

FACT SHEET

Factors Affecting the Abundance, Community Composition, Distribution, Availability and Timing of Food for Native Species in Liberty Island

Deliverables: Quarterly reports, in-person briefings, conference presentation(s), final report or scientific manuscript

Status: Initiated October 2014

Primary Investigator: Charles A. Simenstad

Recipient Organization: University of Washington

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Partners: US Fish and Wildlife Service

Introduction

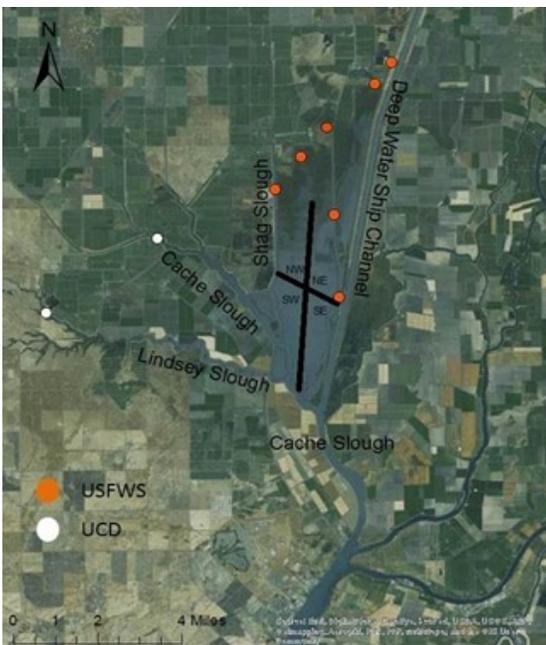


Figure 1. Proposed USFWS-UW sampling sites, including collaborative sampling with University of California-Davis SFCWA investigators.

In addition to the physical and hydrological transformations that have altered the landscape configuration of the Sacramento-San Joaquin Delta that historically supported fish spawning, rearing and migratory habitats, the Delta's food web production and linkages appear to have withered commensurately. Phytoplankton has decreased dramatically since the 1987 introduction of *Potamocorbula amurensis* and is thought to be related to the recent pelagic organism decline, but the contribution of detritus-based food web sources is also highly uncertain. Liberty Island is a restoring wetland (levee breach) in the northern Delta that arguably demonstrates the processes and outcomes of tidal freshwater restoration that could serve as a model for broad ecosystem recovery. It provides important habitat for larval delta smelt, longfin smelt, and Sacramento splittail when they occupy brackish and tidal freshwater and the food web sources that support them. However, the extent to which vegetation colonization, habitat complexity, habitat patchiness and landscape position influences larval fish assemblages, their prey resources, and food web support is largely unknown.

Objective

In collaboration with the US Fish and Wildlife Service, the University of Washington School for Aquatic and Fishery Sciences' Wetland Ecosystem Team will initiate a study in the Cache Slough region of the Sacramento-San Joaquin Delta to evaluate: 1) spatial and temporal variation of the planktonic prey availability, diet composition and prey selection of larval fish (priority on delta smelt, longfin smelt, and Sacramento splittail; larval American and threadfin shad may also be investigated); 2) the spatial and temporal variation of the larval fish assemblage structure and diet relative to prey availability; and, 3) use stable isotope biomarkers to identify the production base of the food web supporting these at risk species and their prey. We will coordinate with a multi-institutional effort to assess the potential role of tidal wetland restoration in this region to provide increased habitat and food web support.