

Memorandum

Date: August 5, 2021

To: Dr. Stacy Sherman
Acting Regional Manager
Bay Delta Region

From: Dr. Timothy D Malinich
Environmental Scientist
Bay Delta Region

Subject: 2021 Summer Townet Survey Delta Smelt Abundance Index

The 2021 Summer Townet Survey annual abundance index for young-of-year Delta Smelt *Hypomesus transpacificus* was 0.0. This is the sixth year in which the number of young-of-year Delta Smelt collected during the first two Summer Townet surveys was low enough to result in an index equal to zero. The first zero index was reported in 2015 and has reported a 0.0 index every year since 2018 (Figure 1).

Summer Townet conducts six Delta wide surveys in which 31 index and nine supplemental stations are sampled (Figure 2). The annual index is the average of the first two survey indices. Survey indices are calculated by multiplying young-of-year Delta Smelt catch at each index station by a station-specific weighting factor. We sum these weighted catches for the 31 index stations and divide this sum by 1000. More information on index calculation can be found at:

<https://filelib.wildlife.ca.gov/Public/TownetFallMidwaterTrawl/TNS%20MS%20Access%20Data/TNS%20data/> Catch from nine supplemental stations in the Napa River, Cache Slough, and Sacramento Deep Water Ship Channel (SDWSC) are not included in the index. For the second year in a row, we were unable to sample at non-index station 721 in Cache Slough due to a significant amount of invasive aquatic vegetation. To compensate, we have begun sampling ~2 kilometers downstream of station 721 at a new location, station "722" (See Figure 2).

The first two surveys of 2021 were conducted during June 7-11 and June 21-24. During the first and second survey, no Delta Smelt were collected at index or non-index stations.

This is the second time that n=0 Delta Smelt have been caught by the Summer Townet Survey in the first two surveys (Table 1). Delta Smelt have been low or absent at index stations but still observed in non-index stations (continuously sampled starting in 2011) in the North Delta. More recently, even non-index stations have yielded low catches of the State and federally listed species. Within the geographic range of the Summer

Townet Survey, the remaining Delta Smelt population may be in numbers below our detection ability. This pattern is consistent with other surveys in the Delta. In 2021, the Spring Kodiak Trawl January through May (DS n=0) and Smelt Larval Survey January through March (DS n=0) observed no Delta Smelt, and only the 20-mm Survey March through July (DS n=1) observed a single Delta Smelt on May 6th in the SDWSC. In addition, the U.S. Fish and Wildlife Service (USFWS) Enhanced Delta Smelt Monitoring Program phase 2 (larval sampling) reported catching n=6 larval Delta Smelt between April and May and no Delta Smelt through mid-June. EDSM phase 3 (juvenile sampling) also has reported n=0 Delta Smelt between late June and July. The CDFW 20-mm survey data is available at: [20-MM](#). USFWS data available at: [Delta Juvenile Fish Monitoring Program](#).

Cc: Dr. James Hobbs
Steven Slater
Kathy Hieb
Lauren Damon

Table 1. Delta Smelt catch by survey from the CDFW Summer Towner Survey for years 2011-2021. Sampling in 2021 is ongoing at the time of writing this memo (S=Survey; NI= Non-Index; NS= not sampled).

Year	Index stations (n=31) Survey						Non-index stations (n=9) Survey						Total
	1	2	3	4	5	6	1	2	3	4	5	6	
2011	86	58	156	119	40	27	117	90	20	26	3	43	785
2012	19	30	37	16	4	5	50	39	21	12	7	9	249
2013	35	18	18	37	2	9	29	7	2	7	1	5	170
2014	5	21	3	7	7	8	20	3	1	2	0	1	78
2015	1	0	2	0	0	0	5	4	10	0	0	1	23
2016	2	0	0	0	1	0	3	0	0	0	0	0	6
2017	1	5	6	3	0	15	0	1	2	0	0	0	33
2018	0	1	0	1	0	0	1	0	0	0	0	0	3
2019	0	0	0	0	0	0	0	1	0	0	0	0	1
2020	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	NS	NS	0	0	0	0	NS	NS	0
Total	149	133	222	183	54	64	225	145	56	47	11	59	1348

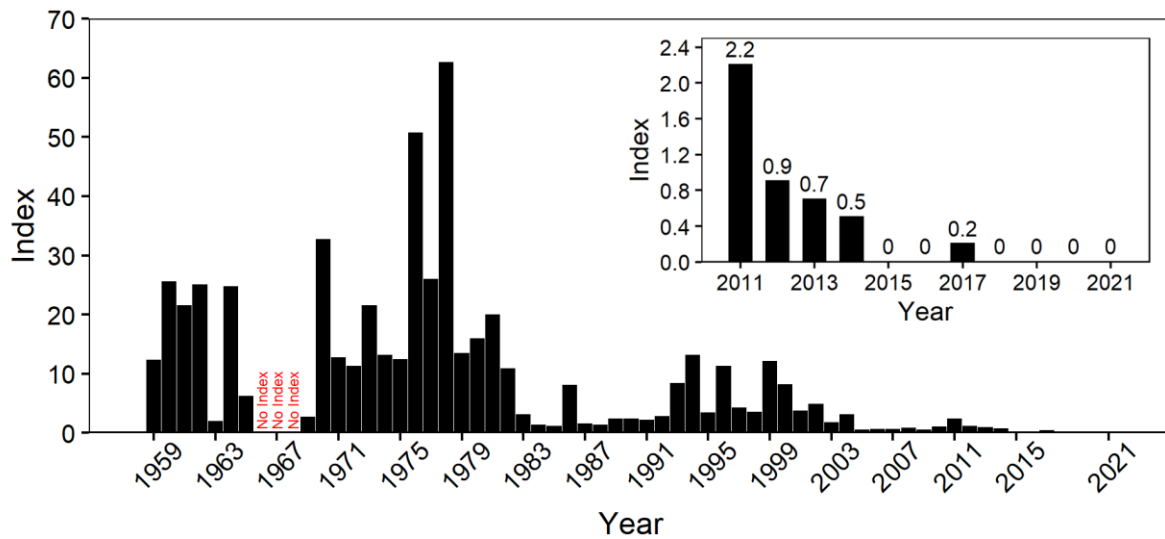


Figure 1. Summer Towner Survey Delta Smelt annual abundance indices 1959-2021 with inset showing indices from 2011 to 2021

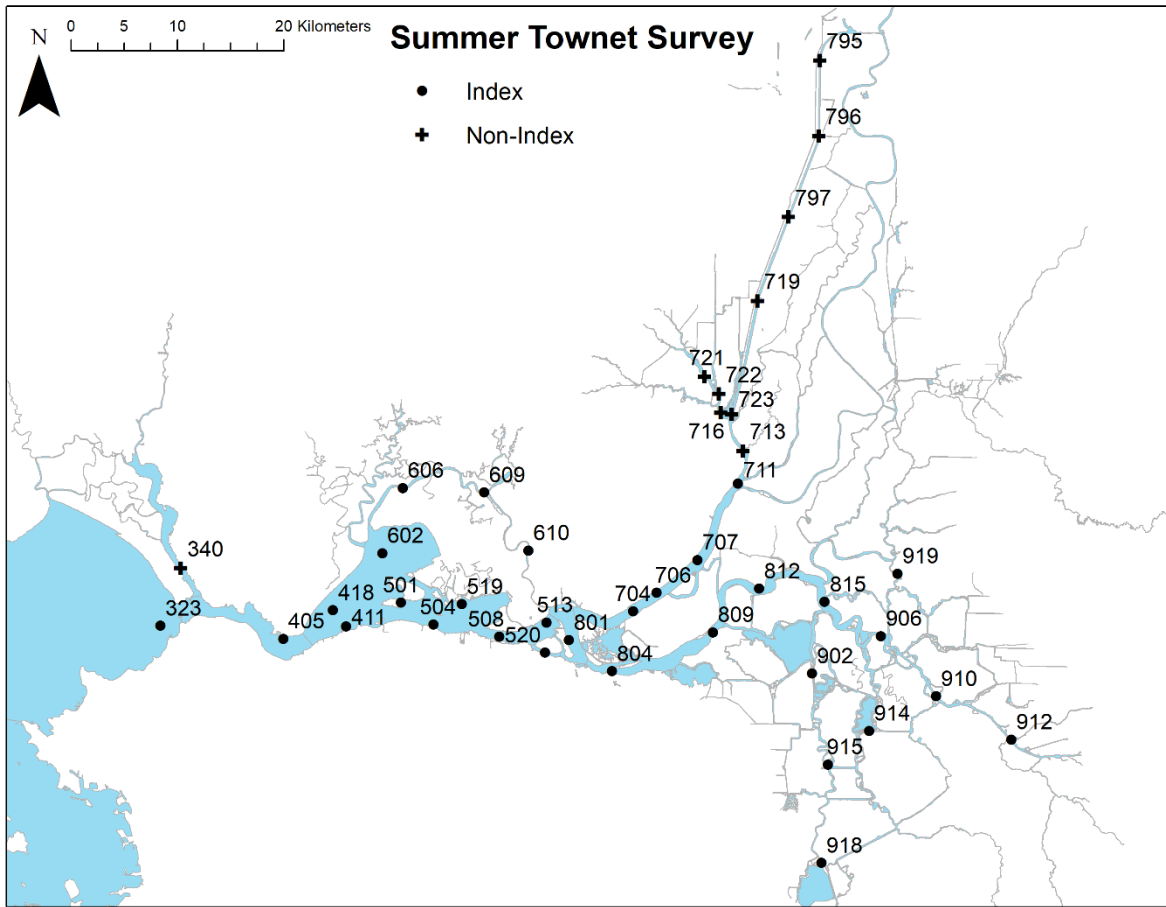


Figure 2. Map of the San Francisco Bay-Delta region and the distribution of Summer Townet Survey index and non-index stations. Station 721 was not sampled this year due to aquatic vegetation. It was replaced by station 722.