

Smelt Monitoring Team – Tuesday, March 23, 2021

PARTICIPANTS

- CDFW
- DWR
- NMFS
- SWRCB
- USBR
- USFWS
- Kearns & West

ACTION ITEMS

- CDFW to share size range of Longfin Smelt (LFS) detected at the State Water Project (SWP) and Central Valley Project (CVP) last week.

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

USBR reported on the OMR management measures currently in effect and whether they have been triggered; CDFW reported on the ITP Conditions of Approval that are currently in effect and whether they have been triggered. The descriptions below are intended as summaries and do not provide all the details related to each action or trigger. For full descriptions, please see the OMR guidance document or ITP as relevant.

Proposed Action

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
Integrated Early Winter Pulse Protection (“First Flush” Turbidity Event)	Reduce exports for 14 consecutive days so that the 14-day averaged OMR index for the period shall not be more negative than -2,000 cfs	Dec 1 to Jan 31	(1) Running three-day average of daily flows at Freeport >25,000 cfs; and (2) Running three-day average of daily turbidity at Freeport \geq 50 Nephelometric Turbidity Units (NTU ¹); or (3) Real-time monitoring indicates a high risk of migration and dispersal into areas at high risk of future entrainment or a spent DS has been collected in monitoring surveys.	No

¹ The current instrumentation measures turbidity in Formazin Nephelometric Units (FNU).

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
OMR Management	Manage to a more positive OMR than -5,000 cfs	From the onset of OMR management to the end		Yes (initiated on 1/1/2021 for salmon)
Turbidity Bridge Avoidance (“South Delta Turbidity”)	If the daily average turbidity at Bacon Island cannot be maintained less than 12 NTU, manage exports to achieve an OMR no more negative than -2,000 cfs until the daily average turbidity at Bacon Island drops below 12 NTU.	After the first flush or Feb 1 (whichever comes first) and until a ripe or spent female is detected or April 1 (whichever is first)	Average daily turbidity in Old River at Bacon Island (OBI) at a level of more than 12 NTU.	No
Larval and Juvenile DS	Run hydrodynamic models and forecasts of entrainment, informed by the EDSM or other relevant survey data to estimate the percentage of larval and juvenile Delta smelt (DS) that could be entrained. If necessary, manage exports to limit entrainment to be protective based on the modeled recruitment levels.	On or after March 15 of each year until off-ramp criteria are met	If QWEST is negative AND larval or juvenile DS are within the entrainment zone of the pumps based on real-time sampling of spawning adults or young of year life stages	No

IIP Conditions of Approval

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.1.5.2 (Smelt Monitoring Team Risk Assessment)	Outlines contents for weekly risk assessments of DS and LFS required under 8.1.5 and 8.1.1	Nov 1 st through June 30 th or until off-ramped by 8.8		Yes
8.3.1 (Integrated Early Winter Pulse Protection)	Reduce south Delta exports for 14 consecutive days to maintain a 14-day average OMR index no more negative than -2,000 cfs, and convene the Smelt Monitoring Team	Dec 1 to Jan 31	Three day running average daily flows at Freeport greater than, or equal to, 25,000 cfs, AND Three day running average of daily	No

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
	(SMT) within one day of triggering. After maintaining a 14-day average OMR index no more negative than -2,000 cfs for 14 days, Permittee shall maintain a 14-day average OMR index no more negative than -5,000 cfs, initiating the OMR Management season.		turbidity at Freeport is greater than, or equal to, 50 FNU OR The SMT determines that real-time monitoring of abiotic and biotic factors indicates a high risk of DS) migration and dispersal into areas at high risk of future entrainment.	
8.3.3 (Adult Longfin Smelt Entrainment Protection)	After December 1, if an Integrated Early Winter Pulse Protection (Condition of Approval 8.3.1) has not yet initiated, Permittee shall reduce south Delta exports to maintain a 14-day average OMR index no more negative than -5,000 cfs and initiate OMR Management if: Cumulative expanded salvage, Dec 1 st through Feb 28 th , exceeds most recent FMWT Index divided by 10, or SMT determines that there is a high risk of entrainment.	Dec 1 through Feb 28th	Salvage threshold is three LFS for WY 2021.	No
8.4.1 (OMR Management for Adult Longfin Smelt)				Off-ramped due to detection of Longfin Smelt larvae on December 28 th
8.4.2 (Larval and Juvenile Longfin Smelt Entrainment Protection)	If triggered, it will restrict south Delta exports for seven consecutive days in order to maintain a seven-day average OMR index no more negative than -5,000 cfs and convene the SMT to recommend an OMR flow limit between -1,250 and -5,000 cfs.	January 1st through June 30th or until the temperature offramp occurs	(1) LFS larvae or juveniles are found in four or more of the 12 Smelt Larval Survey (SLS) or 20 mm stations in the central or south Delta, Or (2) LFS catch per tow exceeds five larvae or juveniles in two or more of the 12 stations in the central or south Delta. The relevant stations are: 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918 and 919	Triggered on 1/26, 2/2, 2/23, 3/9, 3/16
8.4.3 High flow offramp for Longfin Smelt	If triggered, Conditions of Approval 8.4.1 and 8.4.2 are not required or would cease if previously required.	Throughout OMR management	When river flows are (a) greater than 55,000 cfs in the Sacramento River at Rio Vista or (b) greater than 8,000 cfs in the San Joaquin River at Vernalis. If flows	No

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
			subsequently drop below 40,000 cfs in the Sacramento River at Rio Vista or below 5,000 cfs in the San Joaquin River at Vernalis, the OMR limit previously required as a part of Conditions of Approval 8.4.1 and 8.4.2 shall resume.	
8.5.1 Turbidity Bridge Avoidance	maintain daily average turbidity in Old River at Bacon Island (OBI) at a level of less than 12 NTU. If the daily average turbidity at OBI is greater than 12 NTU, Permittee shall restrict south Delta exports to achieve an OMR flow that is no more negative than -2,000 cfs until the daily average turbidity at OBI is less than 12 NTU.	After the first flush or Feb 1 until April 1st	Turbidity at OBI > 12 FNU	No
8.5.2 (Larval and Juvenile Delta Smelt Protection)	If triggered, this Condition of Approval will restrict south Delta exports for seven consecutive days in order to maintain a seven-day average OMR index no more negative than -5,000 cfs and SMT members will meet to assess the risk of entrainment. The SMT may provide further advice to restrict exports in order to maintain an OMR index more positive than -5,000 cfs. In their assessment, SMT members will determine if risk of entrainment is low, medium, or high; subsequent OMR restrictions will be based on level of risk. Furthermore, if salvage of DS exceeds 11 in three days, this Condition of Approval will restrict south Delta exports for seven consecutive days in order to maintain a seven-day average OMR index no more negative than -3,500 cfs.	Nov 1 st through June 30 th or until off-ramped by 8.8	When the five-day salvage of juvenile DS is greater than or equal to one plus the average prior three years' FMWT index (rounded down). The threshold for this year is one.	No
8.12 (Barker Slough Pumping Plant Longfin and Delta Smelt Protection)	Barker Slough Pumping Plant will reduce exports so the maximum 7-day average is <60 cfs.	From January 15 through March 31 in dry and critical water years for LFS, and from March 1 st	Larval Smelt are detected at SLS Station 716 during the period identified for each species, and/or when recommended by the SMT	Yes for Longfin Smelt (1/19/21, 2/2/21, 2/26/21, 3/16)

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
		through June 30 th of dry and critical water years for DS*	<i>*Note: the SMT is currently is a period of overlap when Condition 8.12 is in effect for LFS and DS, though it has only been triggered for LFS.</i>	

Current Operations & Outlook

USBR and DWR shared operations updates from the Outlook. Their observations included:

- USBR CVO reported that there is no precipitation in the forecast for the next week.
- Releases from Whiskeytown Dam on Clear Creek are currently 225 cfs with no changes expected.
- Releases on the Sacramento River from Keswick Dam are currently at 3,500 cfs. USBR does not anticipate changes.
- The Anderson-Cottonwood Irrigation District (ACID) diversion dam will be installed over the next two weeks but no changes in flows are anticipated.
- American River releases from Nimbus Dam are currently 1,200 cfs; no changes are planned.
- Releases from Goodwin Dam on the Stanislaus River are currently 200 cfs. An increase to 300 cfs is planned for tomorrow (March 24th) to manage salinity at Vernalis.
- Jones Pumping Plant exports are currently 800 cfs.
- The Delta Cross-channel Gates are currently closed and are expected to remain closed through mid-May per the PA and D-1641 requirements. Construction activities on the gates remain ongoing.
- DWR reported that Feather River releases remained at 1,050 cfs, which are minimum flows.
- Sacramento River flows at Freeport are near 12,500 cfs and will decrease as runoff from last week's precipitation event moves out of the system.
- San Joaquin River flows at Vernalis are around 1,000 cfs and will likely decrease slightly in the coming days, then increase again because of the increased Stanislaus releases.
- Clifton Court exports have been at 300 cfs since the end of last week; no changes are anticipated in the coming week.
- Delta outflows are near 13,000 cfs today and may decrease to near 7,000 cfs later this week depending on how much flows decrease at Freeport.
- Operators are trying to maintain a bubble of freshwater at Collinsville to avoid potential increases in releases.
- QWEST was near 3,000 cfs over the weekend and is anticipated to decrease to near 1,000 cfs in the coming week.
- The OMRI is currently slightly less negative than -1,000 cfs and should remain near this value as San Joaquin River flows and Delta exports are not anticipated to change this week.
- X2 is around 79 km.
- High winds today (March 23rd) may generate localized spikes in turbidity around Franks Tract.

Review of Environmental Conditions and Survey Updates

CDFW shared survey updates.

- Processing of Smelt Larva Survey (SLS) 5 is complete. No DS were detected. 290 LFS were detected. CDFW shared full catch data with SMT members via email.

- SLS 6, the final SLS survey of water year 2021, sampled March 15th to 17th. Processing is 57% complete. No DS were detected. No LFS were detected at Station 716.
- The first 20 mm Survey of the season began yesterday (March 22nd). Processing of stations 901, 902, 914, 915, and 918 is complete and no osmerids were detected.
- The March Bay Study was on the water March 1st to 18th and is now complete. One LFS (80 mm) was detected in the Sacramento River, along with six LFS in Suisun Bay and four LFS downstream of the Carquinez Strait. No DS were detected.

USFWS reported on the Enhanced Delta Smelt Monitoring (EDSM) Program.

- Zero DS were detected last week (March 15th to 19th), so there was no abundance estimate generated.
- Sampling this week will be impacted by COVID mitigation measures. No crews were on the water today, though crews were sampling yesterday and two crews will be on the water Wednesday through Friday. Although USFWS anticipates sampling in all strata, the number of sites sampled per strata will likely be reduced due to fewer crews on the water.
- One LFS was detected on March 17th (81 mm, not expressing).
- The Chipps Island Trawl detected two LFS on March 17th (77 mm, not expressing and 90 mm). The larger fish was transferred to the Fish Conservation and Culture Laboratory (FCCL). The Chipps Island crew is not sampling today due to COVID mitigations and plans to resume sampling tomorrow.
- EDSM will transition to Phase 2 sampling beginning March 29th.

CDFW provided a salvage update (March 16th to 22nd).

- No adult or larval DS were salvaged.
- 26 LFS were salvaged at the SWP and eight LFS were salvaged at the CVP.
- The expanded salvage seasonal total is 26 LFS at the SWP and 12 LFS at the CVP.
- The SWP did not export or salvage on March 21st.
- The CVP did not export or salvage on March 15th from midnight to noon due to sand removal in the secondary channel.

DWR asked CDFW if the size range of detected fish was available. CDFW will follow up.

After the meeting, CDFW reported via email to the SMT that the LFS salvage forklengths ranged from 22-33mm at the SWP and 20-22mm at the CVP.

USBR asked if EDSM will still retain DS for broodstock. USFWS confirmed they are still on retainer to transfer any DS to the FCCL through the end of this week (i.e., the end of EDSM's Phase 1 Kodiak Trawling).

After the meeting, USFWS shared an update on the unidentified osmerid transferred to FCCL on March 1. According to the DSM hybrid assay results, this individual is not pure Delta Smelt. However, it does not look to be an F1 hybrid. Further analysis is required to determine if it is a backcross.

USBR shared water quality data [three-station average daily water temperature as of March 22nd was 13.71° C; daily average turbidity at Old River at Bacon Island (OBI) was 2.09 FNU and is currently 2.50 FNU]. The seven-day weather forecast for Antioch is partly cloudy to sunny with high winds today from the NNW at 15 to 22 mph with gusts to 29 mph; the seven-day weather forecast for Stockton is partly cloudy to sunny with high winds today from the NNW at 18 to 23 mph with gusts to 40 mph. X2 is 80 km.

PART 2: Open Discussion on Species Status (Structured-Unstructured Time)

CDFW noted that no LFS were detected at Station 716 or the next closest station (723) in SLS 6 and Barker Slough has not been exporting since March 9th. Maintenance at the Barker Slough pumping plant ends March 26th and the protection period for Longfin Smelt ends on March 31st. Although turbidity data for Barker Slough is not currently available, recent hydrodynamic conditions in Barker Slough should have provided sufficient opportunity for Longfin Smelt to move out of the area.

- Based on this information, CDFW suggested lifting the export restriction on Barker Slough.
- DWR and CDFW agreed.
- USFWS asked when the 20 mm survey would sample that area. CDFW replied that crews would likely sample near Barker Slough later this week (perhaps Thursday) but catch data will not be available until Tuesday or Wednesday of next week.
- CDFW will recommend lifting the restriction at Barker Slough under Condition of Approval 8.12.

Condition 8.4.2 remains in effect, triggered by SLS 6. CDFW reminded the group that the SMT's prior advice was to maintain an OMRI no more negative than -2,500 cfs. Exports have consistently been no more negative than -2,500 cfs for the last few weeks and projected operations for the coming week remain less negative than -2,500 cfs.

- USFWS noted the SMT has previously decided to not make a recommendation and asked if that would be an option in the current situation.
- CDFW acknowledged that the OMRI is expected to remain more positive than the SMT's previous recommendation of -2,500 cfs, so the SMT could decide that operations are expected to be sufficiently protective for the coming week.
- DWR suggested the SMT could recommend an OMRI limit of -3,500 cfs, citing the favorable hydrology recently, with QWEST remaining positive and OMRI remaining less negative. Furthermore, last week's PTM run remains valid. DWR also noted that while SLS 6 still detected LFS, densities have decreased, and no detections have been made by the 20 mm survey so far.
- CDFW pointed out that the 20 mm survey stations sampled thus far are located in the OMR corridor and directly outside of Clifton Court. The SLS is less effective at detecting larger LFS.
- CDFW noted that some salvage is to be expected.
- USFWS stated that risk is still high for the fish in the South Delta that end up entrained.
- CDFW noted that while the OMRI has sometimes ended up more negative than projected in the operations outlook, this seems unlikely for the upcoming week given water quality is controlling operations.
- CDFW recommended lifting the prior advice to limit the OMRI to no more negative than -2,500 cfs given that the projected OMRI limits are less negative than -2,500 cfs.
- USFWS agreed.

DWR noted that current water temperatures are nearing the spawning limit for LFS.

SMT members agreed that adult LFS in the Sacramento River and confluence remain at moderate risk of moving into the central and south Delta of their own volition, given recent detections of older fish by the Chipps Island Trawl and EDSM.

SMT members discussed whether DS larvae should be considered in the PA assessment along with adults.

- CDFW pointed out that historically, SLS 6 would detect larval DS.

- USBR shared a table created by CDFW summarizing the timing of DS events from 2008 to 2017, including the date of first larval detection.
- DWR agreed that historical data support including larval DS in the assessment at this point in the season.
- USFWS observed that water temperatures are also conducive to DS spawning.

USFWS asked if it would be helpful to develop a calculator to track incidental take for LFS over the course of the season. CDFW replied that the ITP salvage triggers are specific to DS and adult LFS, while larval and juvenile LFS actions are based on distribution and density in the central and south Delta. CDFW will report total salvage as the season goes on.

PART 3: Live-edit Assessments

ITP Longfin Smelt Risk Assessment

CDFW updated the ITP assessment based on the discussion documented in Part 2 above.

Proposed Action Weekly Evaluation of Delta Smelt, including Distribution, Abiotic Conditions, Risk Assessment Questions, and Executive Summary

USBR reviewed updates to the assessment, which largely focused on the latest detection data and anticipated changes in conditions (including turbidity, OMR Index, and QWEST values). Language was also added to address larval DS in addition to adult DS. Edits to the assessment included:

- A statement in the biological conditions section noting that historical data, temperature, and seasonal timing support the presence of larval DS by this time in the season.
- A statement in the historical trends section noting that historical data indicate larval DS detections have previously occurred by this point in the season.
- Statements in the forecasted distribution section noting the distribution of larval DS cannot currently be estimated due to a lack of detections and that the SMT is using turbidity as a proxy for adult DS distribution.
- A statement in the turbidity section noting some central Delta stations have elevated turbidity today due to high north winds, and while turbidity at OBI may increase, it is not expected to exceed the 12 FNU threshold.
 - USFWS recommended also adding the 15-minute event data from mid-Franks Tract at the time of the SMT meeting, which indicated turbidity had reached 35.77 NTU. SMT members agreed.

The group reviewed the relevant assessment questions: (1) Between December 1 and January 31, has any first flush condition been exceeded? (2) Do DS have a high risk of migration and dispersal into areas at high risk of future entrainment? (3) Has a spent female DS been collected? (4) If OMR of -2,000 cfs does not reduce daily average OBI turbidity below 12 NTU/FNU, what OMR target is deemed protective between -2,000 and -5,000 cfs? (5) If daily average OBI turbidity is greater than 12 NTU/FNU, what do other station locations show? (6) If daily average OBI is greater than 12 NTU/FNU, is a turbidity bridge avoidance action not warranted? What is the supporting information? (7) After March 15 and if QWEST is negative, are larval or juvenile DS within the entrainment zone of the CVP and SWP pumps based on surveys? (8) Based on real-time spatial distribution of DS and currently available turbidity information, should OMR be managed to no more negative than -3,500? (9) What do hydrodynamic models, informed by EDSM or other relevant data, suggest the estimated percentage of larval and juvenile DS that could be entrained may be?

- The responses to questions one, two, and nine did not change.

- The responses to questions three, four, five, six, and eight were updated to reflect the latest dates and data.
- The response to questions five and six noted that high winds may elevate turbidity.
- The response to question six also noted a turbidity bridge avoidance action is not anticipated in the upcoming week based on projected OMRI limits.
- The response to question seven was updated to note QWEST is currently positive and will remain positive but will decrease over the next seven days.

USBR reviewed updates to the Executive Summary:

- The SMT added language to reflect both the adult and larval life stages are now under consideration.
- The SMT removed language referencing a precipitation event and added language to reflect the wind event.
- The SMT added language noting the likelihood of adult entrainment is slightly lower due to seasonal timing while the likelihood of larval entrainment is slightly higher, however, no larval DS have been detected.

No non-consensus issues were identified.

Additional Considerations/Discussion

Agencies reported no items for elevation to WOMT.