State Water Project Incidental Take Permit Risk Assessment for Delta Smelt and Longfin Smelt

Section 1: Overview

Date: 11/15/2022

Life Stages Present:

Delta Smelt (DS): Sub-adults and Adults
Longfin Smelt (LFS): Sub-adults and Adults

Advice to Water Operations Management Team (WOMT):

No Advice.

Risk Assessment:

Delta Smelt: Based on distribution patterns over the past decade and low detections this water year, DS are unlikely to be prevalent in the Central and South Delta. Limited detection data from the past three months support DS being present in the Sacramento Deep Water Ship Channel (SDWSC), Suisun Marsh, and the lower Sacramento River. The last DS observations were on 11/3/22 and 11/7/22 in the lower Sacramento River (Table 1). These detections may be an indication that DS are starting to stage downstream of X2 in preparation for seasonal migration into freshwater. The likelihood of DS entrainment is low due to seasonal timing. First flush conditions are not anticipated to occur within the next seven days. The regulations for Integrated Early Winter Pulse Protection does not go into effect until 12/1/2022.

Longfin Smelt: No adult LFS have been detected in Chipps Island Trawl or Enhanced Delta Smelt Monitoring (EDSM) in the Delta in recent sampling. LFS adults are expected to move into spawning habitat by November and December. Adult and sub-adult LFS have been detected by EDSM in Suisun Marsh and Suisun Bay (Table 1). Chipps Island detected one sub-adult LFS on 10/14/2022, but none have been detected since. Based on distribution data and life history, adults and sub-adults are not expected to be prevalent in the Central or South Delta and therefore are expected to be at low risk of entrainment. Regulations for adult LFS protection goes into effect 12/1/22.

Section 1-A: Sacramento River and Confluence

Table 1: Risk of entrainment into the central Delta and export facilities for Delta Smelt in the Sacramento River and confluence:

Species and life stage	**Risk type**	**Risk level**	**Rationale (turbidity, exports, OMR level, X2, Q west, temperature, distribution etc.)**
DS larvae and juveniles	Exposure Risk (Hydrology)	NA	Spawning hasn't started, no larvae present.
DS subadults and adults	Routing Risk (Behavior and life history)	Low	Turbidity remains low, staging below X2 may be starting soon, water temperatures declining quickly.
DS	**Overall Entrainment Risk**	**Low**	NA

Table 2: Risk of entrainment into the central Delta and export facilities for Longfin Smelt in the Sacramento River and confluence:

Species and life stage	**Risk type**	**Risk level**	**Rationale (turbidity, exports, OMR level, X2, Q west, temperature, distribution etc.)**
LFS larvae and juveniles	Exposure Risk (Hydrology)	NA	Spawning hasn't started, no larvae present.
LFS sub-adults and adults	Routing Risk (Behavior and life history)	Low	Staging downstream of X2 may be starting soon.
LFS	**Overall Entrainment Risk**	**Low**	NA

Section 1-B: Central Delta

Table 3: Risk of entrainment into the export facilities for Delta Smelt in the central Delta:

Species and life stage	**Risk type**	**Risk level**	**Rationale (turbidity, exports, OMR level, X2, Q west, temperature, distribution etc.)**
DS subadults and adults	Exposure Risk (Hydrology)	Low	NA

Table 4: Risk of entrainment into the export facilities for Longfin Smelt in the central Delta:

Species and life stage	**Risk type**	**Risk level**	**Rationale (turbidity, exports, OMR level, X2, Q west, temperature, distribution etc.)**
LFS sub-adults and adults	Exposure Risk (Hydrology)	Low	NA

- Change in exposure from previous week: *(Note: The change in risk compared to previous weeks is not required by the Incidental Take Permit [ITP]).*
    - DS: Risk remains low, though last week there were two fish detected by EDSM in the lower Sacramento River, indicating that staging may be starting soon.
    - LFS: No change, staging downstream of X2 may be starting soon.
- Reporting Old and Middle River Index (OMRI) *(Number and range of OMRI bins will vary based on anticipated hydrology and operations)*
    - Relevant Conditions of Approval (COAs) are not active.

Section 2: Basis for Advice

The 2020 ITP (Incidental Take Permit for Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta 2081-2019-066-00) states that advice to WOMT shall be based the following Conditions of Approval:

List relevant Condition of Approval number and title based on species/life stage, time of year, etc.

Discussion of Conditions of Approval

Provide discussion addressing criteria for each Condition of Approval listed in "Basis for Advice" section. Refer to data below where appropriate.

COAs relevant to OMR management go into effect December 1st. The Smelt Monitoring Team (SMT) conducted a Risk Assessment based on COA 8.1.5.2 and noted that there is no regulatory mechanism in place to provide advice until December 1st.

Section 3: Hydrology and Operations

Assessment of hydrologic, operational, and meteorological information. 8.1.5.2 A.

Section 3-A: Water operations conditions. 8.1.5.2.A. i

- Antecedent Actions: *(e.g. Delta Cross Channel [DCC] gate closure and actions such as integrated early winter pulse protection, etc.)*
    - DCC is closed as of 11/14/22.
    - OMR management has not been initiated.
- Controlling Factors: Water Quality
- Water Temperature:
    - Clifton Court Forebay (CCF) Daily Average Water Temperature = NA
    - 3 Station Average = 12.75°C
- Tidal Cycle: NA
- Turbidity:
    - 8.3.1 Freeport 3-day average = 2.03 formazin nephelometric units (FNU)
    - 8.5.1 Old River at Bacon Island (OBI) Turbidity = 1.58 FNU

- Salinity: X2 > 81 km, estimated at 92.2 km for Sacramento River yesterday, and 94.3 km for San Joaquin River as of 11/10/22.
- Hydrologic Footprint: No Particle Tracking Models were requested.

Section 3-B: Water operations outlook. 8.1.5.2.A. ii

- Outages
    - State Water Project (SWP): None
    - Central Valley Project (CVP): None at the pumping plant, but on 11/10/22 Tracy Fish Facility had an outage for four hours to do maintenance on the secondary channel traveling screen #2.
- Exports:
    - CCF: 500 to 1,000 cfs
    - Jones: 900 to 1,800 cfs
- Meteorological Forecast: Dry conditions for week. Windy on Tuesday and Wednesday. Temperatures warm close to normal by midweek.
- Storm Event Projection: NA

Section 3-C: Projected conditions. 8.1.5.2.A. iii

- DCC Gates position: Scheduled to open 11/18 and close 11/21. Closed during the weekdays and open on weekends
- Sacramento River flow at Freeport: 7,720 cfs
- San Joaquin River flow at Vernalis: 632 cfs
- Qwest: 3,724 cfs
- OBI Turbidity: 1.58 FNU
- NDOI: 8,123 cfs
- Upstream releases:
    - Keswick = 3,600 cfs
    - Nimbus = 1,300 cfs
    - Goodwin = 200 cfs
    - Oroville = 2,000 cfs

Table 5: Comparison of OMR and OMR Index (5-day and 14-day averages for OMR Index and USGS gauge were reported on SacPAS website, accessed 15 November 2022.

Date	Averaging Period	USGS gauges (cfs)	Index (cfs)
11/11/2022	Daily	-3,550	-2,750
11/11/2022	5-day	-2,760	-2,490
11/11/2022	14-day	-2,300	-1,790

Section 4: Distribution and Biology.

8.1.5.2.B. Assessment of biological information for Delta Smelt and Longfin Smelt

Section 4-A: Delta Smelt population status 8.1.5.2.B. i

- EDSM: One subadult DS (Fork-length (FL): 55mm) and one adult DS (FL: 62mm) (Table 1) were detected in lower Sacramento River on November 3rd and 7th respectively.
- Fall Mid-water Trawl (FMWT) Index for Delta Smelt: September Index: 0
- Delta Smelt life cycle model (LCM) discussion: NA
- Biological Conditions: NA
- % of population in Delta zones: NA
- Smelt Larva Survey (SLS) or 20mm Survey: SLS sampling will begin 12/5/2022.
- Salvage: No DS have been salvaged at either facility this water year.

Section 4-B: Longfin Smelt population status 8.1.5.2.B. ii.

- FMWT Index: September Index = 7
- Other Surveys:
  - EDSM: Five sub-adult LFS (FL: 60-73mm) and two adult LFS (FL: 85-91mm) were detected in Suisun Bay and Suisun Marsh during the week of November 7th to November 11th (Table 1).
  - Chipps Island Trawl: One sub-adult LFS (62mm) was detected in Chipps Island on 10/14/22, none have been detected since.
  - Bay Study: In September, 36 sub-adult LFS (20-84mm) were detected from south of Bay Bridge (station 110) to San Pablo Bay (station 322). Distribution shifted further upstream in October with 47 sub-adult LFS (FL: 20-84mm) and five adult LFS (FL: 86-97mm) detected from near the San Mateo Bridge (station 101) to the lower Sacramento River (station 750).
- Salvage: No LFS have been salvaged at either facility this water year.

Section 4-C: Additional data sources to assess sensitivity to entrainment Delta.8.1.5.2.C & D. i

Notes:

- EDSM will convert to phase 1 from phase 3 on 12/5/22.
- Four LFS caught by EDSM on 11/3/22 were sent to FCCL for broodstock (Table 1). The two smaller fish (68-73mm) did not survive, but the two larger fish (85-91mm) survived the three-day quarantine and have been tagged and consolidated. Neither of them are sexually mature yet.

Attachments: Table 1: EDSM Catch Table

Table 1: DS and LFS catch for EDSM 2022 Phase 3 Kodiak trawls November 7th- November 11th. These data are preliminary and subject to change.

Date	Stratum	Subregion	Station Code	Species	Mark Type	Fork Length	Total Catch	Disposition
11/07/2022	Suisun Marsh	Grizzly Bay	23-15-SM03	LFS	None	68	1	FCCL
11/07/2022	Suisun Marsh	Grizzly Bay	23-15-SM03	LFS	None	73	1	FCCL
11/07/2022	Suisun Marsh	Grizzly Bay	23-15-SM03	LFS	None	91	1	FCCL
11/09/2022	Suisun Marsh	Suisun Marsh	23-15-SM01	LFS	None	60	1	Released
11/09/2022	Suisun Marsh	Suisun Marsh	23-15-SM01	LFS	None	62	1	Released
11/09/2022	Suisun Marsh	Suisun Marsh	23-15-SM01	LFS	None	85	1	FCCL
11/09/2022	Suisun Marsh	Suisun Marsh	23-15-SM02	LFS	None	60	1	Released
11/07/2022	Lower Sac River	Lower Sac River	23-15-LSR04	DSM*	None	62	1	FCCL