

State of California
Department of Fish and Wildlife



Memorandum

Date: December 21, 2023

To: Brooke Jacobs, Branch Chief
Kristal Davis-Fadtke, Environmental Program Manager
Paige Uttley, Environmental Program Manager
Michael Eakin, Senior Environmental Scientist (Supervisory)
Ecosystem Conservation Division – Water Branch

DocuSigned by:

Erin Chappell

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From: Erin Chappell, Regional Manager
Bay Delta Region-3

Subject: 2023 Fall Midwater Trawl September-December Delta Smelt and Longfin Smelt
Abundance and Distribution Summary

The Fall Midwater Trawl (FMWT) reports on the relative abundance and distribution of upper-estuary pelagic species including, but not limited to, Delta Smelt (*Hypomesus transpacificus*), Longfin Smelt (*Spirinchus thaleichthys*), age-0 Striped Bass (*Morone saxatilis*), Threadfin Shad (*Dorosoma petenense*), American Shad (*Alosa sapidissima*), and Splittail (*Pogonichthys macrolepidotus*). This memo will only include information pertaining to Delta Smelt and Longfin Smelt. The FMWT samples 130 stations (see: <https://wildlife.ca.gov/Conservation/Delta/Fall-Midwater-Trawl/Stations>) each month from September to December, and those stations range from San Pablo Bay upstream to the City of Stockton on the San Joaquin River, to near the City of Hood on the Sacramento River, and into Cache Slough and through the Sacramento River Deep Water Ship Channel (SRDWSC).

FMWT catch from a subset of stations (100 'index stations', which have been used since the inception of the FMWT) is used to calculate abundance indices (Figure 1). FMWT equipment and methods have remained consistent, which allows the comparison of abundance index trends. Monthly and annual abundance indices are calculated using catch data from index stations grouped into 14 regions. Monthly abundance indices are calculated by averaging catch per tow for index stations in each region, multiplying each regional average by its respective weighting factor (i.e., a scalar based on water volume) for each region, and summing those products for all 14 regions (White and Baxter 2022). The sum of the four (September-December) monthly abundance indices comprises the annual FMWT abundance indices.

In 2023, the monthly FMWT surveys were conducted September 5-20, October 2-17, November 1-15, and December 4-20. During each of the four months, 130 fish trawls were conducted with an additional 36 zooplankton tows. Here we report catch from index and non-index stations, species distributions by region, and preliminary abundance indices. A map of species distribution by station is also publicly available online: (<https://wildlife.ca.gov/Conservation/Delta/Fall-Midwater-Trawl/Map>). Additional

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information on prior year indices, methods, and catch data can be found on our webpage: <https://wildlife.ca.gov/Conservation/Delta/Fall-Midwater-Trawl>.

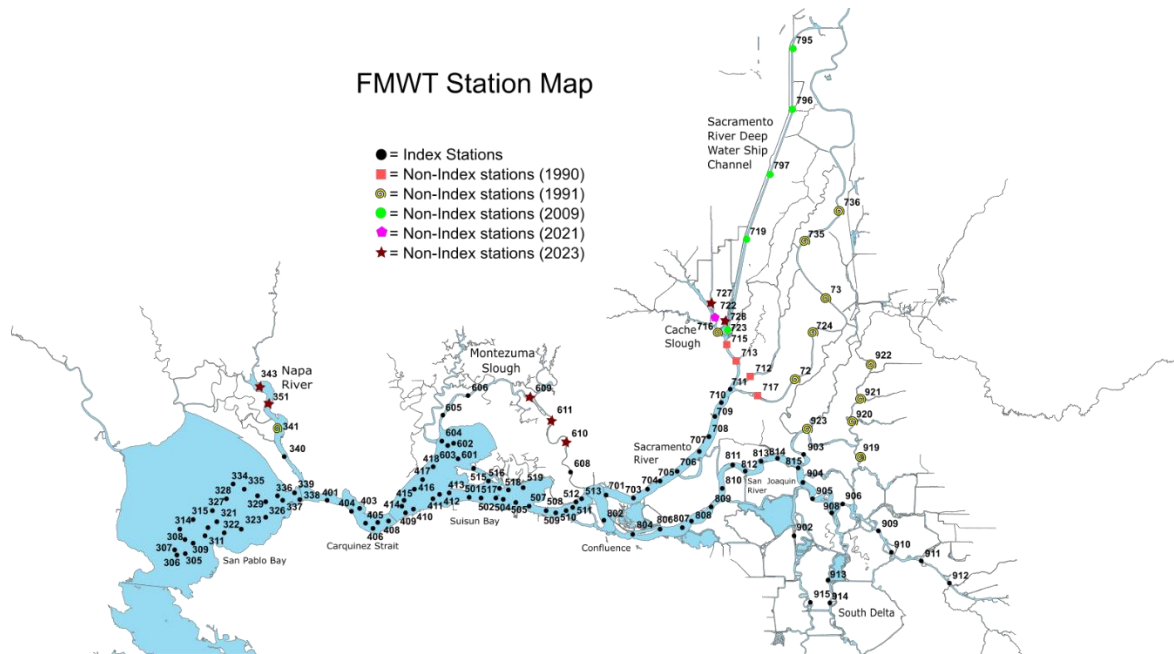


Figure 1. Map of CDFW Fall Midwater Trawl Survey monthly index and non-index stations in the upper San Francisco Estuary, California, USA.

Delta Smelt (*Hypomesus transpacificus*)

No Delta Smelt were collected at any stations from September through December. The 2023 September-December index (0) is tied with 2016 and 2018-2022 as the lowest index in FMWT history. An absence of Delta Smelt catch in the FMWT is consistent among other surveys in the estuary. For example, the Enhanced Delta Smelt Monitoring (EDSM) survey of the U.S. Fish and Wildlife Service (USFWS) caught only 6 Delta Smelt among 16 sampling weeks (between September 4 and December 19) comprised of 2054 tows (USFWS 2023).

Longfin Smelt (*Spirinchus thaleichthys*)

The 2023 September-December Longfin Smelt (all ages) index (464) is a 14 percent increase from the previous year (the 2022 September-December index was 403; <https://apps.wildlife.ca.gov/FMWT>). Four Longfin Smelt were collected at index stations in September for an index of six. In October, 52 were collected for an index of 79. In November, 77 were collected for an index of 203. In December, 86 were collected for an

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Index of 176 (Table 2). Six Longfin Smelt were collected at non-index stations during the four-monthly surveys.

The majority (greater than 92 percent) of Longfin Smelt caught in 2023 have been age-0 (Table 4). Cutoff lengths for age classes were assigned as described in Baxter (1999). Longfin Smelt catch was highest in September at Suisun Bay, highest in October at Suisun Bay, highest in November at San Pablo Bay, and highest in December at San Pablo Bay (Table 3). The Longfin Smelt index includes all ages.

Table 1. Longfin Smelt monthly catch among regions during the 2023 FMWT survey sampling at index and non-index stations.

Month	Type	Region	Catch
September	Index	Suisun Bay	4
October	Index	San Pablo Bay	10
October	Index	Carquinez Strait	1
October	Index	Suisun Bay	41
November	Index	San Pablo Bay	58
November	Index	Carquinez Strait	2
November	Index	Suisun Bay	12
November	Index	Lower Sacramento River	5
November	Non-Index	Montezuma Slough	4
December	Index	San Pablo Bay	52
December	Index	Carquinez Strait	11
December	Index	Suisun Bay	21
December	Index	Lower Sacramento River	2
December	Non-Index	Montezuma Slough	2
Total			225

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Table 2. Longfin Smelt monthly indices generated during the 2023 FMWT season while sampling at index stations September through December.

Month	Index
September	6
October	79
November	203
December	176
Total sum indices:	464

Table 3. Monthly percent of Longfin Smelt index, based on location, during the 2023 FMWT season while sampling September through December.

Month	Locality	Percent of Index
September	Suisun Bay	100
October	San Pablo Bay	33
October	Carquinez Strait	3
October	Suisun Bay	64
November	San Pablo Bay	88
November	Carquinez Strait	2
November	Suisun Bay	7
November	Lower Sacramento River	3
December	San Pablo Bay	61
December	Carquinez Strait	27
December	Suisun Bay	10
December	Lower Sacramento River	2

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Table 4. Longfin Smelt total monthly catch, associated age, and fork length ranges in millimeters during the 2023 FMWT season. No age-2+ fish were captured on survey.

Month	Age-0 Catch	Age-0 FL mm	Age-1 Catch	Age-1 FL mm	
September	4	50-54	0	NA	
October	50	43-81	2	97-103	
November	79	48-75	2	92-100	
December	75	48-81	13	88-117	

If you have any questions, please contact Taylor Rohlin, Environmental Scientist, at (209) 693-3540 or Taylor.Rohlin@wildlife.ca.gov; or Steve Slater, Senior Environmental Scientist (Supervisory), at (209) 403-6325 or Steve.Slater@wildlife.ca.gov.

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