Today's date: 10/3/2010

Project title: Impacts of horseshoe crab foraging on soft-sediment communities

Project number: M/D-0908

Principal investigator: Wan-Jean Lee

Affiliation: Department of Biological Sciences, University of New Hampshire

Type of project: Research

Project initiation date: 11/12/2009

Project completion date: 8/31/2011

NHSG funds: $7,000

Associate investigator(s) and affiliation(s):
James E. Byers, University of Georgia

Students Supported (copy section as needed)

Student name: Wan-Jean Lee

  Institution/Department: Biological Sciences, University of New Hampshire

  Duration of support: January 1 to December 31, 2010.

  Type of support (stipend, travel, supplies, etc.): Stipend

  Type of degree (undergrad, masters, PhD): PhD

  Year degree awarded: Expected September 2011

  Title of thesis (if supported by N.H. Sea Grant): Impacts of horseshoe crab foraging on soft-sediment communities

  Where is he/she now? PhD candidate, Department of Biological Sciences, UNH

Technicians, industry partners, collaborators, etc. (specify which) and affiliations:

Brief project overview/abstract:
This project seeks to characterize the role of Limulus foraging in structuring infaunal communities in Great Bay, and in turn place the species in a larger ecological context. Hypotheses on the community-level effects of Limulus will be tested by examining: 1. The diet of
Limulus; 2. Intensity, frequency, and variability of disturbance by individual Limulus and collectively across larger spatial scales of Great Bay; 3. Density-dependent responses of Limulus foraging to infaunal bivalves (Macoma balthica); 4. Effects of Limulus disturbance on infaunal communities at larger spatial and temporal scales; and 5. The relative importance of Limulus disturbance as a driver of soft-sediment community patterns across Great Bay compared to other environmental factors known to be influential on infaunal community structure. Findings of this project will provide information vital to the understanding the role of disturbance as a structuring component of communities in tidal flats, a major habitat type in Great Bay, as well as identifying important Limulus foraging grounds in the estuary. In addition, because Limulus is a highly charismatic species to multiple stakeholders, we will work closely with marine science educators in the region to highlight its little-understood role in the Great Bay ecosystem.

**Project findings/accomplishments/progress:**

**Research Progress**

1. Monitored spatial and temporal patterns of horseshoe crab foraging disturbance at Adams Point
2. Conducted exclusion experiment at Adams Point to determine effects of horseshoe crab foraging disturbance on infaunal communities of Great Bay
3. Collected samples from ten sites in Great Bay to measure
   a. Sediment grain size
   b. Infaunal community structure
   c. Macoma clam abundance
   d. Horseshoe crab foraging level
   e. Chlorophyll a level
   f. Organic content

   To determine the importance of the role of horseshoe crab foraging in structuring the infaunal communities of Great Bay.

4. Samples collected are currently being processed and analysed.

**Publication**


**Outreach**


Know the Coast Day. Oct 2, 2010. (1) Assisted Marine Docents in ‘Horseshoe Crab Hysteria’ booth. Showed videos of horseshoe crab feeding activities and related research activities to visiting public. Video can be downloaded at
http://myaccount.dropsend.com/file/e081b8499734bd2a (URL expires Oct 10, 2010). (2)

Presentation – ‘Horseshoe Crab feeding ecology in Great Bay: Ancient species, New Perspectives.

Scheduled to give a talk (‘Feeding behavior of Horseshoe Crabs: New perspectives on an ancient species’) at the New England Aquarium on Oct 19, 2010, as part of the Aquarium’s public lecture series. The talk will be videoed and archived at http://forum-network.org.

**Project impacts** (Impacts are higher order, usually long-term results of a program’s activities that have significant scientific, economic or social benefits. Impacts may involve behavioral, policy or economic changes. Seminal contributions to science are considered impacts, especially if the research findings lead to major progress in a particular field, implementation of new technologies or have a substantive bearing on an economic or societal issue. While breakthroughs do occur, it is important to realize that impacts are developed over the long term – both in the scientific arena and through sustained, integrated efforts by Sea Grant programs themselves.):

NA

**Related grants and contracts** (other grants and contracts that funded this project or that were obtained as a result of this project):

NA

**Additional information:**

NA