

Smelt Monitoring Team – Tuesday, February 21st, 2023

PARTICIPANTS

- California Department of Fish and Wildlife (CDFW)
- California Department of Water Resources (DWR)
- State Water Resources Control Board (SWRCB)
- U.S. Bureau of Reclamation (USBR)
- U.S. Fish and Wildlife Service (USFWS)
- Kearns & West (K&W)

ACTION ITEMS

- DWR to perform Particle Tracking Model (PTM) run as requested prior to the next Smelt Monitoring Team (SMT) meeting.

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

Incidental Take Permit (ITP) Condition of Approval (COA) 8.4.2 (Larval and Juvenile Longfin Smelt Entrainment Protection) was triggered by Smelt Larval Survey (SLS) 4. 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 Old and Middle River (OMR) Guidance Document or ITP as needed.

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 cubic feet per second (cfs).	Dec 1 to Jan 31	(1) Running 3-day average of daily flows at Freeport >25,000 cfs; and (2) Running 3-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 Delta Smelt (DS) has been collected in monitoring surveys.	Off-ramped 1/17/23; triggered 12/31/22, implemented 1/3/23 to 1/16/23

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.		Active as of 1/17/23
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 DS 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.	Off-ramped by detection of a ripe female by SKT 2; Triggered 1/17/23 to 2/8/23
Larval and Juvenile Delta Smelt	Run hydrodynamic models and forecasts of entrainment, informed by the Enhanced Delta Smelt Monitoring (EDSM) or other relevant survey data to estimate the percentage of larval and juvenile 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.	Not active
End of OMR Management	OMR criteria may control operations until June 30 (for DS and Chinook salmon), until June 15 (for steelhead/rainbow trout), or when the species-specific off-ramps have occurred, whichever is earlier.	During OMR management to June 30, or when the DS temperature off-ramp has been reached.	DS: when the daily mean water temperature at Clifton Court Forebay (CCF) reaches 77°F for 3 consecutive days	Not active

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 Longfin Smelt (LFS) required under 8.1.5 and 8.1.1.	Nov 1 st through June 30 th or until off-ramped by 8.8		Active
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 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.	Dec 1 to Jan 31	3-day running average daily flows at Freeport greater than, or equal to, 25,000 cfs, AND Three-day running average of daily 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.	Off-ramped 1/17/23; triggered 12/31/22, implemented 1/3/23 to 1/16/23
8.3.3 (Adult Longfin Smelt Entrainment Protection)	After December 1, if an Integrated Early Winter Pulse Protection (COA 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 Fall Midwater Trawl (FMWT) Index divided by 10, or SMT determines that there is a high risk of entrainment.	Dec 1 through Feb 28 th	Salvage threshold for water year (WY) 2023 is 40.	Off-ramped 12/31/22 with triggering of COA 8.3.1

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.4.1 (OMR Management for Adult Longfin Smelt)	<p>The SMT shall conduct weekly risk assessments and decide whether to recommend an OMR flow requirement to minimize entrainment of adult LFS. The SMT may provide advice to restrict south Delta exports for seven consecutive days to achieve a seven-day average OMR index within three risk categories:</p> <p>Low risk: OMR between -4,000 cfs to -5,000 cfs Medium risk: OMR between -2,500 cfs to -4,000 cfs High risk: OMR between -1,250 cfs to -2,500 cfs</p>	Onset of OMR management through Feb 28 th	SMT recommendation based on weekly risk assessment.	Off-ramped with detection of LFS larvae in Smelt Larval Survey (SLS) 12
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 off-ramp occurs	(1) LFS larvae or juveniles are found in four or more of the 12 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 by SLS 4 on 2/16/23
8.4.3 High flow offramp for Longfin Smelt	If triggered, COA 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 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.	Active, not triggered

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.5.1 Turbidity Bridge Avoidance	Maintain daily average turbidity at 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 end of OMR management or until CDFW agrees that the action may be ended or modified.	Turbidity at OBI > 12 FNU	Triggered 1/17/23 to 2/8/23; 2/15/23 to 2/17/23 (not implemented)
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 trigger (2) or (3) are met, this Condition of Approval will restrict south Delta exports to maintain a seven-day average OMR index no more negative than -3,500 cfs until the average Secchi depth is greater than 1 meter in the south Delta stations in a subsequent SLS or 20 mm survey. If average south Delta Secchi depth continues to be less than or equal to 1 meter in a subsequent SLS or 20mm survey then Permittee shall continue restrictions and request a risk assessment by the Smelt Monitoring Team to determine if additional advice and subsequent restrictions are warranted and provide advice to WOMT.	Nov 1 st through June 30 th or until off-ramped by 8.8	(1) When the five-day salvage of juvenile Delta Smelt is greater than or equal to one plus the average prior three years' FMWT index (rounded down). The 2022 September through November FMWT index for DS was zero. Or (2) when a larval/juvenile DS is detected in SLS/20 mm Or (3) the 3-day average water temperature at Jersey Point is $\geq 12^{\circ}\text{C}$ and Secchi from the most recent SLS/20 mm survey is $\leq 1\text{m}$ averaged across the 12 stations (809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, and 919)	Active, not triggered

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.8 (End of OMR Management)	If triggered, OMR Management would be off-ramped for LFS and DS.	From the onset of OMR management through June 30 th	Daily mean water temperature at CCF is >25° C for three consecutive days.	Not active
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 through June 30 th for DS	Larval Smelt are detected at SLS Station 716 during the period identified for each species, and/or when recommended by the SMT.	Not active; water year type is above normal as of 02/01/23

Current Operations & Outlook

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

- USBR reported on weather conditions noting a shift to a wetter weather starting February 21st and continuing to the weekend. The storm system is forecasted to favor the southern region of California, the Shasta Basin, and the spine of the Sierra. Precipitation is expected up to an inch, and half an inch in the Sacramento and San Joaquin Basins (respectively) over the six-day forecast period. Due to the colder nature of the storm system the rain to snow transition elevation will be unusually low resulting in reduced runoff.
- Releases from Whiskeytown Dam on Clear Creek are currently 200 cfs.
- Releases from Keswick Dam on the Sacramento River are 3,250 cfs.
- Releases from Nimbus Dam on the American River are 4,000 cfs.
- Releases from Goodwin Dam on the Stanislaus River are 200 cfs.
- Delta Cross Channel (DCC) gates remain closed. No changes expected for the next seven-day period.
- Tides are emerging from a new moon spring tide and entering a neap cycle on February 27th.
- The federal facility is exporting 3,500 cfs and cannot pump the full allotment due to Delta Mendota Canal-California Aqueduct Intertie restrictions.
- DWR reported that State facility exports are approximately 2,000 cfs in pursuit of a -3,500 OMR index.
- Feather River releases are holding at 950 cfs.
- Sacramento River flows at Freeport have been decreasing with flows at 16,600 cfs as of February 20th, and further decreases expected over the next six-day period.
- San Joaquin River flows at Vernalis were 3,300 cfs at the start of the week with continued decreases expected.
- Delta outflows were 16,000 cfs as of February 20th, with continued decreases expected despite incoming precipitation.
- February 20th QWEST was about 2,300 cfs and is expected to decrease to approximately 1,500 cfs by February 24th.
- Rio Vista flows were about 14,000 cfs as of February 20th.
- X2 is between Port Chicago and Chipps Island (~71 km).

- The expected daily OMR index values as of February 20th are -3,000 to -3,600 cfs.
 - February 18th OMR at USGS gauge:
 - Daily: -4,100 cfs
 - Five-Day: -4,800 cfs
 - 14-Day: -5,100 cfs
 - February 18th OMR Index:
 - Daily: -3,000 cfs
 - Five-Day: -4,500 cfs
 - 14-Day: -4,700 cfs
 - February 20th OMR Index:
 - Daily: -3,500 cfs
 - Five-Day: -3,800 cfs
 - 14-Day: -4,500 cfs

No updates to the survey table.

Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- SLS 4 was on the water from February 13th to the 15th. Preliminary results are as follows:
 - Larval LFS
 - Lower Sacramento River (Rio Vista to Confluence): 22 new detections since last meeting on 2/17/23.
- SLS 5 is scheduled to be on the water from February 27th to March 1st.

USFWS provided updates on the Enhanced Delta Smelt Monitoring Program (EDSM) and Chipps Island Trawl.

- EDSM sampled Monday through Friday the week of February 13th, completing 35 sites.
 - DS:
 - Suisun Bay: One (Right, green, posterior)
 - Lower Sacramento River: One (Right, green, posterior)
 - Sacramento Deep Water Shipping Channel: One (Right, green, posterior)
 - The DS abundance estimate for the week of February 13th is 6,228.
 - LFS (Fork length (FL): 64 to 97 mm):
 - Suisun Bay: Four
 - Suisun Marsh: 12
 - Western Delta: Six
- EDSM is scheduled to sample Tuesday through Friday the week of February 20th.
- The week of February 20th Chipps Island crews completed 50 tows. This increase is due to trawl efficiency protocol being in place for the next couple of weeks.
 - DS: Zero
 - LFS: 125 (FL: 63 to 113 mm)
- This week Chipps Island will sample Sunday, Tuesday, Wednesday, Thursday, and Friday.
 - Preliminary Chipps Island data shows one 84 mm marked DS detected on February 19th (right, green, posterior tag).

CDFW provided a salvage update (February 14th to February 19th).

- Federal Facility
 - DS Counts
 - February 14th: One (Right, orange posterior tag; FL: 63 mm)
 - February 17th: One (Right, orange, posterior tag; FL: 70 mm)
 - February 18th: One (unmarked; FL: 76 mm)
 - LFS Counts
 - February 18th: One (FL: 86 mm)
- Operations
 - February 14th outage from 0649 hours to 0707 hours at the federal facility for secondary channel maintenance.
 - February 14th missed fish count at 2400 hours due to excessive vegetation.
- Cumulative Seasonal Salvage
 - DS: 32
 - Marked: 28
 - Unmarked: Four
 - LFS: 24

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

Delta Smelt

CDFW highlighted increased salvage over the weekend, notably the unmarked fish, as a possible byproduct of entrainment from increased turbidity across the system. With the incoming storm system bringing elevated winds and precipitation, there is a need to track turbidity levels and increase risk for fish in the OMR corridor and Lower San Joaquin River.

DWR shared CDFW's concern over incoming wind events and possible residual turbidity in Franks Tract from the January storm systems which could increase the system's sensitivity to subsequent turbidity events. Both CDFW and DWR have a shared interest in increasing risk with DWR's endorsement contingent upon if the forecasted wind event elevates turbidity.

USFWS agreed that freshly deposited turbidity from January storms, as well as flow variation, seem to be increasing the likelihood of turbidity events. There were several instances of high winds last year that did not lead to significant or widespread increases in turbidity.

USFWS noted that DS will move to areas at high risk of entrainment even at relatively low turbidities (<5 FNU/NTU).

The SMT agreed to elevate risk for DS to high in the OMR corridor and moderate in the Lower San Joaquin River. No trigger was met, and no recommendation was made.

Longfin Smelt

CDFW discussed continued detections of LFS in the Lower Sacramento River and larval presence upstream in freshwater portions of rivers despite high flows. Spawning can be expected to continue given abundant detections by Chipps Island Trawl. The LFS found in salvage could be indicative of spawning in the OMR corridor.

DWR agrees and suggests that spawning in the OMR corridor is possible given detections and salvage. The protective measure of a -3,500 cfs OMR index should help LFS, however incoming wind and X2 shifting upstream may further elevate risk.

CDFW proposed the SMT continue the -3,500 cfs OMR index recommendation until new SLS results are available at next week's SMT meeting since abiotic conditions are unlikely to improve and may worsen in the following week with incomplete data on larval distribution. Keeping the -3,500 cfs recommendation in place may pay dividends in coming weeks as X2 moves upstream, and larvae have a greater risk of entering zone of entrainment.

DWR suggested implementing the -3,500 cfs OMR index recommendation for seven days as a preventative action (i.e., through February 24th), then reassessing risk at the next SMT meeting with the latest information. DWR noted that an OMR index of -5,000 cfs is generally protective of fish in the Lower San Joaquin River. Furthermore, the current recommendation has helped keep QWEST values positive and is providing hydrodynamic benefits for larvae in that region. DWR also referenced their rationale for retaining an OMR index of -5,000 cfs from the February 17th off-cycle SMT meeting to support a shorter duration -3,500 cfs OMR index recommendation.

CDFW noted that keeping an OMRI recommendation of -3,500 cfs in place until only February 24th would result in no protections for approximately six days, since results of the next SLS survey won't be available until February 28th at the earliest and if a recommendation was made on February 28th, it would not go into effect until three days later (on approximately March 3rd).

DWR and CDFW will engage WOMT to resolve the agencies' non-consensus on the duration of the -3,500 cfs OMR index recommendation.

The SMT agreed to request another PTM run to inform discussion at next week's meeting. The insertion points (stations 812, 815, and 902) and operational scenarios (OMR index of -5,000 cfs (base case), -3,500 cfs and -2,000 cfs) will be the same as the previous PTM run.

[PART 3: Live-edit Assessments](#)

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

USBR reviewed proposed changes to the PA Assessment, which include the latest dates, detections, conditions, data, and reflects the discussion documented in Part 2 above.

ITP Longfin Smelt and Delta Smelt Risk Assessment

The SMT reviewed and discussed updates to the ITP Risk Assessment for DS and LFS, which include the latest dates, detections, conditions, and data as well as:

Advice to WOMT

- CDFW recommends OMRI be restricted to -3,500 cfs on a seven-day average until risk for larval LFS can be assessed with further data. DWR recommends OMRI be restricted to -3,500 cfs on a seven-day average through 2/24/23.
- If turbidity remains above 12 FNU at OBI, then OMRI will be restricted to -2,000 cfs from 2/24/23 through 2/28/23 under ITP COA 8.5.1 for the protection of DS.

Section 1-B

- Table 3: DS Subadult and adult: Exposure risk elevated to moderate given increased salvage and worsening abiotic conditions (decreasing outflow, X2 shifting upstream, and high winds forecasted which may increase turbidity).

- Table 3: LFS larvae: Exposure risk elevated to high within the OMR corridor and moderate outside the OMR corridor given increased salvage and detections and worsening abiotic conditions (decreasing outflow, X2 shifting upstream, and high winds forecasted which may increase turbidity).

Change in exposure from last week

- Risk for DS in the OMR corridor increased to high given rationale provided in Part 2.
- Risk for DS outside the OMR Corridor increased to moderate given rationale provided in Part 2.
- Risk for LFS larvae in the OMR corridor increased to high given rationale provided in Part 2.
- Risk for LFS larvae outside the OMR corridor increased to moderate given rationale provided in Part 2.

Part 4: Additional Considerations/Discussion

CDFW and DWR will inform WOMT representatives of non-consensus around the duration of the -3,500 cfs OMR index recommendation under ITP COA 8.4.2.