

Smelt Monitoring Team – Tuesday, June 14th, 2022

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 (KW)

ACTION ITEMS

- Smelt Monitoring Team (SMT) to transmit any suggestions for pre- or post- season topics to CDFW by Friday, June 17th.

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

USBR is under the end of Old and Middle River (OMR) Management action, in which OMR criteria may control operations until June 30th or until the daily mean water temperature at Clifton Court Forebay (CCF) reaches 77° F for three consecutive days. CDFW reported on the Incidental Take Permit (ITP) Conditions of Approval (COA) that are in effect including 8.4.2 Larval and Juvenile Longfin Smelt (LFS) Entrainment Protection, 8.5.2 Larval and Juvenile Delta Smelt (DS) Protection, 8.12 Barker Slough Pumping Plant Longfin and Delta Smelt Protection.

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 3-day average of daily flows at Freeport >25,000 cfs; and (2) Running 3-day average of daily turbidity at Freeport ≥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.	Triggered 12/18/21; last day of action was 1/2/22

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		In effect
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.	Triggered on 1/3/22; Off-ramped by SKT 3 on 3/17/22
Larval and Juvenile Delta Smelt	Run hydrodynamic models and forecasts of entrainment, informed by the 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	In effect
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 CCF reaches 77°F for 3 consecutive days	In effect

ITP 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		Triggered

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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.	Triggered 12/18/21; last day of action was 1/2/22
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 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 WY 2022 is one.	Off-ramped due to trigger of 8.3.1
8.4.1 (OMR Management for Adult Longfin Smelt)	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: 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	Onset of OMR management through Feb 28 th	SMT recommendation based on weekly risk assessment	Off-ramped by larval detections in Smelt Larval Survey (SLS) 12

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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 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 1/20/22, 1/31/22, 2/28/22, 3/11/22, 3/29/22, 4/11/22, and 4/26/22
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 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
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	In effect as of 1/3/22; off-ramped April 1 st .

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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 2021 FMWT index for DS was zero.	Active, not 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	Active, Triggered for LFS 2/14/22, 3/11/22, and DS on 3/23/22

Current Operations & Outlook

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

- USBR reported on weather conditions noting a warming trend starting June 15th and cooling shortly thereafter with possible precipitation for the northern regions of California towards the end of the six-day outlook.
- Releases from Whiskeytown Dam on Clear Creek are currently 150 cfs with a pulse projected for the 18th to the 27th of June with maximum flows of 500 cfs.

- Releases from Keswick Dam on the Sacramento River are 4,000 cfs.
- Releases from Nimbus Dam on the American River flows are 2,000 cfs with a change order of 2,250 cfs for June 15th in response to Delta salinity concerns.
- Releases from Goodwin Dam on the Stanislaus are 800 cfs to meet the Vernalis D-1641 flow objective (a monthly average of 710 cfs) with a buffer (up to 900 cfs) in case additional flows are required.
- The stronger tidal sequence and salinity are concerns in the Delta this week.
- Federal facility exports are at 900 cfs with no changes expected for the week ahead.
- Delta Cross Channel (DCC) gates will remain closed due to salinity concerns.
- DWR reported that Feather River releases increased to 3,500 cfs on June 10th and may increase due to the spring tide.
- June 13th Freeport flows were approximately 9,100 cfs and may increase with the change order out of Nimbus Dam.
- San Joaquin flows at Vernalis were 712 cfs on June 13th.
- State facility exports are 300 cfs.
- Delta outflows are 4,800 cfs and will likely increase with Sacramento River inflows and the tidal cycle.
- QWEST will fluctuate between -500 and -1,000 cfs for the week ahead.
- Rio Vista flows are approximately 5,500 cfs.
- X2 is upstream of Emmaton.
- The daily OMR Index on June 13th was near -1,700 cfs and may become more negative by -200 cfs due to changes in the San Joaquin River.
- DWR clarified that the minimum projected OMR Index of -2,100 listed in the outlook covers the possibility of exports reaching 600 cfs.
- CCF gates will be closed on 27th of June to support herbicide application on the 28th to the 29th of June and re-opening shortly thereafter.
- No updates were made to the survey table.

Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- 20 mm Survey 7 is on the water this week.
- 20 mm Survey 6 was on the water from May 31st to June 3rd. Updated results are as follows:
 - LFS
 - Station 704: 32
 - Station 705: 1
 - Suisun Bay and West: 16
 - Stations 706 and 707 were not sampled due to submerged vegetation complications.
- 20 mm Survey 5 was on the water from May 16th to the 19th. Updated results are as follows:
 - LFS
 - Suisun Bay and West: 217
- Summer Towntnet started last week with no data to report at this point.
 - CDFW clarified that all fish caught during the Summer Towntnet surveys are placed in formalin, though crews have access to liquid nitrogen if osmerids are identified in the field.

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

- Completed 34 of 35 sites last week, but USFWS will still be able to produce a full abundance estimate next week as samples were collected in each stratum.
 - DS
 - One new DS detection was confirmed since the last SMT meeting. EDSM detected one DS (25.5 mm) in the Sacramento Deep Water Ship Channel (SDWSC) on June 1st.
 - All juvenile DS detections for the season have been in the SDWSC.
 - LFS
 - Suisun Bay: 24
 - Lower Sacramento: 4
- Last week's results are still processing.
- EDSM's boat has been fixed so EDSM hopes to return to sampling 40 sites as usual this week.
- The abundance estimate for the SDWSC for May 31st to June 3rd is 1,754 juvenile DS.
- Chipps Island Trawl detected one adult LFS at 93 mm.

CDFW provided a salvage and qualitative larval sampling update (June 6th to the 12th).

- Neither facility reported any osmerids salvaged in the last week.
- Larval processing concluded last Tuesday with a final report pending from the state facility.

USBR shared environmental data updates as of June 13th.

- Three-station daily average water temperature: 22.86° C.
- Daily average turbidity at OBI: 2.80 FNU.
- Current turbidity at OBI: 1.40 FNU.
- Three-day average turbidity at Freeport: 2.95 FNU.
- CCF daily average temperature: 24.25° C.
- The estimated X2 is 91.7 km.
- The weather forecast out of Antioch is sunny and mostly clear with temperatures decreasing Thursday through Saturday and west winds from 9 to 22 mph with gusts up to 28 mph on Thursday.
- The weather forecast out of Stockton is sunny and mostly clear with temperatures decreasing Thursday through Saturday and west winds from 9 to 16 mph with gusts up to 21 mph.

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

The SMT observed that conditions related to DS have not changed significantly since last week. CDFW noted the warm conditions last week, but water temperatures did not increase as much as anticipated. Regardless, spawning is slowing for the season.

USFWS found the lack of larval or juvenile DS detections in the field surprising given the supplementation effort and considering that in most previous years detections would continue into June and wondered if there was a difference in reproductive success between wild and cultured fish. DWR noted that the rate of decline in DS detections in previous years suggested that the fish would not survive much longer, so the detections reported this year are actually a positive sign. The experimental release program far exceeded expectations.

20 mm Survey crews keep ethanol on survey boats in the event that any osmerids are identified in the field to allow for preservation and eventual DNA testing.

CDFW wondered if, as discussed last week, are water temperatures currently cooler in the SDWSC and that is one of the reasons why all of the recent juvenile DS detections have been in the SDWSC. If so, perhaps the possibility of conducting bottom tows to see if juvenile DS densities are higher if there is stratification of colder

water at greater depths in the SDWSC which might be a thermal refuge for fish. DWR noted that the CDEC DWS station is down, and temperatures from EDSM in the SDWSC on June 6th were 20.55 to 21.25° C.

The SMT did not note any significant updates regarding LFS since last week. CDFW did not expect to have an adult detection at Chipps Island. Furthermore, 20 mm survey 5 had a new larva detection from May 18th, which is the latest larval detection this year. The lack of detections in salvage in the last two weeks hopefully signals the end of salvage for the season. No COAs were triggered and so there is no advice to WOMT this week.

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 included updating the latest dates, detections, and data.

- Biological conditions were updated to clarify that spawning is declining.
- Evaluation question 9 notes no recent detections in the OMR corridor since early April. Language referencing particle tracking model (PTM) results and a detection in the OMR corridor in March was removed.

ITP Longfin Smelt Risk Assessment

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

Section 1-A: Risk of entrainment into the central Delta and export facilities for DS and LFS in the Sacramento River and Confluence

- Exposure Risk (hydrology)
 - DS: No changes in risk since last week.
 - LFS: No changes in risk since last week.
- Routing Risk (behavior and life history)
 - DS: No changes in risk since last week.
 - LFS: No changes in risk since last week.
- Overall entrainment risk for DS or LFS.
 - DS: No changes since last week.
 - LFS: No changes since last week.

Section 1-B: Risk of entrainment into the export facilities for DS and LFS in the central Delta

- Exposure Risk
 - DS:
 - Adults and sub-adults: No changes in risk since last week.
 - Juveniles: No changes in risk since last week.
 - Larvae: No changes in risk since last week to larvae in the lower San Joaquin River. Risk in the OMR corridor was reduced from high to low since no larvae have been detected since April 5th and water temperatures are increasing in the region.
 - LFS:
 - No changes to adult risk since last week. Language referencing a detection in the lower San Joaquin River in March was removed.

- No changes in risk since last week for larvae and juveniles in the lower San Joaquin River.
- Risk reduced from high to low since last week for larvae and juveniles in the OMR corridor given the lack of detections in recent field surveys and increasing water temperatures. The absence of salvage also suggests fish are moving out of the area.
- Change in exposure from last week
 - DS: No changes in risk since last week.
 - LFS: No changes in risk since last week.

Part 4: Additional Considerations/Discussion

The SMT briefly discussed logistics for pre- and post-season meetings. SMT members will submit any additional suggestions for discussion topics to CDFW by the end of the week. The SMT will discuss topics at next week's meeting. To maximize the number of topics covered, DWR suggested that early season (i.e., November) SMT meetings begin to incorporate some of the pre-season topics put forth by the SMT.

Agencies reported no items for elevation to WOMT.