ABSTRACT:

*Limulus polyphemus*, the Atlantic horseshoe crab, is important for its environmental role and human uses. Yet little is known about horseshoe crabs beyond their spawning behavior. The goal of this project was to follow the movements of horseshoe crabs throughout their life cycle in the Great Bay estuary. Working out of the Rutgers University Marine Field Station (Fig. 1), a stratified survey of four beaches was designed to locate where and when horseshoe crabs spawned in the Great Bay estuary. Sediment grain size at each station was also analyzed to identify relationships between spawning site selection and sediment characteristics. Eggs obtained from beach samples were reared in the laboratory to document larval development and larval behavior. Some of these larva were used in experiments to observe larval behavior in realistic currents. Concurrently planktonic sampling was conducted in Little Sheephead Creek to determine when larval *Limulus* appear in that estuary and their time and sex ratio. Adult movements that track with ultrasonic telemetry. Eggs were found at higher densities in the more elevated beach strata. Limulus appear to strongly prefer spawning on beaches with coarse to medium granular sediments. Of the four horseshoe crab tag with ultrasonic telemetry, two disappeared after release and the other two were successfully tracked for several hours immediately after release and showed limited movement.

INTRODUCTION:

*L. polyphemus* has existed for 350 million years but now faces an unknown future due to human impacts. Over the past century their population has seen a dramatic decline. Historically crabs were harvested in the millions to make fertilizer. Larval *Limulus* have been reported to be important in estuarine ecosystems, as they are a major food source for marine birds. An estimated 11-17% of the birds' diet consists of small amounts of frozen brine shrimp. When the eggs hatched I removed the larvae to other glass dishes, as they develop so some eggs were separated to take time series photos.

RESULTS AND CONCLUSIONS:

Larval crabs usually appear in the bridge stations the last week of June. The appearance in the bridge stations was two weeks later probably due to the weather and/or development. The highest abundance of crabs was on July 11 (when they initially appeared) at an average of 14.05 crabs/100m². No crabs were collected during the June 29 and June 30 surveys. Larvae are also very active in the water column at median currents.

REFERENCES:


Davidson, A. K., Quigley, J., Grebmeier, J. (2000). *Tracking the Atlantic Horseshoe Crab* Limulus polyphemus with Ultrasonic Telemetry: What do horseshoe crabs tell the oceanographers?*