

## Memorandum

Date: January 2, 2019

**To:** Gregg Erickson  
Regional Manager  
Bay Delta Region

**From:** James White  
Environmental Scientist  
Bay Delta Region

**Subject:** Fall Midwater Trawl 2018 Annual Fish Abundance Summary

The California Department of Fish and Wildlife has conducted the Fall Midwater Trawl Survey (FMWT) to index the fall abundance of pelagic fishes nearly annually since 1967. FMWT equipment and methods have remained consistent since the survey's inception, which allows the indices to be compared across time. These relative abundance indices are not intended to approximate population sizes. However, we expect that our indices reflect general patterns in population change.

The FMWT conducts monthly surveys from September through December. The annual abundance index is the sum of the September through December monthly survey indices. During each monthly survey, one 12-minute oblique midwater trawl tow is conducted at each of 100 index stations used for index calculation and at an additional 22 non-index stations that provide enhanced distribution information.

The 2018 sampling season completed on December 18. Field crews successfully conducted tows at all index and non-index stations during the first three survey months. Two non-index stations in Cache Slough (stations 713 and 721) were not sampled in December due to heavy vegetation damaging sampling gear.

The following summary contains the annual abundance index, monthly collections, and monthly distribution information for six pelagic fish species based on 2018 FMWT survey sampling.

### **Delta Smelt**

The 2018 abundance index (0) is the lowest in FMWT history (Figure 1). No Delta Smelt were collected from any station during our survey months of September-December. While this survey did not catch any Delta Smelt, it does not mean they are not present. Spring Kodiak Trawl (SKT) survey caught 5 Delta Smelt in December

(<http://www.dfg.ca.gov/delta/data/skt/DisplayMaps.asp>) and Enhanced Delta Smelt Monitoring (EDSM) survey caught 13 Delta Smelt during December (<https://fileshare.fws.gov/?linkid=KZi4zr6VWWXpAmKqe8kAILwMpNbkSIFi8YDODS6ncAGbVD1eD7Lrjq>).

### **Age-0 Striped Bass**

The 2018 abundance index (42) is also the lowest value in FMWT history, slightly less than the previous low value (43) in 2010 (Figure 2). Thirty-one age-0 Striped Bass were collected at index stations.

September: Striped Bass were collected at index stations in Suisun Bay (n=3) and the lower Sacramento River (n=1). No Striped Bass were collected at non-index stations.

October: Striped Bass were collected at index stations in Carquinez Strait (n=3), Suisun Bay (n=4), and the lower Sacramento River (n=4). No Striped Bass were collected at non-index stations.

November: Striped Bass were collected at index stations in Suisun Bay (n=2), the lower Sacramento River (n=3), and the lower San Joaquin River (n=1), and the eastern Delta (n=1). No Striped Bass were collected at non-index stations.

December: Striped Bass were collected at index stations in Carquinez Strait (n=2), Suisun Bay (n=6), and the lower San Joaquin River (n=1). For non-index stations, two Striped Bass were collected at a single station in the SRDWSC (n=2).

### **Longfin Smelt**

The 2018 abundance index (52) is the 5<sup>th</sup> lowest value in FMWT history, a 63% reduction from the previous year (Figure 3). Thirty-One Longfin Smelt were collected at index stations.

September: Longfin Smelt were collected at index stations in San Pablo Bay (n=1), Carquinez Strait (n=2), and Suisun Bay (n=2). No Longfin Smelt were collected at non-index stations.

October: The only Longfin Smelt collected were at index stations in San Pablo Bay (n=2). No Longfin Smelt were collected at non-index stations.

November: Longfin Smelt were collected at index stations in San Pablo Bay (n=1), Carquinez Strait (n=1), and Suisun Bay (n=3). No Longfin Smelt were collected at non-index stations.

December: Longfin Smelt were collected at index stations in San Pablo Bay (n=5), Suisun Bay (n=11), and the lower Sacramento River (n=3). No Longfin Smelt were collected at non-index stations.

### **Threadfin Shad**

The 2018 abundance index (198) is the 4<sup>th</sup> lowest in FMWT history, a 32% reduction from the previous year (Figure 4). One-hundred and fifty Threadfin Shad were collected at index stations.

September: Threadfin Shad were collected at index stations in Suisun Bay (n=1), the lower Sacramento River (n=3), the lower San Joaquin River (n=8), and the eastern Delta (n=7). The majority of Threadfin Shad were collected at non-index stations in the SRDWSC (n=453) with an additional fish caught in the Mokelumne River (n=1).

October: Threadfin Shad were collected at index stations in Suisun Bay (n=1), the lower Sacramento River (n=20), the lower San Joaquin River (n=27), and the eastern Delta (n=18). Threadfin Shad were collected at non-index stations in the SRDWSC (n=450).

November: Threadfin Shad were collected at index stations in Suisun Bay (n=1), the lower Sacramento River (n=26), and the lower San Joaquin River (n=1). Threadfin Shad were collected at a single non-index station in the SRDWSC (n=15).

December: Threadfin Shad were collected at index stations in San Pablo Bay (n=4), Carquinez Strait (n=6), Suisun Bay (n=12), the lower Sacramento River (n=8), the lower San Joaquin River (n=6), and the eastern Delta (n=1). Threadfin Shad were collected at non-index stations in the SRDWSC (n=83).

### **American Shad**

The 2018 abundance index (1064) is the 21<sup>st</sup> lowest value on record, a 66% reduction from the previous year (Figure 5). Seven-hundred and two American Shad were collected at index stations.

September: American Shad were collected at index stations in San Pablo Bay (n=6), Carquinez Strait (n=1), Suisun Bay (n=22), the lower Sacramento River (n=13), the lower San Joaquin River (n=8), and the southern Delta (n=15). American Shad were collected at non-index stations in the SRDWSC (n=144), the Mokelumne River (n=2), and the Sacramento River south of Ryde (n=7).

October: American Shad were collected at index stations in Suisun Bay (n=61), the lower Sacramento River (n=37), the lower San Joaquin River (n=18), and the eastern Delta (n=5). American Shad were collected at non-index stations in the SRDWSC (n=95).

November: American Shad were collected at index stations in San Pablo Bay (n=26), Carquinez Strait (n=1), Suisun Bay (n=23), and the lower Sacramento River (n=70). American Shad were collected at non-index stations in the SRDWSC (n=10) and Mokelumne River (n=2).

December: American Shad were collected at index stations in San Pablo Bay (n=50), Carquinez Strait (n=64), Suisun Bay (n=188), the eastern Delta (n=1), the lower Sacramento River (n=31), and the lower San Joaquin River (n=62). American Shad were collected at non-index stations in the SRDWSC (n=11) and the Napa River (n=3).

### **Splittail**

The 2018 abundance index (0) shows a continuing trend of very little to no catch of Splittail in FMWT (Figure 6). No Splittail were collected in during the entire survey from index or non-index stations.

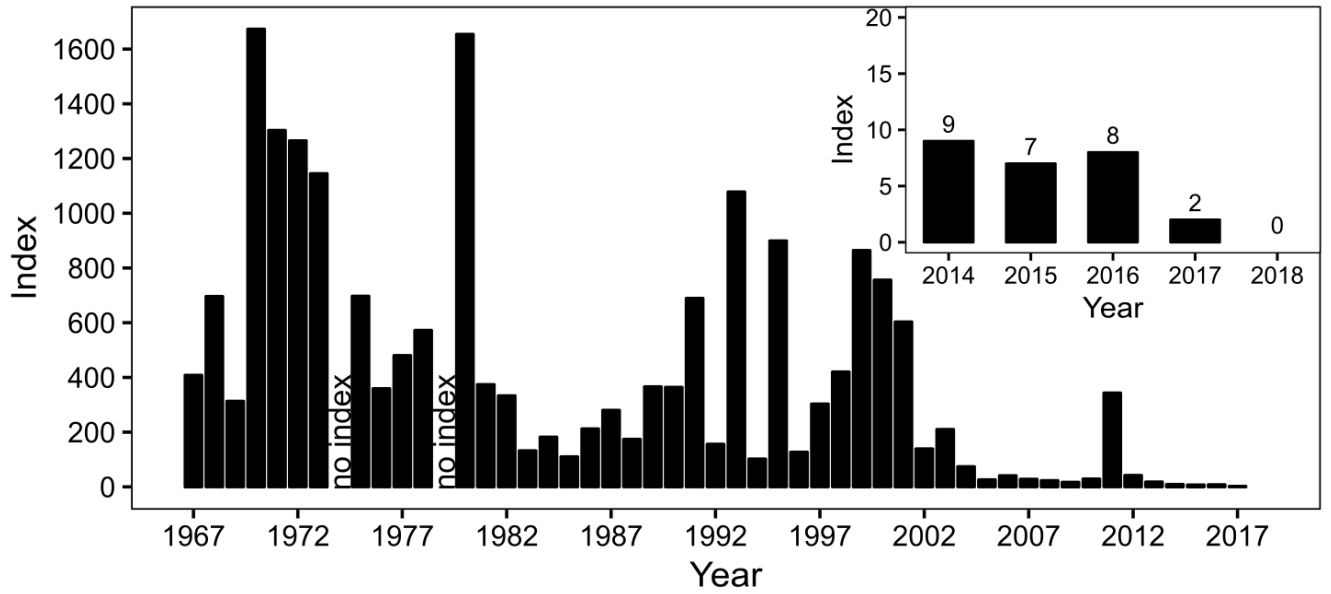


Figure 1. Fall Midwater Trawl Delta Smelt annual abundance indices (all ages), 1967-2018.

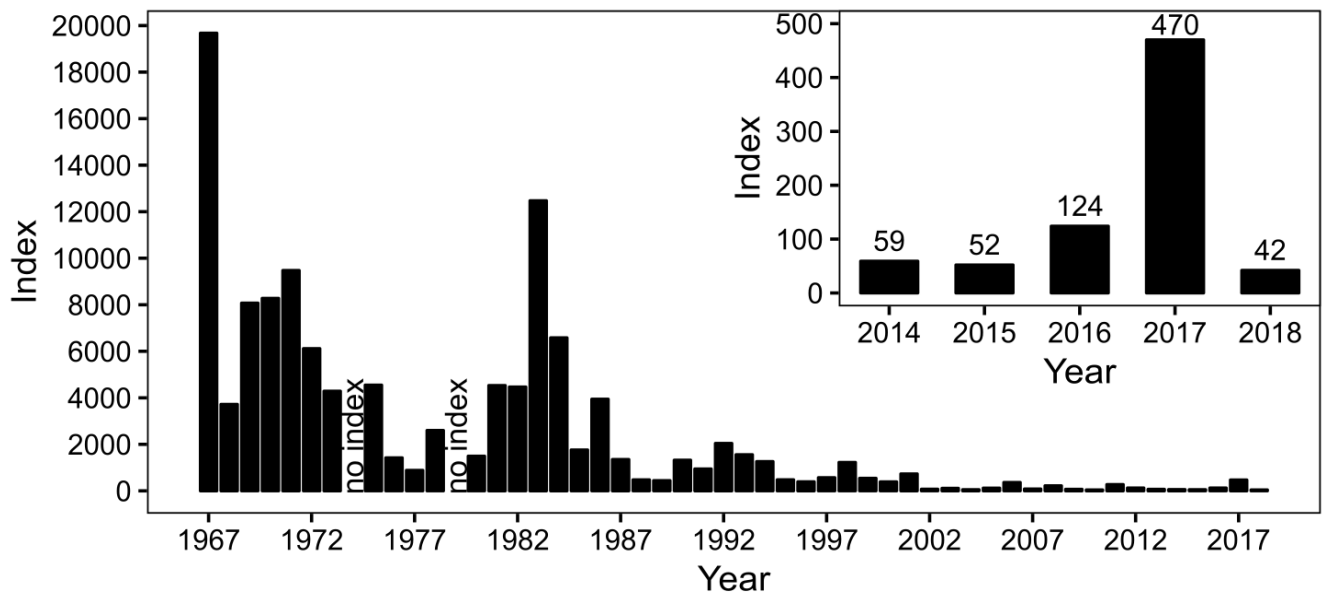


Figure 2. Fall Midwater Trawl Age-0 Striped Bass annual abundance indices, 1967-2018.

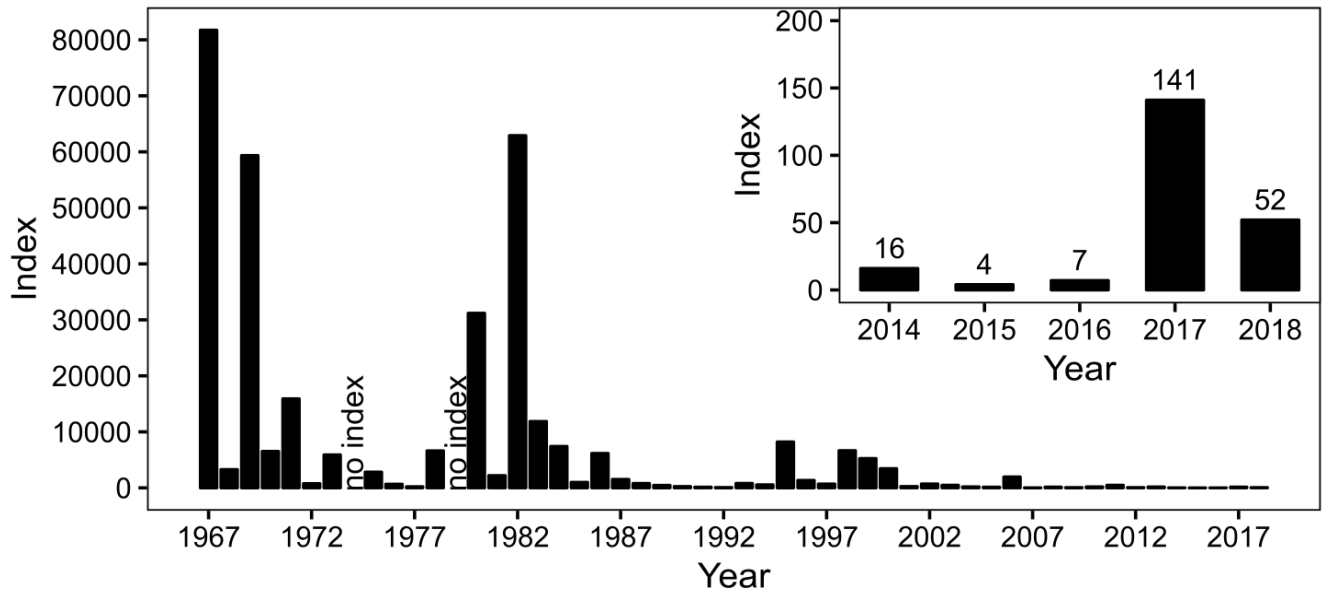


Figure 3. Fall Midwater Trawl Longfin Smelt annual abundance indices (all ages), 1967-2018.

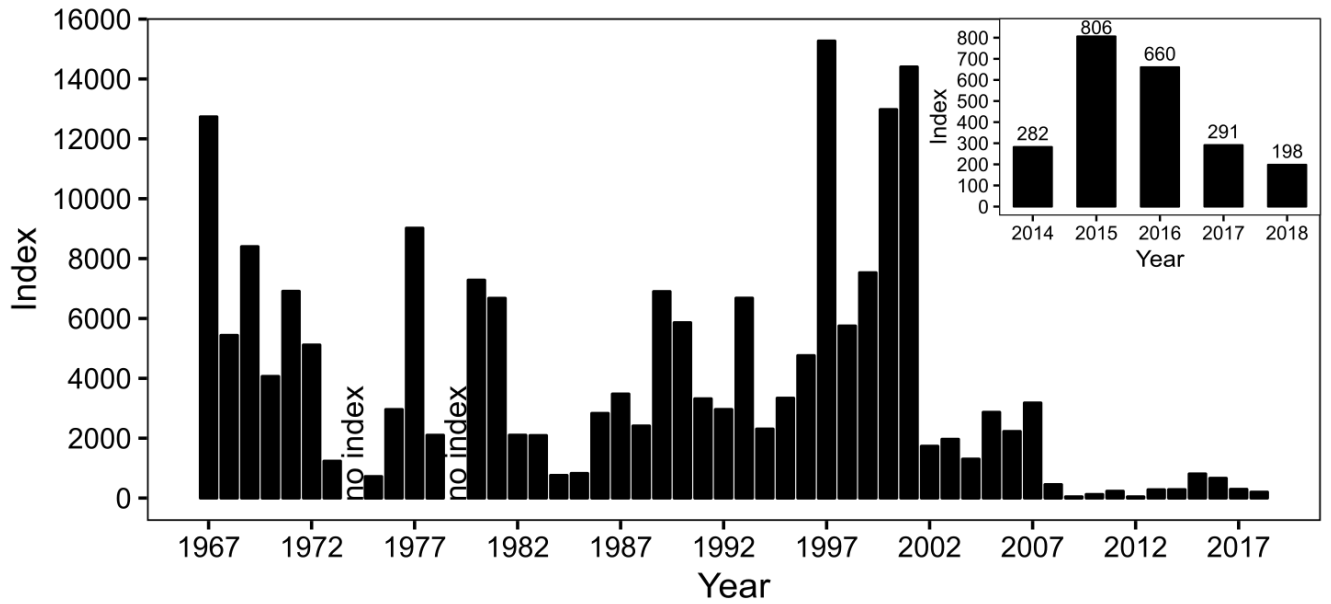


Figure 4. Fall Midwater Trawl Threadfin Shad annual abundance indices (all ages), 1967-2018.

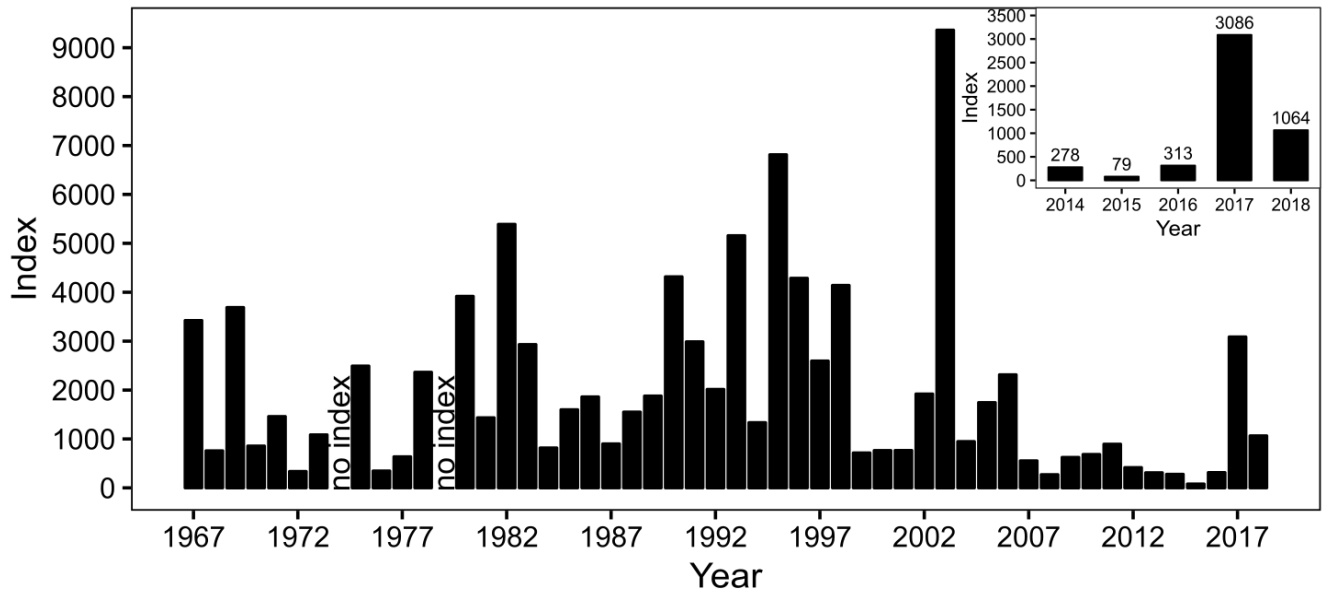


Figure 5. Fall Midwater Trawl American Shad annual abundance indices (all ages), 1967-2018.

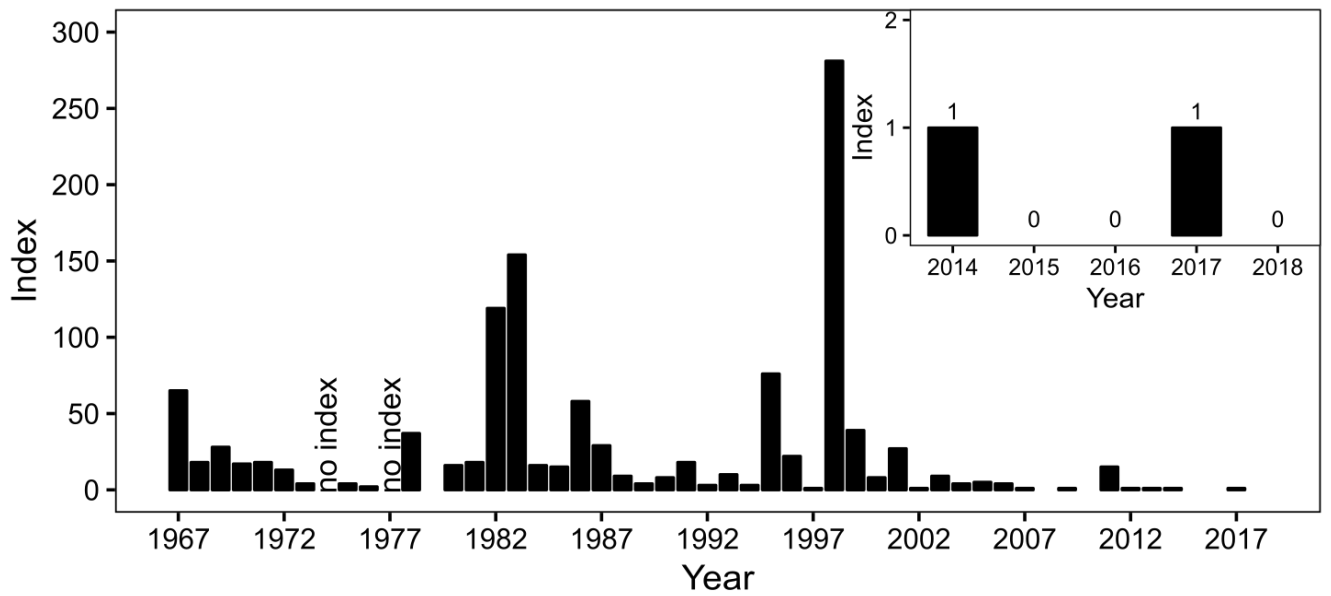


Figure 6. Fall Midwater Trawl Splittail annual abundance indices (all ages), 1967-2018.