

SMELT WORKING GROUP
Monday, December 15, 2014

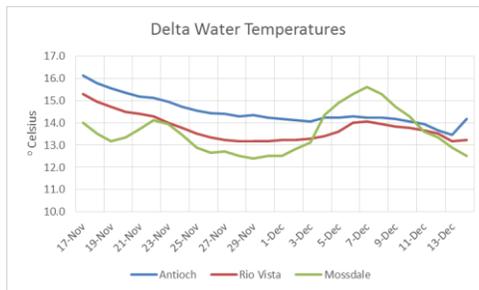
Meeting Summary:

The Working Group did not make a recommendation in projected operations based on a review of current Delta Smelt distribution and salvage data, and current Delta conditions, but noted that potential changes in hydrology this week will require an additional meeting later this week to discuss Delta Smelt entrainment risk. Additionally, the Service requested the Working Group discuss and respond an additional question that will assist the Service in making a decision for Delta Smelt regarding current entrainment risk. The Working Group will meet again Thursday, December 18, 2014.

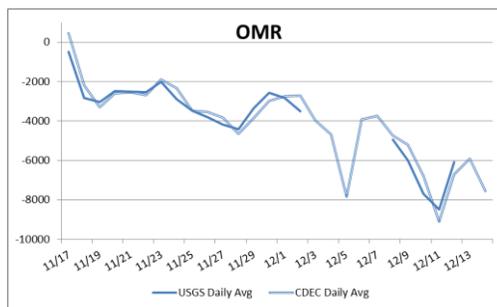
Reported Data:

1. Current environmental data:

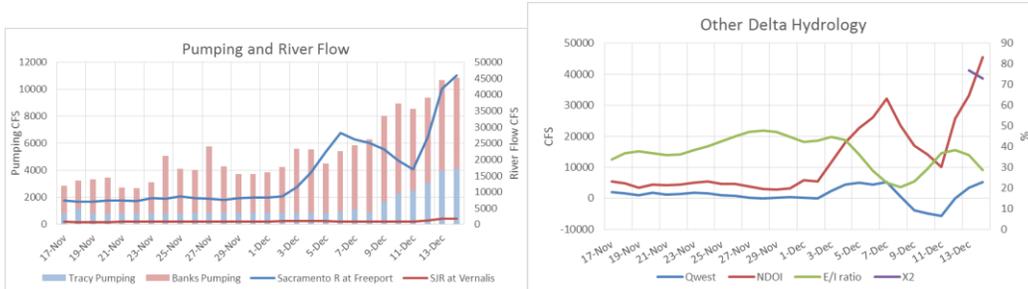
- Water Temperatures are as follows:



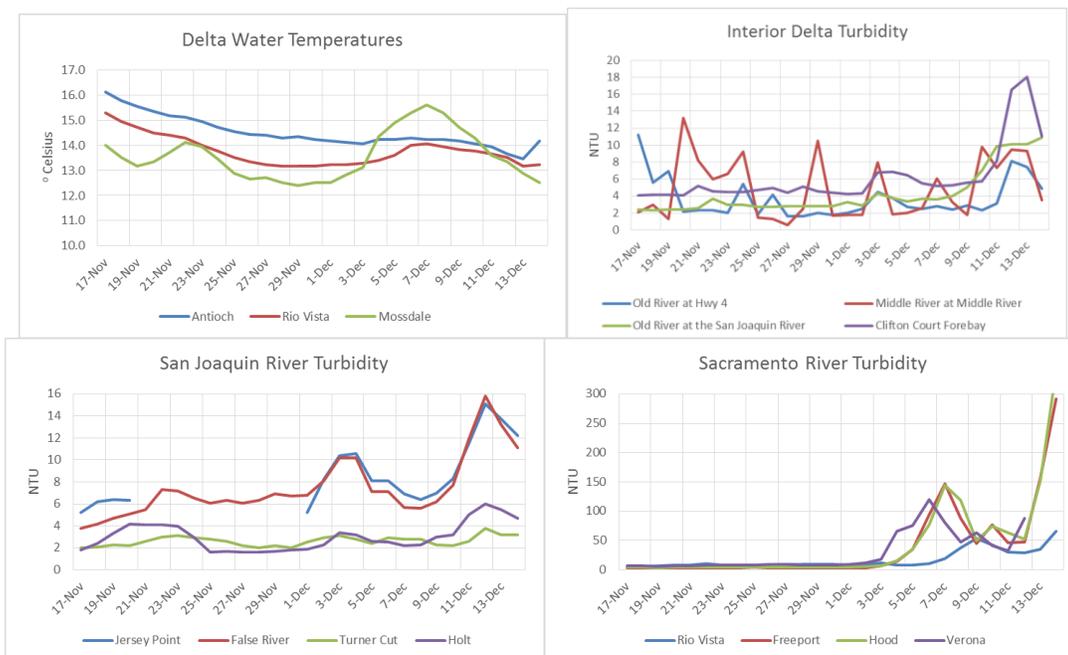
- OMR Flow: USGS tidally-averaged daily OMR as of December 12 is -6080 cfs. CDEC daily OMR flow as of December 14 is -7550 cfs



- River Flows: Sacramento River inflow is 45,816 cfs and San Joaquin River is 1745 cfs. X2 calculation from CDEC is now at 72.8km. 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 December Spring Kodiak Trawl began sampling today and will continue through this week. The SKT shadowed the FMWT last week. On December 8, the SKT shadowing collected one Delta Smelt at station 508 (57mm). On December 9, the SKT collected 24 Delta Smelt at Sacramento River stations 701, 703, 704, 705, 707, and 711 (53-68mm). On December 10, the SKT shadowed the FMWT on the lower San Joaquin River and some south Delta stations, but did not collect Delta Smelt.

The Smelt Larva Survey will begin sampling the week of January 5. Some survey protocols might change for SLS #1.

Last week's FMWT sampling at stations in the central Delta, Mokelumne River, and Cache Slough were delayed till today and tomorrow due to the weather conditions last week. Preliminary data from today's FMWT indicate no Delta Smelt presence at any station between 810 and 815.

The 2014 Fall Midwater Trawl has completed sampling for September, October, and November. Catches have been very low, on par with POD years' catch results. The 2014 Annual Fall Midwater Trawl

Index will be generated using catch results from September through December tows and is anticipated to be released after January 1, 2015.

In the interim, CDFW calculated a partial Delta Smelt index based on the sum of September and October indices (the annual abundance index will be the sum of September through December indices). The September and October index is 8, which is consistent with some of the lower indices encountered since the POD.

The USFWS, as part of the Delta Smelt recovery plan, developed an alternate index based on catch at a subset of FMWT stations during September and October, referred to as the Delta Smelt Recovery Index. The 2014 Delta Smelt Recovery Index (based on September and October) is 5. 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.

September and October Index (based on the FMWT results) for Longfin Smelt is nine. The Longfin Smelt Incidental Take Permit for the SWP indicates that the concern level for take is reached when salvage surpasses 5 times the FMWT index, so the current level of concern is a cumulative salvage of 45. Calculation of the final concern limit will include additional FMWT survey results for November and December, but is anticipated to be relatively small. Larval protection for Longfin Smelt will begin in January.

The Service began the Early Warning Study on December 1, 2014, alternating sampling days at Jersey Point and Prisoner's Point. Sampling currently is ongoing daily until further notice.

3. Salvage:

No salvage has occurred for either Delta Smelt or Longfin Smelt for WY2015. The Tracy Fish Collection Facility has been experiencing large debris loads. Due to these extreme conditions, fish counts have been reduced from 30 minutes per 2 hours to 10 minutes per 2 hours, starting December 10. Reclamation operators are contemplating additional measures to manage the debris load. 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 today are 9100 cfs as of this afternoon. Tomorrow, combined exports will be 6800 cfs. Operators indicated the reduction in pumping was an attempt at managing turbidity levels, with the goal that elevated levels will not reach the south Delta. This level of pumping is anticipated through at least Friday. Operators indicated they anticipate an OMR of -6000 cfs and for Qwest to remain positive in response to this pumping rate.

Operators indicated wet weather this week, with rainfall totals for the northern valley to reach 1 ½ inches for the week. However, they indicated that after this week, meteorology models are indicating dryer weather.

5. Discussion:

The Working Group reviewed and discussed all relevant data from Delta monitoring, salvage, field

surveys, planned Project operations, and risk of entrainment. The Working Group also discussed the question posed them by the Service.

Service Question: Now that last week's large storm is behind us, how probable is it that it was big enough to stimulate a pre-spawning movement?

After a brief discussion, the Working Group agreed that there appeared to be some response to the hydrological conditions within the past day or two, as evidenced by catch with the Early Warning Study over the past three days. However, members were quick to indicate that the full hydrological impact of the storms last week has yet to reach the Delta. Members indicated they would expect more of the population to respond to the conditions within the next few days, as the peak flow and turbidity reaches the Delta.

Members indicated that turbidity levels at Hood on the Sacramento River were quite high (~350 NTU) and would further increase turbidity, in a couple days, at stations into the lower Sacramento River and potentially the lower San Joaquin River. With the anticipated OMR level starting tomorrow, higher turbidities may not reach the southern Delta. Members indicated the anticipated change in turbidity on the Sacramento River increases the possibility of a more pronounced spawning migration.

The Working Group stressed that with the lower population levels, it will be very challenging to draw any conclusions from catch from field surveys. For example, the very low levels of Delta Smelt caught by the Early Warning Study at Prisoner's Point and Jersey Point over the last three days are cause for concern by the group; however, the group does not believe there is sufficient evidence to indicate a large percentage of the population have begun migrating. Some members indicated that historically, once migration has begun, trawls will catch a higher density of individuals, and we have not seen that sort of catch so far this year. Some members indicated that catch on the lower San Joaquin has only very rarely been more than one or two individuals in a trawl, and that low Delta Smelt abundance this year precludes higher density catches in any event.

Members indicated that the length of fish in the field surveys appears to be increasing slightly. This could indicate a larger percentage of the population is becoming ready to migrate. Members indicated mid-December is historically early for a large proportion of the population to be migrating, but again, with the very low population levels, members indicated the data are unlikely to be able to robustly indicate the start of an overall spawning migration.

Members stated that the fish caught over the last few days in the south lane of Jersey Point and the middle lane of Prisoner's Point are at increased risk for entrainment into the south Delta. Some members indicated that station 711 in the lower Sacramento River typically only catches fish when spawning migration has begun and not at other times of the year. Station 711 caught some fish last week.

The Working Group wanted to emphasize their overall high level of concern for Delta Smelt entrainment risk given the hydrologic conditions over this past weekend, and the subsequent reduction of concern with the anticipated reduction in negative OMR to -6000 cfs (although some members indicated they were still highly concerned). Members recalled from previous years that at this level of OMR flow, Particle Tracking Modeling indicates some particles would be pulled from the lower San Joaquin River, but that the pull would be greatly reduced from the more negative levels that occurred over the weekend (~-9000 cfs) and that particles would likely not be pulled from the lower Sacramento River.

Additionally, the Working Group indicated a positive Qwest this week would help to minimize encroachment of turbidity into the south Delta.

Members reminded the Service that the population abundance levels are at an all-time low. At current levels, and with the very low numbers caught in field surveys, members indicated it was exceedingly difficult to draw many conclusions and extrapolate the results to the population as a whole. Members indicated that due to the presence of Delta Smelt in the southern trawl of the Early Warning surveys at Jersey Point, coupled with anticipated OMR flow this week, they would expect some low level of salvage within the next week, since the southern side of the channel is more hydrologically connected to tidal flow into the southern Delta (and fish are being caught there). However, members recognized that at currently low abundance levels, it is also possible that entrained individuals might be missed by salvage sampling, especially given the reduction in salvage efficiency at the TFCF due to high debris loads.

Some members indicated a desire to reduce OMR flow to -5000 cfs now or in the near future. However, the Working Group agreed that the hydrologic difference between the anticipated OMR flow of -6000 cfs and -5000 cfs is difficult to quantify. The Working Group agreed that -6000 cfs OMR flow would provide a reduction in risk of entrainment for the species (as compared to OMR flow from the previous few days), but that this level of OMR may not provide adequate protection for the species if turbidity conditions further invaded the interior Delta. The Working Group agreed that no recommendation was necessary today, but that they would watch conditions closely this week and meet again Thursday, December 18 to review turbidity data and movement (evidence of higher turbidities extending into the southern Delta), catch from this week's Early Warning Study (watching for catch that meets or exceeds current levels), any amount of catch from the DFW SKT survey #1 in the south or central Delta, any level of salvage, and results from the turbidity model (the Service will request results be sent to the Working Group on Wed, December 17).

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Thursday, December 18, 2015, at 10 am.

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

Advice for week of December 15, 2014:

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

Barker Slough operations advice was not provided by the Smelt Work Group, because the 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 14, 2014, no Longfin Smelt have been salvaged for the water year. The interim Longfin Smelt adult salvage threshold for advice is > 45 (see criterion in #1 above), which is based on a combined September and October Fall Midwater Trawl Longfin Smelt index of 9. It will be revised up when November and December indices are calculated and included. No advice is warranted based on this criterion.

2. December Bay Study sampling collected no Longfin Smelt in the San Joaquin River or the south Delta, suggesting no recent proximity to the export pumps. December Fall Midwater Trawl sampled the region last week and today, and did not detect any Longfin Smelt in the central or south Delta. Distribution information does not indicate advice is warranted based on this criterion.

3 & 4. The first Smelt Larva Survey (SLS) of 2015 will be conducted beginning January 5th.

5. Too early for water year classification.

Current conditions: Sacramento River flow has fluctuated recently – exceeding 25,000 on the 6th dropping to almost 15,000 on the 11th and then increasing to just over 45,000 on December 13th, but still climbing. X2 has begun dropping and was about 73 on December 14th. Combined State and federal export have exceeded 8,000 cfs, but are dropping starting today and will target -6,000 cfs. Qwest shifted negative on December 9th and reached -5,700 December 11th, but turned positive on December 14th at +5,146 and is expected to remain positive to at least the weekend. OMR has been strongly negative since the 8th, reaching more negative than -8,000 cfs, but as mentioned previously is targeted for -6,000 early this week.

Summary of Risk:

Risk of entrainment is very low, but this could change at any time with an influx of Longfin Smelt. The risk of entrainment declines as X2 moves downstream.

The collection of no adult Longfin Smelt in salvage or in the San Joaquin River or central Delta (Bay Study, FMWT sampling) to date suggests few fish have moved into the central or south Delta for spawning. Predicted conditions, particularly the less negative OMR and the positive Qwest values, portray a much-reduced risk for fish that do move into the central Delta. Recent flows moved X2 down to 73 and will probably move it farther downstream, likely reducing the

number of Longfin Smelt migrating into the central Delta. Enhanced “early warning sampling” comprised of Kodiak trawling daily with sampling (15 tows) alternating between Jersey Point and Prisoners Point may detect Longfin Smelt migrating upstream, particularly if they are “tidally surfing” and relatively high in the water column on flood tides (i.e., susceptible to Kodiak trawling). Since migration to the Delta could take place at any time for both Longfin Smelt and Delta Smelt, the SWG will convene again Thursday December 18 to discuss new information.