State of California
Department of Fish and Wildlife

M e m o r a n d u m

Date: December 22, 2016

To: Scott Wilson
Regional Manager
Bay Delta Region

From: James White
Environmental Scientist
Bay Delta Region

Subject: Fall Midwater Trawl 2016 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.

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 2016 sampling season was completed December 13. Field crews successfully conducted tows at all index and most non-index stations during all four survey months. Due to net damage and logistical constraints, non-index stations 735 and 736 in the upper Sacramento River were not sampled in November.

The following summary contains the annual abundance index, monthly abundance, and monthly distribution information for five pelagic fish species based on 2016 FMWT survey sampling.

Delta Smelt
The 2016 abundance index (8) is the second lowest in FMWT history (Figure 1). Seven Delta Smelt were collected at index stations in the lower Sacramento River (n=7) in November. No Delta Smelt were collected in September, October, or December.

Age-0 Striped Bass
The 2016 abundance index (124) is the highest value since 2012 (Figure 2). Ninety-five age-0 Striped Bass were collected at index stations.

September: Striped Bass were collected at index stations in Suisun Bay (n=38) and the eastern Delta (n=1). No Striped Bass were collected at non-index stations.

October: Striped Bass were collected at index stations in Suisun Bay (n=4). No

Striped Bass were collected at non-index stations.

November: Striped Bass were collected at index stations in San Pablo Bay (n=1), Suisun Bay (n=1), and the lower Sacramento River (n=2). At non-index stations, one Striped Bass was collected in the Sacramento River Deepwater Ship Channel (SRDWSC).

December: Striped Bass were collected at index stations in San Pablo Bay (n=1), Carquinez Straight (n=10), Suisun Bay (n=13), the lower Sacramento (n=9) and the lower San Joaquin rivers (n=15). At non-index stations, Striped Bass were collected in Steamboat Slough (n=5).

Longfin Smelt

The 2016 abundance index (7) is the second lowest in FMWT history (Figure 3). Five Longfin Smelt were collected at index stations.

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

October: No Longfin Smelt were collected.

November: One Longfin Smelt was collected at an index station in San Pablo Bay (n=1). No Longfin Smelt were collected at non-index stations.

December: Longfin Smelt were collected at index stations in Suisun Bay (n=1) and the lower Sacramento River (n=1). One Longfin Smelt was collected at a non-index station in the SRDWSC.

Threadfin Shad

The 2016 abundance index (660) is the eighth lowest in FMWT history (Figure 4). Five hundred fifteen Threadfin Shad were collected at index stations.

September: Threadfin Shad were collected at index stations in Suisun Bay (n=12), the lower Sacramento River (n=52), and the lower San Joaquin River (n=33). Threadfin Shad were collected at non-index stations in Cache Slough (n=1) and the SRDWSC (n=217).

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). Threadfin Shad were collected at non-index stations in the SRDWSC (n=178).

November: Threadfin Shad were collected at index stations in San Pablo Bay (n=9), the lower Sacramento River (n=119), the lower San Joaquin River (n=62), and the eastern Delta (n=1). Threadfin Shad were collected at non-index stations in the SRDWSC (n=142).

December: Threadfin Shad were collected at index stations in San Pablo Bay (n=10), Carquinez Strait (n=16), Suisun Bay (n=94), the lower Sacramento River (n=28), the eastern Delta (n=2), and the lower San Joaquin River (n=27). Threadfin Shad were collected at non-index stations in the Sacramento River upstream of Isleton (n=4) and the SRDWSC (n=120).

American Shad
The 2016 abundance index (313) is the highest since 2012 (Figure 5). Two-hundred forty-nine American Shad were collected at index stations.

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). American Shad were collected at non-index stations in Cache Slough (n=1) and the SRDWSC (n=36).

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). American Shad were collected at non-index stations in the Sacramento River north of Isleton (n=3) and the SRDWSC (n=86).

November: American Shad were collected at index stations in San Pablo Bay (n=3), Suisun Bay (n=5), and the lower Sacramento (n=87) and San Joaquin Rivers (n=1). American Shad were collected at non-index stations in the SRDWSC (n=13).

December: American Shad were collected at index stations in San Pablo Bay (n=3), Carquinez Strait (n=1), Suisun Bay (n=40), the eastern Delta (n=1), the lower Sacramento River (n=3), and the lower San Joaquin River (n=9). American Shad were collected at non-index stations in Cache Slough (n=1), the Napa River (n=1), the Sacramento River (n=1), and the SRDWSC (n=9).

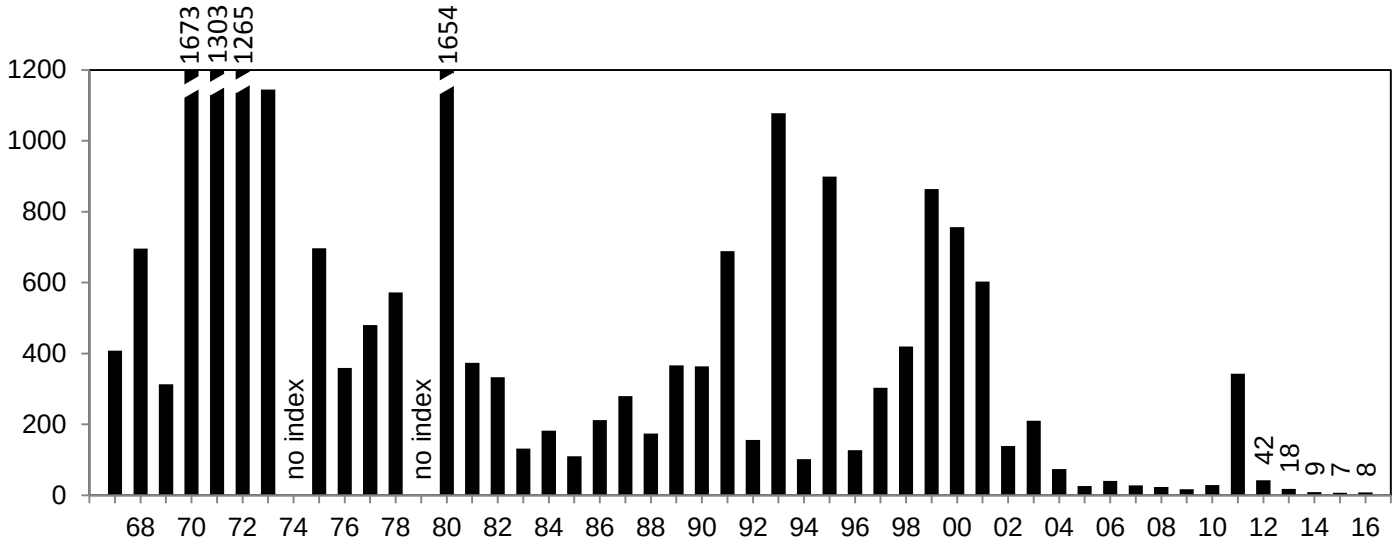

Figure 1. FMWT Delta Smelt annual abundance indices (all ages), 1967-2016.

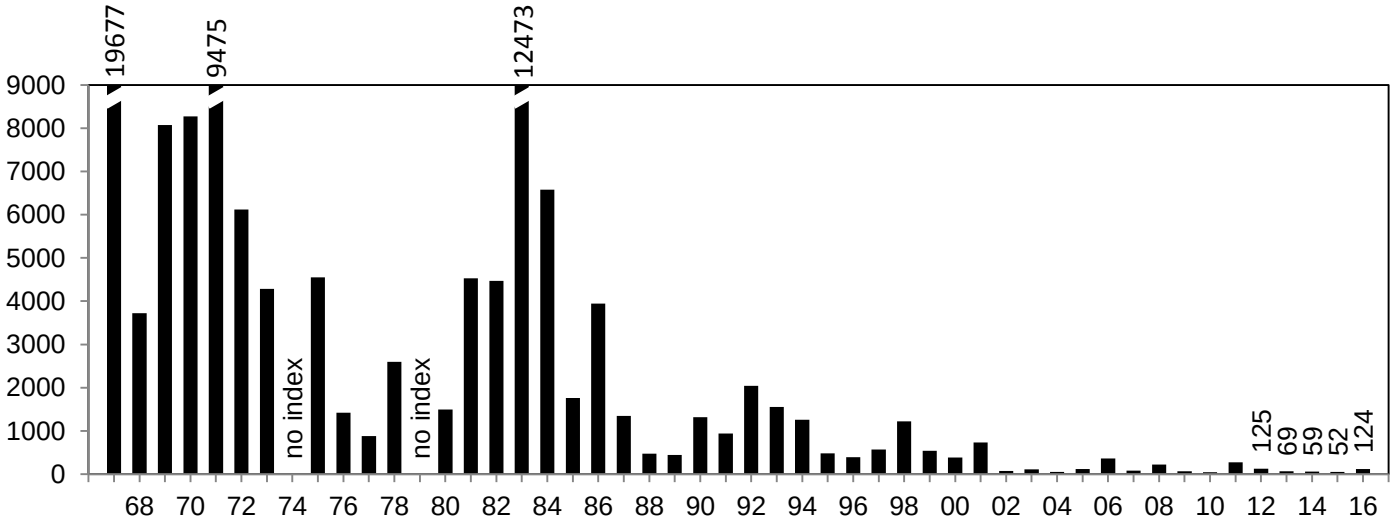

Figure 2. FMWT Age-0 Striped Bass annual abundance indices, 1967-2016.

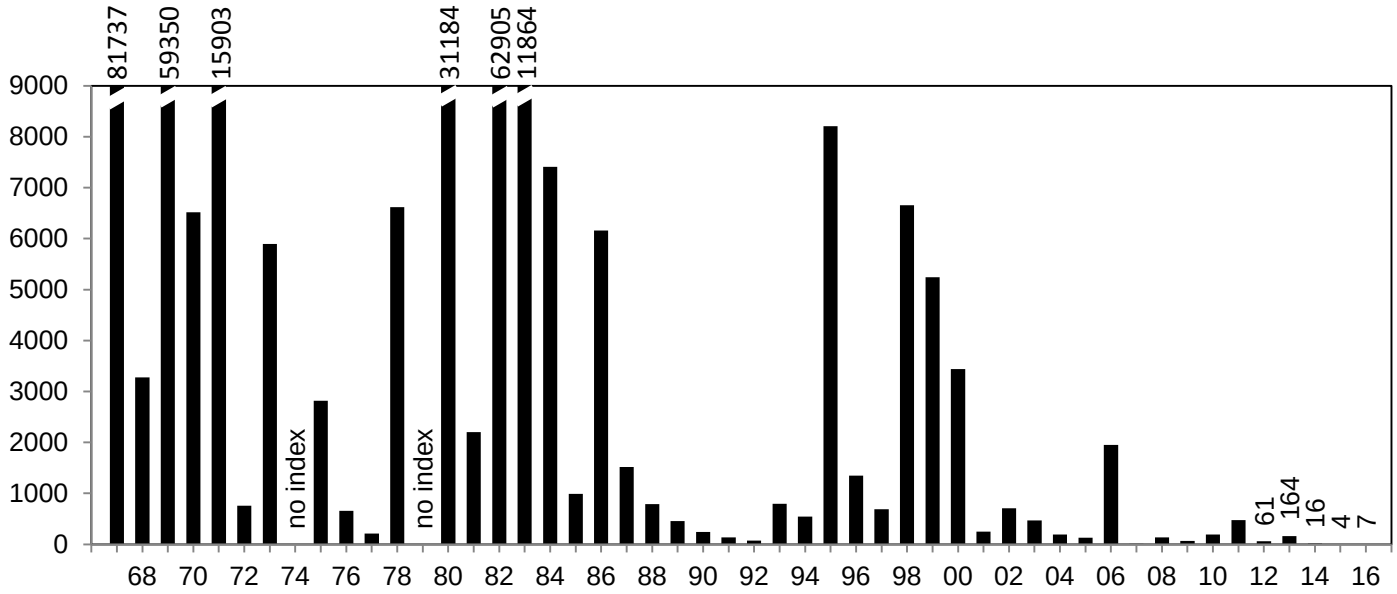

Figure 3. FMWT Longfin Smelt annual abundance indices (all ages), 1967-2016.

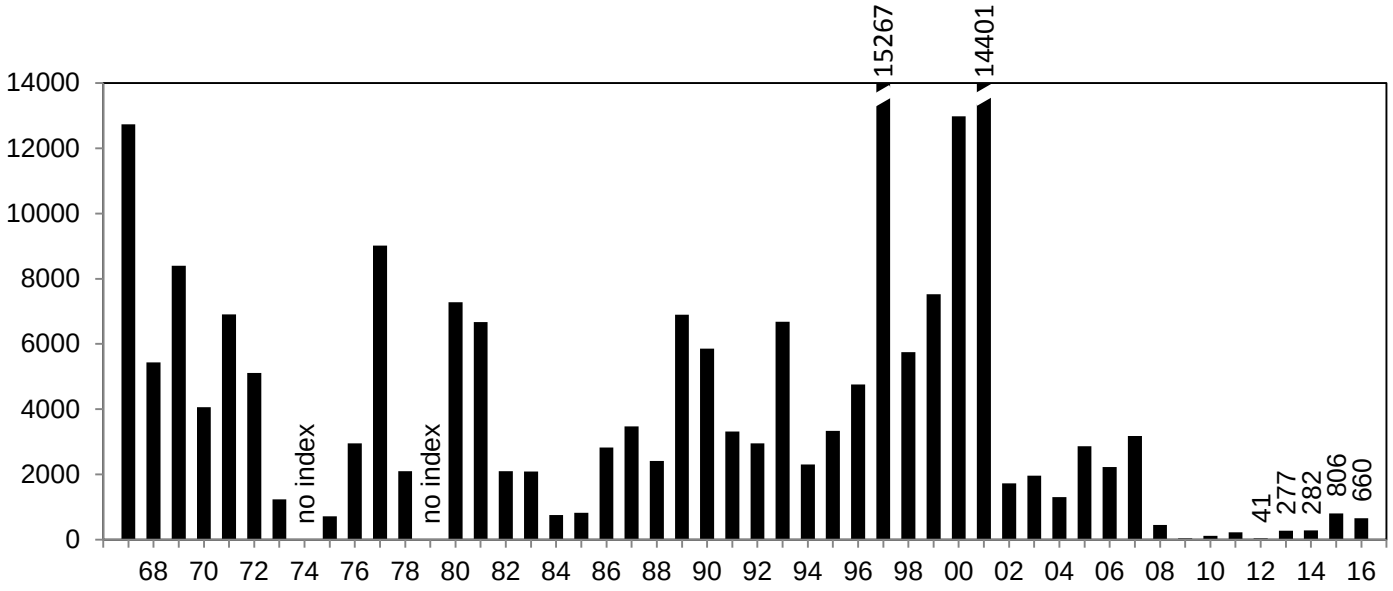

Figure 4. FMWT Threadfin Shad annual abundance indices (all ages), 1967-2016.

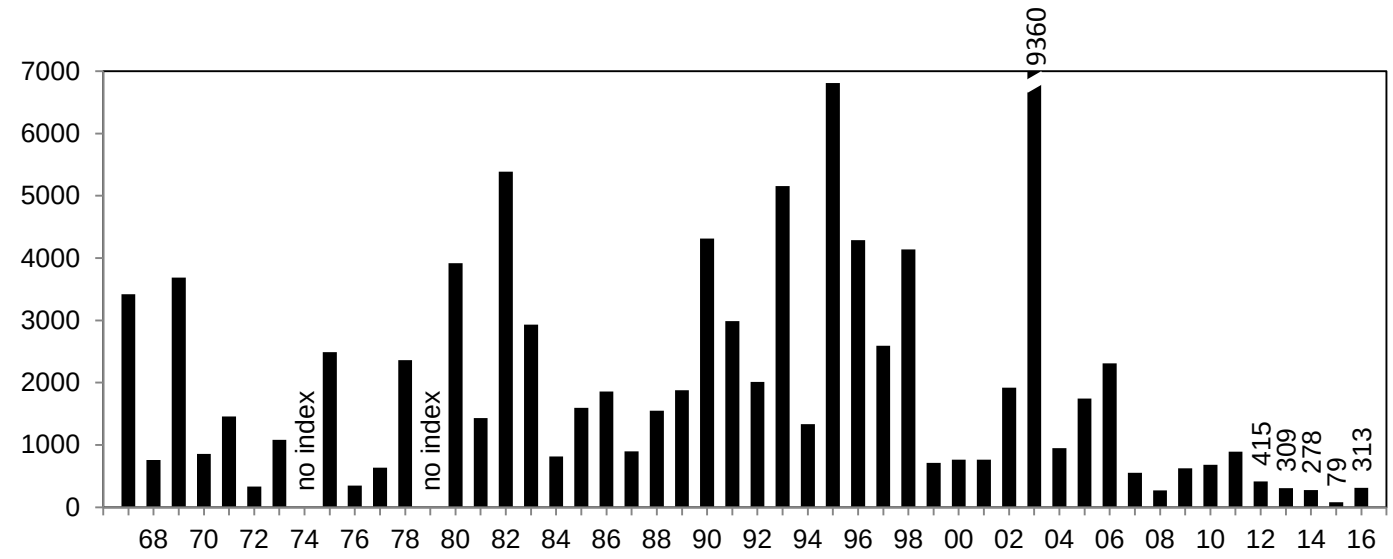

Figure 5. FMWT American Shad annual abundance indices (all ages), 1967-2016.