

# Memorandum

Date: August 9, 2018

To: Gregg Erickson  
Regional Manager  
Bay Delta Region

From: Trishelle Tempel  
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Subject: The 2018 20-mm Survey Delta Smelt Index

The 2018 20-mm Survey Delta Smelt index is not calculable (Figure 1). The index is calculated by summing the geometric means of four index surveys: the two surveys directly before and the two surveys directly after Delta Smelt mean fork length reaches 20 mm. In 2018, Delta Smelt catch was insufficient to determine when mean Delta Smelt fork length reached 20 mm, therefore index surveys could not be determined (Table 1).

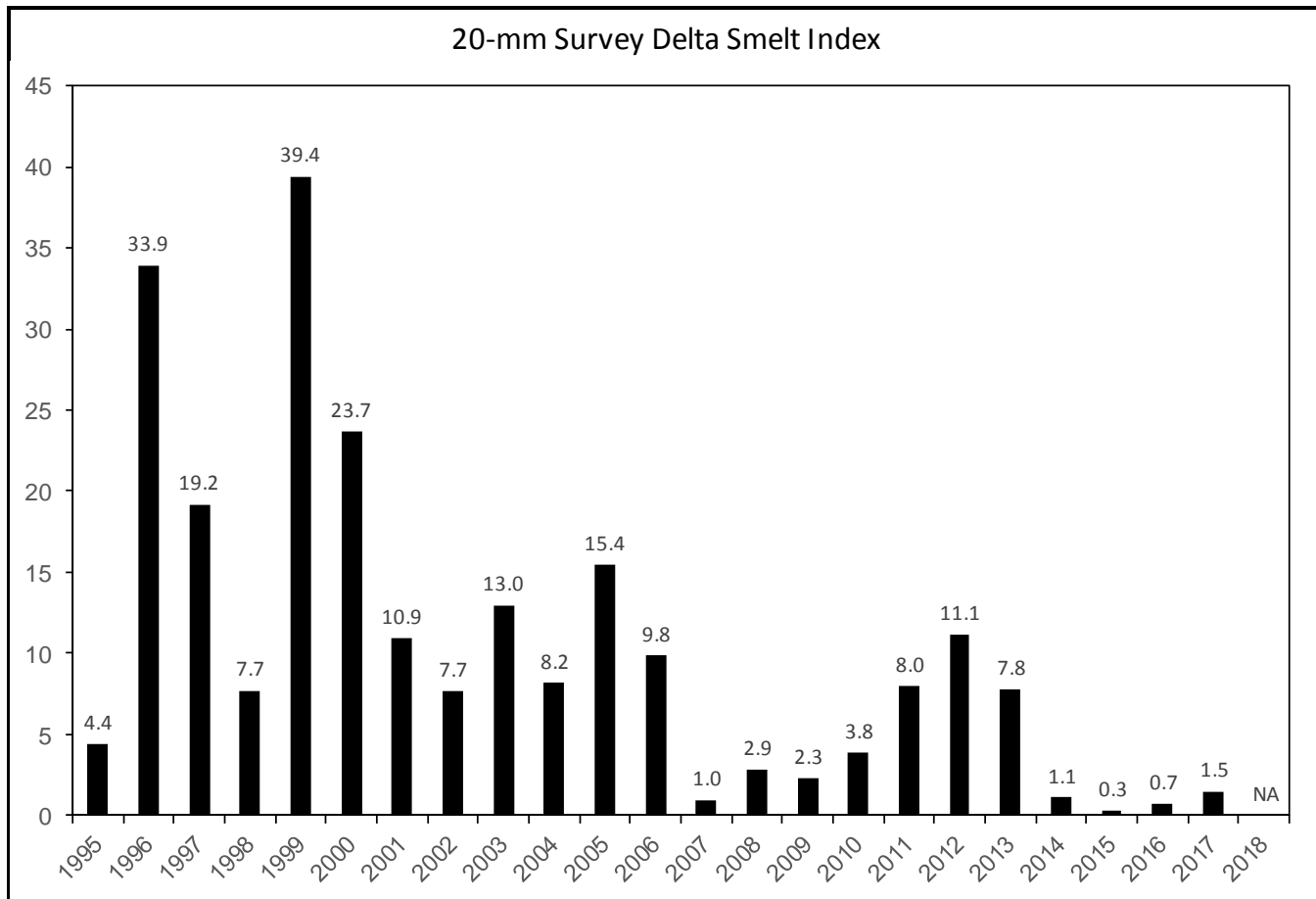


Figure 1. Delta Smelt index of abundance from CDFW's 20-mm Survey, 1995-2018. Delta Smelt catch in 2018 was insufficient to produce an index value.

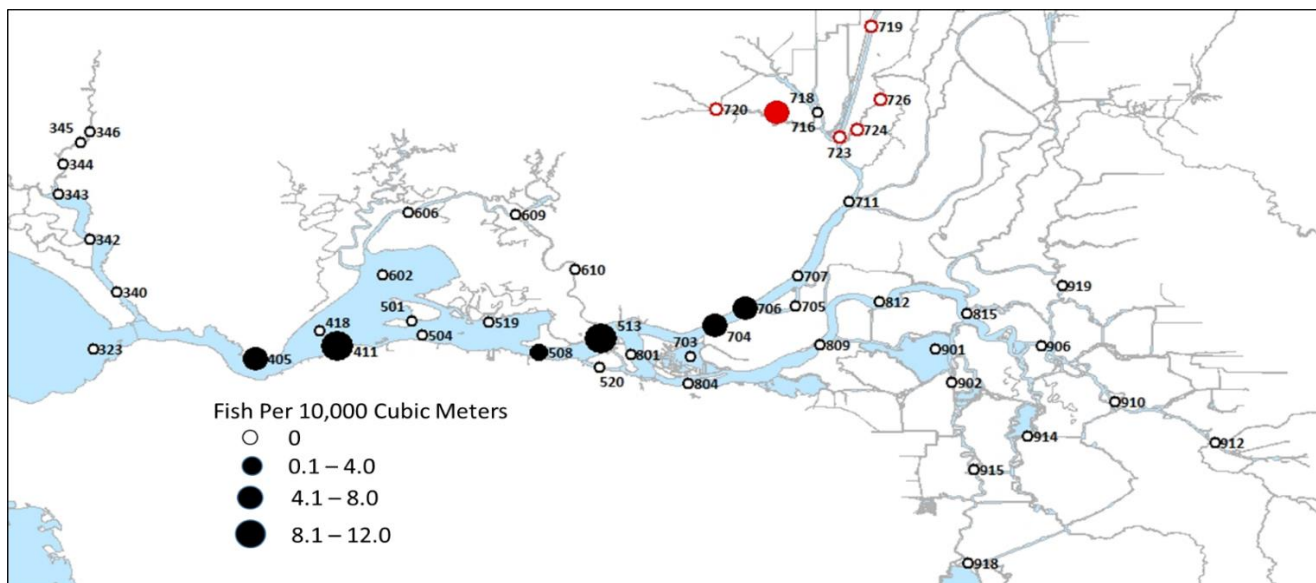
The annual 20-mm Survey monitors the distribution and relative abundance of post-larval and juvenile Delta Smelt throughout their historical range. Nine week-long surveys are conducted every other week from mid-March through early July. Each survey samples 47 stations: 41 "index stations" which have been sampled since the inception of the survey and 6 "non-index stations" which were added to the sampling regime in 2008 (Figure 2).

A total of thirteen Delta Smelt were collected, eleven during Surveys 1-3 and two during Survey 9. No Delta Smelt were observed during Surveys 4-8. During Survey 9, vessel breakdowns caused reduced sampling in western and northern regions, including the Napa River and Cache Slough<sup>1</sup>. The average Delta Smelt fork length for Survey 9 was 36.5 mm, but this value may not represent the population given the reduced sampling effort. Due to very low catch, the long period of no catch, and incomplete sampling during Survey 9, we are unable to confidently estimate when average fork length reached 20 mm, therefore we are unable to produce an index value. Had we been able to estimate when the average fork length reached 20 mm, the resulting index would have been a record low.

**Table 1. Delta Smelt catch, length, and geometric mean by survey from the 2018 CDFW 20-mm Survey. A partial survey was completed during Survey 9.**

Survey	Catch	Average Length	Geometric mean
1	7	6.9	0.2
2	3	7.7	0.1
3	1	14.0	0.0
4	0	0.0	0.0
5	0	0.0	0.0
6	0	0.0	0.0
7	0	0.0	0.0
8	0	0.0	0.0
9*	2	36.5	0.1

Delta Smelt catch this year was a historic low. Catch from prior years ranged from 94 - 4,917, with an average of 1,180. Delta Smelt were collected in Suisun Bay, the Sacramento River, and at one non-index station in Cache Slough.



**Figure 2. Map of the upper San Francisco Estuary showing the 2018 CDFW 20-mm Survey stations and associated Delta Smelt catch per unit effort (10,000 m3) for all surveys. Stations in black are index stations, stations in red are non-index stations.**

More information on prior year indices, methods, and 20-mm Survey data can be found on our webpage: <https://www.wildlife.ca.gov/Conservation/Delta/20mm-Survey>.

cc: Marty Gingras  
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Bay Delta Region

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<sup>1</sup> Only 29 stations were sampled during Survey 9. The following stations were not sampled: 323, 340, 342, 343, 344, 345, 346, 405, 411, 418, 501, 504, 703, 711, 718, 720, 724, 726.