

## SMELT WORKING GROUP

Monday, April 6, 2015

### Meeting Summary:

The Working Group agreed that given present distribution, current salvage, and Delta conditions, there was no indication that the projected combined exports of approximately 1500 cfs for the week (potentially resulting in daily average OMR flows of approximately -1800 cfs) need to be modified for the protection of Delta Smelt adults and larvae.

The Working Group is following guidance for entrainment protections from both Action 2 (adult Delta Smelt) and Action 3 (juvenile Delta Smelt).

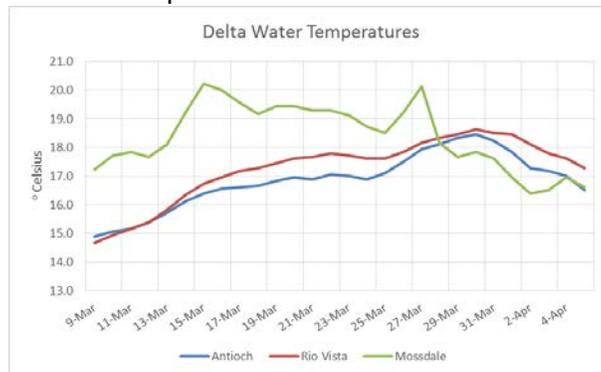
The Working Group also agreed that given their present distribution, existing constraining conditions were sufficient to protect longfin smelt from entrainment in the southern Delta.

The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, April 13, 2015 at 10 am.

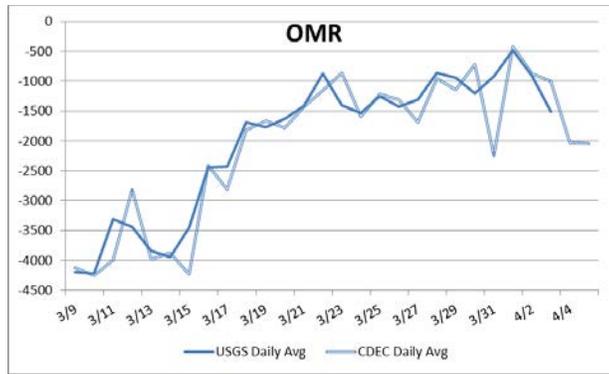
### Reported Data:

#### 1. Current environmental data:

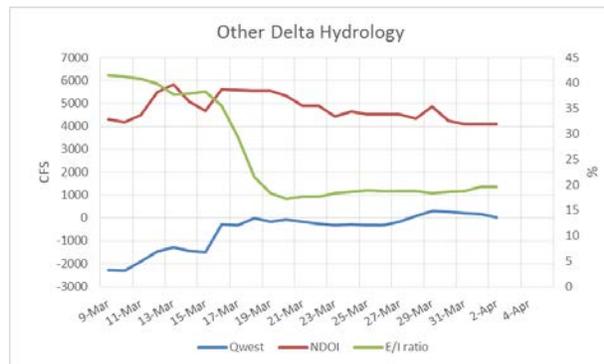
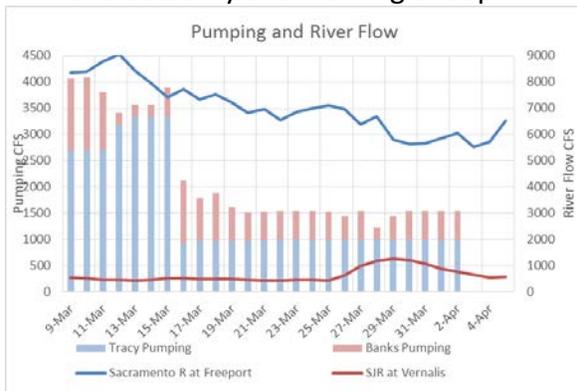
- Since February 3, it has been warm enough for Delta Smelt to spawn throughout much, or all of, the Delta. Water temperatures since March 9 are as follows:



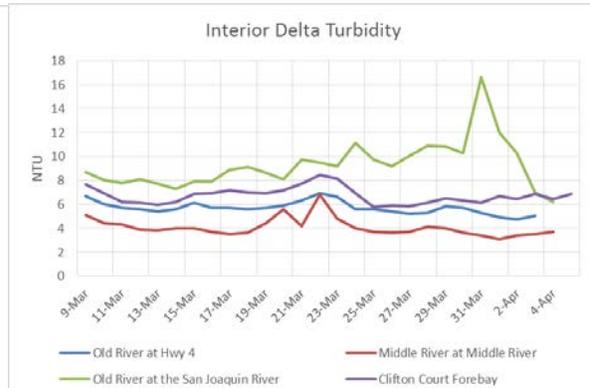
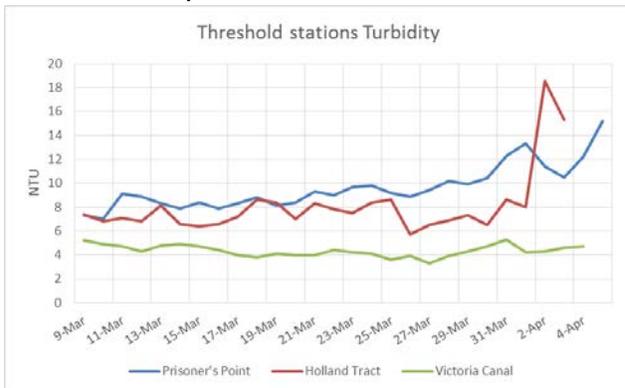
- OMR Flow: USGS tidally-averaged daily, 5-day, and 14-day average OMR flow for April 3 was -1509, -1004, and -1145 cfs, respectively. CDEC daily, 5-day average, and 14-day average OMR flow as of April 5 was -2042, -1275, and -1293 cfs, respectively.

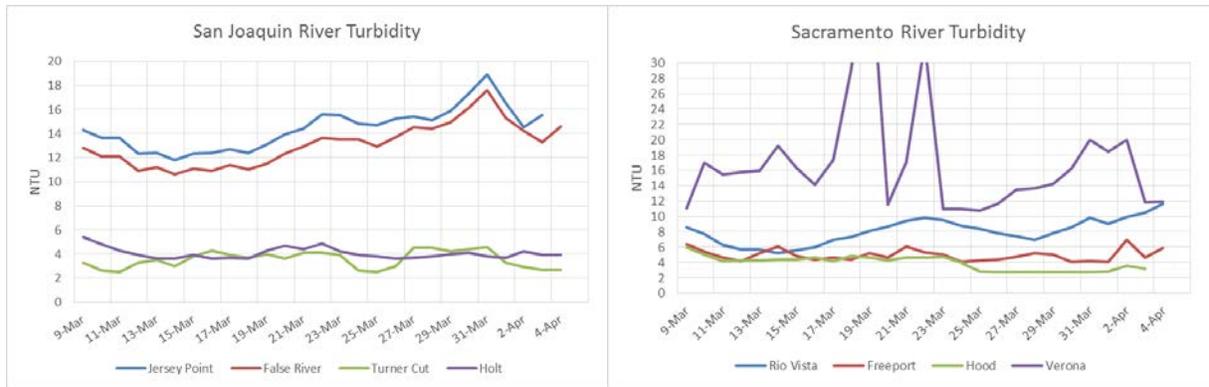


- River Flows: Sacramento River inflow is 6529 cfs and San Joaquin River is 574 cfs. X2 calculation from CDEC has been upstream of Collinsville since March 9. The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group



- Turbidity:





## 2. Delta Fish Monitoring:

The 2014 Fall Midwater Trawl Annual Index for Delta Smelt is 9. This is the lowest reported fall index since the beginning of this survey in 1967, and approximately one half of the previous lowest indices of 17 (2009) and 18 (2013).

SLS #6 was in the field the week of March 23. All stations except the Napa River stations were sampled. Processing is complete. Three Delta Smelt were caught on the lower San Joaquin River, while one Delta Smelt was caught at each of two Sacramento River stations. This is the last SLS survey of the season.

20-mm Survey #2 was in the field starting March 30 and will continue through April 8. Processing is ongoing. Approximately a third of samples have been processed. One Delta Smelt was caught at station 812 and one at station 707. 20-mm Survey #3 is in the field April 13 through 16.

Spring Kodiak Trawl #4 is in the field this week. Jersey Point and some of the Old River stations have been sampled so far this morning, with no catch of Delta Smelt.

The Service's Early Warning Survey had its last day of sampling March 31. Results for March 30 and 31 are as follows:

- 3-30 (Jersey Point): no catch
- 3-31 (Prisoner's Point): no catch

## 3. Salvage:

Delta Smelt have not been observed in salvage counts since February 21. The estimated cumulative seasonal total (CVP and SWP combined) for adult Delta Smelt salvage is still 68. No adult Longfin Smelt has been observed in salvage counts during WY 2015. Young-of-year Longfin Smelt have not been observed in salvage counts since March 29. The total salvage for the season is 8. No larval Delta Smelt has been reported for the last week. One LFS larva was observed at the CVP on March 20. Both the SWP and CVP operated their fish facilities with normal 30 minute counts this past week. The CVP had a couple of short outages to inspect their secondary channel screens.

## 4. Expected Project Operations:

Combined SWP/CVP exports today are approximately 1500 cfs. Operators indicated that they expect the OMR flow to be approximately -1800 cfs for the week. Operators indicated the Head of Old River barrier

will be fully constructed tomorrow. It was reported that combined exports currently are restricted by the Temporary Urgency Change Petition, which restricts pumping to 1500 cfs when water quality standards have been exceeded.

A storm with some rain is anticipated tomorrow. Should outflow get to 5500 cfs or above, operators anticipate exports would increase to match the flow on the San Joaquin River at Vernalis.

#### **5. Delta Conditions Team:**

There was no DCT call last week.

#### **6. Assessment of Risk:**

Background:

RPA Component 1: "Beginning in December of each year, the Service shall review data on flow, turbidity, salvage, and other parameters that have historically predicted the timing of Delta Smelt migration into the Delta. On an ongoing basis, and consistent with the parameters outlined... [in the BO]...the SWG shall recommend to the Service OMR flows that are expected to minimize entrainment of adult Delta Smelt" (page 280).

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 Working Group 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 flow and water quality monitoring, salvage, field surveys, and planned Project operations.

The Service presented its updated WY2015 adult Delta Smelt ITL (196 fish) and early warning level (78 fish) at the January 12 SWG meeting. The January 9, 2015 reinitiation memo regarding these updated levels has been posted to the Bay-Delta FWO website (<http://www.fws.gov/sfbaydelta/>). The WY 2015 juvenile Delta Smelt ITL is 504, based on a WY 2014 FMWT index of 9.

Three-station average water temperature surpassed 12<sup>o</sup> C as of February 3, 2015. The Working Group is now looking to Action 3 of the Biological Opinion as well as Action 2 in framing their advice to the Service. The 3-station average water temperature as of April 5 was 16.8<sup>o</sup> C.

Delta Smelt have not been observed in salvage since February 21.

Expected OMR flows are projected to be -1800 cfs.

Based on a review of the Delta Smelt distribution and salvage data, current Delta conditions and projected operations, the SWG agreed that no change in operations is necessary for the protection of Delta Smelt. The SWG will continue to monitor turbidity, salvage and survey data through this week, and will request a call to discuss Delta Smelt entrainment risk, should one be necessary.

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Monday, April 13, 2015.

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

### **Advice for week of April 5, 2015:**

The Smelt Working Group does not have any Longfin Smelt-related advice based on recent information.

Barker Slough operations advice is not warranted at this time. The concern period for Barker Slough ended on March 31.

### **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 20-mm 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 April 5, 2015, no age-1 or adult Longfin Smelt have been salvaged for the water year. The Longfin Smelt adult salvage threshold for advice is  $> 80$  (see criterion in #1 above), which is based on a combined September through December Fall Midwater Trawl Longfin Smelt index of 16. The first juvenile Longfin Smelt of the season was detected at the CVP on March 26<sup>th</sup> and the second on March 29<sup>th</sup>. There is no criterion for larvae in salvage. No advice is warranted based on this criterion.
2. No new adult distribution information. Early April sampling by Bay Study detected no age-1 or adult Longfin Smelt in the San Joaquin River and only one age-1 fish in the Sacramento River. Kodiak Trawl sampling tends to be inefficient for Longfin Smelt, but in February the USFWS detected four adult Longfin Smelt at Jersey Point, compared to two adult Longfin Smelt at that location in January; none have been caught at Prisoner's Point. No other detections were made in the San Joaquin River or south Delta in January. In early January Bay Study detected Longfin Smelt adults in the Sacramento River at Rio Vista (station 761), a juvenile and adult in the Sacramento River at Sherman Lake (station 736), none in the San Joaquin River, and juveniles ( $< 80$  mm) and adults throughout Suisun Bay. During mid- to late February, Chipps Island trawling caught modest numbers of Longfin Smelt (19 and 16 for Feb 15-21 and 22-28), indicating the spawning run continues. Current distribution information does not indicate advice is warranted based on this criterion.
- 3 & 4. The last Smelt Larva Survey #6 of the season collected Longfin Smelt larvae at 4 locations in the central Delta (Table 1, Figure 1). Densities at these stations were slightly higher than in the past, but remain well below concern levels. The second 20-mm Survey sampling started March 30 and is continuing this week (Table 2, Figure 2). Longfin Smelt larvae have been detected at six locations in the central and south Delta and all catches have been well below the distribution criterion except Station 809. No YOY Longfin Smelt was salvaged since March 29 and none observed from larval fish collections since March 30 at the South Delta export facilities. Overall, catches in the central and south Delta were not sufficient to reach concern levels based on density or distribution.
5. SLS #6 did not detect Longfin Smelt larvae at station 716, the criterion station for Barker Slough, or at station 723, the nearest station. The lack of larvae at 716 removes the trigger criterion for North Bay Aqueduct operations and the lack of Longfin Smelt larva at 723 suggests the risk to larvae in the vicinity was low prior to April 1. After April 1 daily exports have been ranging about 50 to 65 cfs. Entrainment concern for Longfin Smelt larvae at this location ceased on March 31.

**Current conditions:** Sacramento River flow is 6,728 cfs. X2 is well above 81. Combined State and federal exports are currently 1,500 cfs although exports may increase if river discharge rates increase due to recent storms. The E:I ratio is about 19%. The 5-day OMR is -1,360 cfs, but

HORB barrier installation, expected to be completed on April 7, will increase OMR to about -1,800 cfs. Qwest is -120 cfs but expected to increase to positive levels shortly.

**Summary of Risk:**

Risk of entrainment is very low in both the south Delta and Barker Slough. This results from both low densities of larvae and low exports in the south Delta and no larva detections and moderate exports in Barker Slough. Risks of additional adult influx are very low and decreasing. Larva densities appeared to decrease through late March resulting in lower risk of entrainment to those close to export facilities.

The limited number of Longfin Smelt larvae and post-larvae detected in the central and south Delta in SLS #6 and 20-mm Survey 2, the absence adults collected in the San Joaquin River or central Delta fish surveys and the absence of adult Longfin Smelt in salvage samples to date suggests few fish have moved into the central or south Delta for spawning. Current conditions, particularly OMR at -1,360, increasing Qwest, and no recent occurrence of YOY at the export facilities, indicate very little risk for fish that do move into or hatched from the central Delta. The overall risk of entrainment remains very low.

Table 1. Longfin Smelt catches by station in Smelt Larva Survey 6, 2015. Sample processing is complete

Year	Survey #	SLS Station	Sample Status	Species	Smelt Catch
2015	6	340	Not Sampled		
2015	6	342	Not Sampled		
2015	6	343	Not Sampled		
2015	6	344	Not Sampled		
2015	6	345	Not Sampled		
2015	6	346	Not Sampled		
2015	6	347	Not Sampled		
2015	6	348	Not Sampled		
2015	6	349	Not Sampled		
2015	6	405	Processed		No Smelt Catch
2015	6	411	Processed		No Smelt Catch
2015	6	418	Processed		No Smelt Catch
2015	6	501	Processed	Longfin Smelt	1
2015	6	504	Processed		No Smelt Catch
2015	6	508	Processed		No Smelt Catch
2015	6	513	Processed	Longfin Smelt	1
2015	6	519	Processed	Longfin Smelt	5
2015	6	520	Processed	Longfin Smelt	2
2015	6	602	Processed	Longfin Smelt	2
2015	6	606	Processed	Longfin Smelt	16
2015	6	609	Processed	Longfin Smelt	2
2015	6	610	Processed	Longfin Smelt	6
2015	6	703	Processed		No Smelt Catch
2015	6	704	Processed	Longfin Smelt	3
2015	6	705	Processed	Longfin Smelt	24
2015	6	706	Processed		No Smelt Catch
2015	6	707	Processed	Longfin Smelt	14
2015	6	707	Processed	Delta Smelt	1
2015	6	711	Processed	Longfin Smelt	1
2015	6	716	Processed	Delta Smelt	1
2015	6	723	Processed		No Smelt Catch
2015	6	801	Processed	Longfin Smelt	3
2015	6	804	Processed	Longfin Smelt	18
2015	6	809	Processed	Longfin Smelt	4
2015	6	812	Processed	Longfin Smelt	5
2015	6	815	Processed	Longfin Smelt	1
2015	6	901	Processed	Longfin Smelt	4
2015	6	902	Processed	Delta Smelt	3
2015	6	906	Processed		No Smelt Catch
2015	6	910	Processed		No Smelt Catch
2015	6	912	Processed		No Smelt Catch
2015	6	914	Processed		No Smelt Catch
2015	6	915	Processed		No Smelt Catch
2015	6	918	Processed		No Smelt Catch
2015	6	919	Processed		No Smelt Catch

SWP ITP Criteria Stations

Table 2. Longfin Smelt catches by station in 20-mm Survey 2 2015. Field sampling and sample processing are ongoing.

Year	Survey	Station	Date	# Tows Processed	Species	Total Catch	Min Length	Max Length	Avg Length	
2015	2	323		0	Not Yet Processed	0				Suisun Bay & West
2015	2	340		0	Not Yet Processed	0				
2015	2	342		0	Not Yet Processed	0				
2015	2	343		0	Not Yet Processed	0				
2015	2	344		0	Not Yet Processed	0				
2015	2	345		0	Not Yet Processed	0				
2015	2	346		0	Not Yet Processed	0				
2015	2	405		0	Not Yet Processed	0				
2015	2	411		0	Not Yet Processed	0				
2015	2	418		0	Not Yet Processed	0				
2015	2	501		0	Not Yet Processed	0				
2015	2	504		0	Not Yet Processed	0				
2015	2	519		0	Not Yet Processed	0				
2015	2	602		0	Not Yet Processed	0				
2015	2	606		0	Not Yet Processed	0				
2015	2	609		0	Not Yet Processed	0				
2015	2	610		0	Not Yet Processed	0				
2015	2	508		0	Not Yet Processed	0				Confluence
2015	2	513		0	Not Yet Processed	0				
2015	2	520		0	Not Yet Processed	0				
2015	2	801		0	Not Yet Processed	0				
2015	2	804		0	Not Yet Processed	0				
2015	2	703		0	Not Yet Processed	0				Sac. River System
2015	2	704		0	Not Yet Processed	0				
2015	2	705	01-Apr-15	3	Longfin Smelt	6	8	15	12.17	
2015	2	706	01-Apr-15	3	Longfin Smelt	32	8	25	14.69	
2015	2	707	01-Apr-15	3	Longfin Smelt	4	13	16	14.25	
2015	2	711	01-Apr-15	3	Longfin Smelt	1	15	15	15.00	
2015	2	716		0	Not Yet Processed	0				
2015	2	718		0	Not Yet Processed	0				
2015	2	719		0	Not Yet Processed	0				
2015	2	720		0	Not Yet Processed	0				
2015	2	723		0	Not Yet Processed	0				
2015	2	724		0	Not Yet Processed	0				
2015	2	726		0	Not Yet Processed	0				
2015	2	809	30-Mar-15	3	Longfin Smelt	30	7	17	11.47	Central & South Delta
2015	2	812	01-Apr-15	3	Longfin Smelt	6	7	13	10.33	
2015	2	815	01-Apr-15	3	Longfin Smelt	1	14	14	14.00	
2015	2	901	30-Mar-15	3	Longfin Smelt	2	8	11	9.50	
2015	2	902	30-Mar-15	3	Longfin Smelt	4	8	13	10.75	
2015	2	906	01-Apr-15	3	Longfin Smelt	1	11	11	11.00	
2015	2	910	30-Mar-15	3	No Longfin Catch	0				
2015	2	912	30-Mar-15	3	No Longfin Catch	0				
2015	2	914	30-Mar-15	3	No Longfin Catch	0				
2015	2	915	30-Mar-15	3	No Longfin Catch	0				
2015	2	918		0	Not Sampled	0				
2015	2	919	01-Apr-15	3	No Longfin Catch	0				

Processing complete through 4/3/2015

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

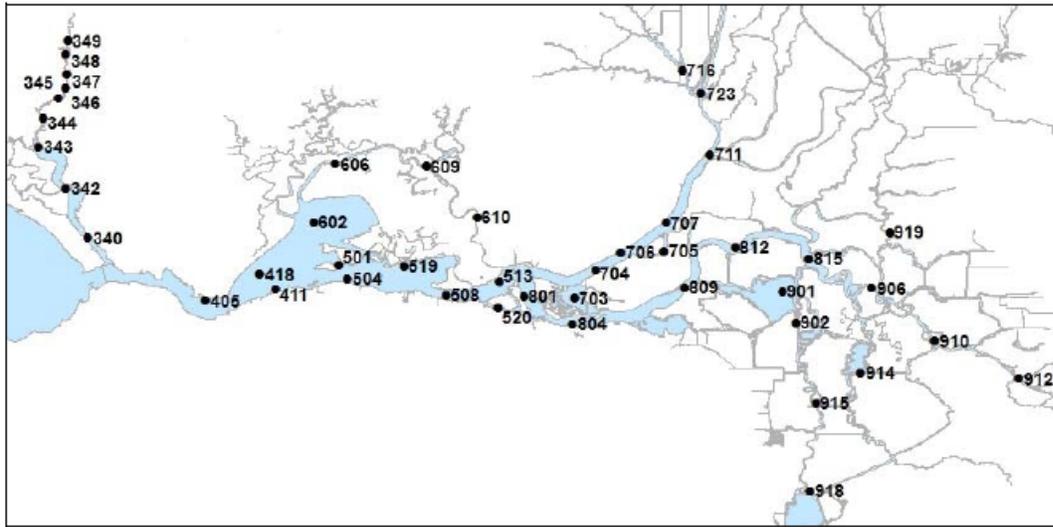


Figure 2. CDFW's 20-mm Survey station locations.

