



Interagency Ecological Program 2023 Work Plan Element Fish Diet and Condition

Project Manager and Affiliation

James Hobbs, CDFW

Principal Investigator and Affiliation

Steven Slater, CDFW

Annual Costs (thousands) and Funding Sources

\$92 DWR; \$92 USBR



Figure 1: Identification and enumeration of fish stomach contents, with examples of some common prey organisms.

Description

The Diet and Condition study has provided information on the foraging habits of pelagic fishes in the estuary since 2005. We focus on the temporal and spatial differences in diet composition and feeding success of Delta Smelt, Striped Bass, Threadfin Shad, Longfin Smelt, Mississippi Silversides, and American Shad.

Need

Data from this project has been used to inform Fall Low Salinity (FLaSH), Directed Outflow Program (DOP), and Delta Smelt Management Analysis and Synthesis (MAST) synthesis efforts and reports, as well as life history models used for the conservation of fish and their habitats. Understanding what prey are utilized for food in the context of available prey, with the associated body-condition of fish, helps clarify the existence and timing of food limitation for young pelagic fish in the estuary. This work began as part of the POD investigations and continued as a contributor to FLASH investigations during which we collaborated with the Fish Health Monitoring Project funded by ERP.

Finally, we will process Delta Smelt diets from investigations prompted by the Delta Smelt Resilience Strategy to inform management actions which use augmented flow to enhance habitat conditions, monitoring and evaluating the operation of the Suisun Marsh Salinity Control Gates, North Delta Food Web, and as part of the Directed Outflow Project (see elements 062, 326, and 335).

Objectives

- What are the diets of pelagic fishes (especially Delta Smelt and Longfin Smelt) in the estuary and do they vary regionally or temporally?
- Is there evidence of reduced feeding success spatially or temporally in the estuary?
- Is feeding success associated with changes in relative weight or condition of fish?
- Is there seasonal and regional overlap of diets between species?
- How do flow actions effect food resource availability and feeding success of fishes in the estuary?

Schedule of Milestones

Winter to Spring 2023: Submit and publish manuscript on larval dietary overlap between Longfin Smelt, Pacific Herring, and Prickly Sculpin. Publish diet data related to that manuscript on EDI. Completed processing of 2022 Delta Smelt.

Summer 2023: Quality check and transfer Delta Smelt diet data to UC Davis collaborators. Submit manuscript with UCD collaborators focusing on larval Delta Smelt diets, histology, and condition.

Fall 2022: Update published data on EDI with Delta Smelt diet data.