

SMELT WORKING GROUP
Monday, April 23, 2012

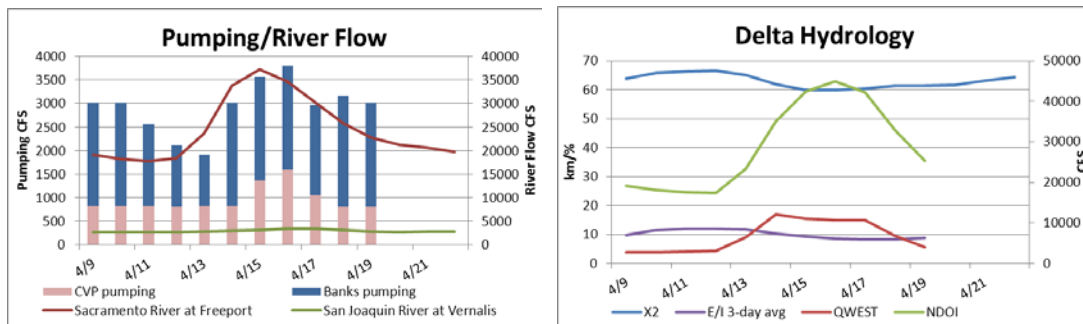
Meeting Summary:

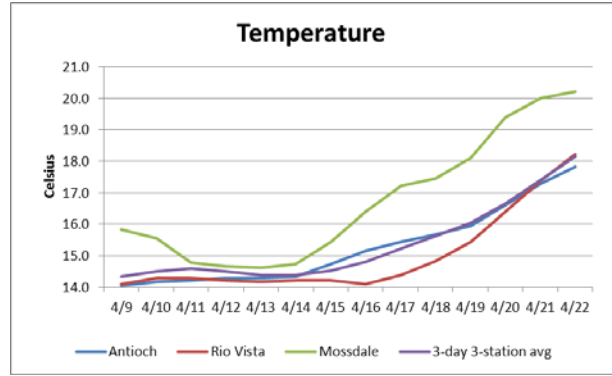
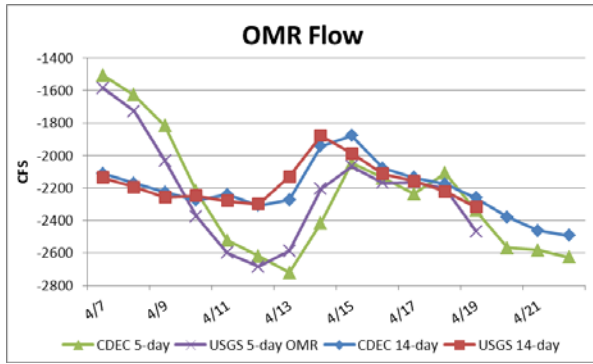
The Working Group agreed that given their present distribution, current salvage, and Delta conditions, risk of entrainment of delta smelt remains low and therefore, the Working Group recommends that no change in operations is necessary to adequately protect delta smelt from entrainment. The Working Group 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 30, 2012, at 10 am.

Reported Data:

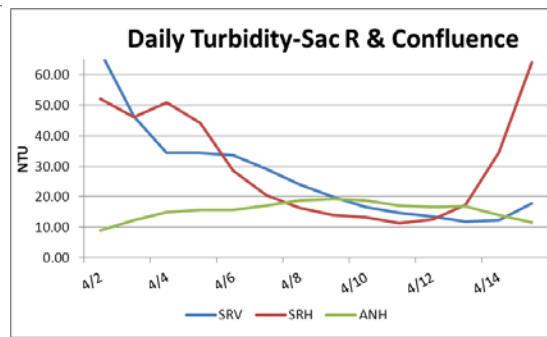
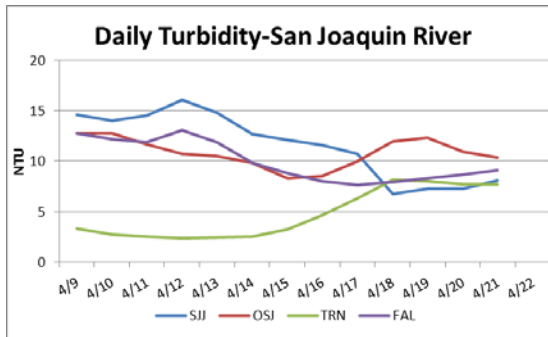
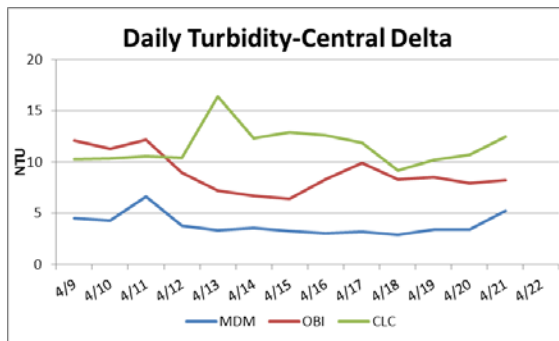
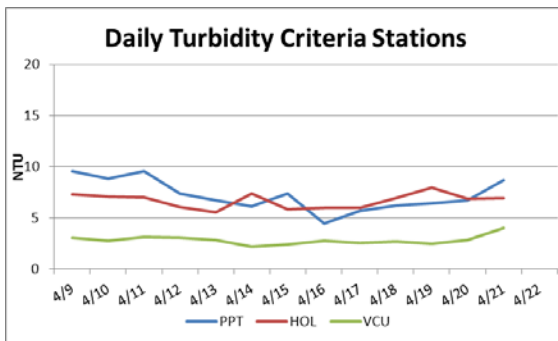
1) Current environmental data:

- **Water temperature** for the 3 station average is 18.1°C.
- **OMR:** USGS tidally-averaged OMR 5-day and 14-day averages as of April 19 are -2,466 cfs and -2,317 cfs, respectfully. CDEC 5-day average and 14-day averages as of April 22 are -2,626 cfs and -2,494 cfs, respectfully.
- **Flow:** Sacramento River inflow is 19,740 cfs and San Joaquin River is 2,800 cfs. X_2 calculation from CDEC is 64.43 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:

20mm Survey #3 was in the field the week of April 9. A total of 31 delta smelt were collected, 15 of which were adults. The larvae ranged in size from 6-15mm. Larvae were detected at stations 914, 902, 812 in the central and southern Delta, as well as stations in the Sacramento River, Suisun Bay, and further downstream. 20mm Survey #4 is in the field this week. SKT#5 is in the field April 30. 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 203. 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 |
| January total | 36 | 0 | 36 | February total | 8 | 0 | 8 |
| February total | 50 | 52 | 102 | March total | 257 | 1484 | 1741 |
| March total | 21 | 40 | 61 | 4/1 | 36 | 62 | 98 |
| 4/17 | 4 | 0 | 4 | 4/2 | 25 | 40 | 65 |
| | | | | 4/3 | 38 | 28 | 66 |
| | | | | 4/4 | 28 | 8 | 36 |
| | | | | 4/5 | 12 | 66 | 78 |
| | | | | 4/6 | 16 | 88 | 104 |
| | | | | 4/7 | 52 | 28 | 80 |
| | | | | 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 |
| | | | | 4/16 | 24 | 76 | 100 |
| | | | | 4/17 | 0 | 80 | 80 |
| | | | | 4/18 | 8 | 46 | 54 |
| | | | | 4/19 | 0 | 46 | 46 |
| | | | | 4/20 | 24 | 20 | 44 |
| | | | | 4/21 | 28 | 4 | 32 |
| | | | | 4/22 | 4 | 4 | 8 |

Larval or prejuvenile (< 20 mm) longfin smelt were observed in daily larval fish samples. 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 1,500 cfs as of April 23. Combined exports are presently curtailed to comply with the NMFS Joint Stipulation which requires OMR flow be no more negative than -1,250 cfs or combined SWP/CVP pumping maximum of 1,500 cfs through April 30. Operations as of May 1 are yet to be determined.

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. Delta smelt were salvaged at the CVP on April 17. This is the first salvage of the species at either facility since March 27. The overall Delta conditions, near 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 4,700cfs and Delta outflow is now 21,490cfs, which should assist the remaining larvae in moving downstream and out of the central Delta. Additionally, with San Joaquin River flow at Vernalis at approximately double the

pumping rate, the Working Group expects that most of the larvae remaining in the central and southern Delta will move downstream prior to April 30.

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

Advice for week of April 23, 2012:

The Smelt Working Group believes that the current target OMR of -1250 cfs will be protective for larvae and juveniles remaining in the lower San Joaquin River.

Summary of risk: Risk of additional entrainment into the south Delta is currently very low. Larva catches were low in the central and south Delta in 20-mm Survey #3. At the fish facilities detection of larvae and salvage of juveniles are dropping. Recent runoff has maintained a strong positive Qwest, which declined slowly to 4734 cfs on April 22. This will provide some westward transport of larvae in the central Delta. Recently, NMFS restrictions constrain OMR to remain no more negative than -1250 cfs through 30 April, possibly longer.

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 15 April and is declining, but remains positive. 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, reached 11,051 cfs 15 April and has declined since to 4734 on 22 April. Longfin smelt larvae are only being detected irregularly at CVP, not at the SWP; small juveniles continue to be detected at both fish facilities, but juvenile salvage declined last week and over the weekend to single digits. The increase in south Delta water temperatures to 18°C likely means the end of longfin smelt spawning.

Combined State and federal exports were recently coordinated to achieve no more negative than -1250 cfs OMR 30 April to protect steelhead. OMR was estimated at -2,626 cfs (CDEC 5-day) and -2,494 (CDEC 14-day). Such weakly negative OMR flows along with 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 | 3 | Longfin Smelt | 1 | 9 | 9 | 9 | Suisun Bay & West |
| 2012 | 3 | 340 | 11-Apr-12 | 3 | Longfin Smelt | 3 | 9 | 10 | 9.33333 | |
| 2012 | 3 | 342 | 11-Apr-12 | 3 | Longfin Smelt | 7 | 8 | 11 | 9.85714 | |
| 2012 | 3 | 343 | 11-Apr-12 | 3 | Longfin Smelt | 50 | 8 | 26 | 14 | |
| 2012 | 3 | 344 | 11-Apr-12 | 3 | Longfin Smelt | 88 | 7 | 24 | 10.9773 | |
| 2012 | 3 | 345 | 11-Apr-12 | 3 | Longfin Smelt | 19 | 10 | 17 | 11.8421 | |
| 2012 | 3 | 346 | 11-Apr-12 | 3 | No Longfin Catch | 0 | | | | |
| 2012 | 3 | 405 | 12-Apr-12 | 3 | No Longfin Catch | 0 | | | | |
| 2012 | 3 | 411 | 12-Apr-12 | 3 | Longfin Smelt | 1 | 8 | 8 | 8 | |
| 2012 | 3 | 418 | 12-Apr-12 | 3 | Longfin Smelt | 1 | 10 | 10 | 10 | |
| 2012 | 3 | 501 | 10-Apr-12 | 3 | Longfin Smelt | 36 | 6 | 20 | 8.66667 | |
| 2012 | 3 | 504 | 10-Apr-12 | 3 | Longfin Smelt | 13 | 8 | 24 | 17.4615 | |
| 2012 | 3 | 519 | 10-Apr-12 | 3 | Longfin Smelt | 9 | 7 | 23 | 14.2222 | |
| 2012 | 3 | 602 | 10-Apr-12 | 3 | Longfin Smelt | 8 | 9 | 29 | 19.875 | |
| 2012 | 3 | 606 | 10-Apr-12 | 3 | Longfin Smelt | 71 | 8 | 31 | 18.1972 | |
| 2012 | 3 | 609 | 10-Apr-12 | 3 | Longfin Smelt | 52 | 8 | 28 | 15.2115 | |
| 2012 | 3 | 610 | 10-Apr-12 | 3 | Longfin Smelt | 7 | 13 | 20 | 15.7143 | |
| 2012 | 3 | 508* | 11-Apr-12 | 3 | Longfin Smelt | 9 | 6 | 17 | 9.77778 | Confluence |
| 2012 | 3 | 513 | 11-Apr-12 | 3 | Longfin Smelt | 10 | 7 | 24 | 10.8 | |
| 2012 | 3 | 520 | 11-Apr-12 | 3 | Longfin Smelt | 1 | 11 | 11 | 11 | |
| 2012 | 3 | 801 | 11-Apr-12 | 3 | Longfin Smelt | 3 | 7 | 17 | 13.3333 | |
| 2012 | 3 | 804 | 11-Apr-12 | 3 | Longfin Smelt | 5 | 7 | 18 | 10.4 | |
| 2012 | 3 | 703 | 11-Apr-12 | 3 | No Longfin Catch | 0 | | | | Sac. River System |
| 2012 | 3 | 704 | 11-Apr-12 | 3 | Longfin Smelt | 1 | 22 | 22 | 22 | |
| 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 4/23/12

*5 minute tows