Smelt Monitoring Team – Tuesday, June 7th, 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

- DWR and USBR will alert the state and federal facilities to halt qualitative larval sampling for the year.

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 (FNUs).

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 1st through June 30th 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 1st through Feb 28th, 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 28th	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 28th	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 1st.

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 1st through June 30th 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 30th	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 1st through June 30th 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 the recent larger than expected precipitation event that resulted in a detectable, but insignificant, pulse of water traveling through the system. Conditions will transition to warmer temperatures with triple digit highs in the week ahead.
- Releases from Whiskeytown Dam on Clear Creek are currently 150 cfs.

- Releases from Keswick Dam on the Sacramento River increased to 4,000 cfs to meet demands in the upper reaches of the Sacramento River.
- Releases from Nimbus Dam on the American River flow were increased to 2,000 cfs at midnight on June 7th to address increasing salinity in the Delta.
- 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.
- Federal facility exports are at 900 cfs with no changes expected for the week ahead.
- Delta Cross Channel (DCC) gates opened and then closed over the Memorial Day weekend. The gates remain closed with no plans to open in the coming seven-day period to address salinity concerns.
- The Delta is currently experiencing a neap tide with a stronger spring tide peaking on June 14th.
- DWR reported that Feather River releases increased from 2,700 to 3,000 cfs last week with a change order for 3,500 cfs on Thursday to address spring tide water quality.
- June 6th Freeport flows were approximately 8,200 cfs.
- San Joaquin flows at Vernalis were 770 cfs on June 6th.
- State facility exports are 300 cfs.
- Delta outflows increased by 500 cfs to 5,100 cfs on June 6th with the weekend precipitation.
- QWEST was 0 cfs and will remain near 0 cfs before trending negative to the -200 to -500 cfs range later in the week.
- The daily OMR Index is near -1,400 cfs and will become more negative by 200 cfs due to changes to the OMR Index equation in response to the Grant Line Canal Barrier closing yesterday.
- X2 is near Emmaton.
- The SWP will be out of service on June 28th for an herbicide application at CCF. The process will take approximately four days before regular service resumes.
- The following updates were made to the survey table:
    - SJRRP USFWS and USBR Field Monitoring has concluded for the season.
    - The Summer Townet Survey began June 6th.

Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- 20 mm Survey 6 was on the water from May 31st to June 3rd detecting one LFS was at station 801.
- 20 mm Survey 5 (May 16th to May 19th) updated results are:
    - Additional LFS
        - Station 704: 28
        - Confluence: 65
        - Suisun Bay and West: 57
- 20 mm Survey 2 is complete with the results below:
    - Additional LFS
        - Station 704: 158
        - Station 513: 161
        - Suisun Bay and West: 7
- 20 mm Survey 7 will be on the water next week.
- 20 mm Survey 9, scheduled for July 11th to the 14th, will be the last 20 mm Survey of the season.
- Larval Entrainment Pilot Study sample processing resumed mid-May and detected one more 10 mm LFS collected on March 14th. Processing is ongoing and final data will be available later this year.

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

- EDSM reported boat trouble last week cancelling Suisun Marsh and San Joaquin sites.
- Boat troubles continue this week possibly resulting in cancelled sites.
- The four DS reported last week were identified as another species, but another unidentified fish from the Sacramento Deep Water Ship Channel (SDWSC) on May 23rd is now confirmed as a DS bringing the water year total to 73.
- LFS detections:
    - Week of May 30th: 18 in Suisun Bay and Lower Sacramento.
    - Week of May 23rd: 7 in Suisun Marsh
- The DS abundance estimate for week of May 23rd to the 26th is 3,366.
- Last week Chipps Island Trawl detected one juvenile LFS with a length of 31 mm.
    - Chipps Island Trawl will return to its regular Monday, Wednesday, Friday schedule this week.

CDFW provided a salvage and qualitative larval sampling update (May 30rd to June 5th).

- No larval osmerids were detected at either facility.
- Weekly salvage of LFS ≥20 mm:
    - Federal Facility: 0
        - Salvage did not occur any day of the week.
    - State Facility: 6
        - Salvage occurred May 30th.
    - Weekly total for both facilities: 6
- The seasonal total LFS juvenile salvage is 7,448 for both state and federal facilities.
    - CDFW clarified that this week's total salvage is the same as the previous week (6 juvenile LFS) since May 30th data were reported for the May 31st and June 7th SMT meetings.

USBR shared environmental data updates as of June 6th.

- Three-station daily average water temperature: 21.29° C.
- Daily average turbidity at OBI: 2.88 FNU.
- Current turbidity at OBI: 3.90 FNU.
- CCF daily average temperature: 22.40° C.
- The estimated X2 is 92.4 km.
- The weather forecast out of Antioch is sunny and mostly clear with temperatures increasing and west winds from 9 to 22 mph.
- The weather forecast out of Stockton is sunny and mostly clear with temperatures increasing and west northwest winds from 6 to 18 mph and gusts reaching 24 mph.

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

The SMT discussed the merits of continuing or concluding qualitative larval sampling for the season.

- The SMT agreed to end qualitative larval sampling given increasing temperatures and no recent detections of larval LFS.
- USFWS noted that the Tracy Fish Facility reported numerous Striped Bass juveniles in recent days. This has also been observed in past years at the Skinner Fish Facility . When some species (like DS or LFS) are relatively rare while others are highly abundant, statistical analysis may be required to determine how many subsamples are necessary to effectively and efficiently sample species regardless of relative abundance.

CDFW noted there have been no significant changes since last week for DS. Temperatures remain warm and there is a low likelihood of detection in the central and south Delta.

CDFW also confirmed no significant updates related to LFS, with steady temperatures and no detections in the central and south Delta. The fish are likely further downstream in the confluence and cooler regions. LFS have grown enough to reach a size capable of volitional movement and appear to be moving downstream.

CDFW pointed out that, unlike LFS, the Striped Bass FMWT Index was not elevated this year. There may be value in researching how salvage of other species corresponds to LFS/DS salvage for future reference.

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.

- The executive summary corrects recent DS detections replacing the four fish detected by EDSM with the one detected on May 23rd and noted the most recent DS detection in the OMR corridor was two months ago.

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. Noted the only detection at Chipps Island was of a juvenile fish.
- 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. Language referencing uncertainty in the behavior of cultured fish was removed.
        - Juveniles: No changes in risk since last week. Content was updated to note detections in the SDWSC, but no detections in the central or south Delta.
            - The SMT discussed several reasons why the SDWSC has been a region of high DS detections, including the homogenous environment, ease of sampling, channel morphology, gear efficiency, and cooler water temperatures.

        - Larvae: No changes to risk since last week and no DS detections in the OMR corridor or salvage facilities during the last week.
    - LFS:
        - No changes to adult risk since last week.
        - No changes in risk since last week for larvae and juveniles in the lower San Joaquin River.
        - No changes in risk since last week for larvae and juveniles in the OMR corridor.
- Change in exposure from last week
    - DS: No changes in risk since last week.
    - LFS: Risk decreased to moderate due to reduced detections in monitoring surveys and salvage. LFS may still reside in OMR corridor and may travel downstream as water temperatures increase or be miscued and move towards the export facilities resulting in possible entrainment.

The executive summary was updated to reflect:

- COA 8.12 offramps June 30th. If the OMR season ends prior to June 30th, the SMT will continue to monitor station 716 for DS detections and coordinate via email if necessary.
- COA 8.4.2 was not triggered by 20 mm Survey 6.
- Water year 2022 is the largest LFS salvage year observed since 2002.
- Larval and juvenile detections are declining indicating that spawning is wrapping up for the season.
- With no recent detections in qualitative larval monitoring the SMT agreed to conclude sampling for the year.

Part 4: Additional Considerations/Discussion

The SMT discussed possible pre- and post- season discussion topics including:

- Pre-season topics
    - Salvage tutorial
    - Assessing risk (Tools and PTM)
    - Regulatory overview
    - Hydrology calculations
    - Purpose of SMT
- Post-season topics:
    - Striped Bass detections
    - Season debrief
    - WY 22 Salvage
    - Pre-screen loss
    - Lessons learned
    - Larval smelt entrainment modeling

The SMT agreed they would need to prioritize these discussion topics. CDFW suggested some topics could be addressed by small groups. The SMT will continue planning post- and pre-season discussions at next week's meeting.

Agencies reported no items for elevation to WOMT.