Smelt Monitoring Team – Tuesday, November 23, 2021

PARTICIPANTS

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

ACTION ITEMS

MEETING SUMMARY

USFWS provided clarification on editorial comments on the November 16th meeting notes regarding language in the PA Assessment. Specifically, more context needs to be provided on what criteria (survey data or historical distribution) is used to determine the population centroid of Delta Smelt (DS).

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

USBR reported on anticipated Old and Middle River (OMR) management measures. At this point there are no controlling actions set for the region. The first one will be the Integrated Early Winter Pulse Protection action, and this cannot be initiated until December 1, 2021. CDFW reported on the Incidental Take Permit (ITP) Conditions of Approval that are currently in effect. Currently only 8.1.5.2 is in effect requiring SMT to conduct a risk assessment. Integrated Early Winter Pulse Protection (8.3.1) and Adult Longfin Smelt Entrainment Protection (8.3.3) can be initiated as of December 1st.

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 ≥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 has been collected in monitoring surveys.	Not active
OMR Management	Manage to a more positive OMR than -5,000 cfs	From the onset of OMR management to the end		Not active
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.	Not active
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 delta smelt 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 delta smelt are within the entrainment zone of the pumps based on real-time sampling of spawning adults or young of year life stages	Not active

[1] The current instrumentation measures turbidity in Formazin Nephelometric Units (FNUs).

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
End of OMR Management	OMR criteria may control operations until June 30 (for Delta Smelt 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 reaches 77°F for 3 consecutive days	Not active

ITP Conditions of Approval

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.1.5.2 (Smelt Monitoring Team Risk Assessment) Triggered	Outlines contents for weekly risk assessments of Delta Smelt and Longfin Smelt (LFS) required under 8.1.5 and 8.1.1	Nov 1st through June 30th 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 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	Three 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 Smelt Monitoring Team 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.	Not active

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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 TBD.	Not active
8.4.1 (OMR Management for Adult Longfin Smelt)	The SMT shall conduct weekly risk assessments and decide whether to recommend and 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	Not active

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) Longfin Smelt 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) Longfin Smelt 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	Not active
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.	Not active
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 end of OMR management or until CDFW is in agreement that the action may be ended or modified.	Turbidity at OBI > 12 FNU	Not active

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 Delta Smelt 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 Delta Smelt is greater than or equal to one plus the average prior three years' FMWT index (rounded down). The 2021 FMWT index for Delta Smelt is not yet available.	Active, not triggered
8.8 (End of OMR Management)	If triggered, OMR Management would be off-ramped for Longfin and Delta Smelt.	From the onset of OMR management through June 30th	Daily mean water temperature at Clifton Court Forebay 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 Longfin Smelt, and from March 1st through June 30th for Delta Smelt	Larval Smelt are detected at SLS Station 716 during the period identified for each species, and/or when recommended by the SMT	Not active

Current Operations & Outlook

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

- USBR Central Valley Office (CVO) reported above average temperatures and drier climatic conditions with no precipitation expected for the next week.

- Releases from Whiskeytown Dam on Clear Creek are currently 200 cfs. No modifications expected.
- Releases on the Sacramento River from Keswick Dam are currently 3,250 cfs. No modifications expected.
- American River releases from Nimbus Dam are holding at 550 cfs. No modifications expected.
- Releases from Goodwin Dam on the Stanislaus River are currently 200 cfs. No modifications expected.
- Jones Pumping Plant exports are currently at 2,700 cfs and will decline to 1,700 cfs by November 25th in response to reduced Delta inflows.
- Delta Cross-channel (DCC) gates closed at 10:00 am today (November 23rd) to meet Rio Vista Requirements from D-1641. Additional operations are being considered to improve Delta salinity due to the drier climatic conditions.
- DWR reported that Feather River releases are currently 950 cfs.
- Freeport flows were 6,000 cfs on November 22nd and are expected to decrease over the coming week.
- San Joaquin River flows at Vernalis were 600 cfs on November 23rd and are anticipated to stay steady or decrease slightly.
- Clifton Court Forebay inflows are currently 300 cfs and are anticipated to stay steady.
- Delta outflows as of November 22nd were 2,600 cfs with a targeted monthly average outflow of 3,500 cfs per D-1641 requirements.
- X2 is currently upstream of the confluence and will likely move further upstream as dry conditions persist.
- As of November 23rd, QWEST is around 600 cfs with the DCC gates open. When the DCC gates close, flows will shift to about -600 cfs.
- The OMR Index is about -2,800 cfs and will track towards more positive values as CVP operations decrease.
- CDFW asked how the OMR Index will be affected by upcoming changes in CVP operations.
    - DWR replied that the OMR Index will reach around -1,900 cfs (i.e., a ~1,000 cfs change).
- There were no updates to the survey status table.

Review of Environmental Conditions and Survey Updates

CDFW shared the following updates:

- Smelt Larva Survey (SLS) will begin December 13th.
- FMWT November data is not yet available. The September LFS index is one and October LFS index is 12.
- Bay Study reported the following catch data for November:
    - Five juvenile and three adults in Suisun Bay.
    - 95 juvenile and one adult in San Pablo Bay.
    - 19 Juvenile and two adults in Central Bay.
    - 23 juvenile and one adult in South Bay.

CDFW noted that adult LFS appear to be starting to stage downstream of the Delta.

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

- No new updates for Chipps Island.
- EDSM captured two LFS on November 22nd in Suisun Marsh measuring 104 mm and 66 mm.
    - A detailed catch table was distributed to the SMT via email on Monday.
- CDFW noted that some EDSM strata overlap with other regions that may be referred to by other names. They pointed to Grizzly Bay being included in the Suisun Marsh stratum as an example though some may

consider it part of Suisun Bay. CDFW will identify instances that require further discussion and encouraged other SMT members to do the same.

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

- No DS or LFS were salvaged at either facility.

USBR shared environmental data updates as of November 22nd.

- Three-station daily average water temperature: 14.39° C.
- Three-day running average discharge at Freeport: 6,030 cfs.
- Three-day running average turbidity at Freeport: 5.42 FNU.
- X2 is >81 km.
    - Estimated Sacramento River X2 is 93.1 km.
    - Estimated San Joaquin River X2 is 93.5 km.
- Weather forecast out of Antioch is mostly clear and sunny with winds from the west to southwest between five and 10 mph.
- Weather forecast out of Stockton is mostly clear to partly cloudy with northwest winds between five and eleven mph.

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

CDFW shared the following:

- The Smelt Effects Analysis includes a machine learning-based investigation of the seasonality of adult LFS migration, which on average starts December 13th, though timing varies depending on water temperature, X2, and secchi depth.
- Adult detection may increase in the next few weeks, but it is likely too early for the full onset of migration.
- To predict LFS migration, the study presented in Appendix A of the Effects Analysis tracks turbidity, secchi depth (seven-day running average <0.6 m), X2 (<79 km), and water temperature (<12° C).
- Under the current dry conditions, the CDFW LFS spawning, and migration conceptual model predicts staging and spawning may occur further upstream than usual.

DWR suggested noting in the ITP Risk Assessment that LFS have been detected at Chipps Island (64 to 68 mm) and may be present in the confluence. DWR also pointed out that Condition of Approval 8.3.3 (Adult LFS Entrainment Protection) references the presence of LFS >60 mm.

- CDFW noted that the reference to LFS >60 mm is intended to be an early warning indicator, consistent with juveniles moving into the Delta prior to the beginning of adult migration.

PART 3: Live-edit Assessments

ITP Longfin Smelt Risk Assessment

- CDFW updated the ITP Risk Assessment to reflect the presence of juvenile and adult LFS in Suisun Bay, Suisun Marsh Strata, San Pablo Bay, and the Central Bay.
- CDFW added the following language: “Juveniles greater than 60 mm were detected at Chipps Island” per the discussion in Part 2.

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

- USBR reviewed changes to the outlook:
    - Language was added regarding the presence of >60 mm juveniles LFS at Chipps Island for continuity with the ITP Risk Assessment.
- Per the discussion at the beginning of the meeting, USFWS requested that language in the Biological Conditions section be modified to better describe the location of the confluence by river kilometer from the Golden Gate and the predicted centroid of the DS population.
    - The assessment was altered to reflect that historical data indicates the centroid of the DS population is located near the X2 position in November and that X2 is currently estimated to be several kilometers upstream of the confluence.
    - Sommer et al. 2011 was added as a reference for expected DS distribution patterns.
- USFWS and CDFW noted that the precise location of the confluence in terms of distance from the Golden Gate does not appear to be memorialized in any regulatory documentation, though some peer-reviewed publications have figures that show the confluence to be located at approximately 77 to 78 km (Jassby et al. 1995).
- USBR reviewed additional updates reflecting the latest dates and data.
- USBR made the following revisions to the Executive Summary:
    - Removed language referring to DS presence downstream of the confluence.
    - Added language noting the centroid of the DS population is close to the X2 position.
    - Removed language referencing detections "*in this water year*".

Part 4: Additional Considerations/Discussion

Presentation on Experimental Release of DS by USFWS and CDFW

The program is being spearheaded by USFWS and CDFW with support from a collective of other agencies who participate in the Experimental Release Technical Team (DWR, USGS, UC Davis, USBR).

The research will test the following technical questions:

- Pre-Release VIE tagging and adipose fin clipping methodology
- Acclimation and production measures within the Fish Conservation and Culture Laboratory (FCCL)
- Enclosure design
- Methods to transport from FCCL to the field
- Release methodology (hard and soft release, explore release life stages)
- Methods to assess survivorship of released fish
- Release locations

Potentail release areas include Suisun Bay, Lower Sacramento River, Cache Slough Complex, Sacramento Deepwater Shipping Channel. CEQA documentation approved releases anywhere in the mentioned locations, but this year Suisun Bay and the Sacramento Deep Water Shipping Channel will likely be excluded due to extended travel time. Once the DS are released, they will be monitored through existing surveys, as there are no plans to conduct special surveys for this program at this time. Recapture probability for the released fish is expected to be low.

- DWR asked how salvage of experimentally released fish should be handled.

    - CDFW and USFWS replied that facilities staff should note if an experimental DS was caught, but no special measures need to be taken. CDFW and USFWS will be meeting with SWP operations staff next week and plan to discuss salvage protocols in detail.
- USBR asked how the SMT will be informed of updates from the experimental release program.
    - CDFW and USFWS explained that there is no structured approach for communications yet, but that will be considered soon. They anticipate notifications will follow a similar process to existing efforts.

Agencies reported no items for elevation to WOMT.