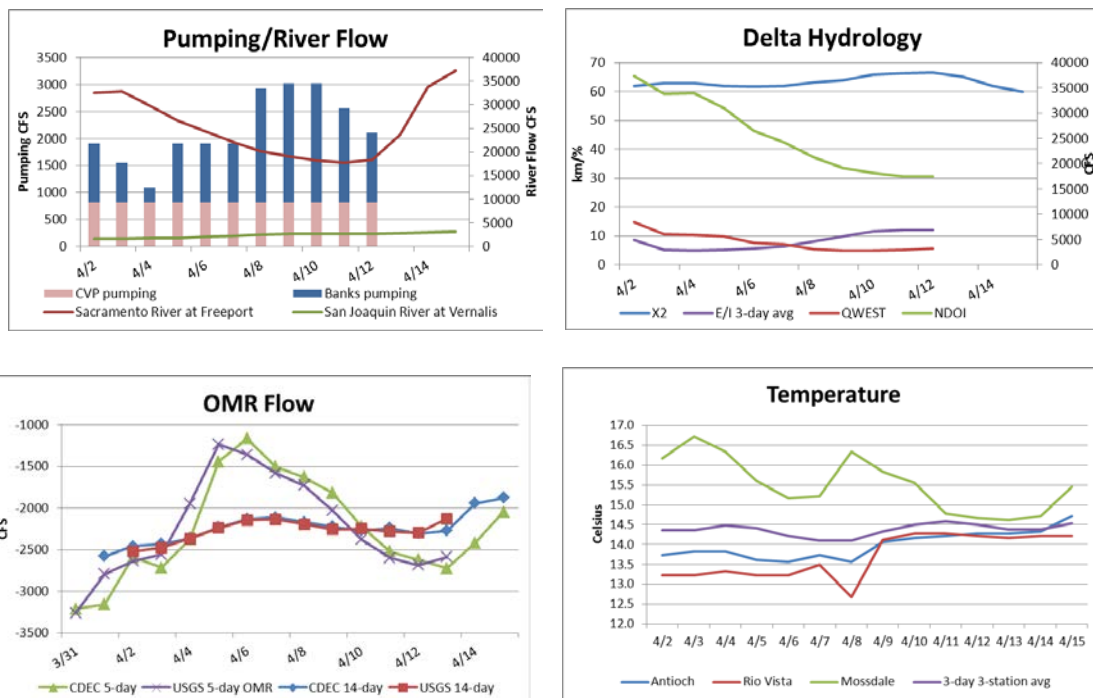
Meeting Summary:

The Working Group agreed that given their present distribution, current salvage, and Delta conditions, risk of entrainment of delta smelt remains low and therefore, the Working Group recommends that no change in operations is necessary to adequately protect delta smelt from entrainment. The Working Group also agreed that given their present distribution, existing constraining conditions was sufficient to protect longfin smelt. The Working Group will continue to monitor smelt salvage, adult and larval smelt survey data, and delta hydrological conditions and will reconvene April 23, 2012, at 10 am.

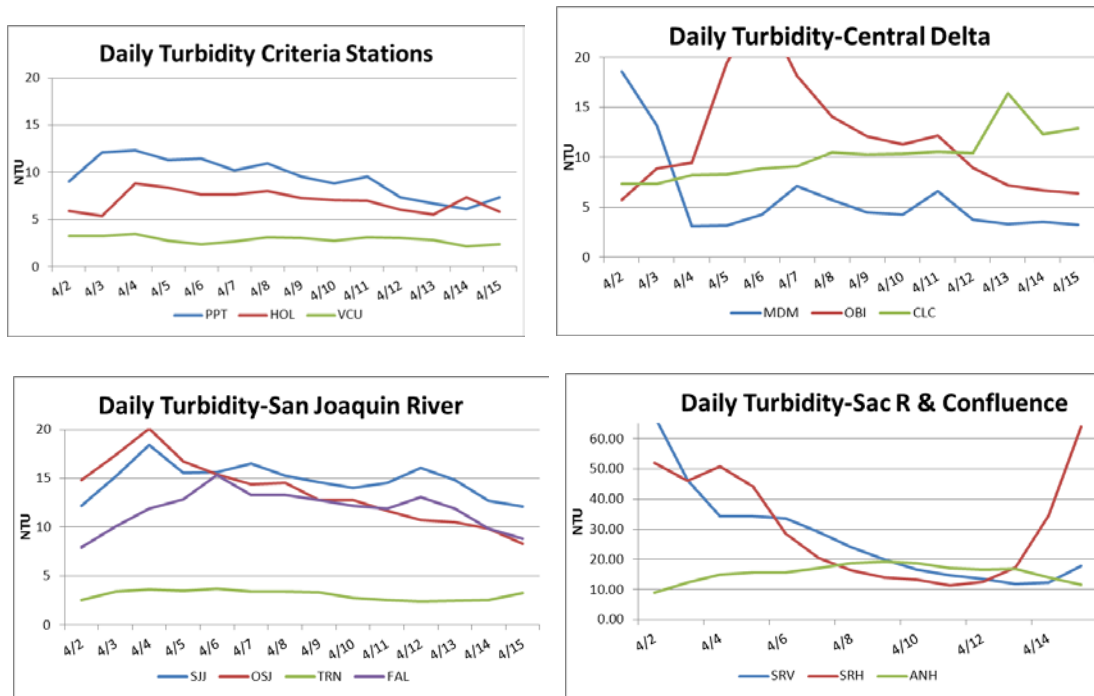
Reported Data:

1) Current environmental data:

- **Water temperature** for the 3 station average is 14.5°C.
- **OMR:** USGS tidally-averaged OMR 5-day and 14-day averages as of April 13 are -2,587 cfs and -2,130 cfs, respectfully. CDEC 5-day average and 14-day averages as of April 15 are -2,046 cfs and -1,878 cfs, respectfully.
- **Flow:** Sacramento River inflow is 37,192 cfs and San Joaquin River is 3,076 cfs. X_2 calculation from CDEC is 59.88 km. 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:

Spring Kodiak Trawl # 4 was in the field the week of April 2. A total of 181 adult delta smelt were collected. Most of the delta smelt adults were in prespaw condition; however some showed evidence of a previous spawn. Detections were widespread, with the majority around the confluence and Montezuma Slough areas. SKT#5 is in the field April 30. 20-mm Survey #3 was in the field last week. Larval delta smelt were collected in the south and central Delta, at stations 914, 902, and 812. Additional stations with larval delta smelt detections were in the confluence area, Cache Slough, and Montezuma Slough. 20-mm Survey #4 is in the field next week. See “WEEKLY ADVICE FOR THE DEPARTMENT OF FISH AND GAME FOR LONGFIN SMELT” for additional details. The annual FMWT Delta Smelt Index for 2011 is 343 (sum of all four months). The 2011 Delta Smelt Recovery Index (based on September and October) is 55. More information on the Recovery Index can be found on the Bay-Delta Office’s web site at <http://www.fws.gov/sfbaydelta/> under “hot topics.” Results from CDFG surveys are available online at: <http://www.dfg.ca.gov/delta/>.

3) Salvage:

The cumulative total for adult delta smelt for WY 2012 is 199. The table below details daily estimated adult delta smelt and juvenile longfin smelt salvage for the season:

Table 1: Estimated daily adult delta smelt and juvenile longfin smelt salvage (≥ 20 mm) for WY2012

Delta Smelt (adults)				Longfin Smelt (YOY≥ 20 mm)			
Date	CVP	SWP	Total	Date	CVP	SWP	Total
1/18	4	0	4	2/29	8	0	8
1/24	4	0	4	3/3	4	0	4
1/25	4	0	4	3/5	4	4	8
1/26	5	0	5	3/6	32	0	32
1/27	2	0	2	3/7	0	8	8
1/28	4	0	4	3/9	8	0	8
1/30	12	0	12	3/11	0	48	48
1/31	1	0	1	3/12	0	8	8
2/1	3	0	3	3/13	8	16	24
2/3	4	0	4	3/14	4	8	12
2/10	4	0	4	3/15	0	28	28
2/13	4	0	4	3/16	4	24	28
2/14	4	0	4	3/17	0	34	34
2/15	1	0	1	3/18	4	16	20
2/17	2	0	2	3/19	0	14	14
2/18	4	0	4	3/20	4	22	26
2/20	4	0	4	3/21	4	172	176
2/21	4	0	4	3/22	42	152	194
2/22	8	0	8	3/23	3	126	130
2/23	0	4	4	3/24	16	144	156
2/24	0	12	12	3/25	4	82	86
2/25	0	4	4	3/26	6	72	76
2/27	4	18	22	3/27	21	62	88
2/28	4	4	8	3/28	8	222	230
2/29	0	10	10	3/29	28	130	158
3/1	0	2	2	3/30	8	88	96
3/2	0	6	6	3/31	8	88	96
3/5	0	4	4	4/1	36	62	98
3/6	4	20	24	4/2	25	40	65
3/9	4	0	4	4/3	36	28	64
3/11	4	4	8	4/4	25	8	33
3/13	0	4	4	4/5	12	66	78
3/17	4	0	4	4/6	16	88	104
3/24	4	0	4	4/7	52	28	80
3/27	1	0	1	4/8	28	8	36
				4/9	48	24	72
				4/10	28	36	64
				4/11	44	36	80
				4/12	48	56	104
				4/13	24	84	108
				4/14	4	140	144
				4/15	35	84	119

Larval or prejuvenile (< 20 mm) longfin smelt were observed in daily larval fish samples on 4-9, 10, and 12. Current delta and longfin 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>

4) Expected Project Operations:

Combined CVP/SWP exports are approximately 2,600 cfs as of April 16. Combined exports are presently curtailed to comply with the d-1641 restriction on Delta pumping to match San Joaquin flow at Vernalis (1:1 restriction) from April 15 through May 15. However, the Projects will transition to operating to the -3500 cfs OMR flow as stipulated within the OMR Technical Memo between April 15 and 30.

5) Particle Tracking Modeling:

The Working Group did not request PTM runs for this week.

6) Assessment of Risk:

Background:

The collection of a spent female in the SKT Survey #2 on February 15 indicates that delta smelt spawning has begun. The Working Group discussed the risk of entrainment for larval delta smelt and any discussion of a recommendation was intended to protect larval delta smelt (B.O., p 282). The Working Group will follow the guidance for Action 3 of the B.O. (pp. 357-368).

Combined incidental take levels for State and federal fish facilities are based on the most recent FMWT abundance index. The 2011 FMWT index for delta smelt is 343. This means that the authorized incidental take of adults is 2,487 (estimated) and the concern level is 1,862 (estimated), cumulative for the December through March period.

Table 2: Incidental Take Levels for the larval/juvenile life stage (cumulative)

	Concern Level	Take Limit
April	101	151
May	4,471	6,705
June	11,327	16,991
July	12,851	19,276

Discussion: The Working Group reviewed and discussed all relevant data from fish surveys, Delta monitoring, salvage, and planned Project operations. No delta smelt has been salvaged at either facility since March 27. The overall Delta conditions, absence of salvage and survey data indicates a low risk of entrainment. The Working Group expects with the extended spawning

season, larvae reaching detectable sizes will continue through the next few weeks, and subsequent SLS detections will increase.

7) Longfin Smelt:

Longfin smelt larval distribution (Smelt Larva Survey 1, January 9-10) exceeded the criteria for advice from the SWG under the SWP's 2081 permit; CDFG therefore requested that the Working Group discuss entrainment risk for longfin smelt. The 2081 identifies OMR flow between -1,250 and -5,000 cfs as the range to select from in determining a level adequately protective of longfin larvae. Because few larvae were collected in the central and south Delta for 20-mm Survey #3, the risk is currently low. Qwest is approximately 11,000cfs and Delta outflow is now 42,500cfs, which should assist the remaining larvae in moving downstream and out of the central Delta.

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

Advice for week of April 16, 2012:

The Smelt Working Group believes that OMR of no more negative than -5,000 cfs is protective of longfin smelt at this time. The current OMR of -3,100 to -3,400 cfs will be substantially more protective and beneficial to larvae and juveniles remaining in the lower San Joaquin River.

Summary of risk: Risk of entrainment into the south Delta is currently low. Larva catches were low in the central and south Delta in 20-mm Survey #3. At the fish facilities detection of larvae continues at regular but less frequent intervals and salvage of juveniles remains consistent 30-80/day and recently increased to just over 100/day combined salvage. Recent runoff has maintained Qwest in the 3,100 cfs range and increased to 11,000 cfs, likely transporting larvae in the central Delta westward. Recently, NMFS restrictions constrain OMR to remain no more negative than -2,500 cfs through 14 April; now exports are constrained to match Vernalis flows predicted to be 3,100 to 3,400 cfs this week. The period of potential Barker Slough export restrictions concluded for the year on 31 March.

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 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 in 4 or more of the 12 survey stations listed.
5. For Barker Slough exports only: After January 15 through March 31 of critically dry or dry water years (Sacramento River), based on abundance and distribution and detection at Station 716.

Discussion of Criteria and Conditions

Review of past information: Longfin smelt larvae were collected in the Smelt Larva Survey #1 (January 9-10, 2012), so adult salvage and distribution are now informational and can be viewed as suggestive possible future larvae distribution. As of 5 March 2012, no ≥ 80 mm longfin smelt have been salvaged for the water year, but larva sampling began at both facilities 16 February, and longfin smelt larvae were detected by the State on 19 February and at both facilities 20 February. The Fall Midwater Trawl longfin smelt annual abundance index for 2011 is 477. The total adult salvage level threshold for advice is 2385 (see criterion in #1).

December Fall Midwater Trawl and Bay Study surveys collected adult longfin smelt in the San Joaquin River just downstream and just upstream of the Antioch Bridge. In early January, Bay Study collected adult longfin smelt as far upstream as San Andreas Shoals on the San Joaquin River. The first Smelt Larva Survey of 2012 caught longfin smelt larvae at 9 of 12 criteria stations in the central and south Delta (criterion #3, Figure 1) triggering the need for advice. Larva catches (densities) were very low during survey 1 and hydraulic conditions at the time posed little risk to longfin smelt larvae. Larvae numbers increased in Smelt Larva Survey 2, and then declined slightly in survey 3 and again in survey 4 followed by a substantial drop in survey 5.

Review of new and current information: The third 20-mm Survey (9-12 April) detected only 3 longfin smelt larvae in the central and south Delta (Table 1). Qwest **reached** 11,000 cfs and is predicted to go somewhat higher later this week. These observations indicate continued low risk of entrainment into the south Delta. Qwest was positive throughout March including high levels 18 and 19 March (over 10,000 cfs positive) and a steep increase at the end of the month to 9,972 on 1 April, likely leading to the lower longfin smelt numbers in the central Delta. Qwest declined to 3,100 cfs on 8 April and remained at about 3,000 cfs through 12 April and is currently at 11,051 cfs. Longfin smelt larvae or small juveniles continue to be detected at both fish facilities. Larvae are being detected irregularly, juveniles daily. The juvenile salvage trend had been declining last week, but started to increase again at the end of the week and jumped to over 100 juveniles per day combined for both facilities over the weekend. The recently salvaged large larvae (15-19 mm) and small juveniles (20-30mm) collected at the fish facilities were either spawned in or drawn into the south Delta months prior to detection at the facilities (otolith growth data indicates 80+ days to reach 20 mm; no evidence that longfin smelt spawn upstream of the facilities in the San Joaquin River). Thus, current longfin smelt salvage likely reflects

larva distributions, hydrology and OMR from late January and early February when they were entrained into the south Delta; subsequent south Delta hydrodynamics, particularly reduced exports and OMR, allowed longfin smelt larvae to grow for months prior to salvage.

Combined State and federal exports were recently coordinated to achieve no more negative than -3,500 cfs OMR for the period 8-14 April to protect winter-run Chinook salmon and steelhead. OMR was estimated at -1,628 cfs (CDEC 5-day) and -2,171 (CDEC 14-day). Exports are now controlled by D1641 to match Vernalis flows 1:1. Vernalis flows are currently 3,100 cfs and predicted to increase to 3,400 later this week; combined exports will match these flows. Since the Head of Old River Barrier is in place, upcoming exports will be drawing water south and OMR will be negative and about the same magnitude as exports or somewhat more positive. Such moderately negative OMR flows along with strongly positive Qwest should not draw many additional longfin smelt larvae or juveniles into the south Delta.

The longfin smelt incidental take permit restrictions for Barker Slough exports concluded for 2012 on 31 March. Although longfin smelt larvae remain in the vicinity, exports remain sporadic and low, and should not entrain larvae.

Table 1. Longfin smelt catch per station from 20mm Survey #3, 2012.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length	
2012	3	323	11-Apr-12	1	Longfin Smelt	1	9	9	9	Suisun Bay & West
2012	2	340			Not yet processed					
2012	2	342			Not yet processed					
2012	2	343			Not yet processed					
2012	2	344			Not yet processed					
2012	3	345	11-Apr-12	1	Longfin Smelt	13	10	17	12.0769	
2012	3	346	11-Apr-12	1	No Longfin Catch	0				
2012	3	405	12-Apr-12	1	No Longfin Catch	0				
2012	3	411	12-Apr-12	1	No Longfin Catch	0				
2012	3	418	12-Apr-12	1	Longfin Smelt	1	10	10	10	
2012	3	501	10-Apr-12	2	Longfin Smelt	26	6	20	8.53846	
2012	3	504	10-Apr-12	2	Longfin Smelt	9	8	24	17.4444	
2012	3	519	10-Apr-12	2	Longfin Smelt	7	7	23	12.5714	
2012	3	602	10-Apr-12	1	Longfin Smelt	1	9	9	9	
2012	3	606	10-Apr-12	1	Longfin Smelt	27	8	27	16.3704	
2012	3	609	10-Apr-12	1	Longfin Smelt	18	8	28	15.2778	
2012	3	610	10-Apr-12	1	Longfin Smelt	3	13	17	15	
2012	3	508	11-Apr-12	1	Longfin Smelt	2	6	13	9.5	Confluence
2012	3	513	11-Apr-12	1	Longfin Smelt	6	7	24	13.1667	
2012	3	520	11-Apr-12	1	No Longfin Catch	0				
2012	3	801	11-Apr-12	1	Longfin Smelt	1	16	16	16	
2012	3	804	11-Apr-12	2	Longfin Smelt	2	12	18	15	
2012	3	703	11-Apr-12	2	No Longfin Catch	0				Sac. River System
2012	3	704	11-Apr-12	1	No Longfin Catch	0				
2012	3	705	10-Apr-12	3	No Longfin Catch	0				
2012	3	706	10-Apr-12	3	Longfin Smelt	1	27	27	27	
2012	3	707	10-Apr-12	3	No Longfin Catch	0				
2012	3	711	09-Apr-12	3	No Longfin Catch	0				
2012	3	716	09-Apr-12	3	Longfin Smelt	1	14	14	14	
2012	3	718	09-Apr-12	3	Longfin Smelt	20	11	19	15.65	
2012	3	719	09-Apr-12	3	Longfin Smelt	4	18	26	20.5	
2012	3	720	09-Apr-12	3	Longfin Smelt	4	16	28	22.5	
2012	3	723	09-Apr-12	3	Longfin Smelt	1	27	27	27	
2012	3	724	09-Apr-12	3	No Longfin Catch	0				
2012	3	726	09-Apr-12	3	No Longfin Catch	0				
2012	3	809	09-Apr-12	3	No Longfin Catch	0				Central & South Delta
2012	3	812	10-Apr-12	3	No Longfin Catch	0				
2012	3	815	10-Apr-12	3	No Longfin Catch	0				
2012	3	901	09-Apr-12	3	No Longfin Catch	0				
2012	3	902	09-Apr-12	3	No Longfin Catch	0				
2012	3	906	10-Apr-12	3	Longfin Smelt	1	8	8	8	
2012	3	910	09-Apr-12	3	No Longfin Catch	0				
2012	3	912	09-Apr-12	3	No Longfin Catch	0				
2012	3	914	09-Apr-12	3	No Longfin Catch	0				
2012	3	915	09-Apr-12	3	Longfin Smelt	2	13	16	14.5	
2012	3	918	09-Apr-12	3	No Longfin Catch	0				
2012	3	919	10-Apr-12	3	No Longfin Catch	0				

Processing complete through 4/12/12