

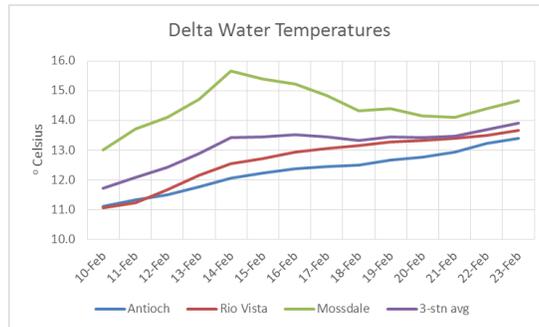
**Smelt Working Group**  
**Monday, February 24, 2014**

**Meeting Summary:**

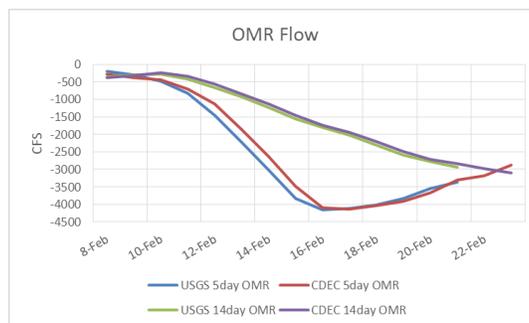
The Working Group agreed that given their present distribution, current salvage, and Delta conditions, the risk of entrainment of delta smelt remains low and therefore, the Working Group recommends that no change in projected operations is necessary to adequately protect delta smelt from entrainment. The Working Group also agreed that given their present distribution, existing constraining conditions were sufficient to protect longfin smelt from entrainment in the southern Delta. Barker Slough operations are to target 50 cfs exports, as the longfin smelt larva density at Station 716 exceeded the ITP criteria. The Working Group will continue to monitor salvage, turbidity, and other conditions and reconvene March 3.

**Reported Data:**

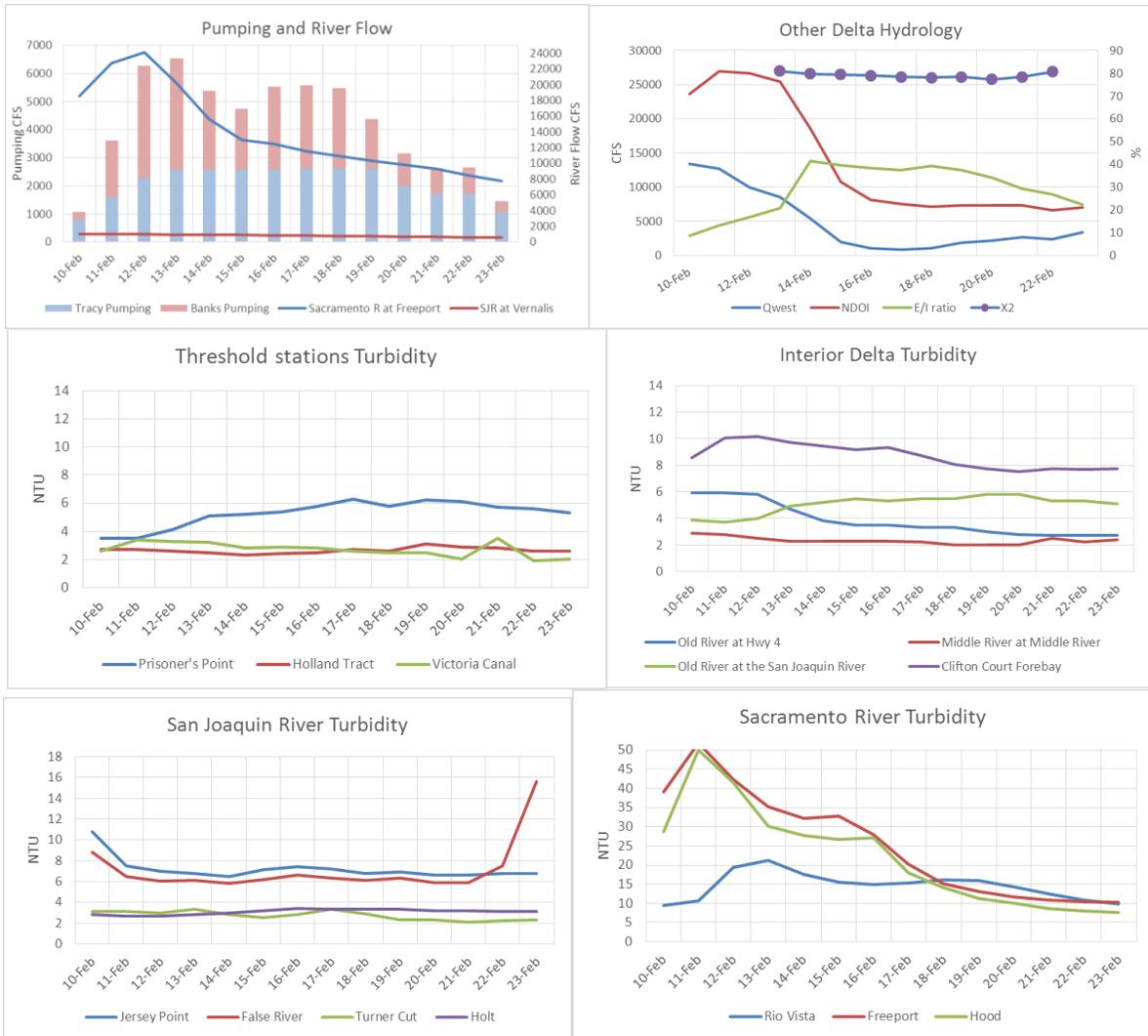
1. **Current environmental data:**
  - **Water temperatures:**



- **OMR flow:** USGS tidally averaged daily OMR flow on February 21 was -2910 cfs, while the 5-day and 14-day average flows were -3362 cfs and -2939 cfs, respectively.. CDEC daily OMR flow as of February 23 was -2277 cfs, while the 5-day and 14-day average flows were -2886 cfs and -3104 cfs, respectively..



- **Flow:** Sacramento River average daily flow for February 23 was 7811 cfs and San Joaquin River average daily flow was 599 cfs. X2 calculation from CDEC was upstream of Collinsville (81km) as of yesterday. The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group.



**2. Delta Fish Monitoring:**

Smelt Larval Survey #4 was in the field last week. Processing is ongoing with 22 stations completed out of 44. No delta smelt larvae have been detected so far. A total of 277 longfin smelt larvae have been counted thus far from catch. Sizes ranged from 4-17 mm. Stations process thus far include those in the south and central Delta, as well as Sacramento River stations and additional upstream stations. SLS #5 is in the field next week.

Spring Kodiak Trawl #3 is in the field the week of March 10. 20mm Survey #1 and SLS # 6 are both the week of March 17.

Jersey Point sampling continued through Friday, February 21 for the Service's Early Warning Study. Catch has dropped off since February 6 (24 delta smelt) to a few fish each day as of Friday. Trawling will resume on Thursday, February 27; the study is expected to run through April 15. Trawls are expected to be performed once per week unless hydrology changes significantly. Should hydrology change, trawls will be increased to daily for 14 consecutive days and then decrease to once per week until the next change in hydrology.

The 2013 Annual FMWT surveys have concluded. The Annual FMWT Index (based on all four months) for delta smelt is 18, the second lowest on record, and statistically indistinguishable from the lowest, 17, from 2009.

The 2013 Delta Smelt Recovery Index (based on September and October) is 4. More information on the Recovery Index can be found on the Bay-Delta Office's web site at [http://www.fws.gov/sfbaydelta/species/delta\\_smelt.cfm](http://www.fws.gov/sfbaydelta/species/delta_smelt.cfm). Results from CDFG surveys are available online at: <http://www.dfg.ca.gov/delta/>.

### **3. Salvage:**

No delta smelt or longfin smelt have been observed in salvage in WY2014 thus far.

Tracy Fish Collection Facility high debris load (vegetation) reported from last week has apparently decreased to some extent. Salvage protocols were reported to have returned to normal operations.

The initiation of larval sampling at the facilities was briefly discussed. Although last year larval sampling began when the first spent female was collected, members commented they would like to see larval sampling begin prior to such a detection this year. The SWP will begin larval sampling this week and the CVP is anticipated to begin shortly after, however no CVP staff were able to make the call to confirm.

Current longfin smelt and delta 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 SWP/CVP exports are at 1500 cfs starting yesterday, when they began operating to the TUC petition protocols. SWP operators indicated that water quality at Colinsville exceeded SWRCB standards for February, which indicated they were once again operating to the limits set in the TUC order from the SWRCB. The precipitation forecast is indicating a wet system will be coming through the area late this week and another over the weekend. Operators were not sure how exports might be affected by this system as yet. The DCC gate is closed.

The board's order from January 31, 2014 states that project operations must maintain a monthly net Delta outflow of no less than 3000 cfs (3-day running average) and must not pump more than combined 1500 cfs. An addendum was submitted to the Board on February 7. This addendum allows the operators to revert to compliance with the February Outflow standard of 7100 cfs, and increase pumping above the 1500 cfs included in the TUC petition.

Although not presently controlling operations, NMFS RPA IV.2.3 is in effect as of January 1, 2014, which restricts OMR flow to no more negative than -5,000 cfs.

### **5. Particle Tracking Modeling:**

No PTM runs were requested for this week.

## 6. Turbidity Modeling:

No modeling runs were discussed this week.

## 7. Assessment of Risk:

### Background:

RPA Component 1, Action 2: "An action implemented using an adaptive process to tailor protection to changing environmental conditions after action 1. As in Action 1, the intent is to protect pre-spawning adults from entrainment and, to the extent possible, from adverse hydrodynamic conditions."

"The range of net daily OMR flows will be no more negative than -1,250 to -5,000 cfs. Depending on extant conditions (and the general guidelines below) specific OMR flows within this range are recommended by the SWG from the onset of Action 2 through its termination..." (page 352).

RPA Component 2, Action 3: "The objective of this RPA component (which corresponds to Action 3 in Attachment B), is to improve flow conditions in the Central and South Delta so that larval and juvenile delta smelt can successfully rear in the Central Delta and move downstream when appropriate" (page 282).

"Upon completion of RPA Component 1 or when Delta water temperatures reach 12°C (based on a 3-station average of daily average water temperature at Mossdale, Antioch, and Rio Vista) or when a spent female delta smelt is detected in the trawls or at the salvage facilities, the projects shall operate to maintain OMR flows no more negative than -1,250 to -5000 cfs based on a 14-day running average with a simultaneous 5-day running average within 25 percent of the applicable 14-day OMR flow requirement. Depending on the extant conditions, the SWG shall make recommendations for the specific OMR flows within this range from the onset of implementing RPA Component 2 through its termination. The Service shall make the final determination regarding specific OMR flows. This action shall end June 30 or when the 3-day mean water temperature at Clifton Court Forebay reaches 25° C, whichever occurs earlier" (page 282).

### Discussion:

The Working Group reviewed and discussed all relevant data from Delta monitoring, salvage, field surveys, and planned Project operations. Adult take limit is 155 with a concern level of 116 fish. Juvenile take limit is 1007 with a concern level of 671 fish. These numbers reflect the revised take estimate produced last February.

Operators estimated that OMR would continue to become more positive throughout the week. Some members pointed out that more recent catches with the Early Warning Study show that some delta smelt are being caught on the southern lane of the San Joaquin River. This could indicate the fish are actively selecting to move into the southern Delta. Members indicated that once pumping increases again above the current minimum levels, the facilities will likely see salvage. The Working Group agreed there was no need to modify exports at this time to benefit delta or longfin smelt, due to the results of surveys and hydrology.

Some members requested that Brent Bridges be on the Working Group call when there are complicating issues with the Tracy Fish Collection Facility.

**8. Framework for providing advice to the Service:**

Service management anticipated providing an update this week to the Working Group, however this has been postponed. There was not anticipated date for when an update will be provided.

The SWG will have the next meeting on March 3.

**WEEKLY ADVICE FOR THE DEPARTMENT OF FISH AND WILDLIFE FOR LONGFIN SMELT**

**Advice for week of February 24, 2014:**

The Smelt Working Group believes that current and planned export rates are protective of Longfin Smelt at this time.

Barker Slough operations advice is provided by the Smelt Work Group to target 50 cfs exports, because the larva density increased substantially at station 716 (see #5 below in Discussion of Criteria).

**Basis for advice:**

The 2009 State Water Project 2081 for Longfin Smelt states that advice to WOMT and the DFW Director shall be based on:

1. Adult Salvage – total adult ( $\geq 80$ 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; see Figure 1).
4. Larva catch per tow exceeds 15 Longfin Smelt larvae or juveniles in 4 or more of the 12 survey stations listed.
5. During the period January 15 through March 31 of a dry or critically dry water year only, advice for Barker Slough pumping plant operations may be warranted if larval Longfin Smelt are detected at station 716 and other information indicates risk of entrainment.

**Discussion of Criteria**

1. As of February 16, 2014, no Longfin Smelt have been salvaged for the water year. The Fall Midwater Trawl Longfin Smelt annual abundance index was 164. The total salvage level threshold for advice is  $>820$  (see criterion in #1). No advice is warranted based on this criterion.
2. December Fall Midwater Trawl and December and both January and February Bay Study sampling collected no Longfin Smelt in the central or south Delta, suggesting limited or no recent proximity to the export pumps. Distribution information does not indicate advice is warranted based on this criterion.

3 & 4. The fourth Smelt Larva Survey (SLS) of 2014 was conducted February 17-19. The larva distribution criterion (#3 above) was met during survey 3, but distribution diminished by survey 4 (cf., Table 1 and Basis for Advice #s 3 & 4 above). Except for 2 stations in the lower San Joaquin River channel, larva densities remained low during survey 4.

5. The fourth SLS once again detected Longfin Smelt larvae at station 716, so export restriction advice continues (Table 1). Water year 2014 has been classified as critically dry and during Smelt Larval Survey #2, 62 Longfin Smelt larva were collected at 716 and a similar number at 723. The export target if larval smelt are present at station 716 is a export pumping limit of 50 cfs as a 7-day mean. The SWG provides advice because larval density exceed the criterion. Since early February Barker Slough exports have remained below 40 cfs.

**Current conditions:** Net Delta outflow peaked February 11 at 26,920 and then declined to below 7,000 cfs by February 23. X2 dropped to 78.3 on February 17, but has increased since. Combined State and federal export ramped up to about 5,500 cfs on February 12 and then dropped on the 13<sup>th</sup> and again during the 17<sup>th</sup>-23<sup>rd</sup> to about 1,350 cfs. Qwest was briefly strongly positive on February 10 and 11<sup>th</sup> at 13,420 and 12,633 cfs, respectively; it declined steadily since then to 841 on February 17<sup>th</sup>, but increased to 3,393 cfs on the 24<sup>th</sup>. OMR became progressively more negative after February 11<sup>th</sup>, reaching about -4,500 February 13 and remaining at that level through the 16<sup>th</sup>, before trending slightly more positive the 17<sup>th</sup>-22<sup>nd</sup> (5 day mean).

**Summary of Risk:** Risk of entrainment for larvae in the central and south Delta was reduced by strong positive Qwest flows (February 10-11), which appeared to reduce larva detections in the central and south Delta and slightly reduce densities where detected thus lowering risk of entrainment. Current export rates suggest very low risk of entrainment and few larvae remain vulnerable. Exports are not planned to increase until runoff increases, maintaining very low risk of entrainment for any additional larvae hatching currently or in the near future.

Substantial numbers of larvae in Barker Slough remain at risk, and advice is to continue export restrictions.

No adult Longfin Smelt have been detected to date in the central or south Delta by fish surveys or by salvage, and collections at Chipps Island dropped very low since early February. This suggests limited spawning in the central or south Delta. The small to modest numbers of larvae collected in the central and south Delta support this conclusion, though it is too early in the hatching season to predict this will be the case throughout. The current and predicted exports will result in an OMR much less negative than -2,500 cfs. Qwest has recently been of sufficient magnitude to move larvae downstream. These circumstances all support the conclusion of low risk of entrainment.

Table 1. Longfin Smelt catch per station from 2014 Smelt Larva Survey, Survey 4.

| Study Year | Survey # | SLS Station | Sample Status     | Species       | Smelt Catch    | MinOfLength | MaxOfLength | AvgOfLength |
|------------|----------|-------------|-------------------|---------------|----------------|-------------|-------------|-------------|
| 2014       | 4        | 340         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 342         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 343         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 344         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 345         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 346         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 347         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 348         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 349         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 405         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 411         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 418         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 501         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 504         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 508         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 513         | Processed         | Longfin Smelt | 33             | 5           | 10          | 7.4         |
| 2014       | 4        | 519         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 520         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 602         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 606         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 609         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 610         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 703         | Processed         | Longfin Smelt | 18             | 6           | 14          | 7.8         |
| 2014       | 4        | 704         | Processed         | Longfin Smelt | 30             | 5           | 11          | 7.1         |
| 2014       | 4        | 705         | Processed         | Longfin Smelt | 15             | 7           | 13          | 8.9         |
| 2014       | 4        | 706         | Processed         | Longfin Smelt | 23             | 5           | 7           | 6.2         |
| 2014       | 4        | 707         | Processed         | Longfin Smelt | 21             | 5           | 10          | 6.2         |
| 2014       | 4        | 711         | Processed         |               | No Smelt Catch |             |             |             |
| 2014       | 4        | 716         | Processed         | Longfin Smelt | 14             | 5           | 17          | 7.4         |
| 2014       | 4        | 723         | Processed         | Longfin Smelt | 31             | 4           | 12          | 6.0         |
| 2014       | 4        | 801         | Not yet processed |               |                |             |             |             |
| 2014       | 4        | 804         | Processed         | Longfin Smelt | 3              | 7           | 8           | 7.7         |
| 2014       | 4        | 809         | Processed         | Longfin Smelt | 64             | 6           | 13          | 8.1         |
| 2014       | 4        | 812         | Processed         | Longfin Smelt | 15             | 6           | 12          | 8.5         |
| 2014       | 4        | 815         | Processed         | Longfin Smelt | 4              | 7           | 10          | 8.3         |
| 2014       | 4        | 901         | Processed         | Longfin Smelt | 2              | 6           | 8           | 7.0         |
| 2014       | 4        | 902         | Processed         | Longfin Smelt | 4              | 7           | 10          | 8.5         |
| 2014       | 4        | 906         | Processed         |               | No Smelt Catch |             |             |             |
| 2014       | 4        | 910         | Processed         |               | No Smelt Catch |             |             |             |
| 2014       | 4        | 912         | Processed         |               | No Smelt Catch |             |             |             |
| 2014       | 4        | 914         | Processed         |               | No Smelt Catch |             |             |             |
| 2014       | 4        | 915         | Processed         |               | No Smelt Catch |             |             |             |
| 2014       | 4        | 918         | Processed         |               | No Smelt Catch |             |             |             |
| 2014       | 4        | 919         | Processed         |               | No Smelt Catch |             |             |             |

Processing is complete through 02/21/14

SWP ITP Criteria Stations

Figure 1. DFW's Smelt Larva Survey/20-mm Survey station locations.

