

## **Environmental Projects Benefiting San Diego Bay**

### **Project title:**

Maintaining Healthy Eelgrass Beds: Fishes, Trophic Diversity, and Ecosystem Function

### **Progress Report:**

The final master's thesis of Levi Lewis was completed in Summer 2009, followed by his graduation from San Diego State University with a M.S. in Biology. In October-Dec. 2009, Levi conducted further analyses on his data and reformatted his thesis for submission to a peer-review journal. His manuscript will soon be submitted to the journal *Ecology*.

To further explore the feeding relationships of dominant fish and invertebrate taxa in San Diego Bay eelgrass beds, we conducted stable isotope analyses of eelgrass flora and fauna in 2008-2009. This work was conducted in collaboration with an undergraduate research assistant (James Farlin) and contributed to the completion of his undergraduate honors thesis in Fall 2009. All statistical analyses, literature review, and final writing and editing of this research was completed in Oct. – Dec. 2009. In November 2009, James presented the results of his research at a scientific conference, the annual meeting of the Western Society of Naturalists. In Dec. 2009, James submitted a written undergraduate honors thesis to SDSU and a reformatted manuscript to a peer-reviewed scientific journal, *Marine Ecology Progress Series*. James successfully defended his honors thesis research during a presentation at SDSU and graduated in December 2009.

We include a figure that depicts the functional diversity of herbivorous amphipods in eelgrass beds, one of the main areas of James Farlin's work. This research shows that amphipods feed on both selective and mixed diets based on primary production from eelgrass and microalgae, with one group of amphipods revealing a certain degree of carnivory. These data suggest that considering amphipods as functionally redundant (eating similar food items) is an oversimplification in seagrass ecosystems.

Our project is currently 95% complete. Our only tasks remaining are to submit Levi's thesis, reformatted as a manuscript, for peer-review in *Ecology* and to submit a final report to the Port of San Diego by end of March 2010. This report will include a summary of research and the accomplishments and awards attained from our Port-funded research.

**Figure 1.** Results from stable isotope analyses of amphipod families in San Diego Bay eelgrass habitats indicating significant differences in diets among herbivorous families and one carnivorous amphipod family (Oedicerotidae).

