

Memorandum

Date: 10/9/2018

To: Gregg Erickson
Regional Manager
Bay Delta Region

From: Trishelle Tempel
Environmental Scientist
Bay Delta Region

Subject: 2018 20-mm Survey Delta Smelt Index of Relative Abundance Supplemental Documentation

The 2018 20-mm Survey (20-mm) Delta Smelt index of relative abundance was incalculable due to low catch¹. This document intends to contextualize that finding by comparing recent Delta Smelt catch data from various sources.

The California Department of Fish and Wildlife (CDFW) conducts multiple monitoring surveys that sample Delta Smelt throughout their native range. Each of those surveys targets a different life stage. Many of these surveys produce an annual index of Delta Smelt relative abundance for the life stage they sample (hereafter, "index")².

In recent years, each survey has reported indices that indicate record-low presence in the sampling area. 20-mm samples larval and juvenile Delta Smelt from March-July and has reported relatively low indices each year since 2014 (Figure 1). The Summer Towntnet Survey (STN) samples juvenile Delta Smelt from June-August, and reported an index of 0 in 2015, 2016, and 2018. The Fall Midwater Trawl Survey (FMWT) samples juvenile Delta Smelt from September-December, has reported single-digit indices since 2014, and reported a record-low index of 2 in 2017. The Spring Kodiak Trawl Survey (SKT) samples adult Delta Smelt from December-May, and has reported single-digit indices each year since 2016. This pattern of record low indices spanned the recent drought, but also persisted through the wet year in 2017.

At the time of this writing, we have observed Delta Smelt in each of the 2018 CDFW monitoring surveys (Table 1). SKT collected a record-low 21 adult Delta Smelt from December-March. SLS collected 21 larval Delta Smelt in March, which was the highest catch since 2014 and evidence of hatching in early spring. The 20-mm Survey collected a record-low 13 larval and juvenile Delta Smelt in March, April, and July. No Delta Smelt were collected by 20-mm in May or June, which has never happened before. STN collected a record-low 3 juveniles in June and July. One adult Delta Smelt was observed at the State (Skinner) and Federal (Tracy) salvage facilities in March, but no young-of-the-year were observed there.

¹ For more details, see *Memorandum: 2018 Index of Delta Smelt Abundance from the 20-mm Survey* here: <http://www.dfg.ca.gov/delta/data/20mm/bibliography.asp>

² CDFW monitoring survey data, salvage data, summaries, and prior year indices are available from the Bay Delta Region webpage: <https://www.wildlife.ca.gov/Regions/3>

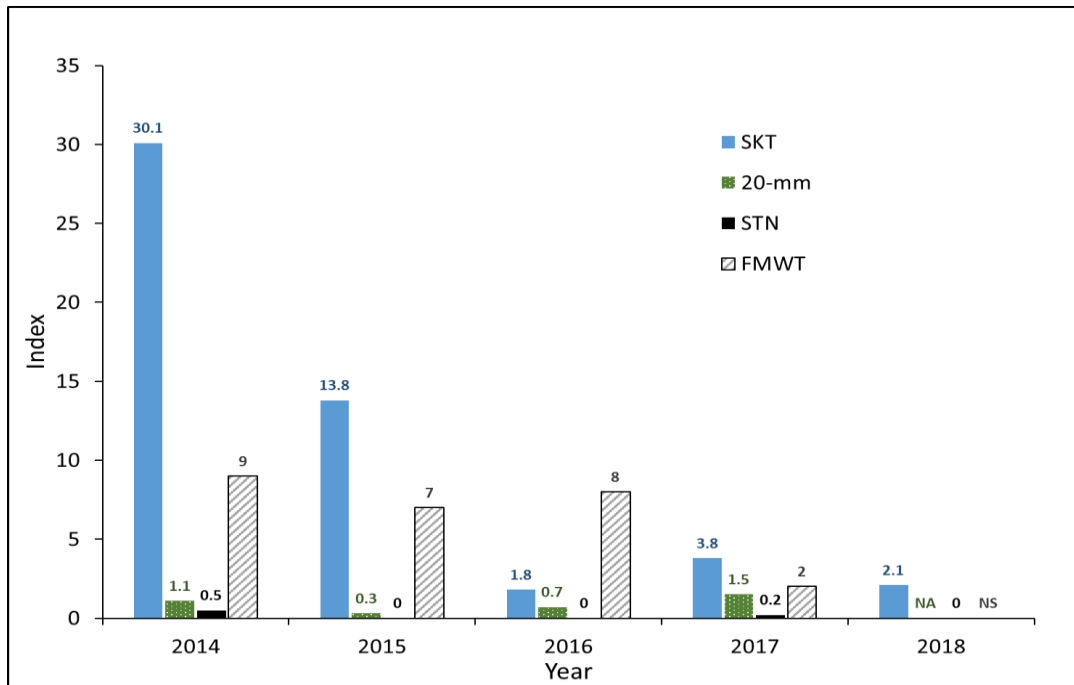


Figure 1. CDFW survey indices of Delta Smelt relative abundance from 2014-2018. At the time of this writing, the 2018 FMWT index has not been set (NS).

The United States Fish and Wildlife Service (USFWS) conducts the Enhanced Delta Smelt Monitoring program (EDSM)³, which began in December 2016 and conducts high-frequency sampling targeting Delta Smelt using gear similar to SKT and 20-mm. EDSM used SKT gear from December 2017 until March 2018, when 20 adult Delta Smelt were collected, and in July and August 2018, when 50 juvenile and 1 adult Delta Smelt were collected. 20-mm gear was used throughout June 2018, but only 2 Delta Smelt were collected.

These data from SKT, 20-mm, STN, FMWT, EDSM, the Skinner salvage facility, and the Tracy salvage facility indicate that Delta Smelt are still in the system but have become sparse and thus more difficult to detect. Preliminary review of 2018 environmental data did not suggest abnormal temperatures, salinities, or flow rates. Initial review of the Delta Smelt fork length data did not suggest an abnormal growth rate. Zooplankton samples were collected concurrently with 20-mm and STN to evaluate food supply, but those samples await processing.

Table 1. Delta Smelt catch and life stage from CDFW’s salvage monitoring, FMWT, SKT, SLS, 20-mm, and STN surveys, and USFWS’s EDSM survey, December 2017 - August 2018.⁴

	December	January	February	March	April	May	June	July	August
Salvage	0	0	0	1	0	0	0	0	0
FMWT	0								
SKT	1 5	1 9	4	1	0	1			
SLS		0	0	21					
20-mm				10	1	0	0	2	
STN							2	1	0
EDSM	3	10	3	4			1 1	19	31 1

Adults (>58mm)
 Larvae (<20mm)
 Juveniles (20-58mm)
 Sampled, No Catch
 No Sample

cc: Jim Starr, Bob Fujimura, Steve Slater, Randy Baxter

³ USFWS EDSM data, metadata, and weekly summaries are available from the USFWS webpage: https://www.fws.gov/lodi/juvenile_fish_monitoring_program/jfmp_index.htm

Year to date data can be accessed from the file: *Enhanced Delta Smelt Monitoring Daily Report*

⁴ Sampling sites are limited to where the gear can be safely deployed; this restricts shallow water (<7 ft) sampling