

Smelt Working Group
December 19, 2016

Meeting Summary

The Working Group reviewed current Delta conditions, survey data, and forecasted weather and maintains their December 13, 2016 recommendation that the Service implement Action 1 of the RPA (-2,000 cfs OMR for 14 days with a corresponding 5 day average OMR of -2,500 cfs) as soon as practicable.

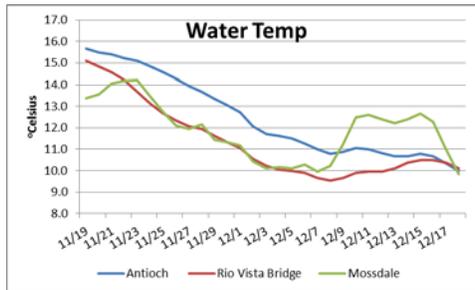
The Working Group is following guidance for entrainment protections from Action 1 (adult Delta Smelt). The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions, and will meet again on Tuesday, December 27, 2016 at 10 am, or sooner, if conditions warrant.

Reported Data

1. Current environmental data

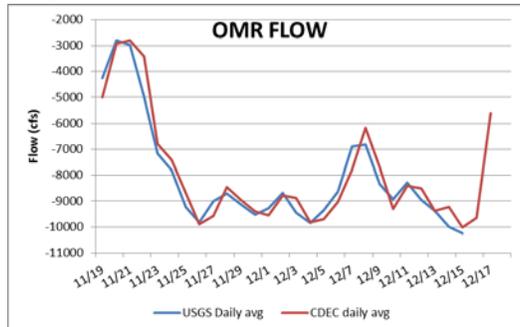
a. Temperature

Daily averages of the 3 Delta stations (Rio Vista, Antioch, and Mossdale) was 10°C as of December 18.



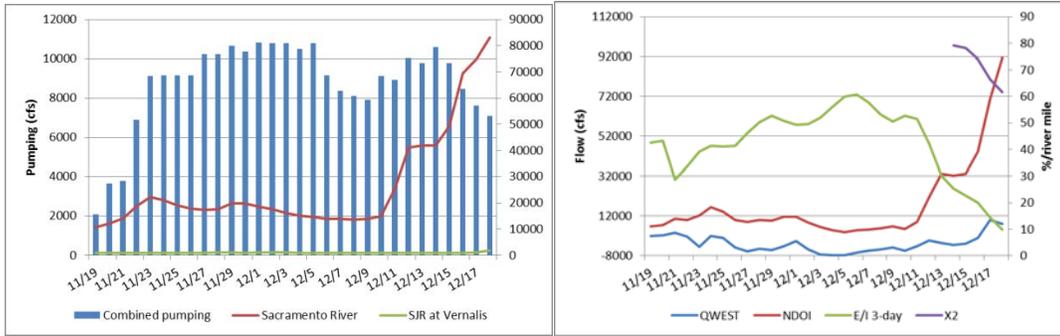
b. OMR flow

The CDEC daily average OMR flow for December 17 was -5,607 cfs (December 18 was unavailable). USGS daily average OMR flow for December 15 (most recent daily average available) was -10,240 cfs.

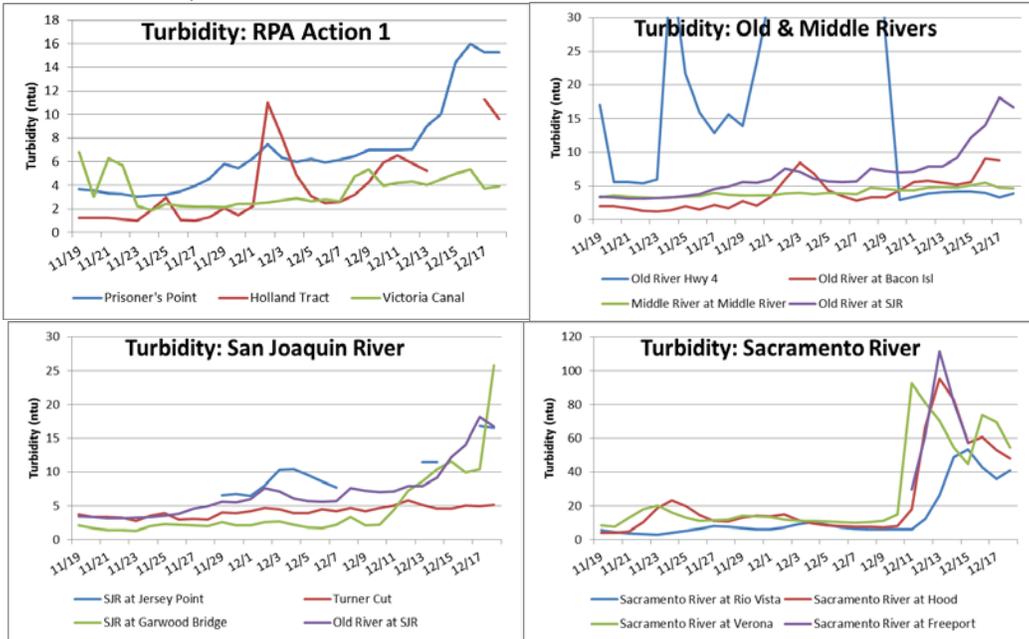


c. River flows and pumping

Sacramento River at Freeport flow for December 18 was 83,173 cfs. San Joaquin River at Vernalis river flow for December 18 was 1,730 cfs. X2 was at 61.6 km as of December 18.



d. Turbidity



2. Delta fish monitoring

SKT December survey caught a total of 227 Delta Smelt.
 FMWT December survey had zero catch of Delta Smelt; three Longfin Smelt were caught. The 2016 FMWT Index is expected to be released later this week or next week.
 Bay study December survey caught three Delta Smelt in the lower Sacramento River. Four Longfin Smelt were caught throughout the Delta.
 No additional fish surveys until January 3, 2017.
 Service Chippis Island survey caught Longfin Smelt last week.
 EDSM was in the water last week on Thursday, surveying the lower San Joaquin River. A total of three Delta Smelt were caught at two stations (two upstream from Old River and one at Prisoner’s Point). The EDSM only had one crew available this week, and is on the water surveying the lower San Joaquin River. No Delta Smelt caught so far today (update during the call).

3. Modeling

No new PTM runs were distributed to the group this morning for discussion.

4. Salvage

No adult Delta Smelt or Longfin Smelt salvage has occurred so far this water year.

5. Expected Project Operations

Another storm is anticipated later this week, but is not anticipated to be as strong as last week's storm. Combined pumping today is 7,000 cfs and anticipated to remain steady. OMR is anticipated to remain at approximately -6,000 cfs for the week.

6. Delta Conditions Team

The DCT met last Friday. The group requested that DWR produce modeling runs through PTM and turbidity forecasting. The DCT requested that the SWG review this information in their discussion of the risk of entrainment. Modeling results could not be produced in time for the SWG meeting today.

7. DWR Turbidity Transects

Surveys were completed last week on Wednesday in the Old River corridor and data was distributed to the SWG.

8. Biological Opinion Background:

RPA, Action 1: Adult Migration and Entrainment

Objective: A fixed duration action to protect pre-spawning adult delta smelt from entrainment during the first flush, and to provide advantageous hydrodynamic conditions early in the migration period.

Action: Limit exports so that the average daily OMR flow is no more negative than -2,000 cfs for a total duration of 14 days, with a 5-day running average no more negative than -2,500 cfs (within 25 percent).

Timing:

Part A: December 1 to December 20 – Based upon an examination of turbidity data from Prisoner's Point, Holland Cut, and Victoria Canal and salvage data from CVP/SWP (see below), and other parameters important to the protection of delta smelt including, but not limited to, preceding conditions of X2, FMWT, and river flows; the SWG may recommend a start date to the Service. The Service will make the final determination.

Part B: After December 20 – The action will begin if the 3 day average turbidity at Prisoner's Point, Holland Cut, and Victoria Canal exceeds 12 NTU. However the SWG can recommend a delayed start or interruption based on other conditions such as Delta inflow that may affect vulnerability to entrainment. Part B has associated triggers involving turbidity and/or salvage.

The window for triggering Action 1 concludes when either the temperature criterion is exceeded or there is evidence of spawning. These off-ramp conditions may occur without Action 1 ever being triggered. If this is the case, Action 3 begins, unless the Service concludes on the basis of the totality of available information that Action 2 should be implemented instead.

9. Assessment of Risk Discussion

After a review of the hydrology data, members indicated their assertion that First Flush conditions continue to move through the Delta. Although turbidity and flows on the Sacramento River side may have peaked as a result of last week's storm and are descending, additional

releases from Keswick and anticipated turbidity from the Yolo Bypass could produce a prolonged First Flush. Flows in the Sacramento River are expected to drop below the Fremont weir by Wednesday, and the bypass could take around a week to drain.

Turbidity has increased in the northern end of Old River, as far south as Bacon Island. Turbidity also has increased in the lower San Joaquin River, from the three east-side streams down to the confluence. Members are concerned that with the current OMR levels, additional turbidity could be pulled into the Old River corridor. Last year, the SWG discussed the importance of maintaining turbidity less than 10NTU (preferably less than 8NTU) at Bacon Island and controlling operations such that the turbidity field does not reach further south. Members emphasized this point again today, stressing the importance of maintaining low turbidity in the Old River corridor this week.

Members stressed that the EDSM has confirmed the presence of the species in the lower San Joaquin River, especially at stations upstream of Old River. Fish at Prisoner's Point are considered to be at greater risk of entrainment into the Old and Middle River corridors than those detected at Jersey Point or further downstream, especially when OMR is at or more negative than -5,000 cfs.

The SWG agrees that the current hydrological conditions are what Action 1 in the Biological Opinion is intended to respond to. The SWG believes it is appropriate to begin Action 1 now, in order to control how far south high turbidity encroaches into the Old River corridor, and to encourage Delta Smelt to remain in the lower San Joaquin River or move into the Sacramento River. The group emphasized a point that was made last week (and historically), that the migration period is the most effective time to manage OMR levels and achieve desired results that can positively affect the distribution of the species for the remainder of the season (and the subsequent risk of entrainment).

Members expect that Delta Smelt have begun their migration to spawning habitat. Migration is anticipated to continue until spawning begins, or approximately March. Individuals are anticipated to move upstream with the turbidity field, and then to remain in position with the receding tide.

Members recommended that should the Service not implement Action 1 this week that they direct the SWG to look to Action 2 for guidance in assessing risk of entrainment. Should this occur, the SWG likely will want to meet again before December 27 to reassess the risk of entrainment and recommend an OMR flow that would provide adequate protection to the species. SWG members stressed the importance of providing immediate additional protections beyond those currently in place. Members emphasize that current OMR levels (approximately -6,000 cfs) put some proportion of the population at increased risk of entrainment.

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Tuesday, December 27, 2016, or sooner, if conditions warrant.

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

Advice for week of December 19, 2016:

The Smelt Working Group has no advice for Longfin Smelt: the “off-ramp” for advice, net flow of 55,000 cfs at Rio Vista, was surpassed on December 17 and remains above the off-ramp level.

No Barker Slough operations advice. The Smelt Work Group meeting occurred prior to concern period beginning January 15 (see #5 below).

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 (≥ 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 December 18, 2016, no Longfin Smelt have been salvaged for the water year. See current conditions discussion below. There will be a Longfin Smelt adult salvage threshold for advice (see criterion in #1 above), because some Longfin Smelt were collected by the Fall Midwater Trawl Survey during the four monthly surveys; annual abundance has not yet been calculated. Advice is not warranted based on this criterion.
2. December Bay Study and Fall Midwater Trawl sampling collected no Longfin Smelt in the San Joaquin River or south Delta; however, the December Fall Midwater Trawl did detect Longfin Smelt in the Sacramento River as high as station 713 (Cache Slough at Elkhorn Slough), indicating that Longfin Smelt adults are entering the Delta and are present in the Sacramento River. USFWS Chipps Island Trawl caught 10 Longfin Smelt in early December, two on the 7th and eight on the 9th. Presence of adult Longfin Smelt in the Sacramento River and the likelihood of increasing numbers of adults in the system would otherwise warrant advice, but recent high flows surpassed the Incidental Take Permit flow off-ramp of 55,000 cfs at Rio Vista and have shifted X2 downstream into Suisun Bay and shifted Qwest strongly positive, so any

San Joaquin River spawners are unlikely to be entrained into the south Delta and export facilities.

3 & 4. The first Smelt Larva Survey (SLS) of 2017 will be conducted beginning January 3th.

5. Criteria does not begin until January 15th, and given flow conditions, is unlikely to be implemented this water year.

Current conditions: As of December 18th, Sacramento River flow surpassed 83,000 cfs and continued increasing; the San Joaquin was at 1,737 cfs. Net flow at Rio Vista of 55,000 cfs acts as a flow off-ramp for adult and larval protections. This off-ramp was achieved about December 17th and remains in place. X2 was about 61.5. Combined State and federal exports on the 18th were 7,000 cfs targeting an OMR of -5,000 to -6,000. Qwest was +7,919 and likely beginning to decrease. The runoff from the most recent storm has mostly reached the Delta.

In December, Longfin Smelt were collected in the Sacramento River by the Fall Midwater Trawl, one each at station 706 (lower Sacramento River at Three-Mile Slough) and station 713, Cache Slough at Elkhorn Slough. FWS Chipps Island: 12/7 – 2 LFS; 12/9 – 8 LFS. Bay Study in December: 2 LFS in Suisun (535 and 430) and 1 in Central Bay (215) and in South Bay (108). These collections indicate the start of the spawning migration and spawning, and that some adult Longfin Smelt moved well into the Delta. The number of adults entering the Delta is expected to increase through the month and beyond. No Longfin Smelt have been salvaged this water year.

Summary of Risk: Risk of entrainment is low due to high outflow moving X2 downstream, strongly positive Qwest and modest exports.