

Preliminary Inventory Status of *Limulus* Population on Long Island: From Anecdote to Annual Survey

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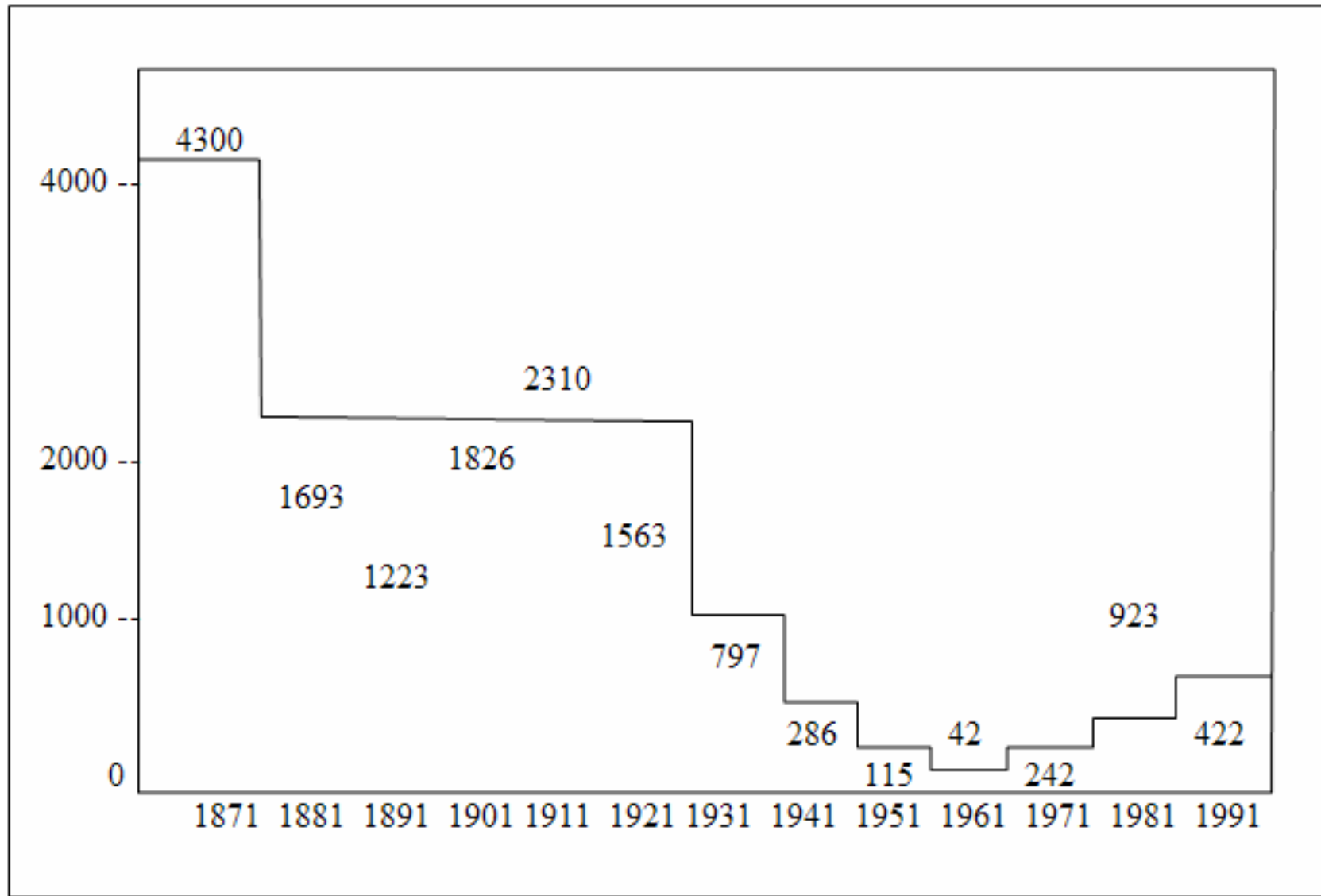
ABSTRACT

- Considerable concern regarding the abundance of American Horseshoe Crabs (HSC) Limulus polyphemus along the coasts of New Jersey and Delaware prompted past moratoriums on collecting HSC for bait in New Jersey. The parallel population decline in migratory shorebirds such as Red Knots (*Calidris canutus*), Ruddy Turnstones (*Arenaria interpres*) and others that seasonally feed on the copious quantities of HSC eggs laid along this shoreline resulted in reduced HSC collection permits to numbers considered sustainable. In New York State's Marine District, which is mostly comprised of the Long Island coastline, there is no reliable or routine inventory network existing for determining Horseshoe Crab populations. Shorebird data, which has been collected by Audubon Chapters, the National Park Service and the U.S. Fish and Wildlife Service, as well as academia, have hinted at a declining HSC population. However, due to the lack of a formal and extensive or reliable inventory network, assessing changing trends in HSC population levels is unattainable or mostly inaccurate. Anecdotal information from these same sources, as well as coastal enthusiasts and recreationalists (i.e. Shorewalkers, Inc., American Littoral Society, etc.) all provided strong support for a declining population of HSC in the metropolitan New York City area, however all were unreliable and inaccurate. In 2003, we established at Dowling College the "Long Island HSC Network," which provides for a hot-line telephone number, survey form and website to (1) Collect data on Long Island sites which support HSC [all GPS'ed for repeated sampling]; (2) Count and tag HSC for an as reliable estimate of the HSC population on Long Island as practical; (3) Sex and age of individual HSC at each site; and, most importantly (4) Establish a network that can be repeated annually to detect precipitous changes in HSC population numbers and distributions. Data collection for HSC will aid in protecting the HSC population as well as other species which require HSC eggs as food during significant migratory periods.
- Results of the first two years reveal (1) considerable reduced number of HSC than "remembered in the past"; (2) sites along the Long Island coastline now believed to support HSC have been found to have few to modest numbers of HSC; and, (3) a very preliminary number projection of Limulus on Long Island at approximately 15,000 adult breeding individuals.

Introduction

- Data collected from harvest counts from the 1870s through the 1960s in Delaware Bay exhibited a peak of 4 million crabs in a season. Surveys of spawning activity during the 1990s indicated a decline in horseshoe crab populations, their eggs and feeding bird populations. (Ref: Limulus in the Limelight)

Estimated Horseshoe Crab Abundance

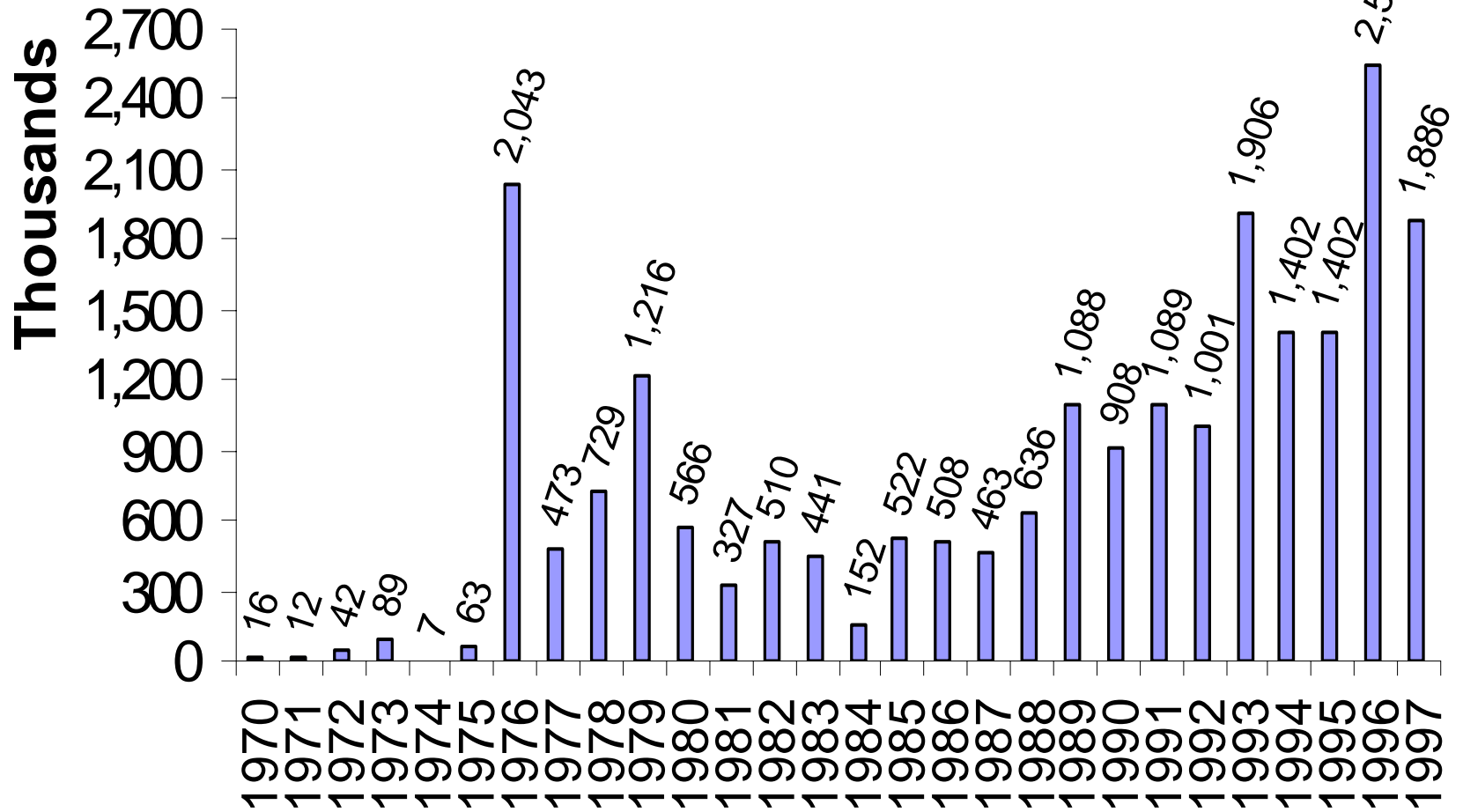


- In response to Conservationists concerned with horseshoe crab harvests for bait, the NJ Department of Fish & Game implemented horseshoe crab rules, which required any person harvesting horseshoe crabs to have a permit and report the number of crabs taken along with other information.
- In 1996, 1997, 1998 amendments to the horseshoe crab rule placed further restriction on crab catches (Ref: Limulus in the Limelight)

■ Pounds

Atlantic States Landing (Maine to Florida)

(Atlantic states landings for horseshoe crab for the period 1970-1997)



(Ref: Limulus in the Limelight)

Anecdotal Reports in the Late 1990's Horseshoe Crab Population

- “I remember when”
 - “I remember summers spent on the Great South Bay in Babylon while growing up in the early 1960's, there were days when it was hard to walk across the beach because it was so crowded with horseshoe crabs. Sights like that have become very rare today.”
 - “I miss the horseshoe crabs my grand kids will never get to see them if they keep disappearing at this rate.”
 - “When I as a teenager I used to go camping on the beach and horseshoe crabs were always there I went a few years ago and I did not see a single one, I never thought I would be disappointed to not see them. As a kid I thought they were ugly and I was afraid of them”
- A NY Times article of 6/6/2004 focusing on the Horseshoe Crab Network and horseshoe crabs on Long Island generated over 250 telephone calls reporting sightings of Horseshoe Crabs and many anecdotal reports of population trends like those above.

Dowling College Long Island Horseshoe Crab Network 2003-2005

- The Long Island Horseshoe Crab Network is conducting a super-inventory of horseshoe crabs on Long Island.
- The purpose is to find out if the horseshoe crab populations on Long Island are actually dwindling.
- Dowling College Department of Earth and Marine Science has established an online presence through the website at www.HSCLI.org
 - Included at the site is a link to an on-line form to report to information collected in the field.
- The intentions of the website include being an educational resource about horseshoe crabs for the general public and collecting data about horseshoe crab sightings from the general public and trained field teams including students from Dowling College.



Department of Earth & Marine Sciences

Long Island Horseshoe Crab Network Issues Alert

To find out if the horseshoe crab population on Long Island is dwindling, as has been reported by some experts, the Long Island Horseshoe Crab Network, headed by Dr. John T. Tanacredi, Chairman of the Department of Earth and Marine Sciences at Dowling College, will conduct its second annual Super-Inventory of Horseshoe Crabs (HSC) on Long Island.



Horseshoe Crab

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- B.S. in Environmental Science
- Long Island Horseshoe Crab Network
- Horseshoe Crab Diagram
- **Report A Horseshoe Crab Sighting**
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Dr. John T. Tanacredi

"Over the last 10 years there has been considerable controversy over the extent to which horseshoe crab harvesting has impacted the species' existence," explained Dr. Tanacredi. "It is general knowledge that HSC habitat covers from the coast of Maine to Florida, with Long Island historically having a robust population of HSC. Anecdotal information from 'coast-wise' people have recently expressed concerns that once large numbers of HSC observed each year, are today a mere skeletal population."

Anyone sighting a horseshoe crab, along the coast of Brooklyn, Queens and Long Island, is asked to make report through [this form](#) from May 1st. The information to be collected includes name, address, telephone number and e-mail of the reporter, date, time, location and condition of tide, number of Horseshoe Crabs, number living and dead, male, and female at sighting. Instructions are available for determining sex and measuring size by clicking [this link](#). Researchers from the HSC Network will be using the data collected to target sites that require additional information to be collected during site visits. All data collected both through the web based reporting system and planned site visits will be recorded to Long Island Map of Horseshoe Crab habitats. This is a multi-year study that will help identify the trends with regard to Horseshoe Crabs around Long Island. The HSC Network invites everyone to join in and help protect a species 350 million years in the making.

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Public Reporting Elements

- Telephone reporting system 2003 – 2004 over 400 reports of horseshoe crab sightings. (631-244-3394)
- Site visits to locations across Long Island from Montauk point to the tip of Brooklyn along the north and south shores as well as along the shores of the Great South and Peconic Bays (54 Locations)
- Web based reporting system launched in the summer of 2005 (Complete field form and web reporting page available on-line)
- www.HSCLI.org launched during the summer of 2005 and after testing is completed the public launch will commence
 - Features
 - Automated database recording of reports
 - Automated response letters thanking the public
 - Automated notification of reports
 - Database is available for queries and the creation of custom reports

Web Reporting Form

Department of Earth & Marine Sciences

Horseshoe Crab Sighting Report

First Name: Last Name:

Address: City:

State: ZIP:

Phone #: Email:

Date of sighting: Location:

Tide:

Number of Horseshoe Crab seen:

Number Living: Number Dead:

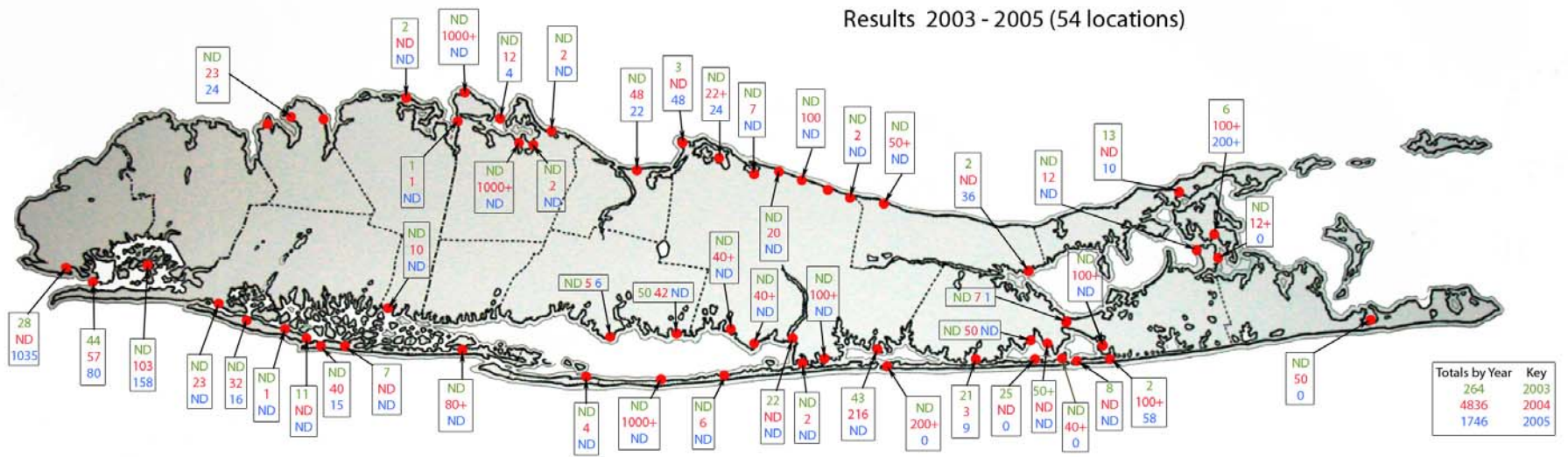
Number male (live only): Measure of prosoma:

Number female (live only): Measure of prosoma:

Field Data Collection Process

- Areas for field collection identified by using current and past reports from public, historic population data, and data from prior years site visits.
- Data collection teams trained in data collection procedures.
 - A defined 200 meter data collection area.
 - Count all horseshoe crabs with in the defined study area.
 - Determine and record the gender diversity of as many horseshoe crabs as possible.

Results 2003 - 2005 (54 locations)



Conclusion

- 54 sites on Long Island reported and identified as observing HSC populations;
- formal Long Island Horseshoe Crab Network established at Dowling College;
- continue to corroborate anecdotal reports with more statistically relevant data sheets;
- Preliminary Long Island Horseshoe Crab population estimated at a maximum of 25,000.