



Interagency Ecological Program 2023 Work Plan Element Fall Midwater Trawl (FMWT)

Project Manager and Affiliation

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Principal Investigator and Affiliation

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Annual Costs (thousands) and Funding Sources

\$516 DWR; \$516 USBR



Figure: *FMWT crew retrieving net at the end of a tow*

Description

Fall Midwater Trawl Survey (FMWT) sampling began in 1967 to measure the abundance and distribution of age-0 Striped Bass and has since collected similar information on a suite of pelagic fishes including Delta Smelt and Longfin Smelt. Survey staff calculates annual abundance indices based on September through December monthly sampling data collected from San Pablo Bay through the Delta. POD and subsequently FLaSH funding allowed survey sampling to expand into Cache Slough and the Sacramento Deepwater Ship Channel. The abundance and distribution data acquired along with other survey data provide means to determine species status and to

evaluate the success of various mitigation and restoration projects for benefitting fishes in the estuary. Fish collected are also used to support various research activities including Diet and Condition of fish (see element # 062) and growth and habitat use by smelt via examination of otoliths (UC Davis). Routine zooplankton sampling was added in 2011 to address prey availability and food limitation for young fish. Zooplankton sampling informs several management actions focused on Delta Smelt habitat improvements including the Suisun Marsh Salinity Control Gate re-operation (Co-PI with DWR on element #335) and the North Delta Food Web Managed Flow actions.

Staff will continue to contribute to the “2022-23 CDFW Proposed Workplan to Implement Results from the USBR led Monitoring Design Review Report” 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 FMWT conducts compliance monitoring in collaboration with USBR and DWR 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-NMFS biological opinions for Delta Smelt (*Hypomesus transpacificus*) and salmonids, and for incidental take permits issued by CDFW for operation of the State Water Project (SWP), and the USBR BA/ROD. FMWT also informs Natural Resource Agency Delta Smelt Resiliency Strategy management actions including the Suisun Marsh Salinity Control Gate re-operation and the North Delta Food Web Managed Flow actions. FMWT data is also utilized by USBR Directed Outflow Program collaborative effort on the Effects of Outflow Alteration upon Delta Smelt Habitat, Condition and Survival. The survey’s catch data provides means to calculate adult Delta Smelt incidental take at the export facilities. The State Water Project Incidental Take Permit for Longfin Smelt requires the FMWT Longfin Smelt abundance index to calculate the incidental take limit for the salvage facilities.

Objectives

- To annually measure the abundance and distribution of selected species of pelagic fishes in the estuary.
- To gain understanding of the factors affecting abundance, distribution, and survival of pelagic fishes in the estuary.
- To detect introductions of new exotic fish and invertebrates.
- Provide baseline data to evaluate management plans and habitat restoration projects.
- To measure availability of fall planktonic food resources.

Schedule of Milestones

September: Monthly surveys start and continue through December

Late December to Early January: Wrap up data entry and database corrections

Late December to Early January: Calculate and report annual abundance indices

March/April: Submit status and trends article to IEP Newsletter