

SMELT WORKING GROUP
Monday, January 26, 2015

Meeting Summary:

The Working Group described the risk of entrainment under the Service-provided advice framework. Under this framework the relative risk of entrainment for each of three Old and Middle River flow ranges is ranked and discussed:

- -1250 to -2000 cfs has a low risk of entrainment,
- -2000 to -3500 cfs has a low risk of entrainment, and
- -3500 to -5000 cfs has a medium risk of entrainment.

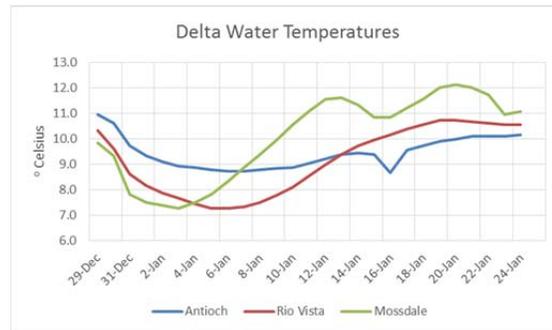
These relative risk levels are based upon a review of Delta Smelt relative abundance and distribution data, Delta Smelt salvage data, and Delta conditions data, including turbidity.

The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, February 2, 2015 at 10am.

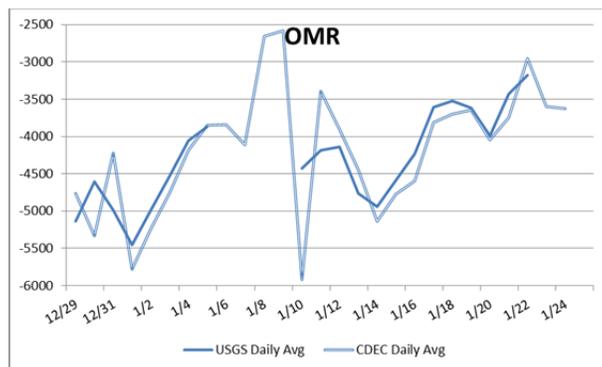
Reported Data:

1. Current environmental data:

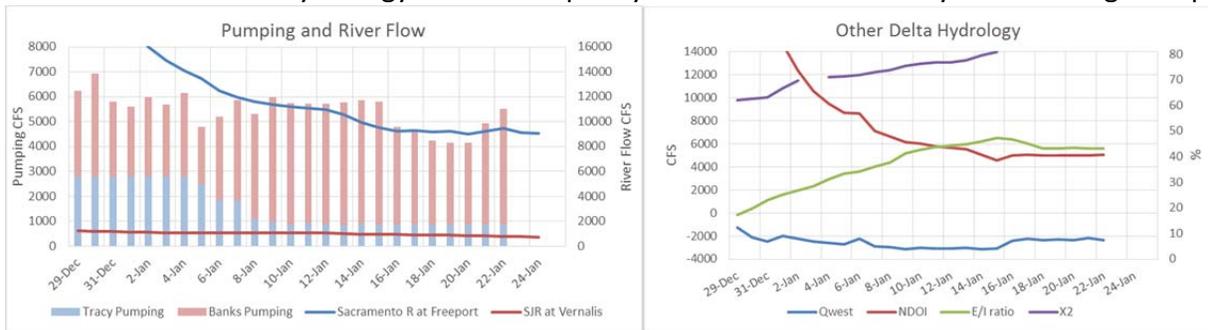
- Water Temperatures are as follows:



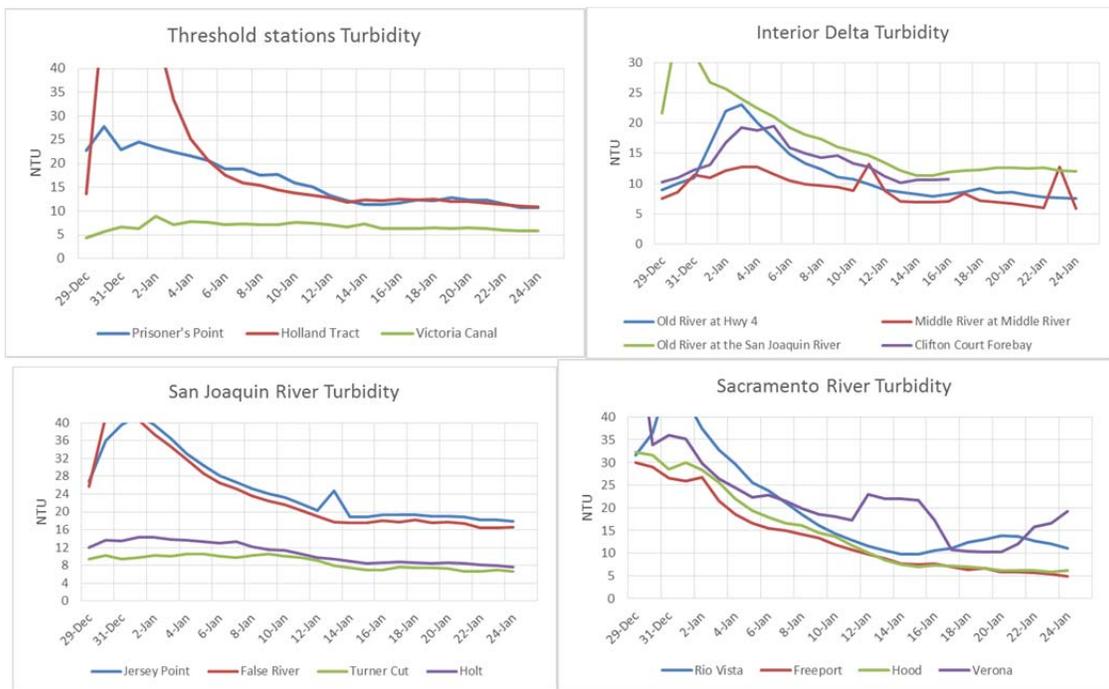
- OMR Flow: USGS tidally-averaged daily and 5 day average OMR flow for January 22 is -3178 and -3548 cfs, respectively. CDEC daily, 5 day average, and 14 day average OMR flow as of January 24 is -3626, -3596, and -3957 cfs.



- River Flows: Sacramento River inflow is 9091 cfs and San Joaquin River is 729 cfs. X2 calculation from CDEC is upstream of 81 km. 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 2014 is 9. This is the lowest fall index, and approximately one half of the previous lowest indices of 17 (2009) and 18 (2013).

Smelt Larva Survey #2 was in the field January 20th. Napa river stations are being sampled today (January 26th). Sample processing is ongoing. A total of 4 Longfin Smelt ranging in size from 6-7mm were observed in samples taken from stations generally from the confluence and downstream. No Delta Smelt have been observed in the samples processed so far. SLS #3 will start February 2nd.

Spring Kodiak Survey 2 will be in the field beginning February 9th.

The Service's Early Warning Survey has reduced sampling to one day per week at each location. A total

of 1 delta smelt was collected on January 20th at Jersey Point, and none were collected at Prisoner's Point on January 21st. Additional data will be available later this week.

3. Salvage:

No Delta Smelt salvage has occurred since January 7. The estimated cumulative seasonal total for adult Delta Smelt salvage remains at 56. No Longfin Smelt has been observed in salvage counts during WY2015. Salvage counts have returned to 30 minutes per 2 hours at the SWP. High debris loads at the CVP have caused the salvage count to be reduced to 10 minute counts per 2 hours for some counts on most days last week. On Friday the 23rd, the CVP Tracy Fish Collection Facility experienced a scheduled outage of 35 minutes where exports continued without the operation of the salvage facility.

4. Expected Project Operations:

Combined SWP/CVP exports today are approximately 4600 cfs. SWP exports are expected to be reduced from 3700 to 3400 on January 27th to meet D1641 requirements. Operators indicated that the Index OMR value was anticipated to be approximately -4000 cfs, or more positive to comply with the D-1641 January Outflow requirement.

5. Delta Conditions Team:

Turbidity in the Delta was reported to have decreased from last week with Delta operations being controlled by the 7-day average outflow requirement under D1641. There was no official advice for the Working Group or Delta Operations for Salmonids and Sturgeon team.

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 1, Part B: "High-entrainment risk period: Delta Smelt have historically been entrained when first flush conditions occur in late December. In order to prevent or minimize such entrainment, Action 1 shall be initiated on or after December 20 if the 3 day average turbidity at Prisoner's Point, Holland Cut, and Victoria Canal exceeds 12 NTU, or if there are three days of Delta Smelt salvage at either facility or if the cumulative daily salvage count is above the risk threshold based upon the 'daily salvage index' approach described in Attachment B. Action 1 shall require the Projects to maintain OMR flows no more negative than -2,000 cfs (14-day running average) with a simultaneous 5-day running average flow no more negative than -2,500 cfs to protect adult Delta Smelt for 14 days. However, the SWG can recommend a delayed start or interruption based on other conditions such as delta inflow that may affect vulnerability to entrainment." (page 281).

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).

Discussion:

The Working Group reviewed and discussed all relevant data from Delta monitoring, salvage, field surveys, and planned Project operations. On January 12, 2015, the Service introduced the “Framework for Providing Advice to the Service” (advice framework). Under the advice framework, the Working Group is to evaluate the risk of entrainment relative to three ranges of OMR flow (-1250 to -2000 cfs, -2000 to -3500 cfs, and -3500 to -5000 cfs). Specific guidelines were provided to the Working Group in how to discuss the risk of entrainment under each flow range. Refer to the January 12, 2015 notes to view the draft advice framework.

The Service presented its updated WY2015 adult Delta Smelt ITL (196 fish) at the January 12 meeting. The January 9, 2015 reinitiation memo regarding this new limit has been posted to the Bay-Delta FWO website (<http://www.fws.gov/sfbaydelta/>).

Turbidity has dropped slightly below 10 NTU at stations in the southern Delta, while Prisoner’s Point and Holland Tract turbidity remains slightly above 10 NTU. The group noted that wind speed is forecasted to increase this Friday at Stockton Airport which could result in wind-driven resuspension of sediment and increases in turbidity.

Some members expect that Delta Smelt likely remain in the central and southern Delta, based on survey results and salvage through January 7. The Working Group noted that there has been zero salvage of Delta Smelt since January 7.

High debris loads continue to negatively impacted fish salvage efficiency at the CVP. Fish counts are at the full 30 minutes per two hours at the SWP facility and some of the counts at the CVP facility have been reduced to 10 minutes per 2 hours due to high debris load. The reduced counts sporadically reduce the already low probability of detecting Delta Smelt.

The above discussion points influenced and contribute to all three flow ranges described below:

Advice Framework OMR Level Risk Ranking and Discussion

- OMR flow of -1250 to -2000 cfs: There is a low risk of entrainment under this flow range. This is the most protective range for Delta Smelt.
 - Risk factors: lowest annual index on record, turbidity levels slightly below threshold levels for fish movement, confirmed Delta Smelt presence in central Delta based upon earlier Jersey Point and Prisoner’s Point catch data, sporadic reduction in salvage efficiency due to debris loads at the CVP, comparable catch results for January SKT for Sac River stations and Jersey Point
 - Salvage: geographic influence of the pumps is reduced to southern Delta under this flow range
 - Unknowns: Would expect Qwest to become more positive under this flow scenario.
 - Persistence of risk: N/A
- OMR flow of -2000 to -3500 cfs: There is a low risk of entrainment under this flow range,

although some members indicated a medium risk of entrainment also was appropriate for this flow range.

- Risk factors: lowest annual index on record, turbidity levels slightly below threshold levels for fish movement, confirmed Delta Smelt presence in central Delta based upon persistent Jersey Point and Prisoner's Point catches from the Early Warning Survey and partially from the January SKT survey, sporadic reduction in salvage efficiency due to debris loads at the CVP, comparable catch results for January SKT for Sac River stations and Jersey Point
- Salvage: Observed salvage has been zero since January 8
- Unknowns: future occurrence of high winds increasing turbidity levels could result in an increased risk of entrainment under this flow range.
- Persistence of risk: N/A
- OMR flow of -3500 to -5000 cfs: There is a medium risk of entrainment under this flow range.
 - Risk factors: lowest annual index on record, turbidity levels slightly below threshold levels for fish movement, persistent Delta Smelt presence in central Delta based upon earlier Jersey Point and Prisoner's Point catch data, sporadic reduction in salvage efficiency due to debris loads at the CVP, comparable catch results for SKT for Sac River stations and Jersey Point
 - Salvage: Observed salvage has been zero since January 8
 - Unknowns: future occurrence of high winds increasing turbidity levels could result in an increased risk of entrainment under this flow range. Increased combined pumping could increase the risk of entrainment for this flow range.
 - Persistence of risk: level of risk for this flow range would be anticipated to remain for the week.

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Monday, February 2, 2015.

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

Advice for week of January 26, 2015:

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

Barker Slough operations advice was not provided by the Smelt Work Group, because water year 2015 is currently classified as “below normal” (see Basis of advice #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 January 25, 2015, no Longfin Smelt has been salvaged for the water year. The interim 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. No advice is warranted based on this criterion.

2. Early January sampling (USFWS) detected two adult Longfin Smelt at Jersey Point; otherwise, none have been caught at Jersey Point or Prisoner’s Point. No other detections have been made in the San Joaquin River or south Delta in January to date. 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 December. Previously, Fall Midwater Trawl sampled the Bay-Delta region during the first half of ~~the month~~ December and the supplemental Spring Kodiak Trawl survey during the same month, and neither detected any Longfin Smelt in the central or south Delta. Late December catches by

the Chipps Island trawl suggested that spawning movement into the western Delta happened. Current distribution information does not indicate advice is warranted based on this criterion.

3 & 4. The second Smelt Larva Survey (SLS) is sampling Napa River today (January 26), otherwise sampling was completed at all stations. Sample processing for survey 2 is partially complete and larvae were detected at only two stations in the central and south Delta: a single larva at station 906 on the San Joaquin River at Medford Island and three larvae at station 809, Jersey Point (Table 1, Figure 1). The next sampling survey is scheduled for February 2-5. In SLS 1, most larvae were distributed from the confluence downstream. Hatching for the season is only just beginning. Catches are not yet sufficient to reach concern levels based on density or distribution.

5. Based on the of January 1, 2015 California Cooperative Snow Surveys Forecast and as of January 25, the California Hydrological Conditions report listed the water year type as below normal. No advice is warranted based on this criterion.

Current conditions: Sacramento River flow remained at about 9,100 cfs at Freeport on January 26. X2 remains above 81 km after a low of 61 km on December 28. Combined State and federal exports have been about 4,600 cfs and may decline to meet D1641 outflow requirements. Qwest has been about -2,200 cfs and will vary with river flow and exports. Projected OMR index of less negative than -4,000 cfs is expected.

Summary of Risk:

Risk of entrainment remains low, but this could change at any time with an influx of adult Longfin Smelt into the central or south Delta, or with substantial hatching in the region.

The risk of adult entrainment increases as X2 increases. X2 exceeded 81 km recently.

The limited number of Longfin Smelt larvae detected in the central and east Delta in SLSs 1 & 2, the few 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 of about -4,000 cfs and a modestly negative Qwest (-2,200 cfs), add some risk for fish that do move into the central Delta. The overall risk of entrainment remains low, but could increase if adult fish migrate into the central or south Delta or if larvae hatch in the region. Roughly half the spawning season remains and as X2 moves upstream subsequent spawners may move upstream as well, potentially placing them and their progeny closer to the export facilities.

Table 1. Longfin Smelt catches by station in Smelt Larva Survey 2, 2015. Sample processing is incomplete.

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

SWP ITP Criteria Stations

Processing is complete through 1/23/15.

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

