

Memorandum

Date: November 1, 2017

To: Scott Wilson
Regional Manager
Bay Delta Region

From: James White
Environmental Scientist
Bay Delta Region

Subject: 2017 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, almost to Hood on the Sacramento River, and into Cache Slough and through 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 14 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 14 regions. The abundance indices reported here are the sum of the first two (September-October) of the four planned monthly abundance indices that will comprise the annual FMWT abundance indices.

The September and October FMWT surveys were conducted Sept 5-20 and Oct 2-19. Here we report catch from index and non-index stations, species distributions by region, and summed Sep-Oct abundance indices. A map of species distribution by station is also made publically available online:
(http://www.dfg.ca.gov/delta/data/fmwt/Catch_Map.asp).

Delta Smelt

No Delta Smelt were collected at index stations in September but two were collected in October. This created a September index of 0 and an October index of 2. The 2017 Sep-Oct index (2) is the second lowest Sep-Oct index in FMWT history (Figure 1). No Delta Smelt were collected at non-index stations during September or October.

In October, one Delta Smelt was collected in Suisun Bay and the other was collected

in the lower Sacramento River.

Age-0 Striped Bass

Fifty-one age-0 Striped Bass were collected at index stations in September for an index of 43 and 109 were collected in October for an index of 118. The 2017 Sep-Oct index (161) is higher than the Sep-Oct indices for each of the previous five years (2012-2016) (Figure 2).

In September, the majority of Striped Bass were collected at index stations in Suisun Bay (n=44, 80% of total index) and 7 were collected in the lower Sacramento River. Two fish were collected at non-index stations during September, both from the Sacramento River Deepwater Shipping Channel (SRDWSC).

In October, most Striped Bass were collected at index stations in Suisun Bay (n=89, 75% of total index). Otherwise, 5 fish were collected in Carquinez Strait and 15 were in the lower Sacramento River. No Striped Bass were collected at non-index stations during October.

Longfin Smelt

One Longfin Smelt was collected at an index station in September for an index of 6 and 13 were collected in October for an index of 23. The 2017 Sept-Oct index is 29. This is the highest Sept-Oct index in the past 3 years of FMWT (Figure 3). No fish were collected at non-index stations.

The Longfin Smelt collected in September was in San Pablo Bay. Of the 13 Longfin Smelt collected in October, 3 were in San Pablo Bay, 4 were in the Carquinez Strait, 5 were in Suisun Bay, and 1 was in the lower San Joaquin River.

Threadfin Shad

Twelve Threadfin Shad were collected at index stations in September for an index of 12, and 60 were collected in October for an index of 72. The 2017 Sep-Oct index (84) is the sixth-lowest Sep-Oct index in FMWT history (Figure 4) and a 49% reduction from the previous year (Figure 4).

In September, Threadfin Shad were collected mostly from index stations in the Suisun Bay (n=9, 69% of total index) and the lower Sacramento River (n=3). At non-index stations, 433 fish were collected in the SRDWSC.

In October, Threadfin Shad were collected at index stations in Carquinez Strait (n=1), Suisun Bay (n=19), the lower Sacramento River (n=36), and the lower San Joaquin River (n=4). The majority of Threadfin Shad collected (n=491) were at non-index stations in the SRDWSC.

American Shad

Three hundred and twenty-two American Shad were collected at index stations in September for an index of 434, and 347 were collected in October for an index of 451. The 2017 Sep-Oct index (885) is highest Sep-Oct index of the past decade (2007-2016; Figure 5).

In September, American Shad were collected at index stations in San Pablo Bay (n=47), Carquinez Strait (n=7), Suisun Bay (n=260; 55% of index), the lower Sacramento River (n=5), the lower San Joaquin River (n=2), and the eastern Delta

(n=1). Most fish caught at non-index stations were collected from the SRDWSC (n=36). However, American Shad were also collected at non-index stations in the Sacramento River (n=2), Cache Slough (n=4), the Mokelumne River (n=1), and Steamboat Slough (n=1).

In October, American Shad were collected at index stations in San Pablo Bay (n=34), Carquinez Strait (n=17), Suisun Bay (n=174), the lower Sacramento River (n=96), the eastern Delta (n=3), and the lower San Joaquin River (n=23). Twenty-five fish were collected at non-index stations in October. Catches were in the SRDWSC (n=11), Cache Slough (n=4), the Mokelumne River (n=9), and the Napa River (n=1).

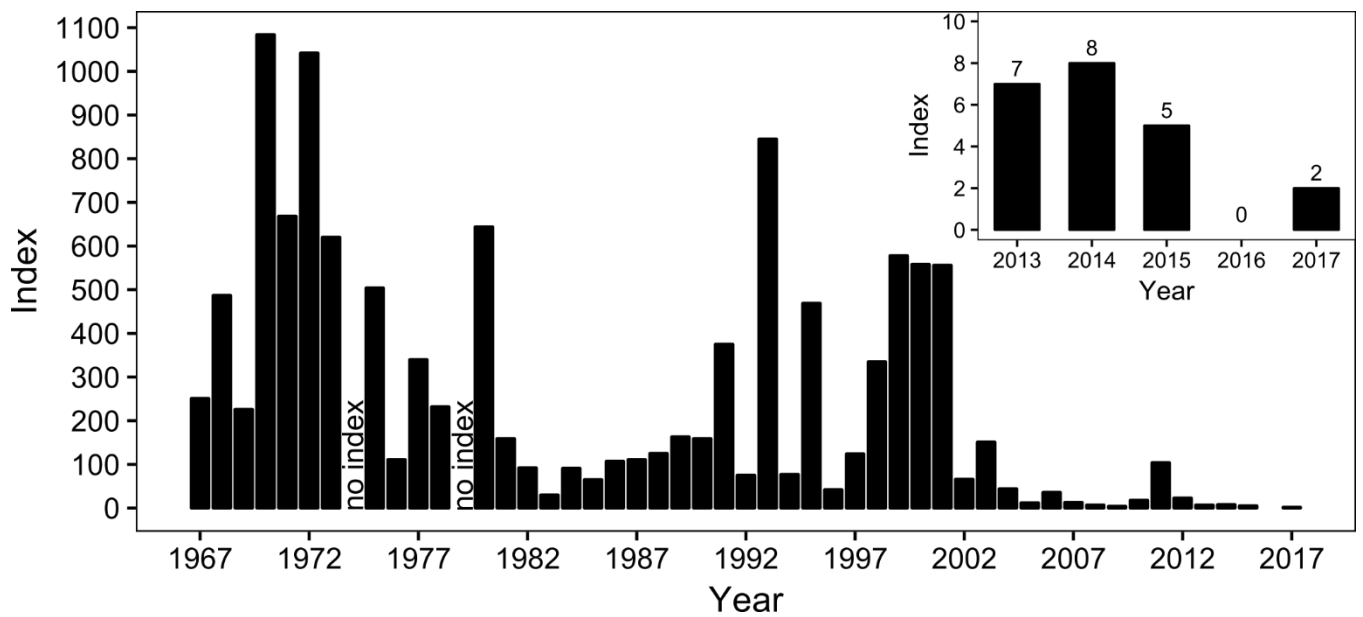


Figure 1. FMWT Delta Smelt September-October abundance indices, 1967-2017.

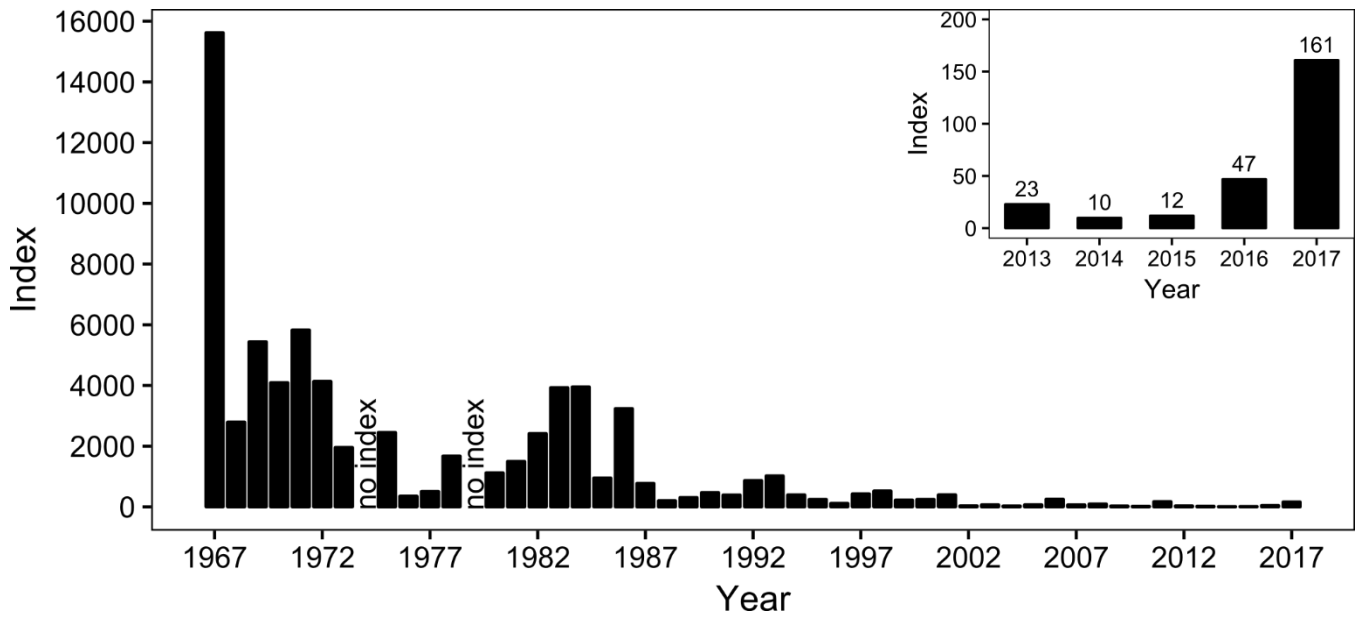


Figure 2. FMWT Age-0 Striped Bass September-October abundance indices, 1967-2017.

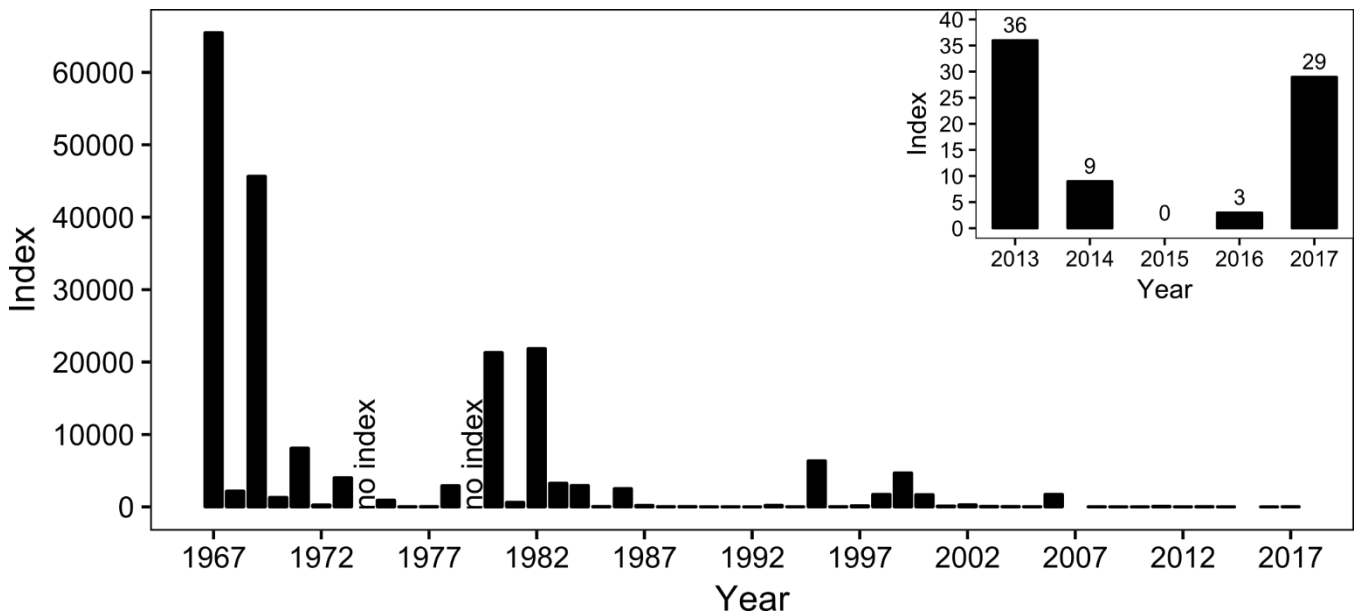


Figure 3. FMWT Longfin Smelt September-October abundance indices, 1967-2017.

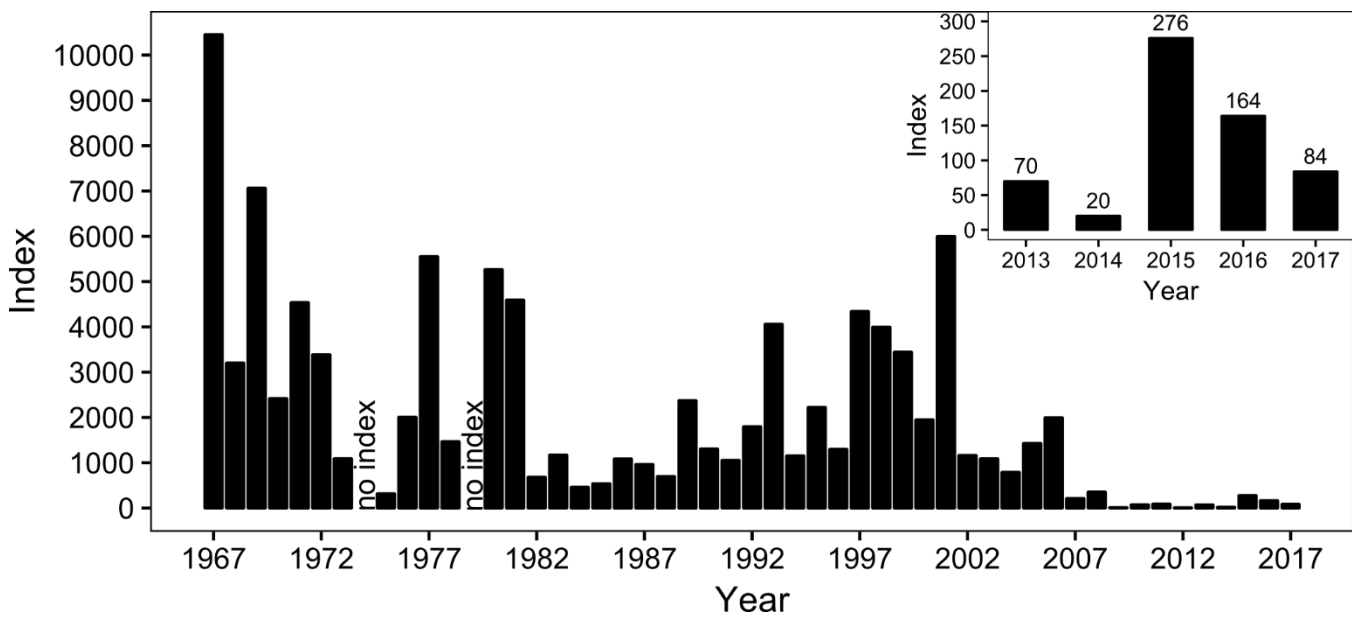


Figure 4. FMWT Threadfin Shad September-October abundance indices, 1967-2017.

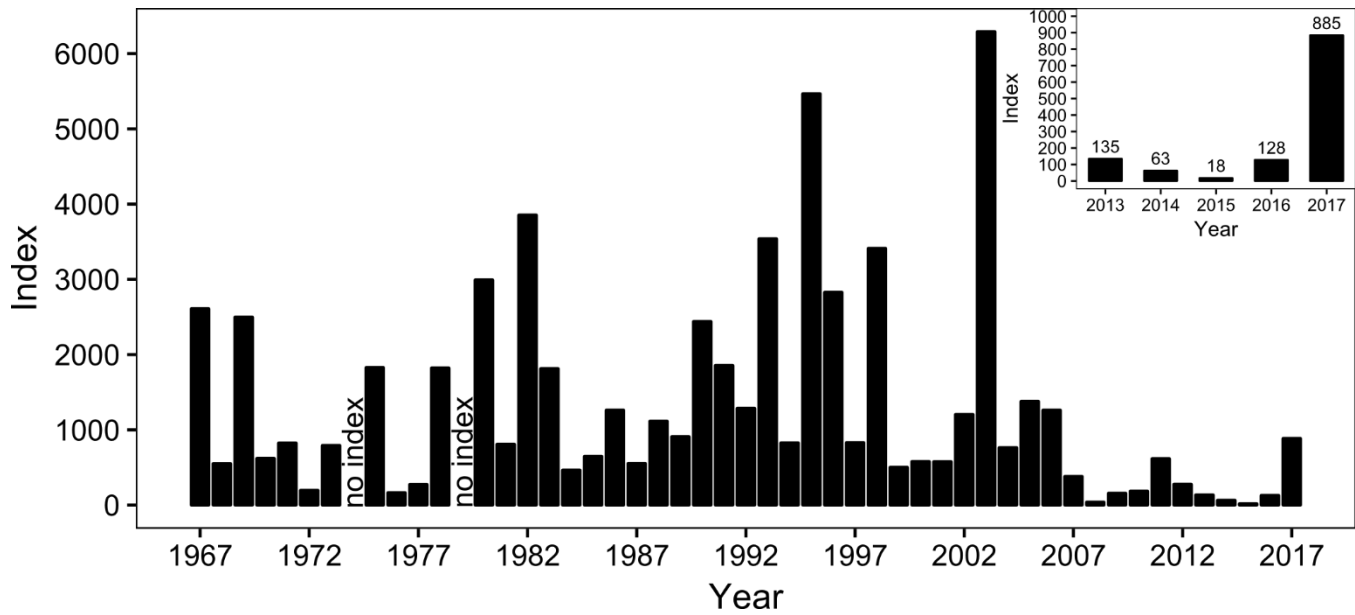


Figure 5. FMWT American Shad September-October abundance indices, 1967-2017.