Graduate School of Oceanography - OCG 695
March 24, 2008, 3:30 PM, Corless Auditorium
Seminar Abstract
Marisa L. Guarinello

Mapping and classifying biotopes in a coastal lagoon experiencing periodic hypoxia

In order to successfully manage marine and coastal resources, it is essential to understand the spatial patterns and ecological processes that influence ecosystem function and, thus, environmental quality. Acoustic technologies, such as side-scan sonar, can make full-coverage, high-resolution maps available to address management needs. However, the "benthic habitat maps" that are produced frequently simplify complex ecosystems by equating substrate with habitat. This approach can be problematic as abiotic surrogates only explain a portion of biotic patterns. Other contributing factors to biotope (i.e., habitats with recurring, persistent, and predictable biological associations) distribution include water quality parameters such as temperature and dissolved oxygen content, energy regimes, competition, recruitment, etc. The challenge is to develop benthic habitat mapping protocols that incorporate biological features and address spatial and temporal variability. Data collected in Quonochontaug Pond (Quonnie), one of Rhode Island's coastal lagoons, will tackle this challenge by integrating substrate, physical and chemical environmental variables, and benthic biology to classify and map benthic habitats. The scale of Quonnie, its enclosed nature, and recent extensive multidisciplinary sampling provide the opportunity to examine landscape, biological, and water column features in detail within an entire waterbody. The geomorphology of the lagoon, including the permanent breachway and flood tidal delta, contribute to circulation patterns in the lagoon. An apparent result of restricted circulation and geomorphology is periodic hypoxia in Quonnie's western basin. The spatial and temporal habitat shifts in the presence of eelgrass *Zostera marina* and of the tube-building amphipod *Ampelisca abdita* are examined here in concert with dissolved oxygen data. Eelgrass is widely recognized as valuable habitat and beds are known to be fairly stable on yearly timescales. *Ampelisca abdita* is used as a sensitive species for toxicity and low dissolved oxygen testing and produces two generations per year. Both these species modify existing habitats but persist on different temporal scales, making them appropriate biotopes with which to begin habitat mapping in Quonnie.

Marisa Guarinello received a B.S. in Biology and Environmental Science from The College of William and Mary in 2002. She entered GSO as a M.S candidate in the fall of 2006. Her major professor is John King. Other committee members are Candace Oviatt, Peter August, and Rob Pockalny.

Please rank the abstract and presentation in areas A-G using the scale below:

0=Decline to Evaluate 2=Above Expected Standards 4=Below Expected Standards
1=Outstanding 3=Acceptable 5=Poor

A. Quality of Abstract _____
B. Preparation of Material _____
C. Timing _____
D. Scientific Content _____
E. Quality of Verbal Communications _____
F. Adequacy of Visual Aids _____
G. Ability to Handle Questions During Discussion _____

Comments and Suggestions:

Evaluator: _____. Please return to Academic Affairs Office, Box 43.