

Memorandum

Date: October 24, 2016

To: Scott Wilson
Regional Manager
Bay Delta Region

From: James White
Environmental Scientist
Bay Delta Region

Subject: 2016 Fall Midwater Trawl September-October fish abundance and distribution

The Fall Midwater Trawl (FMWT) was initiated to determine the relative abundance and distribution of age-0 Striped Bass (*Morone saxatilis*) in the estuary, but the data is used routinely for information on upper-estuary pelagic species including but not limited to Delta Smelt (*Hypomesus transpacificus*) and Longfin Smelt (*Spirinchus thaleichthys*). The FMWT samples 122 stations each month from September to December, and those stations range from San Pablo Bay upstream to Stockton on the San Joaquin River, to Hood on the Sacramento River, and to the Sacramento Deep Water Ship Channel.

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. 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 17 regions. Monthly abundance indices are calculated by averaging catch per tow for index stations in each region, multiplying each average by its respective weighting factor (i.e., a scalar based on water volume) for each region, and summing those products for all 17 regions. The abundance indices reported here are the sum of the first 2 (September-October) of the 4 planned monthly abundance indices that will comprise the annual FMWT abundance indices.

The 2016 September and October FMWT surveys were conducted Sept 6-21 and Oct 3-18. Here we report catch from index and non-index stations, species distributions by region, and summed Sep-Oct abundance indices.

Delta Smelt

No Delta Smelt were collected at index or non-index stations in September or October. This is the lowest Sep-Oct index (0) in FMWT history (Figure 1).

Age-0 Striped Bass

Thirty-nine age-0 Striped Bass were collected at index stations in September for an index of 43, and 4 were collected in October for an index of 4. The 2016 Sep-Oct index (47) is higher than the Sep-Oct indices for each of the previous four years (2012-2015) (Figure 2).

In September, the majority of Striped Bass were collected at index stations in Suisun Bay (n=38, 96% of total catch) and one was caught in the eastern delta. No fish were collected at non-index stations during September.

In October, all Striped Bass were collected at index stations in Suisun Bay (n=4). No fish were collected at non-index stations during October.

Longfin Smelt

Two Longfin Smelt were collected at index stations in September for a Sep-Oct index of 3. None were collected at index or non-index stations in October. This is the third-lowest Sep-Oct index in FMWT history (Figure 3).

Of the two Longfin Smelt caught in September, one was collected in San Pablo Bay and one in Suisun Bay. No fish were collected at non-index stations.

Threadfin Shad

Ninety-seven Threadfin Shad were collected at index stations in September for an index of 114, and 50 were collected in October for an index of 50. The Sep-Oct index (164) is the seventh-lowest in FMWT history (Figure 4) and a 40% reduction from the previous year (Figure 4).

In September, Threadfin Shad were collected at index stations in the Suisun Bay (n=12), the lower Sacramento River (n=52), and the lower San Joaquin (n=33) River. At non-index stations, fish were collected in Cache Slough (n=1) and the Sacramento Deep Water Shipping Channel (SRDWSC; n=217).

In October, Threadfin Shad were collected at index stations in San Pablo Bay (n=2), Suisun Bay (n=39), the lower Sacramento River (n=1), and the lower San Joaquin River (n=8). The majority of Threadfin Shad catch (n=178) was collected at non-index stations in the SRDWSC.

American Shad

Fifty-eight American Shad were collected at index stations in September for an index of 61, and 38 were collected in October for an index of 67. The Sep-Oct index (128) is higher than Sep-Oct indices for each of the previous two years (2013-2014; Figure 5).

In September, American Shad were collected at index stations in Suisun Bay (n=43), the lower Sacramento River (n=11), and the lower San Joaquin River (n=4). Thirty-seven fish were caught at non-index stations in the SRDWSC.

In October, American Shad were collected at index stations in San Pablo Bay (n=5), Suisun Bay (n=9), the lower Sacramento River (n=9), and the lower San Joaquin River (n=15). Eighty-nine fish were collected at non-index stations in the SRDWSC (n=86) and in the Sacramento River (n=3).

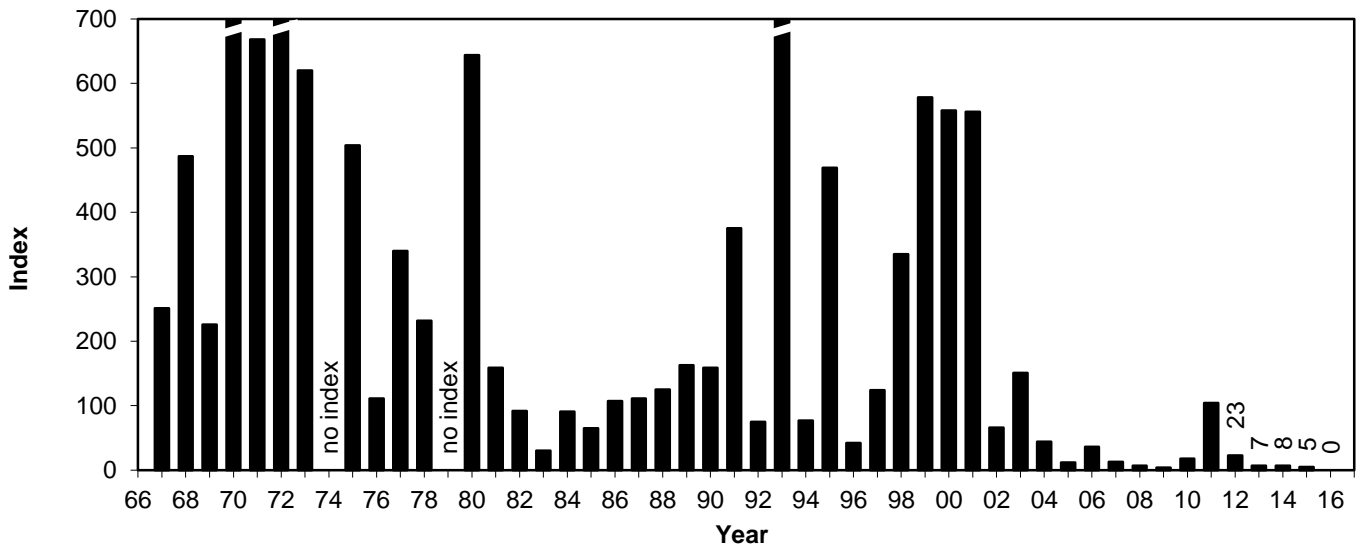


Figure 1. FMWT Delta Smelt September-October abundance indices, 1967-2016.

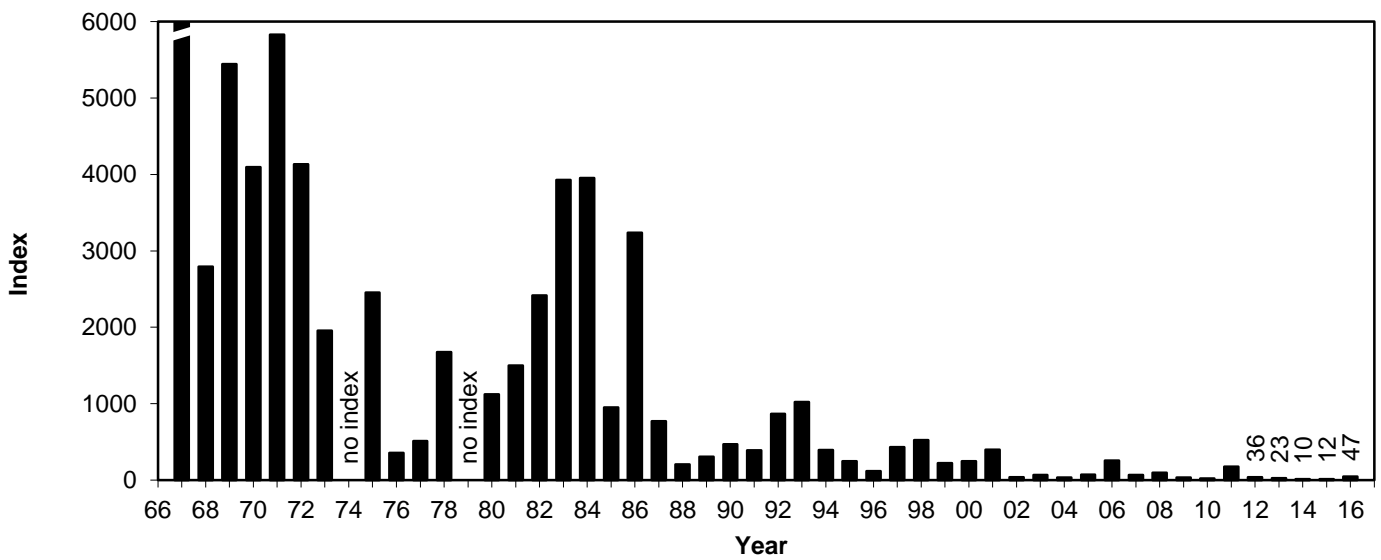


Figure 2. FMWT Age-0 Striped Bass September-October abundance indices, 1967-2016.

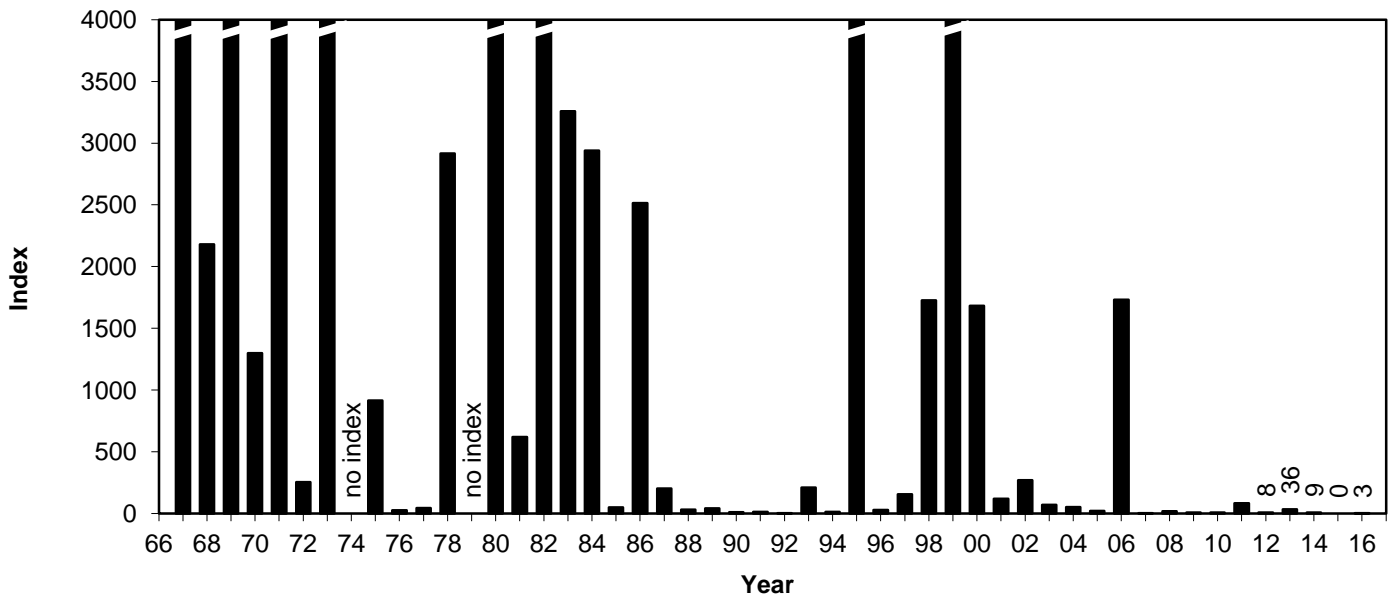


Figure 3. FMWT Longfin Smelt September-October abundance indices, 1967-2016.

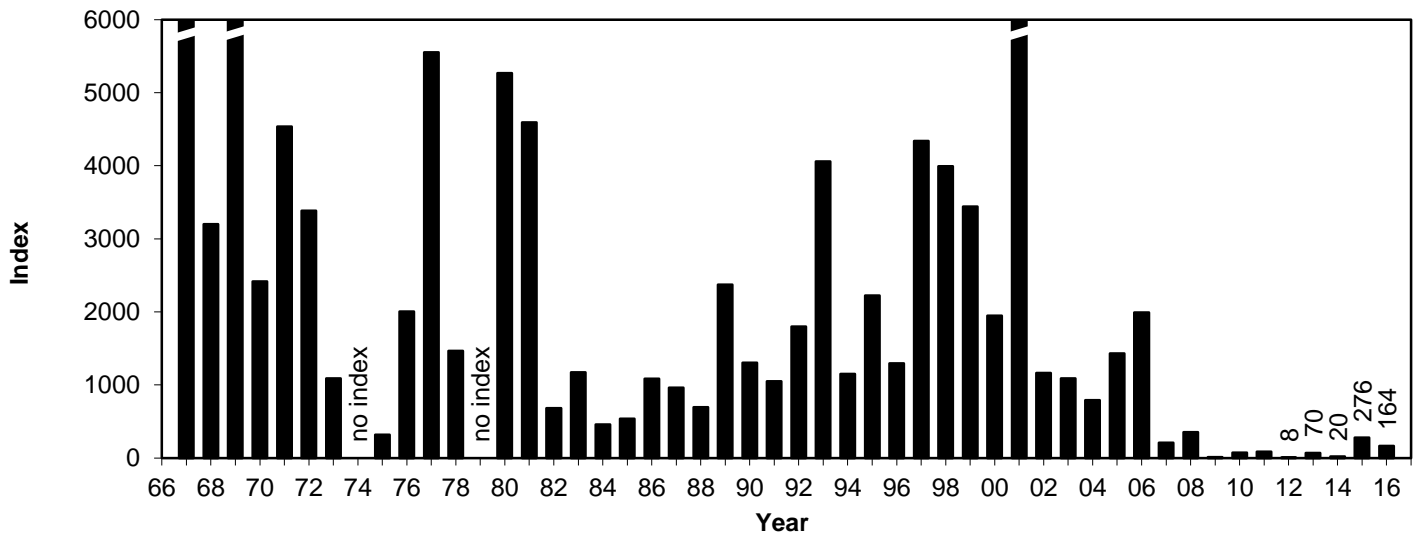


Figure 4. FMWT Threadfin Shad September-October abundance indices, 1967-2016.

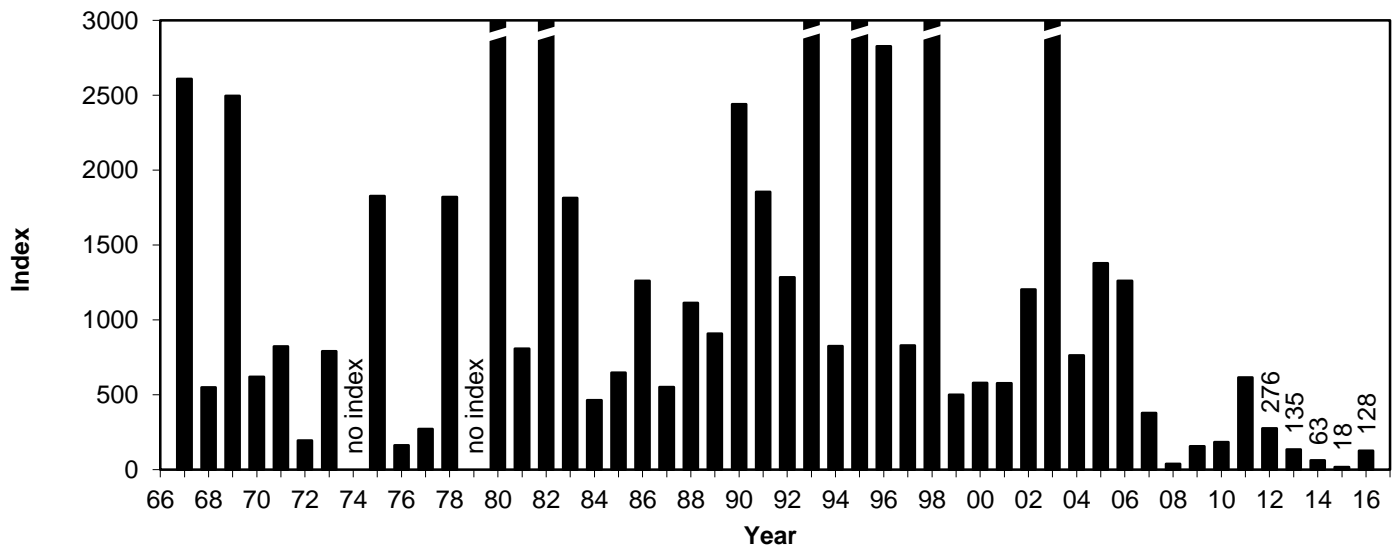


Figure 5. FMWT American Shad September-October abundance indices, 1967-2016.