2015

Long Island Horseshoe Crab Network Annual Inventory Report

CERCOM, Molloy University

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FINAL REPORT

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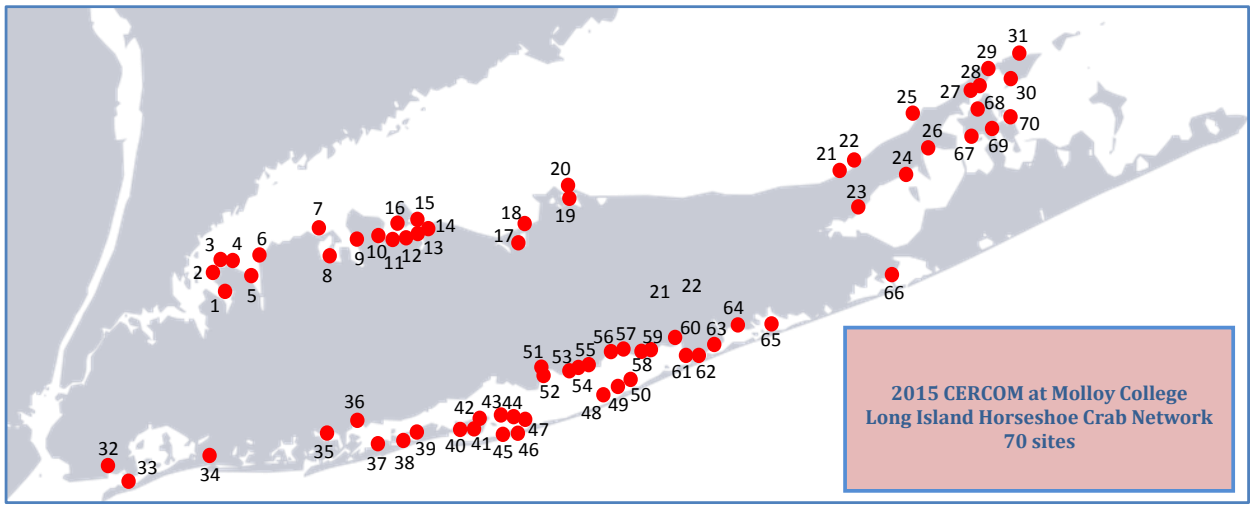
Introduction:

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 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

2015 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 2015 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 - 2015) demonstrates an approximate 1% decline in total HSCs seen per year (Figure 1). The spawning habitats where no HSCs were detected show an increasing trend of almost 1% per year of all sites covered since 2003 (Figure 2).

2015 HSCLI Inventory Results	
Sum of HSCs at all sites	340
Reports submitted	88
Sites covered	70
None detected	46
% None detected	66%

Table 1. Maximum number of 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

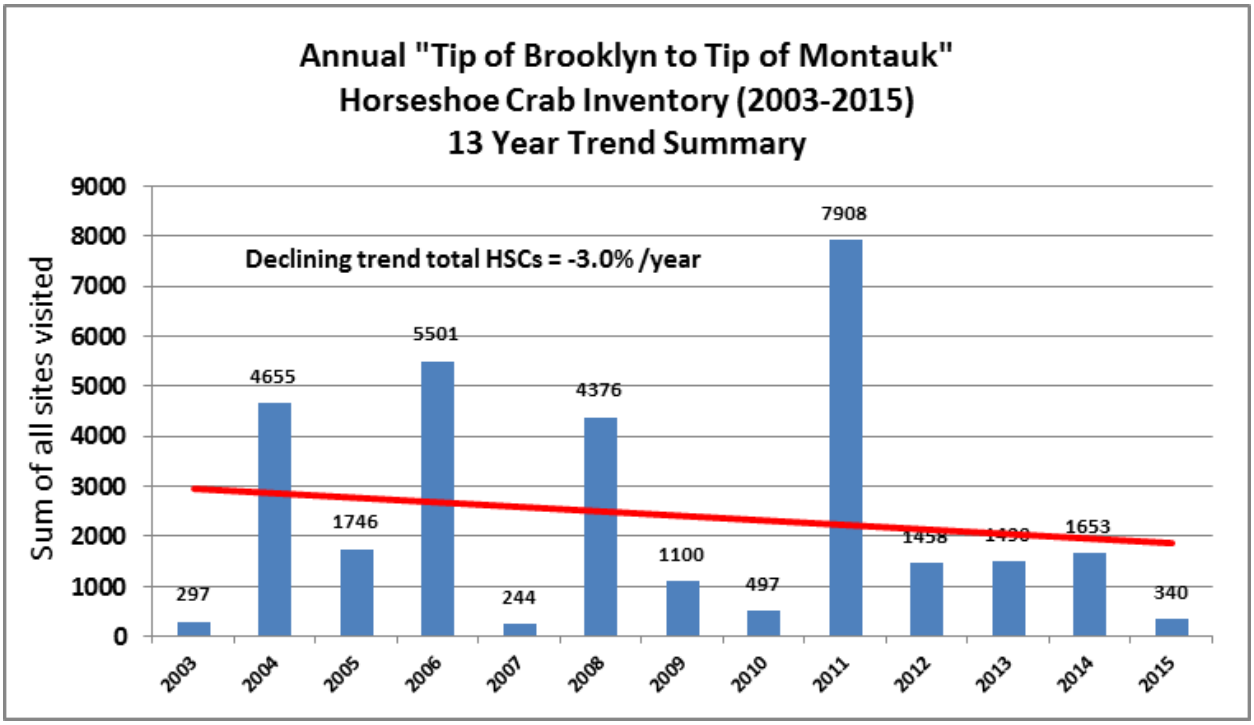


Figure 1. Annual totals with calculation of declining trend for 13 years of data from 2003 – 2015. Declining trend is -3.0% horseshoe crabs per year.

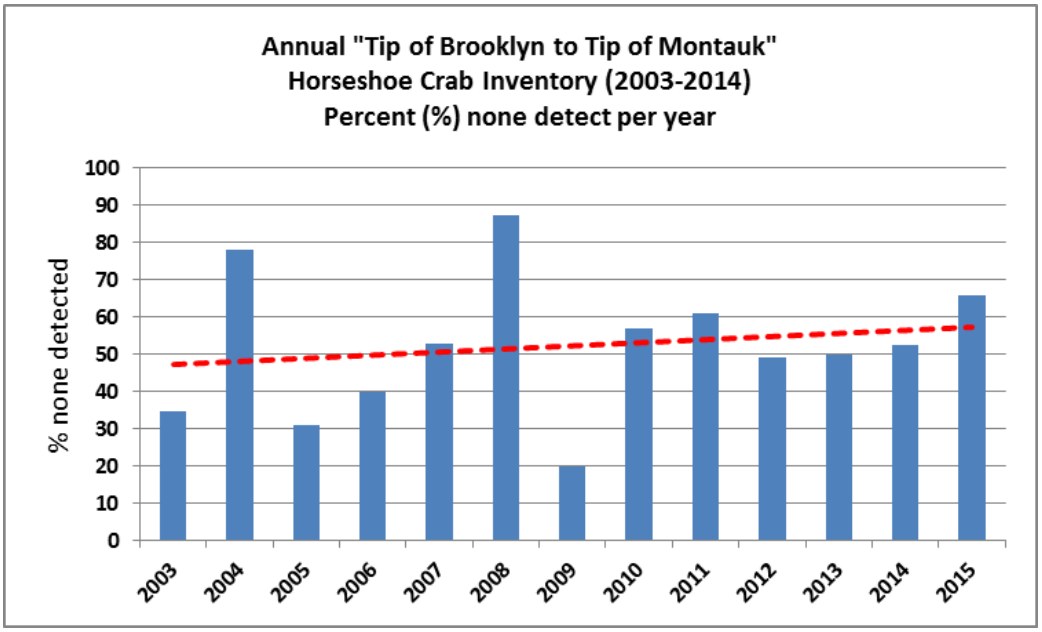


Figure 2. Annual percent of habitats where no horseshoe crabs were detected, i.e., "none detected." Increasing trend is 1.8% per year.

Results and Discussion:

Results of the last 13 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 1.8% per year has been observed for the number of beaches exhibiting "no breeding activity;" and (5) there has been observed an average of 3.0%/year decline in the total number of HSC's observed.

Appendix A

	North Shore	#
1	Leeds Pond	2
2	Half Moon Beach	12
3	Sands Point Preserve	0
4	Prospect Point	10
5	North Hempstead Harbor Beach	2
6	Morgan Memorial Park, Glen Cove	0
7	Soundside Beach Bayville	4
8	Theodore Roosevelt Memorial Park	84
9	West Neck Beach	40
10	Gold Star Beach Park	7
11	Bay Hills Beach, Huntington	0
12	Crescent Beach Town Park	0
13	Centerport Beach Park	6
14	Fleets Cove Beach Park	7
15	Asharoken Beach Park	2
16	Hobart Beach Park	1
17	Cordwood Path	0
18	Long Beach Rd	0
19	Mt Sinai Harbor Harbor Rd	4
20	Mt Sinai: Cedar beach	0
21	Sound Ave, Mattituck Beach	0
22	Breakwater Beach District Park, Mattituck, Luthers Rd	0
23	South Jamespoint Beach, Jamestown, Peconic Bay Blvd	0
24	New Suffolk Beach, 1st St.	0
25	Kennys Road Beach, Southold	0
26	South Harbor Park, S. Harbor Rd, Southold	0
27	6th Street Beach, Greenport	0
28	Greenport betw Gull Pond and Breakwater	10
29	Truman Beach East Marion, Rt 25	0
30	Ben's Point, Orient Beach State Park, Orient, NY	0
31	Orient Point County Park, Latham Lane	0
		191

	South Shore	#
32	Plumb Beach West	0
33	Park End Terrace, Breezy point, Rockaway Blvd	3
34	Beach 9 Playground Beach, Rockaway	0
35	Wantagh Park	1
36	Division Ave East Cove	12
37	Tobay Beach	0
38	Coast Guard Cove, Gilgo St Park, beach	5
39	Gilgo Heading	1
40	Oak Beach	47
41	Captree State Park East	0
42	Captree State Park south piers	2
43	West Fire Island	0
44	East Fire Island	0
45	Saltaire	0
46	Atlantique	0
47	Ocean Beach West	0
48	Barrett Beach	16
49	Davis Park	45
50	Watch Hill	0
51	Hairy Island Bay side	0
52	Hairy Island River side	0
53	Maritime Museum Beach WEST	0
54	Maritime Museum Beach EAST	0
55	Suff Co Beach (CERCOM East)	0
56	Corey Beach	0
57	Pine Neck Beach	0
58	Howell Beach, Beach Rd	0
59	S Howells Point Rd.	0
60	Grand View	0
61	Dune view Dr. Launch area	0
62	Smith Point	0
63	Cramberry Dr. Dock	0
64	Webby's Beach	0
65	Pike's Beach	1
66	Ponquogue Point beach, bulkhead (N) to point (S)	0
		133

	Shelter Island	
67	S. Midway Rd, Wades Beach	0
68	Winthrop Rd, 2nd Bridge	0
69	Menhaden Lane Beach	0
70	Reel Point	0
		0

Appendix B

Regions	totals
Little Neck/Manhasset Bay	2
Hempstead harbor	24
Oyster Bay/Cold Spring Harbor	128
Huntington/Northport Bay	23
Stony Brook Harbor	0
Mount Sinai Harbor	4
North Fork	10
Rockaway, Jamaica Bay	3
Hempstead Bay/East Bay	1
South Oyster Bay	12
Western Great South Bay, Babylon	55
Great South Bay	0
Great South Bay Fire Island	61
Great South Bay Main land	0
Dune Rd. and Shinnecock West	1
Shelter Island	0
	324

Appendix C

Beach Captains
Janine Rizzuto
Peggy Maslow
Deborah Klein
Jacki Gutman
Sue Feete
Carol Ann Norton
Kelly Smith
Justin LaGiudice
Alan Delsman
Terri Rosen
Josephine Cracchiolo
Kirstie Dominique
Dave Swenson
Todd Dempsey
Lauren Macri
Robert Hitscherich
Sixto Portilla

Appendix D

CERCOM MARINE SCIENCES

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:

submit