Common Name: Horseshoe crab ***SGCN – High Priority***
Scientific Name: *Limulus polyphemus*
Taxon: Meristomata

Federal Status: Not Listed
New York Status: Not Listed

Natural Heritage Program Rank:
Global: Not Ranked
New York: Not Ranked
Tracked: No

Synopsis:
Horseshoe crabs are found from northern Maine to the Yucatan Peninsula. Temperature appears to be the limiting factor on the northern range of this species (Shuster 1982). In New York they are found year-round in Long Island Sound, Great South Bay, and in other areas along the coast. Horseshoe crabs are not true crabs but are in fact more closely related to spiders and scorpions (Roscoe and Stegemann 2011). Many migrating shorebirds from South America to the Arctic rely on horseshoe crab eggs as a food source. Although humans do not consume horseshoe crabs, both recreational and commercial bait fisheries exist. Additionally, the horseshoe crab's unique blood is used by the biomedical industry to produce Limulus Amoebocyte Lysate (LAL). Crabs harvested for this purpose can (and should) be returned to the water alive. However, there is a 15% mortality rate associated with the bleeding of live crabs (ASMFC 2010). Horseshoe crab populations in New York and New England waters have shown an overall decline and these stocks are potentially being harvested at an unsustainable rate (ASMFC 2012). As part of the conservation plan for the migratory shorebird, the red knot, there was increased protection of crabs in the Delaware Bay region by means of reduced harvest quota. This reduction may be causing an increase in harvest pressure in surrounding areas, including New York (ASMFC 2012).

The decline of the red knot has resulted in much attention to horseshoe crab populations since horseshoe crab eggs play a vital role as a food source for these migrating birds. NY indices show year to year fluctuations, yet an overall stable abundance in the western Long Island Sound, from 1987 through 1996, with a sharp increase seen from 1996 to 1997. After 1997 the abundance decreased, although it remained higher on average than previous years. In 2003, another peak was reached, followed by a sharp decline in 2004. From there on, abundance remained relatively stable until 2011 (besides a small peak in 2007). Although abundance in the eastern Long Island Sound followed a similar pattern to the western portion from 1987 to 1996, it has since shown a gradual overall decline, reaching some of the lowest values in the time series in 2010 and 2011.

Distribution (% of NY where species occurs)		**Abundance** (within NY distribution)		**NY Distribution Trend**	**NY Abundance Trend**
0% to 5%		Abundant		Stable	Moderate Decline
6% to 10%		Common	X		
11% to 25%		Fairly common			
26% to 50%	X	Uncommon			
> 50%		Rare			

Habitat Discussion:
Horseshoe crabs are benthic organisms and non-breeding adults are exclusively subtidal. They have been caught at depths of greater than 200 meters, but are thought to prefer depths of less than 30 meters. Overwintering adults may remain in bays or migrate to the continental shelf (ASMFC 2013).

During spawning season, which typically reaches its peak in May and June, sandy beaches are utilized by the crabs. Beaches or coves that are protected from strong wave action are the preferred habitat for spawning events. Shallow inshore water or shoals are ideal nursery grounds for horseshoe crabs. For the first two years of their life, horseshoe crabs live on intertidal sand flats. Older juveniles eventually migrate out of these nursery habitats and into waters a few miles offshore (ASMFC 2013).

Primary Habitat Type
Marine; Deep Sub-tidal
Marine; Intertidal
Marine; Shallow Sub-tidal
Tidal Flat

Distribution:
Horseshoe crabs occur in Long Island Sound, Great South Bay, and in other areas along New York's coastline.

Threats to NY Populations				
Threat Category	**Threat**	**Scope**	**Severity**	**Irreversibility**
1. Biological Resource Use	Fishing & Harvesting Aquatic Resources (commercial harvest)	P	L	L
2. Natural System Modification	Other Ecosystem Modifications (shoreline hardening)	W	H	V
3. Biological Resource Use	Fishing & Harvesting Aquatic Resources (illegal harvest)	P	M	M
4. Residential & Commercial Development	Housing & Urban Areas (construction and maintenance of docks, moorings)	N	L	M
5. Natural System Modifications	Other Ecosystem Modifications (beach nourishment)	N	L	L
6. Transportation & Service Corridors	Shipping Lanes (dredging for nearshore navigation)	N	L	M
7. Pollution	Household Sewage & Urban Waste Water (sewage and garbage)	R	L	H
8. Energy Production & Mining	Renewable Energy (impingement and entrainment in energy plants)	N	L	V
9. Climate Change & Severe Weather	Habitat Shifting & Alteration (sea level rise)	P	M	H
10. Agriculture & Aquaculture	Annual & Perennial Non-Timber Crops (agricultural runoff)	R	L	H
11. Biological Resource Use	Fishing & Harvesting Aquatic Resources (bycatch)	W	L	H

References Cited:

Atlantic States Marine Fisheries Commission (ASMFC). 2012. 2012 Review of the Fishery Management Plan in 2011 for Horseshoe Crab (*Limulus polyphemus*). http://www.asmfc.org/. May 2013.

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Roscoe L, and E. Stegemann. 2011. GIANTS at our feet--New York's horseshoe crabs. New York State Conservationist [serial online]. June 2011;65(6):12-15. Available from: Environment Complete, Ipswich, MA. February 21, 2013.

Shuster, C. N., Jr. 1982. A pictorial review of the natural history and ecology of the horseshoe crab, *Limulus polyphemus*, with reference to other Limulidae. In Physiology and biology of horseshoe crabs (J. Bonaventura, C. Bonaventura, and S. Tesh, eds.), p. 1–52. Alan R. Liss, Inc., New York, NY.