

The Biomass of Invasive Bivalves in the Low Salinity Zone in August 2011

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Abstract: We conducted a scaled down version of the General Randomized Tessellation Stratified (GRTS) benthic special study to sample bivalves in the low salinity zone (LSZ) of the San Francisco estuary in August of 2011. The purpose of the study was to determine the effects of the high flow events during the spring of 2011 on populations of the invasive bivalves *Corbula amurensis* (*Corbula*) and *Corbicula fluminea* (*Corbicula*) in the LSZ immediately prior to the fall months. We collected benthic grabs at 141 sites in the upper estuary in mid August 2011. All *Corbula* and *Corbicula* were removed from the samples and measured and preserved. At seven sites we collected an extra grab from which live clams were measured then dried and ashed to determine biomass. Shell length and biomass data from the live sorted clams were used to generate regression equations for converting size classes of preserved clams to biomass. Biomass data for the August sampling event were compared to data from previous GRTS sampling events in May and October of 2009-2011.

Corbula biomass was significantly lower in upper Grizzly and Suisun Bays as well as Montezuma Slough in August 2011 compared to previous GRTS sampling events that occurred in the drier years of 2009 and 2010. *Corbula* biomass at the confluence was significantly lower in August 2011 than in May 2009. There were no significant differences in *Corbula* biomass in lower Grizzly and Suisun Bays. *Corbicula* biomass was not significantly different between sampling events; however, *Corbicula* ranged much farther west in August 2011 compared to previous GRTS sampling events.

Analyses investigating the specific mechanisms that may influence *Corbula* and *Corbicula*'s distribution and biomass in wet versus dry years are in progress. Bivalve biomass data from GRTS sampling that occurred in 2007 and 2008 will be available soon, and GRTS monitoring is expected to continue in 2012.

Statement of Relevance: Numerous studies have indicated that primary production lost to invasive bivalve grazing is a key factor limiting productivity in the estuary. Changes in flow patterns due to variability in natural runoff or water management operations alter the distribution and biomass of invasive bivalves and consequently their effects on the food web.

Statement of Relevance: This data will be used to help us understand the relative importance of different toxic contaminants that affecting the fish health in the SFE.