

Memorandum

Date: August 20, 2020

To: Gregg Erickson
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Department of Fish and Wildlife

From: Dr. Timothy D. Malinich
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Subject: 2020 Summer Townet Survey Age-0 Striped Bass Abundance Index

The 2020 Summer Townet Survey (STN) age-0 Striped Bass abundance index was 0.6, representing a 65% decrease from the previous year (Figure 1). This is the lowest index since 2014 and 2015.

STN annually conducts six Delta-wide surveys on alternating weeks beginning in June and running through August. Each survey samples 31 stations that contribute to the index, as well as nine supplemental stations in the Napa River, Sacramento Deep Water Ship Channel (SDWSC) and Cache Slough (Figure 2). The annual abundance index is calculated using catch data from the two surveys bracketing the date when the mean fork length of age-0 Striped Bass (*Morone saxatilis*) reach or surpass 38.1 mm. The abundance of age-0 Striped Bass beyond this size has been found to be an indicator of survivorship to mid-summer (Stevens 1977).

STN caught a total of 48 striped bass (mean fork length 31.1 mm) at index stations during survey 2, and 8 individuals (mean fork length 56.5 mm) during survey 3. In both surveys most of the age-0 Striped Bass were collected at stations in Suisun Bay (Table 1). The mean 38.1 mm fork length was exceeded on July 5th, between survey 2 (June 29- July 3) and survey 3 (July 13-17).

Striped Bass were also caught at non-index stations in both survey 2 and 3, although in lower numbers than index stations. In survey 2, age-0 Striped Bass were caught only in the SDWSC (n=8). This was also the case in survey 3, where Striped Bass were observed in the SDWSC (n=4), but not in other non-index stations.

The STN age-0 Striped Bass index can help identify changes in the bass population, but is not a direct predictor of the striped bass population. For instance, it is possible that age-0 Striped Bass were not present within the geographic sampling range of the Summer Townet Survey, and changes in flows and the position of X2 are known to impact the STN indices (Stevens 1979; Kimmerer et al. 2001). Other potential impacts to the San Francisco Estuary Striped Bass population, and therefore the STN index, have been explored such as the shifting of the population into shallower shoal habitats over open water habitats (Sommer et al. 2011).

References

- Kimmerer WJ, Cowan JH, Miller LW, Rose KA. 2001. Analysis of an estuarine striped bass population: Effects of environmental conditions during early life. *Estuaries*. 24(4):557–575. doi:10.2307/1353257.
- Sommer T, Mejia F, Hieb K, Baxter R, Loboschefskey E, Loge F. 2011. Long-term shifts in the lateral distribution of age-0 striped bass in the San Francisco estuary. *Trans Am Fish Soc*. 140(6):1451–1459. doi:10.1080/00028487.2011.630280.
- Stevens DE. 1979. Environmental factors affecting striped bass (*Morone saxatilis*) in the Sacramento-San Joaquin estuary. *San Fr Bay Urban Estuary*. 1970:469–478.

Attachments: (Figures 1-3, Table 1)

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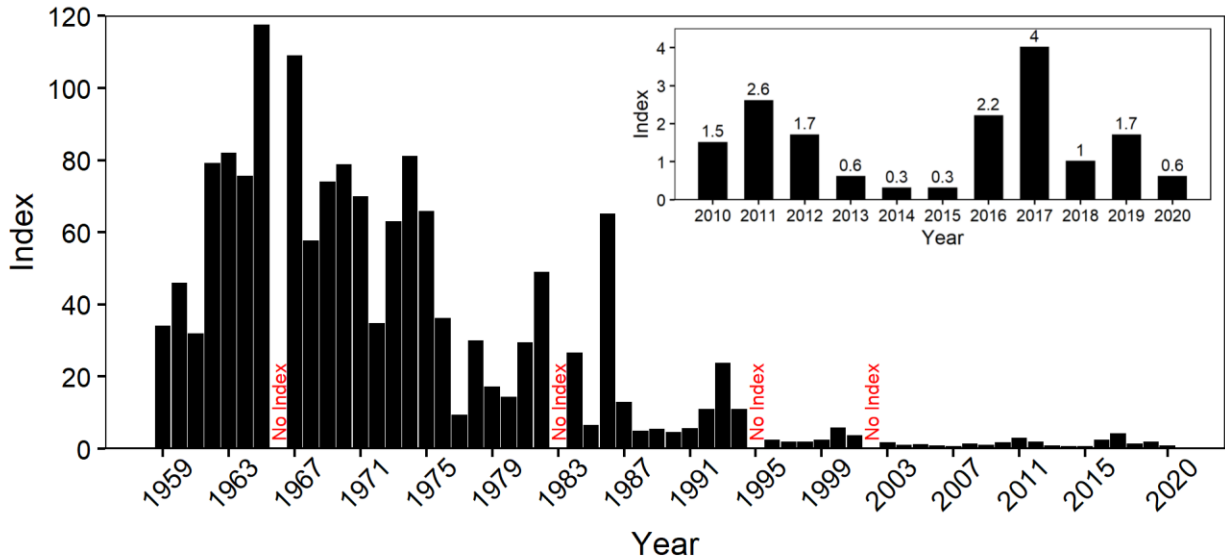


Figure 1. Summer Towner Survey age-0 Striped Bass abundance indices, 1959-2020, with inset displaying 2010-2020.

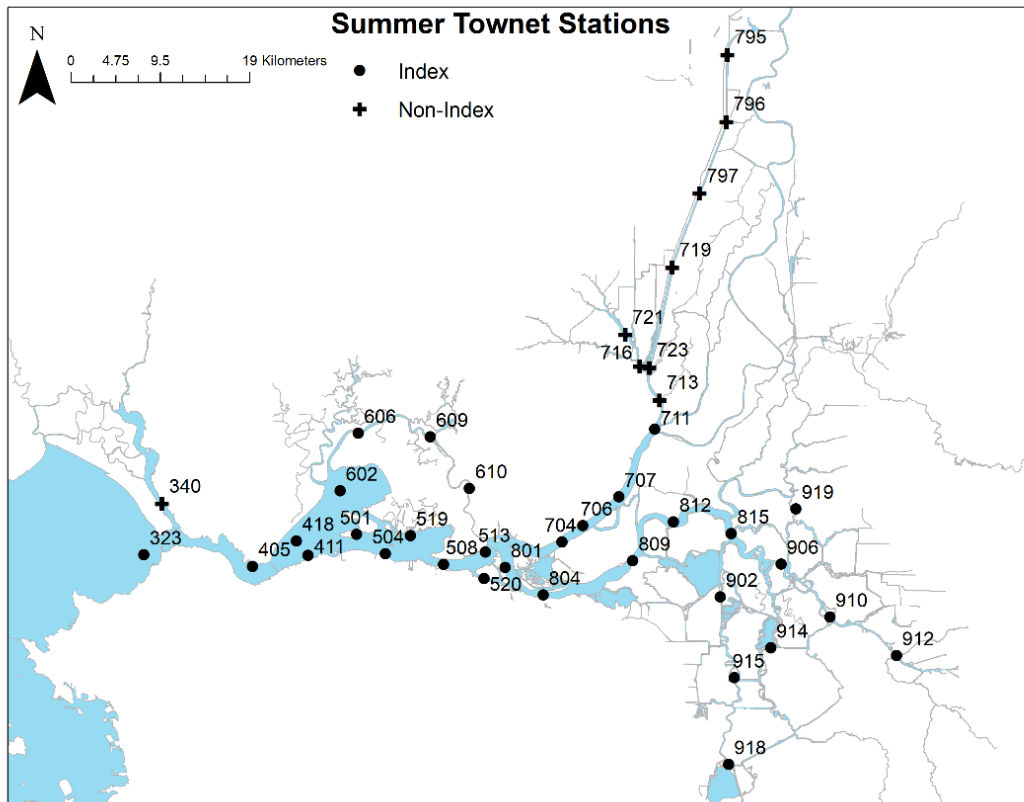


Figure 2. Map of Summer Towner Survey index stations (circles) and non-index stations (crosses) within the San Francisco Delta Estuary.

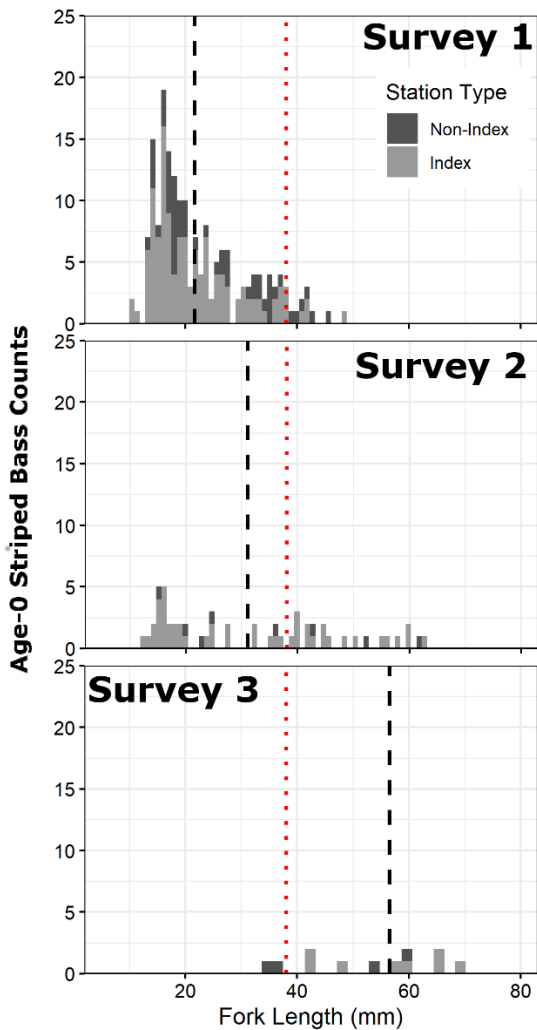


Figure 3. Length frequency histograms for age-0 Striped Bass caught in index (light grey) and non-index stations (dark grey) in surveys 1-3. The red dotted line indicates the target 38.1 mm mean fork length used to calculate the age-0 Striped Bass index and the black dashed line indicates the mean fork length for age-0 Striped Bass within a single survey at index stations (Survey 1=21.8 mm, Survey 2=31.1 mm, and Survey 3=56.5 mm).

Table 1. Age-0 Striped Bass catch in index stations, by region for surveys 2 and 3 as well as the stations contributing to catch within each region.

Survey	Region	Catch	Stations
2	Suisun Bay	36	501, 508, 513, 520, 602, 519, 609, 610
2	Sacramento River	10	704, 706, 707
2	Lower San Joaquin	1	815
2	South Delta	1	902
3	Suisun Bay	6	609, 610
3	Confluence	2	801