

SMELT WORKING GROUP
Monday, March 12, 2012

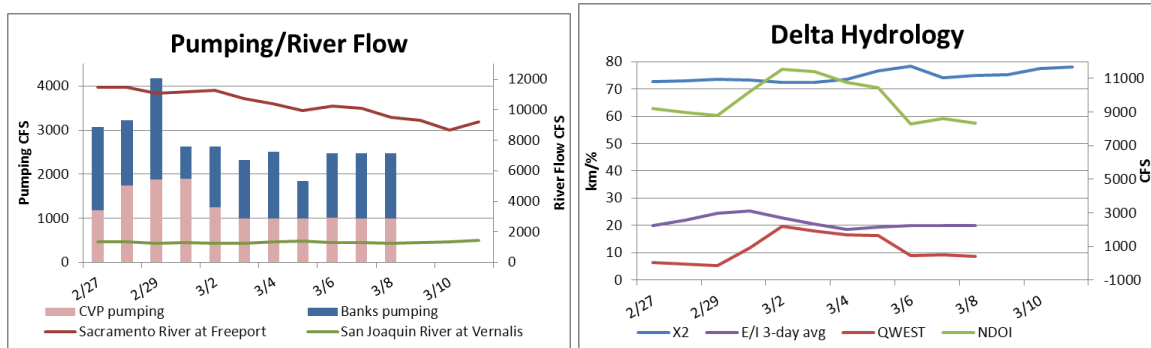
Meeting Summary:

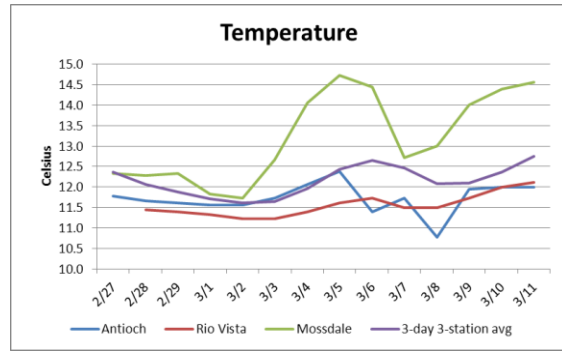
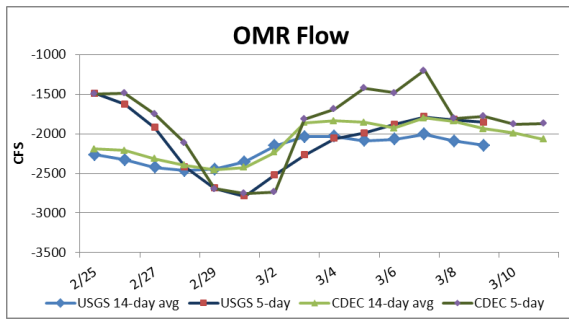
The Working Group agreed that given their present distribution, low levels of salvage, and current Delta conditions, risk of entrainment of delta smelt remains low and therefore, the Working Group recommends that no change in operations is necessary to adequately protect delta smelt from entrainment. 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 March 19, 2012, at 10am.

Reported Data:

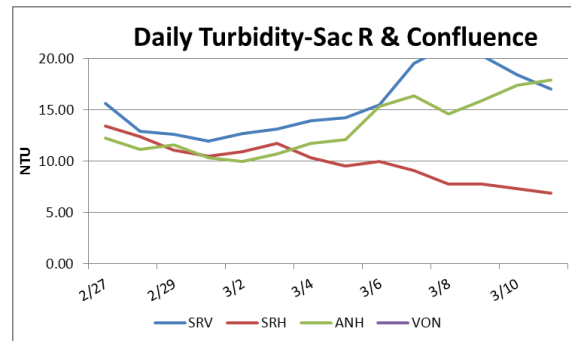
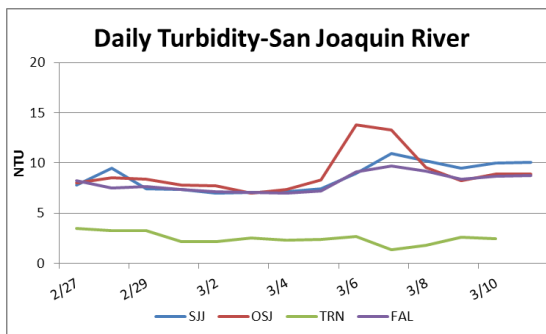
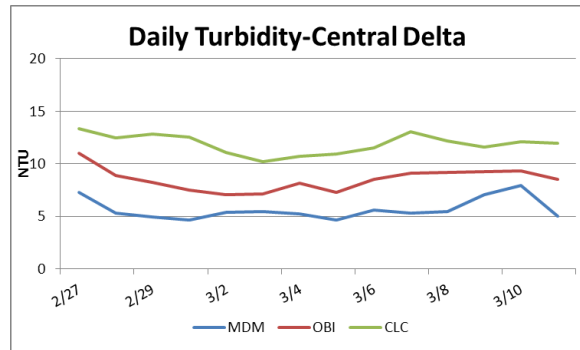
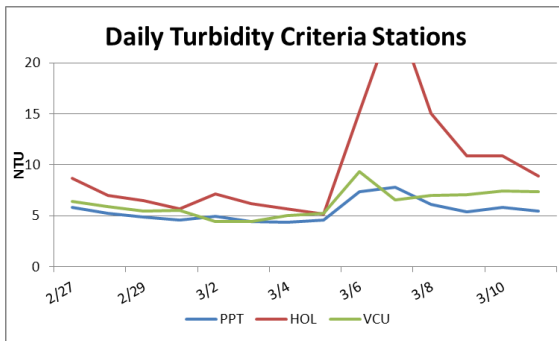
1) Current environmental data:

- **Water temperature** for the 3 station average is 12.7°C.
- **OMR:** USGS tidally-averaged OMR 5-day average for March 8 was -1,856cfs and the 14-day average was -2,148cfs. CDEC 5-day average on March 11 was -1,872cfs and the 14-day average was -2,068cfs.
- **Flow:** Sacramento River inflow is 9,201cfs and San Joaquin River is 1,463cfs. X₂ calculation from CDEC is 78.1km. The NDOI and Qwest approximate values were reported by DWR as slightly below 7,000cfs and 200cfs, respectively. 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:

20-mm Survey #1 is in the field this week. Spring Kodiak Trawl #3 was in the field last week. 28 of the 40 stations were sampled. A total of 295 delta smelt were collected from 10 stations. Cache slough stations had the largest catch, with 143 at station 716, 37 at station 713, and 41 at station 715. No delta smelt were collected east of Antioch on the San Joaquin River. A few spent females were collected, with the majority of delta smelt in pre-spawn condition. SKT #4 is in the field the week of April 16th. Smelt Larval Survey #5 was in the field last week. 25 of 35 stations were sampled. 24 stations have been fully processed. A total of 1,276 longfin smelt larvae were collected, most in the 7-8mm size. 25 longfin smelt larvae were collected at criteria stations in the central and southern Delta. No delta smelt larvae has been observed at this time. SLS #6 is in the field the week of March 19th. 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 186. The table below details daily estimated adult delta smelt salvage for the season:

Table 1: Estimated daily adult delta smelt salvage and estimated daily 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 | 3/9 | 0 | 8 | 8 |
| 1/28 | 4 | 0 | 4 | | | | |
| 1/30 | 12 | 0 | 12 | | | | |
| 1/31 | 1 | 0 | 1 | | | | |
| 2/1 | 3 | 0 | 3 | | | | |
| 2/3 | 4 | 0 | 4 | | | | |
| 2/10 | 4 | 0 | 4 | | | | |
| 2/13 | 4 | 0 | 4 | | | | |
| 2/14 | 4 | 0 | 4 | | | | |
| 2/15 | 1 | 0 | 1 | | | | |
| 2/17 | 2 | 0 | 2 | | | | |
| 2/18 | 4 | 0 | 4 | | | | |
| 2/20 | 4 | 0 | 4 | | | | |
| 2/21 | 4 | 0 | 4 | | | | |
| 2/22 | 8 | 0 | 8 | | | | |
| 2/23 | 0 | 4 | 4 | | | | |
| 2/24 | 0 | 12 | 12 | | | | |
| 2/25 | 0 | 4 | 4 | | | | |
| 2/27 | 4 | 18 | 22 | | | | |
| 2/28 | 4 | 4 | 8 | | | | |
| 2/29 | 0 | 10 | 10 | | | | |
| 3/1 | 0 | 2 | 2 | | | | |
| 3/2 | 0 | 6 | 6 | | | | |
| 3/5 | 0 | 4 | 4 | | | | |
| 3/6 | 4 | 20 | 24 | | | | |
| 3/9 | 4 | 0 | 4 | | | | |
| 3/11 | 4 | 4 | 8 | | | | |

Post-larvae or young juvenile (< 20 mm) longfin smelt were observed in daily larval fish samples from both facilities during February 28 – March 11.

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 2,600cfs as of March 12. Combined exports are presently curtailed to comply with the NMFS RPA OMR restriction of -2,500cfs to protect winter-run Chinook salmon.

The current OMR limit of -2,500 cfs was triggered by Delta export facilities loss densities greater than 6.91 unclipped older juvenile Chinook salmon (considered to be comprised mainly of winter-run sized fish by date) / TAF on March 8, 2012. Export restrictions to achieve an OMR flow of -2500 cfs were scheduled to be implemented through the weekend. Based on loss density over the weekend and made available Monday afternoon (3/12/2012), OMR flows will be held at -2,500 cfs until at least Thursday, March 15, 2012. Relaxation of the OMR flow restrictions at that time will be based on loss density data collected during the next 3 days. Relaxation of the OMR flow restrictions require 3 consecutive days below the loss density trigger point of 5 fish/TAF to go to -3,500 cfs, or 2.5 fish/TAF to go to -5,000 cfs.

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. Low levels of salvage continue at both the CVP and SWP. The overall Delta conditions, low salvage and survey data indicate a low risk of entrainment.

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 -1250 and -5000cfs 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 SLS #5 (and progressively less than SLS #4 or #3) the risk is currently low. Qwest remains positive and Delta outflow also has generally been maintained above 10,000cfs, all of which should assist larvae in moving downstream and out of the central and south Delta.

See “WEEKLY ADVICE FOR THE DEPARTMENT OF FISH AND GAME FOR LONGFIN SMELT” for additional details regarding this discussion.

The Working Group will hold the next call on March 19.

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

Advice for week of March 12, 2012:

The Smelt Working Group believes that OMR no more negative than -5000 cfs is protective of longfin smelt at this time. The current target of -2500 cfs should reduce the risk even further.

Summary of risk: Risk of entrainment is currently low. Larva densities decreased substantially in the central and south Delta in Smelt Larva Survey 5. OMR constraints by the Salmonid BO recently increased and hydraulic conditions in the interior Delta likely minimized larvae entrainment at the south Delta export facilities. Larvae and small juveniles continue to be salvaged in low numbers. Currently, OMR restrictions remain at -2500 cfs through 15 March, possibly longer. Barker Slough exports and criteria were not discussed, but exports recently dropped to 0 cfs, which poses no risk of entrainment to longfin smelt larvae in the vicinity.

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 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: Smelt Larva Survey 5 (6 March 2012 - partial) detected substantially decreased numbers of longfin smelt larvae in the central and south Delta criteria stations (criterion #3 and Table 1 below). This observation indicates decreased risk of entrainment. Also, Qwest remained weakly positive through the week of 5 March and will likely remain positive through most of the week of 12 March, which would tend to move larvae

downstream away from the area of entrainment. Nonetheless, longfin smelt larvae or small juveniles have been detected regularly at the SWP and CVP.

Combined State and federal exports were coordinated to achieve -2500 cfs OMR for the period 24-29 February to protect winter-run Chinook salmon, later relaxed to -5000 cfs, and the week 5 March returned to -2500 cfs. San Joaquin River flow has been staying about 1300 cfs since 5 March, but increased to 1460+ on 11 March. OMR, estimated for 11 March, was -2261 cfs (CDEC 14-day average). Such flows will not strongly draw longfin smelt larvae into the central Delta.

Barker Slough exports were not discussed, but have dropped to 0 cfs over the past weekend and do not pose an immediate risk to longfin smelt larvae. Barker Slough exports can pose a risk to longfin smelt larvae (concern period 15 January through 31 March) during critically dry and dry water years when longfin smelt larvae are present. Even though larva densities remained relatively high during Smelt Larva Survey 4, such intermediate level exports do not present a major risk to longfin smelt larvae.

Table 1. Longfin smelt and delta smelt catch per station from 2012 Smelt Larva Survey, survey 5.

| Year | Survey | SLS Station | Sample Status | Species | Smelt Catch |
|------|--------|-------------|---------------|---------------|----------------|
| 2012 | 5 | 405 | Not Sampled | | |
| 2012 | 5 | 411 | Not Sampled | | |
| 2012 | 5 | 418 | Not Sampled | | |
| 2012 | 5 | 501 | Not Sampled | | |
| 2012 | 5 | 504 | Not Sampled | | |
| 2012 | 5 | 508 | Processed | Longfin Smelt | 147 |
| 2012 | 5 | 513 | Processed | Longfin Smelt | 268 |
| 2012 | 5 | 519 | Not Sampled | | |
| 2012 | 5 | 520 | Not Sampled | | |
| 2012 | 5 | 602 | Not Sampled | | |
| 2012 | 5 | 606 | Not Sampled | | |
| 2012 | 5 | 609 | Not Sampled | | |
| 2012 | 5 | 610 | Not Sampled | | |
| 2012 | 5 | 703 | Processed | Longfin Smelt | 101 |
| 2012 | 5 | 704 | Processed | Longfin Smelt | 253 |
| 2012 | 5 | 705 | Processed | Longfin Smelt | 7 |
| 2012 | 5 | 706 | Processed | Longfin Smelt | 68 |
| 2012 | 5 | 707 | Processed | Longfin Smelt | 32 |
| 2012 | 5 | 711 | Processed | | No Smelt Catch |
| 2012 | 5 | 716 | Processed | Longfin Smelt | 31 |
| 2012 | 5 | 723 | Processed | Longfin Smelt | 22 |
| 2012 | 5 | 801 | Processed | Longfin Smelt | 178 |
| 2012 | 5 | 804 | Processed | Longfin Smelt | 144 |
| 2012 | 5 | 809 | Processed | Longfin Smelt | 13 |
| 2012 | 5 | 812 | Processed | Longfin Smelt | 1 |
| 2012 | 5 | 815 | Processed | | No Smelt Catch |
| 2012 | 5 | 901 | Processed | Longfin Smelt | 3 |
| 2012 | 5 | 902 | Processed | Longfin Smelt | 3 |
| 2012 | 5 | 906 | Processed | | No Smelt Catch |
| 2012 | 5 | 910 | Processed | Longfin Smelt | 1 |
| 2012 | 5 | 912 | Processed | | No Smelt Catch |
| 2012 | 5 | 914 | Processed | Longfin Smelt | 1 |
| 2012 | 5 | 915 | Processed | Longfin Smelt | 2 |
| 2012 | 5 | 918 | Processed | | No Smelt Catch |
| 2012 | 5 | 919 | Processed | Longfin Smelt | 1 |

SWP ITP Criteria Stations

Processing complete through 03/8/2012

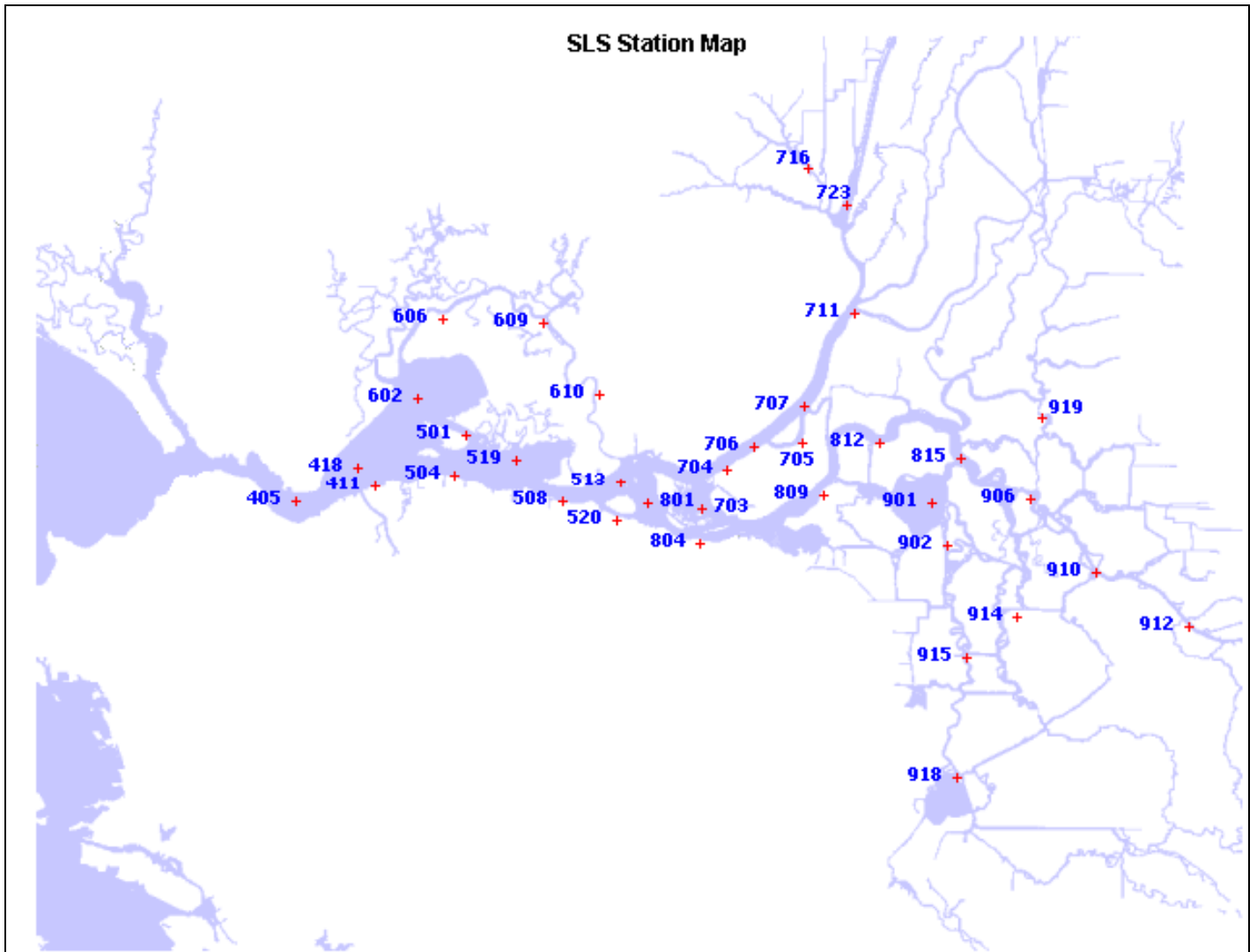


Figure 1. DFG's Smelt Larva Survey station locations.