



## Interagency Ecological Program 2023 Work Plan Element Summer Towner Survey

### Project Manager and Affiliation

James Hobbs, CDFW

### Principal Investigator and Affiliation

Steven Slater, CDFW

### Annual Costs (thousands) and Funding Sources

\$517 (DWR) and \$517 (USBR)



Figure: CDFW staff bringing in the Summer Towner. This survey program has been monitoring fish abundances in the upper San Francisco Estuary since 1959.

### Description

The Summer Towner Survey (STN) is a long-term effort to monitor young pelagic fishes in the upper San Francisco Estuary. Since 1959, STN has sampled fixed locations from eastern San Pablo Bay to Rio Vista on the Sacramento River, and to Stockton on the San Joaquin River; and a single station in the lower Napa River. The study area was expanded in 2011 to include the Sacramento Deep Water Ship Channel and Cache Slough. Currently, 40 stations are sampled every other week June through August using a conical, fixed-frame net, which is pulled obliquely through the water column 2 to 3 times at each station. Data collected at 31 stations are used to calculate annual relative abundance indices for age-0 Striped Bass (*Morone saxatilis*) and Delta Smelt (*Hypomesus transpacificus*). The remaining 8 stations are sampled to increase our understanding of juvenile fish abundance and distribution in the lower Napa River and the north Delta. Starting in 2005, a zooplankton net was added to assess fish food resources at each station and a subset of the fish collected are retained for diet analysis

by CDFW researchers (see element # 062). Finally, the STN also measures environmental variables including water temperature, water clarity and specific conductivity. Managers and researchers use data collected by STN to inform decisions and improve and understand the health of the upper San Francisco Estuary. Staff will continue to contribute to the “2022-23 CDFW Proposed Workplan to Implement Results from the USBR led Monitoring Design Review Report (2022)” including development of design-based abundance estimates, spatial balance in study design, and analysis of the 2021 FMWT special study evaluating random vs fixed sampling.

## **Need**

The STN conducts compliance monitoring to meet permit obligations to the State Water Resources Control Board (SW and DRCB) via Water Rights Decisions (D-1485 and D-1641) and USFWS biological opinions for Delta Smelt (*Hypomesus transpacificus*), and for incidental take permits (ITP) issued by CDFW for operation of the State Water Project (SWP), and the USBR BA/ROD. While the original intent was to monitor the population of age-0 Striped Bass throughout the upper San Francisco Estuary, its scope has broadened to include other species of fish such as Delta Smelt (which is listed as threatened under the federal and endangered under the state endangered species acts) and the food resources they rely upon. Further, this study informs summer habitat conditions relative to Natural Resource Agency Delta Smelt Resiliency Strategy management actions including the Suisun Marsh Salinity Control Gate re-operation (Co-PI with element# 335) and the North Delta Food Web Managed Flow Actions. STN data is also utilized by USBR Directed Outflow Program collaborative effort on the Effects of Outflow Alteration upon Delta Smelt Habitat, Condition and Survival (see element# 326).

## **Objectives**

- Monitor the annual abundance and distribution of Upper San Francisco Estuary pelagic fish
- Measure factors affecting abundance and distribution of age-0 Striped Bass, Delta Smelt and other fish in the estuary
- To detect introductions of new exotic fish and invertebrates.
- Provide baseline data to evaluate management plans and habitat restoration projects.
- Measure availability of summer planktonic food resources
- Examine summer diets of young Delta Smelt, Striped Bass, and other pelagic fishes

## **Schedule of Milestones**

June: Sampling begins and is conducted every other week through August

July: Annual index of relative abundance for Delta Smelt is completed and released to the public

August: Annual index of relative abundance is calculated for Age-0 Striped Bass and released to the public.

September: All field work is completed, all unidentified fish have been identified, and all data has been entered.

October: The 2022 dataset is quality checked and released to the public via the STN public website.

April: Abundance and distribution data reported in the IEP newsletter spring status and trends issue.