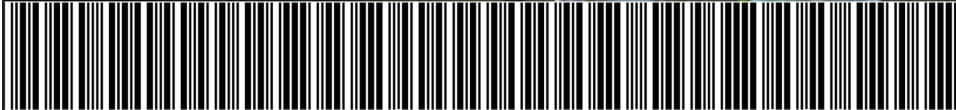


**DNA BARCODING INVASIVE SPECIES**



**INVASIVE**

**Styela plicata**  
Colonial Tunicate Phylum: Chordata

Scientists: Zach Bissonek, Ben Bradley, Natcho Cano  
Sample ID: 53A  
Objective: To identify potential invasive species of the San Diego Bay  
Native Range: Japan  
Source: Grove Street Pier, San Diego Bay  
DNA % Match: 100% to *Styela plicata*  
Verified by: Gretchen Lambert  
BLAST date: December 2009



**Syngnathus ocellatus**  
Colonial Tunicate Phylum: Chordata

Scientists: Holly Rogan and Lizzie Bissonek  
Sample ID: 5-02  
Objective: To identify potential invasive species of the San Diego Bay  
Native Range: Japan  
Source: Grove Street Pier, San Diego Bay  
DNA % Match: 9% to *Syngnathus ocellatus*  
Verified by: Gretchen Lambert  
BLAST date: November 2009



This study is a component of the HTH San Diego Bay Study, now in its eighth year. Aware of our previous publications and DNA barcoding research, biologists from the Southwest Division of the U.S. Navy asked us to do a pilot study for a large-scale ecological survey of the bay. The project focused on the influx of non-native species that has created a shift in the regional ecology, resulting in a number of current and potential ecological and economic problems.

We began with a focus on benthic marine invertebrates. Student teams took on taxonomic groups, striving to identify all species within their taxa (e. g., Molluscs, Arthropods, Cnidaria). They collected samples from the bay for DNA barcoding in the HTH biotech lab, identifying a variety of organisms and invasive species. Their findings will be shared with the Invasive Species Management Plan.

Through such surveys students and collaborating scientists could prevent and slow the spread of invasive species through early detection, rapid response, and eradication, ultimately reducing the effects of bioinvasions on human health, the economy, and the oceans.

**Student Reflection**

We learned biotechnology skills and gained an understanding of how these applications could serve the community. We generated over 100 DNA barcodes and discovered eight non-native and invasive species. We presented these results to the annual meeting of the Southern California Society of Environmental Toxicology and Chemistry, where we showcased the phyla we had discovered and the threat that invasive species pose to the region.

—Kathleen Estrella, 12th grade

**Acknowledgements**

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Visit Jay Vavra's portfolio at <http://hthbiotech.sdcte.org>

