SFCWA State and Federal Contractors Water Agency

FACT SHEET

Dynamics of Zooplankton in the Cache Slough Complex (15-11)	
Deliverables: 1) Final report in the form of two or more publication-format manuscripts, 2) at least one presentation at a professional conference, 3) quarterly reports, 4) final factsheet.	
Status: Initiated January 2015	
Primary Investigator: Wim Kimmerer, SFSU and Brian Bergamaschi, USGS	**Recipient Organization:** San Francisco State Univ.; US Geological Survey
Project Cost: $260,988	**SFCWA Funding:** $230,988
Partners:	

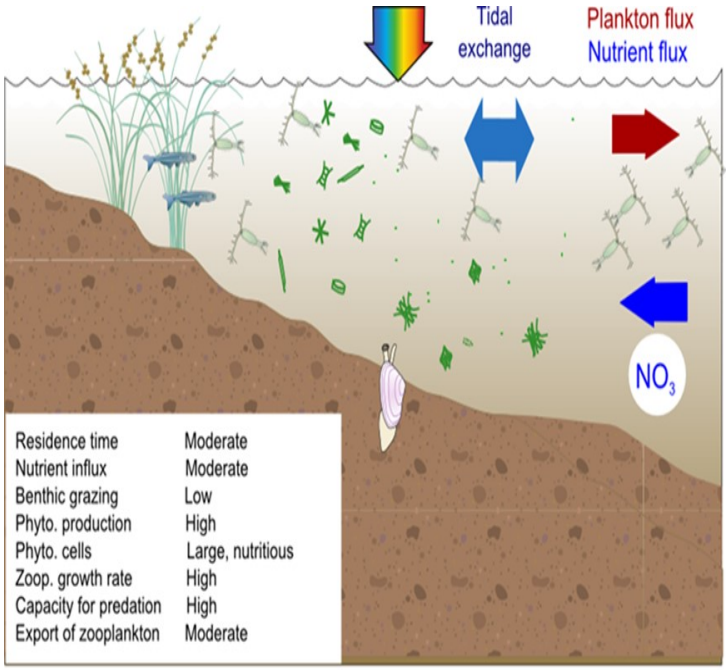

Figure 1. Conceptual model of plankton production by a shallow water-marsh complex that in which conditions are ideal for high productivity and export of that productivity to adjacent open waters. Other conditions, e.g., long residence time and high benthic grazing rate, result either in low export rate.

Introduction

Our purpose is to investigate what controls the distribution and abundance of fish prey within the Cache Slough Complex (CSC). We assume that the principal fish of concern there is delta smelt, which feeds mainly on zooplankton. Our key question is therefore: What controls the abundance and species composition of zooplankton within the Cache Slough Complex (CSC)? The answer to this question is directly relevant to looming decisions about restoration, and to our understanding of why the CSC seems to be such a special place as habitat for delta smelt and other fishes.

Objective

1. To quantify rates of reproduction, growth, and mortality of zooplankton in the CSC.
2. To characterize the feeding environment for zooplankton by linking methods previously applied in the Kimmerer and Bergamaschi laboratories.
3. To estimate zooplankton exchange between shallow environments and the channels that link the CSC to the broader estuary.
4. Ultimately to assess the distribution and the characteristics of environments that support high zooplankton production and the potential for expanding those environments to support recovery of endangered fish species.

Results

To be determined

Conclusions

To be determined

Relevance

A key question is whether the CSC can serve as a guide for expansion and restoration of shallow habitats to support native fishes. Several key unknowns stand in the way of progress toward replication of the apparent success of the CSC in supporting delta smelt. The plan for habitat restoration in the BDCP relies on the assumption that shallow areas are likely to support delta smelt either through their residence in these areas or through export of zooplankton to open waters where delta smelt have been common in the past. However, scientific support for this export idea is lacking and we don't know if it will work. If these regions actually can become net exporters of zooplankton, they must be set up in a way that balances productivity within the shallow areas and export to open waters. The understanding gained in our study of foodweb productivity and fluxes in CSC will provide important new information for assessing the likelihood that restored wetlands will actually provide a boost in food supply to open waters.

Next Steps

Test the zooplankton sampler, then begin the sampling cycle.