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2014

## Long Island Horseshoe Crab Network Annual Inventory Report

CERCOM, Molloy University

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**Center for Environmental Research and Coastal Oceans Monitoring  
(CERCOM)  
Molloy College**

**Long Island Horseshoe Crab Network  
Annual Inventory Report**

2014  
FINAL REPORT

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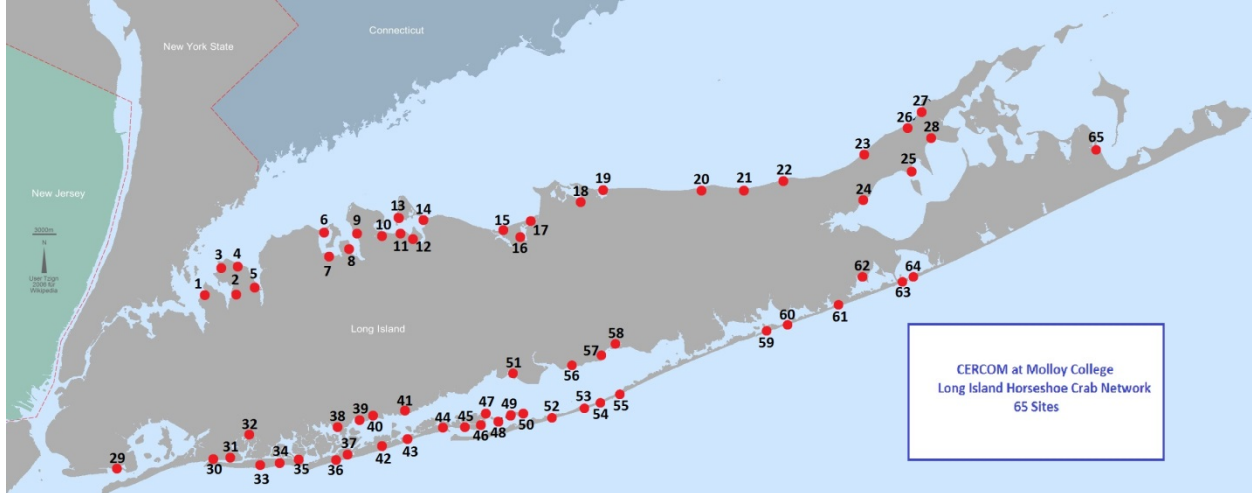
**Introduction:**

Considerable concern regarding the abundance of the North American Horseshoe Crab (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 HSC populations or habitat. 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 declining HSC populations. Anecdotal information from these same sources, as well as coastal enthusiasts and recreationalists providing support for a declining population of HSC in the metropolitan New York City area, serve to but these data lack scientific rigor to assess annual trends in local HSC populations and their relationship to human activity, commerce, etc. Molloy College's Long Island HSC Network commenced quantifying and recording data to address this void in 2003 and continues with the submission of this 2014 report.

**Objectives:**

This study is designed to provide annual inventories of adult HSCs visiting accessible spawning habitats along the New York marine coastline from the tip of Brooklyn to the tip of Montauk. Recorded data is formatted to be readily compared and contrasted with prior years' data for the assessment of trends in regional spawning populations. The design of this annual study draws from the abundant resource of citizen scientists with particular knowledge of their local environments who have answered the call to be stewards of this species.

## Map of Inventory Coverage:



## Recruitment of Survey Volunteers:

Each year Molloy Collage generates a press release targeted for local media serving as a call for local residents to become trained as volunteer in this inventory. These new recruits join the army of volunteers already established at their particular habitats and familiar with data protocols. Each new recruit participates in an orientation to the program which includes an introduction to the program, a brief history of the HSC, its ecological importance, a review of past results, a rigorous tutorial and field training at a local shoreline habitat.

## Data collection Protocols:

All volunteers of the program are required to conform to the protocols of data collection:

1. Plan site visits around the local posted high tide.
2. Local high tides can found at [www.saltwatertides.com](http://www.saltwatertides.com) going to the “tide portion of the website.”
  - a. Get data for tide sites nearest your sites.
3. Bring a log book and a pen.

4. Wear footwear appropriate to walk up to knee deep (walking this deep may not be necessary.)
5. When you arrive, identify the boundaries of the beach.
6. Beginning at one end, **walk at the water's edge** and count and log all females (F) and males (M) on land and visible in the water.
7. If the density of spawning adults is too great to capture in one survey, pace off a 100 foot length of representative HSC density and count within these boundaries.
8. Complete all site visits around the high tide.
9. Submit data by visiting [www.molloy.edu/cercom/hscinventory](http://www.molloy.edu/cercom/hscinventory)

**2014 data:**

The geographical boundaries of all sites are verified through ArcGIS. All data submitted to this inventory is entered into an ArcGIS file layered by year. All sites included in the annual inventory report were visited at least once during the 2014 spawning season, which extends from May to July. For sites reporting more than one visit, the maximum number of individuals per visit for any given site is the data point for that site. This program is coordinated by staff of CERCOM at Molloy College, who is also responsible for coverage of all sites within the Inventory and handling of all submitted data. A brief summary of data are listed in Table 1. A comparison of all annual data the commencement of the program to present (2003 - 2014) demonstrates an approximate 1% decline in total HSCs seen per year (Figure 1). The spawning habitats where no HSCs were detected shows an increasing trend of almost 1% per year of all sites covered since 2003 (Figure 2).

2014 H.S.C.L.I. Inventory Results	
Sum of HSCs at all sites	1694
Reports submitted	95
Sites covered	71
None detected	41
% None detected	58%

Table 1. Total spawning adult HSCs seen at all sites, number of reports submitted, number of sites covered, number of sites reporting none detected, and percent sites none detected

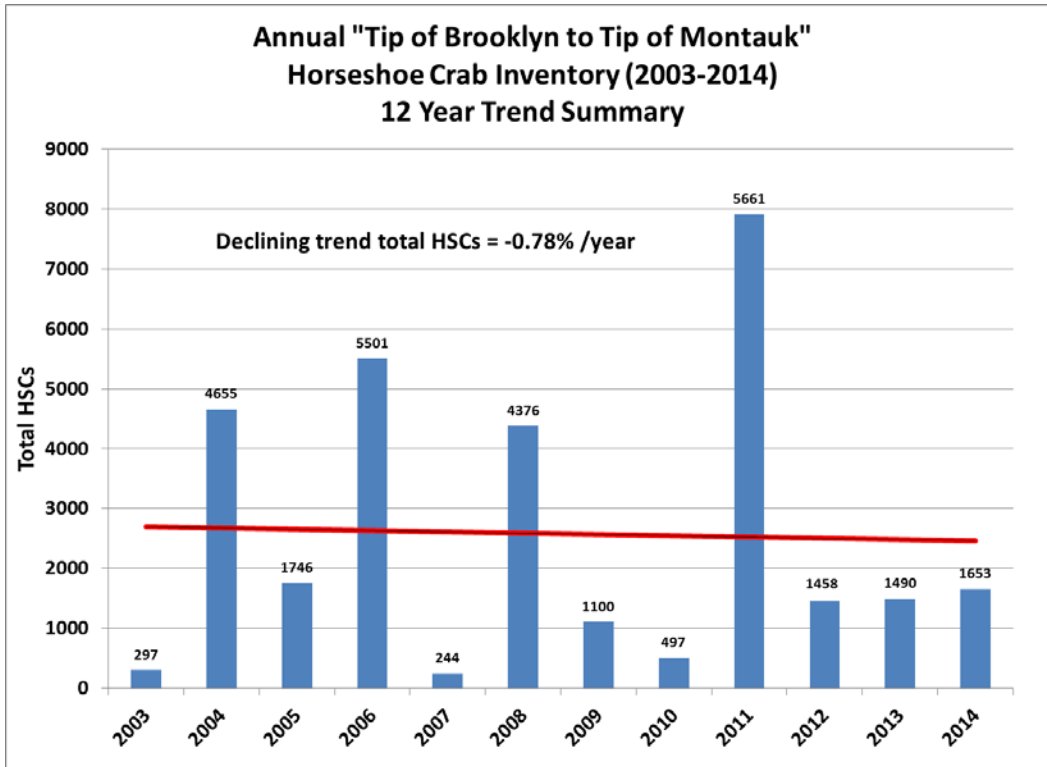


Figure 1. Annual totals with calculation of declining trend for 12 years of data from 2003 – 2014. Declining trend = -0.78%/year,  $r^2 = 0.001$ , mean =  $2577 \pm 2443$ .

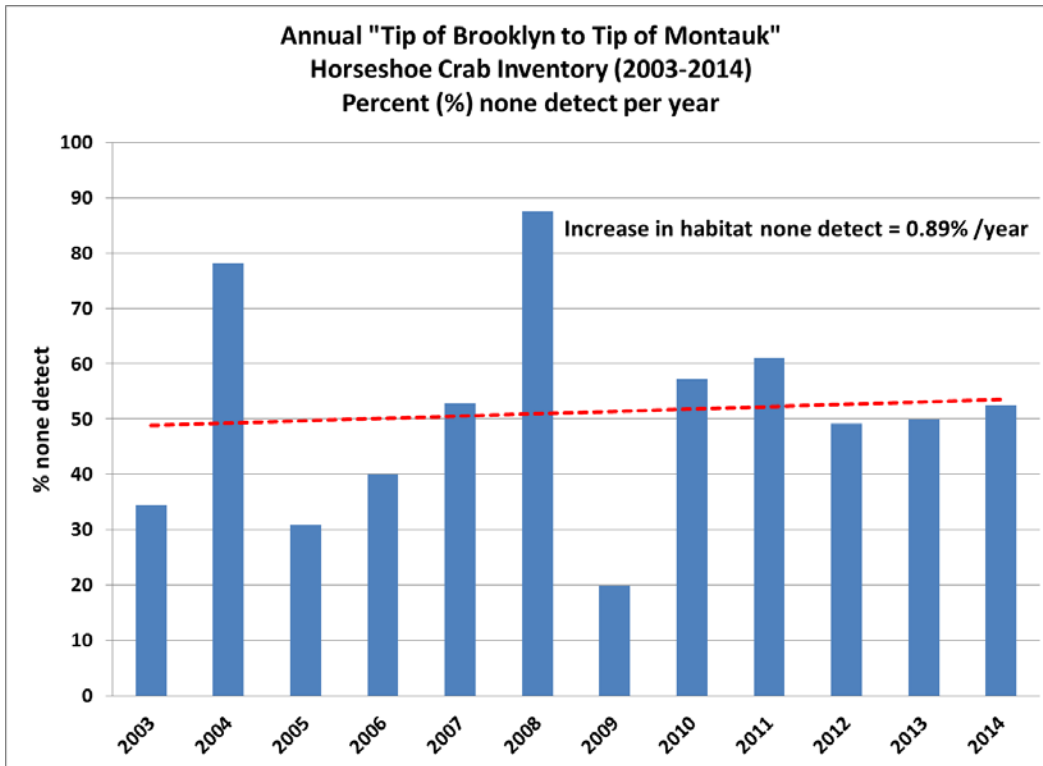


Figure 2. Annual percent of habitats where no horseshoe crabs were detected, i.e., “none detected.” Increasing trend = 0.89%/year,  $r^2 = 0.0066$ , mean =  $51 \pm 19.0$ .

**Results and Discussion:**

Results of the last 12 years of annual monitoring 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; (3) a preliminary number projection of *Limulus* on Long Island at approximately 15,000 adult breeding individuals on beaches surveyed; (4) of the 108 beaches monitored since 2003, an annual increase of 0.89% per year has been observed for the number of beaches exhibiting “no breeding activity;” and (5) there has been observed an average of 0.78%/year decline in the total number of HSC’s observed.



## Appendix A

	<b>NORTH SHORE (West to East)</b>		<b>SOUTH SHORE (West to East)</b>
1	Stepping Stone Park	29	Plumb Beach West
2	Leeds Pond	30	Beach 9 Playground Beach, Rockaway
3	Half Moon Beach	31	Bannister Creek, Rockaway
4	Sands Point Preserve	32	Hewlett Point Park
5	Prospect Point	33A	Park Place, Long Beach
6	Center Island Beach Village Park	33B	Long Beach Blvd Bridge, Long Beach
7	Theodore Roosevelt Memorial Park	34	Long Beach National Blvd at ocean
8	Sagamore Hill Beach	35	Bayside Drive, Point Lookout, Long Beach
9A	Lloyd Neck bath Club Beach	36A	Jones Beach Coast Guard Station
9B	West Neck Beach	36B	Jones Beach Fishing Pier
10	Gold Star Beach Park	36C	Jones Beach Fishing Pier back beach
11A	Crescent Beach Town Park	36D	Short Beach near Coast Guard Station
11B	Bay Hills Beach, Huntington	37	Zachs Bay/Jones Beach Theater
12A	Fleets Cove Beach Park	38	Wantagh Park
12B	Centerport Beach Park	39	Florence Ave Massapequa
13	Hobart Beach Park	40	Alhambra Road Massapequa
14	Asharoken Beach Park	41	Tanner Park, Copaigue
15	Short Beach	42	Tobay Beach
16	Cordwood Path	43	Gilgo Heading
17	Long Beach Rd	44	Gilgo State Park
18	Walnut St	45	Oak Beach
19	Mt Sinai Harbor Harbor Rd	46	Captree State Park East
20	Power Plant/La Plage, Wading River	47	Captree State Park south piers
21	Wildwood State Park, Wading River	48	Havemeyer Island
22A	Reeves Beach, Baiting Hollow	49	West Fire Island
22B	Roanoke Beach, Baiting Hollow	50	East Fire Island
23	5155 Breakwater Rd, Mattituck	51	Atlantique
24	South Jamesport Beach	52	Ocean Beach FINS
25	101-299 1st St, New Suffolk	53A	Sailors Haven West
26	205 Diamond Ln, Peconic	53B	Sailors Haven East
27	2150 Leeton Dr, Southold	54	Barrett Beach
28	South Harbor Park, Southold	55	Davis Park
		56A	Suff Co Beach near CERCOM
		56B	Maritime Museum Beach
		57	Corey Beach
		58	Watch Hill
		59	Cupsogue Co Park
		60	Pike's Beach
		61	Howell Beach
		62	Pine Neck Beach
		63	Ponquogue Point Beach
		64	Shinnecock Inlet W
		65	Louse Point Town Beach

## Appendix B

<b>NORTH SHORE</b>	<b># per site</b>
Stepping Stone Park	1
Leeds Pond	2
Lloyd Neck bath Club Beach	5
West Neck Beach	10
Center Island Beach Village Park	0
Theodore Roosevelt Memorial Park	42
Sagamore Hill Beach	0
Gold Star Beach Park	10
Crescent Beach Town Park	0
Asharoken Beach Park	14
Bay Hills Beach, Huntington	0
Half Moon Beach	2
Prospect Point	9
Short Beach	17
Cordwood Path	0
Long Beach Rd	0
Walnut St	3
Mt Sinai Harbor Harbor Rd	0
Wildwood State Park, Wading River	0
Power Plant/La Plage, Wading River	0
Reeves Beach, Baiting Hollow	0
Roanoke Beach, Baiting Hollow	0
5155 Breakwater Rd, Mattituck	0
205 Diamond Ln, Peconic	0
2150 Leeton Dr, Southold	0
South Harbor Park, Southold	0
101-299 1st St, New Suffolk	0
South Jamesport Beach, Peconic Bay Blvd, Jamesport, NY	0
total	115

### Appendix B (continued)

SOUTH SHORE	# per site
Beach 9 Playground Beach, Rockaway	4
Plum Beach West	90
Bannister Creek, Rockaway	0
Hewlett Point Park	0
Park Place, Long Beach	0
Long Beach Blvd Bridge, Long Beach	0
Bayside Drive, Point Lookout, Long Beach	2
Long Beach National Blvd at ocean	0
Zachs Bay/Jones Beach Theater	11
Jones Beach Coast Guard Station	24
Jones Beach Fishing Pier	6
Jones Beach Fishing Pier back beach	0
Short Beach near Coast Guard Station	7
Wantagh Park	1
Florence Ave Massapequa	0
Alhambra Road Massapequa	5
Tanner Park, Copaigue	54
Tobay Beach	0
Gilgo Heading	0
Gilgo State Park	0
Oak Beach	0
Captree State Park East	0
Captree State Park south piers	0
Havemeyer Island	5
East Fire Island	0
West Fire Island	0
Watch Hill	7
Davis Park	1089
Barrett Beach	135
Sailors Haven East	1
Sailors Haven West	0
Ocean Beach FINS	0
Atlantique	0
Howell Beach	2
Pine Neck Beach	2
Corey Beach	19
Suff Co Beach near CERCOM	0
Maritime Museum Beach	0
Cupsogue Co Park 1st crescent beach across trailer park	2
Pike's Beach	69
Shinnecock Inlet W, Rd I to riprap (East)	0
Ponquogue Point beach, bulkhead (N) to point (S)	3
Louse Point Town Beach	0

## Appendix C

<u>Regions</u>
Little Neck/Manhasset Bay
Oyster Bay/Cold Spring Harbor
Huntington/Northport Bay
Hempstead harbor
Nissequogue River
Stony Brook Harbor
Port Jefferson Harbor
Mount Sinai Harbor
Long Island Sound East of Mt Sinai
North Fork
Rockaway, Jamaica Bay
Long Beach
Jones Beach
Hempstead Bay/East Bay
South Oyster Bay
Western Great South Bay, Babylon
Great South Bay
Great South Bay Fire Island
Great South Bay Main land
Dune Rd. and Shinnecock West
East Hampton

## Appendix D

<b>Beach Captains</b>
Eric Morris
Sue Feete
Carol Ann Norton
Kata Macklin
Jacinta Marshall
Amanda Cipriani
Jacki Gutman
Peggy Maslow
Kelly Eames
Lauren Macri
Phil Cusimano
Kim Cusimano
Grant Kletter
Sixto Portilla
Evonne F.
Andrew J Schleider
Teresa Clark
Terri Rosen
Robin Schaper
Aubrey Peterson

## Appendix E

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# CERCOM MARINE SCIENCES

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### Survey Data

First name:

Last name:

Contact email:

Contact phone: (  )  -

Date:  

Time:  

Location name:

Name of nearest access road:

Length of beach/survey area:

Tide (low, high, middle ebb, middle flood, other):

Water conditions (calm, low surf, high surf):

Total number of HSC on beach or in water as visible from water's edge:

Number of females:

Number of males:

Number dead (M and F):

Comments: