

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

Section 1: Overview

Date: 11/07/2023

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 in this water year, Delta Smelt are unlikely to be prevalent in the Central and South Delta. Limited detection data from the past month supports Delta Smelt presence in the lower Sacramento River. The last Delta Smelt observations were on 10/05/23 and 10/24/23 in the lower Sacramento River. The likelihood of Delta Smelt entrainment is low due to seasonal timing. The regulations for Integrated Early Winter Pulse Protection do not go into effect until 12/01/23.

Longfin Smelt: Adult and sub-adult LFS have been detected by Enhanced Delta Smelt Monitoring Program (EDSM) in Suisun Marsh and Suisun Bay. One adult and one sub-adult LFS have been detected by Chipps Island Trawl on 10/20/23 and 10/02/23 respectively. Fall Midwater Trawl (FMWT) detected adult LFS in Suisun Bay and sub-adult LFS in the Confluence, Suisun Bay, and San Pablo Bay in the last two months. Based on distribution data and life history, adults and sub-adults are not expected to be present in the Central or South Delta and therefore are not expected to be at risk of entrainment.

Section 1-A: Sacramento River and Confluence

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 subadults and adults	Exposure Risk (Hydrology)	Low	NA
DS subadults and adults	Routing Risk (Behavior and life history)	Low	NA
DS	Overall Entrainment Risk	Low	NA

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 sub-adults and adults	Routing Risk (Behavior and life history)	Low	NA
LFS	Overall Entrainment Risk	Low	NA

Section 1-B: Central Delta

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

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: Not discussed

- LFS: Not discussed
- 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.
 - Expected daily OMRI range this week: -3,000 to -7,000 cfs

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: Open on 11/3/23, closing on 11/8/23 and opening on 11/10/23 for Rio Vista
 - OMR management has not been initiated.
- Controlling Factors: Water Quality (salinity)
- Water Temperature:
 - Clifton Court Forebay (CCF) Daily Average Water Temperature = NA
 - 3 Station Average = 16.14°C
- Tidal Cycle: Transitioning from Neap to Spring; New Moon on 11/13/23.
- Turbidity:
 - 8.3.1 Freeport 3-day average = 3.46 formazin nephelometric units (FNU)
 - 8.5.1 Old River at Bacon Island (OBI) Turbidity = 2.53 FNU
- Salinity: X2 = 82.3 km
- 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):
 - 10/30/23 (0830-1145): No salvage due to maintenance.
 - 11/05/23 (0200): Extended count to 45-minutes to account for Daylight Savings time.
 - Central Valley Project (CVP):
 - 10/31/23 (1600): Missed count.
 - 11/01/23 (1200): Reduced count due to unscheduled flow change
 - 11/05/23: Conducted a 30-minute count for Daylight Savings time.
- Exports:
 - CCF: 1,000 cfs. Anticipated range: 1,000 to 5,000 cfs
 - Jones: 2,700 cfs. Anticipated range: 900 to 2,700 cfs
- Meteorological Forecast: Scattered showers on Monday; additional mountain snow late Monday into Tuesday; drier conditions begin to settle in late Tuesday, becoming dominant for the remainder of this week; some showers in the mountains on Friday, but generally drier conditions prevail; model projections are uncertain for next week, but potential precipitation amounts look light.
- Six-day Storm Event Projection: NA

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

- DCC Gates position: Open on 11/3, closing on 11/8 and opening on 11/10 for Rio Vista
- Sacramento River flow at Freeport: 8,638 cfs as of 11/06/23.
 - Anticipated range: 7,500 to 9,500 cfs
- San Joaquin River flow at Vernalis: 1,794 cfs as of 11/06/23.
 - Anticipated range: 1,500 to 2,000 cfs
- Qwest: 620 cfs as of 11/05/23. Anticipated to become negative when DCC gates are closed, and positive when the gates are open.
- OBI Turbidity: 2.53 FNU
- NDOI: 4,422 cfs as of 11/05/23. Anticipated range: 4,000 to 5,000 cfs.
- Upstream releases:
 - Keswick = 5,000 cfs. No anticipated changes.
 - Nimbus = 2,000 cfs. No anticipated changes.
 - Goodwin = 200 cfs. No anticipated changes.
 - Oroville =1,750 cfs. No anticipated changes.

Table 1: Comparison of OMR and OMR Index (5-day and 14-day averages for OMR Index and USGS gauge were reported on [SacPAS website](#), accessed 07 November 2023.

Date	Averaging Period	USGS gauges (cfs)	Index (cfs)

11/03/23	Daily	-5,790	-5,430
11/03/23	5-day	-4,090	-3,460
11/03/23	14-day	-1,930	-1,590

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 adult (Fork-length (FL): 60mm) and one sub-adult (FL: 53mm) DS were detected in Lower Sacramento River in October.
- FMWT September to October Index for Delta Smelt: 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 12/11/23.
- 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 September to October Index: 84.5 (preliminary)
- Other Surveys:
 - EDSM: Three adult and 58 sub-adult LFS were detected in Suisun Bay and Suisun Marsh in the week of 10/30/23 (Table 1).
 - Chipps Island Trawl: One adult LFS (FL: 95mm) was detected in Chipps Island on 10/20/23 (Table 2).
 - Bay Study: NA
- 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

- SLS will start on 12/11/23 and will be sampling their full suite of stations including San Pablo Bay.
- The first adult LFS (FL: > 84mm) near Chipps Island was detected about a month earlier (10/24/23) than the previous water year (11/21/22).

Attachments: Table 1: EDSM Catch Table, Table 2: Chipps Island Catch Table, Table 3: FMWT Catch Table, Figure 1: FMWT Station Locations

Table 1. Delta Smelt (DSM) and Longfin Smelt (LFS) catch for EDSM 2022 Phase 3 Kodiak trawls in October and first week of November. Only stations with DSM or LFS catch are reported here.

These data are preliminary and subject to change.

Date	Sub-Region	Species	Catch	FL Range (mm)
10/02/2023	Suisun Marsh	LFS	1	48
10/03/2023	West Suisun Bay	LFS	3	60-69
10/04/2023	Grizzly Bay	LFS	2	53-54
10/05/2023	Sacramento River Near Rio Vista	DSM	1	60
10/05/2023	Grizzly Bay	LFS	14	49-70
10/05/2023	Grizzly Bay	LFS	9	51-68
10/10/2023	West Suisun Bay	LFS	1	60
10/11/2023	Grizzly Bay	LFS	32	48-98
10/11/2023	Suisun Marsh	LFS	5	52-64
10/11/2023	Suisun Marsh	LFS	7	57-71
10/12/2023	Suisun Marsh	LFS	1	56
10/16/2023	Suisun Marsh	LFS	2	57-61
10/16/2023	Suisun Marsh	LFS	23	49-97
10/17/2023	Suisun Marsh	LFS	2	63-76
10/17/2023	Suisun Marsh	LFS	1	56
10/18/2023	Mid Suisun Bay	LFS	1	57
10/24/2023	Lower Sacramento River	DSM	1	53
10/24/2023	West Suisun Bay	LFS	3	50-59
10/26/2023	Grizzly Bay	LFS	17	54-96
10/26/2023	Suisun Marsh	LFS	2	48-65
10/26/2023	Suisun Marsh	LFS	6	55-74
10/30/2023	Honker Bay	LFS	2	64-92
10/31/2023	Suisun Marsh	LFS	25	53-75
11/01/2023	Grizzly Bay	LFS	20	50-87
11/01/2023	Grizzly Bay	LFS	5	57-74
11/01/2023	Suisun Marsh	LFS	2	62-86
11/02/2023	Honker Bay	LFS	7	50-63

Table 2. Delta Smelt (DSM) and Longfin Smelt (LFS) catch in Chipps Island mid-water trawls from September and October, there was no catch in September. Only tows with catch of these species are reported here. These data are preliminary and subject to change.

Date	Station Code	Species	Mark Type	Fork Length (mm)	Total Catch	Disposition
10/2/2023	SB018N	LFS	None	67	1	Released
10/20/2023	SB018N	LFS	None	95	1	Released

Table 3. Longfin Smelt (LFS) catch in Fall Midwater Trawl (FMWT) during September and October, only stations with catch of these species are reported here. No DS were detected by FMWT in either month. These data are preliminary and subject to change.

Month	Station	Fork Length (mm)	Length Frequency
September	413	54	1
September	415	58	1
September	415	54	1
October	309	66	1
October	334	57	1
October	329	45	1
October	329	50	1
October	329	52	1
October	329	57	1
October	329	64	1
October	329	66	1
October	329	67	1
October	329	78	1
October	412	55	1
October	401	70	1
October	409	77	1
October	410	103	1
October	410	58	1
October	410	57	2
October	411	57	1
October	412	60	1
October	413	58	1
October	412	65	1
October	417	54	1
October	417	68	1
October	414	53	1
October	415	68	1
October	416	43	1
October	603	63	1
October	416	48	1
October	515	68	1
October	418	97	1
October	418	68	1
October	418	66	2
October	418	65	1
October	418	61	1
October	418	56	1

Month	Station	Fork Length (mm)	Length Frequency
October	418	54	1
October	516	80	1
October	606	69	2
October	509	63	1
October	503	71	1
October	503	63	1
October	507	67	1
October	509	65	1
October	509	56	1
October	510	61	1
October	511	81	1
October	511	72	1
October	511	55	1
October	517	70	1
October	511	65	1

Figure 1. Fall Midwater Trawl Station Locations

