Species Status Assessment

Common Name: Blue crab **Date Updated:** 12/1/2023

Scientific Name: *Callinectes sapidus* **Updated by:** Kyle Martin MISC

Class: Malacostraca

Family: Portunidae

Species Synopsis *(a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):*

The Atlantic Blue Crab (*Callinectes sapidus*) is an ecologically and economically important crustacean species which ranges along the Western Atlantic from Southern New England to Argentina, with New York being near the northern limit for its range. Blue Crabs have been reported as far north as the Gulf of Maine and Nova Scotia during warmer months, though the winter temperatures are too cold for them to establish year-round populations (Molina 2021). Blue Crabs utilize different habitats based on sex and specific life stages which they migrate between, with males occupying lower salinity estuarine waters, females inhabiting higher salinity waters near inlets, and planktonic larvae developing in the coastal ocean from which they will enter estuaries as juveniles. Adult and juvenile Blue Crabs will overwinter and bury into muddy sediment until spring (Epifanio 2019). Commercial and recreational landings for Blue Crab in New York are primarily from pot fisheries in bays along Long Island's south shore. Blue Crab population data is collected and monitored by the NYS DEC Great South Bay Beam Trawl independent survey (DEC 2022).

I. Status

a. Current legal protected Status

i. **Federal:** Not Listed **Candidate:** No

ii. **New York:** Not Listed

b. Natural Heritage Program

i. **Global:** Not Ranked

ii. **New York:** Not Ranked **Tracked by NYNHP?:** No

Other Ranks:

-New York 2025 SGCN status: Species of Greatest Conservation Need

-IUCN Red list: Least Concern

-Northeast Regional SGCN: Watchlist

Status Discussion:

In New York State, blue crabs are known to inhabit the New York Harbor, the tidal Hudson River estuary, and the various bays along Long Island’s south shore (Briggs 1998). They are native along the Atlantic coast from Southern New England down to Argentina and have been introduced as a highly invasive species in the Eastern Atlantic coast of Europe, as well as the Mediterranean, Aegean, North, and Black Seas (Moncinelli 2021). In its native range, this species is believed to be experiencing increases in abundance related to climatic changes (Molina 2021).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Stable			-
Northeastern US	Yes	Declining	Stable	2000-2012 (Chesapeake Bay)		No
New York	Yes	Unknown	Stable	2000-2012		Yes
Connecticut	Yes	Declining	Stable	1989-2011	Not Listed	Yes
Massachusetts	Yes	Unknown	Unknown	1990-2012	Not Listed	No
New Jersey	Yes	Stable	Stable	2000-2010	Not Listed	No
Pennsylvania	No	-	-			-
Vermont	No	-	-			-
Ontario	No	-	-			-
Quebec	No	-	-			-

Column options
Present?: Yes; No; Unknown; No data; (blank) or Choose an Item
Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item
SGCN?: Yes; No; Unknown; (blank) or Choose an item

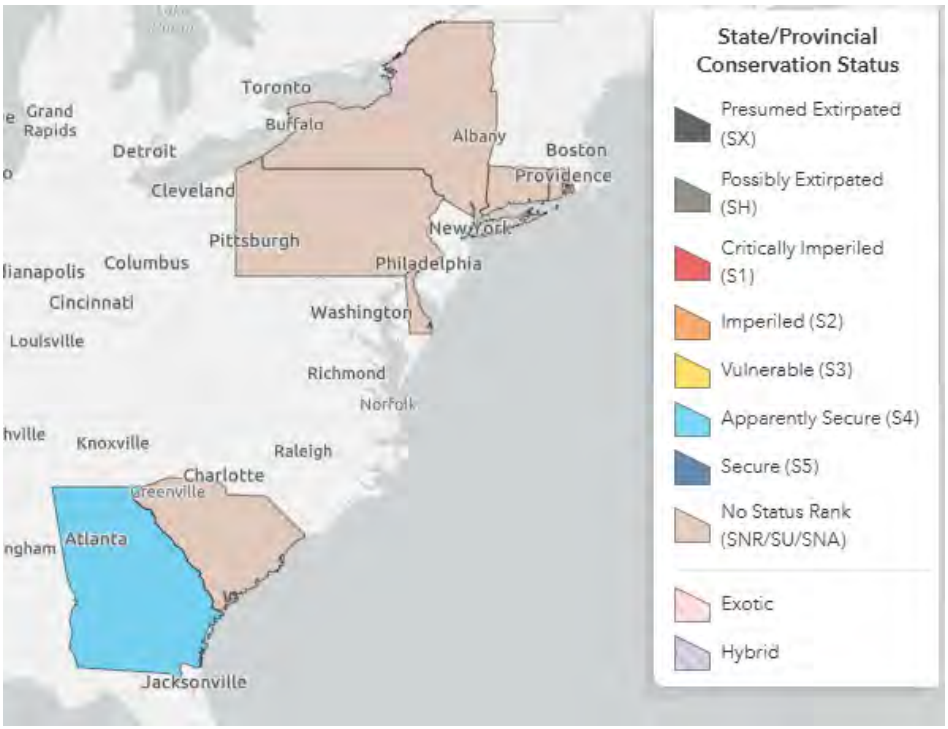
Monitoring in New York *(specify any monitoring activities or regular surveys that are conducted in New York):*

The NYSDEC has conducted an annual Blue Crab Tagging Study since 2004 to track the seasonal movements of the spawning blue crab population in New York. In conjunction with the tagging study the DEC is also using that data to estimate fishing pressure and natural mortality. Commercial fishers of blue crab are required to report their harvests. These harvest reports can be used to show annual fluctuations in landings. The last "Annual report on the Commercial Monitoring of the Hudson River Blue Crab Fishing" was published in 2002. The NYSDEC has been conducting the Great South Bay Beam Trawl, a fishery independent survey for marine invertebrate and finfish species, with a focus on blue crabs. This study, designed by SBU SoMAS, tracks species relative abundance of blue crabs and tags male crabs ≥ 127mm, and all mature and gravid females. This survey has been ongoing since 2014, with DEC taking over since 2017, and aims to collect long-term data of changes in species composition and abundance. The goal of this survey is to monitor ecosystem recovery driven by improvements in water quality and restoration of seagrass habitat, as well as changes in population abundance influenced by warming temperatures (DEC 2022).

Trends Discussion *(insert map of North American/regional distribution and status):*

Trend information can be estimated from landings of blue crabs in New York. In 2009 859,309 lbs of crab were caught. This is below the average of 956,522 lbs per year for the period of 1999-2009, but higher than the previous four years. Blue Crab productivity may be positively influenced by warmer winters and abundance may be increasing with northern range expansion due to climate change. Future warming is predicted to result in decreased winter mortality and longer growing seasons for blue crabs, as well as range expansion as areas previously unavailable to them becomes suitable (Molina 2021). The NYS DEC Great South Bay beam trawl independent survey for blue crabs suggests that blue crab populations in New York may be increasing (DEC 2022).

Figure 1. Distribution of blue crab in the Western Hemisphere



F**igure 2.** Conservation status of Blue Crab in North America (NatureServe 2024).

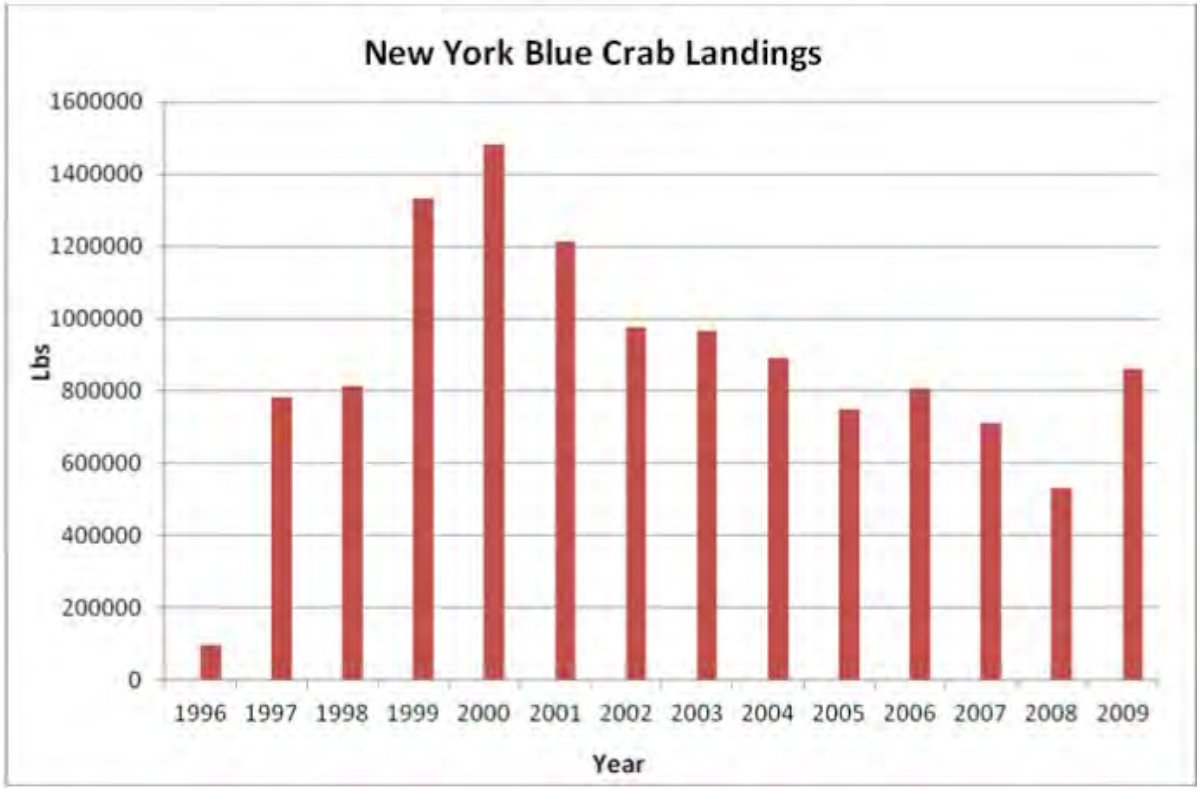


Figure 3. NYS DEC Landing Report- Kim McKown, personal communication

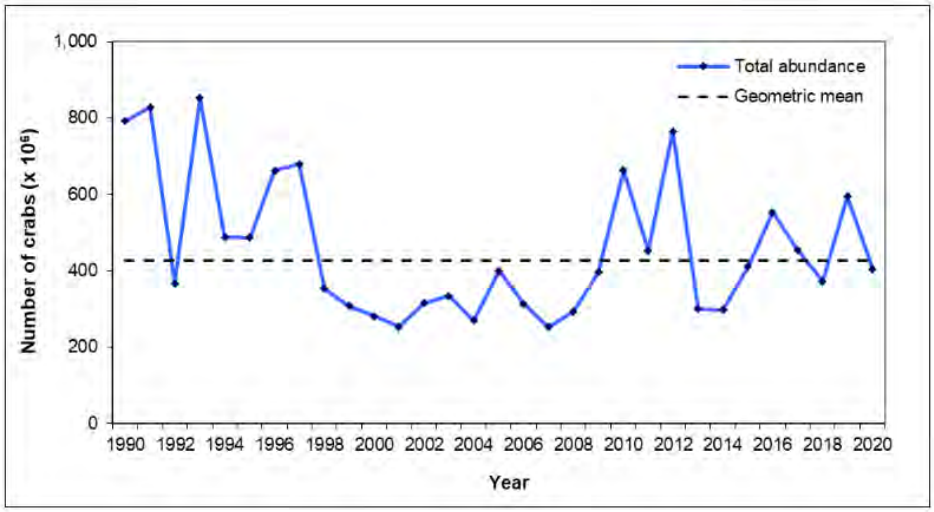


Figure 4. Winter dredge survey estimate of abundance of all crabs (both sexes, all ages) in Chesapeake Bay, 1990-2020.

III. New York Rarity *(provide map, numbers, and percent of state occupied)*

The blue crab is relatively common in the Hudson River, New York harbor, and the North and South shores of Long Island.

Details of historic and current occurrence:

Historic: Records indicate that historic blue crab landings peaked in 1880 at 1 million pounds, following a collapse which declined to 1% of that peak by 1945. Landings increased sharply in 1980, reaching another peak in 1994 (Briggs 1998).

Current: Blue crabs occur throughout estuaries of Long Island, and in the New York Harbor northward throughout the Hudson River to the Federal Dam in Troy (Rensselaer County).

New York's Contribution to Species North American Range:

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Core	

Column options
Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%; 1-25%; 0%; Choose an item
Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type *(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):*

a. Size/Waterbody Type:

1. Estuarine, Brackish Intertidal
2. Estuarine, Brackish Shallow Subtidal
3. Estuarine, Freshwater Shallow Subtidal
4. Marine, Shallow Subtidal

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/ Community Trend	Time frame of Decline/Increase
No	Yes	Stable	

Column options
Habitat Specialist and Indicator Species: Yes; No; Unknown; (blank) or Choose an item
Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

Blue crabs occupy a wide variety of habitats throughout their life history. In general, males remain in lower-salinity waters. Females migrate to higher-salinity water to spawn. Offshore, high-salinity waters are used during early larval stages. Larvae move into the estuary and use intertidal marshes, seagrass beds, and soft-sediment shorelines as they grow. In the winter months adults and juveniles will burrow into the mud or sediment until the temperatures warm in the spring (NOAA 2012).

V. Species Demographics and Life History

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
Yes	-	-	Yes	Yes	-

Column options
First 5 fields: Yes; No; Unknown; (blank) or Choose an item
Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item

Species Demographics and Life History Discussion *(include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):*

From Kenney (2001): After hatching, their lives begin as zoea, a planktonic form, moving out of the estuary at the mercy of tides and wind to develop in the near shore ocean. After 10-12 molts, about two months, the larval form gradually assumes the shape of a crab. At this stage they begin to move back into the estuary. Juvenile crabs can be found throughout the estuary as they continue to molt and grow. Female crabs are mature after 18 to 24 months, when they measure approximately five inches from point to point across the back (carapace length). Females undergo their final molt when sexually mature. It is at this final molt that the female undergoes her once in a lifetime mating event. The female then stores the sperm for future spawning events, which may occur three to four times annually over the course of her life. The eggs develop beneath her apron and she carries them until she spawns in the lower estuary in areas of high salinity. Higher salinity water has been found to be favorable for larval development (McClintock et al. 1993). Males continue to molt and grow throughout their lives. Life span in the wild is 1-3 years.

VI. Threats *(from NY 2015 SWAP or newly described)*

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
5. Biological Resource Use	5.4 Fishing & Harvesting Aquatic Resources	5.4.2 Commercial fishing	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
5. Biological Resource Use	5.4 Fishing & Harvesting Aquatic Resources	5.4.3 Poaching/persecution of aquatic species	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.4 Pathogens	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.1 Domestic & Urban Wastewater	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.2 Industrial & Military Effluents	9.2.1 Oil spills	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.2 Industrial & Military Effluents	9.2.4 PCB	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.2 Industrial & Military Effluents	9.2.5 Mercury	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.5 Air-Borne Pollutants	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1: Recommended conservation actions for blue crab.

Blue crabs in New York are on the northern extreme of their geographic range and are subject to high mortality in particularly cold winters (Kenney 2005). During the last decade, blue crab populations in the Chesapeake Bay reached some of their lowest numbers ever due to overexploitation and habitat degradation (NOAA 2012). New York is facing the same habitat degradation as a result effluent discharging into the Hudson River and Atlantic Ocean as well as dredging and development throughout the coast. The lack of harvest limits on commercial blue crab fishers in New York may overexploit the current population. Additionally, the blue crab is threatened by the potential establishment of the Chinese Mitten Crab (*Eriocheir sinensis*). The Chinese mitten crab, an invasive species, was found in 2008 in the Hudson River as far north as Tivoli Bays. Even though the sightings remain low, this is a major concern because they are aggressive and may compete with the native blue crab in the river. Threats facing the New York blue crab population include habitat degradation associated with coastal development, dredging, and pollution. Nutrient pollution from discharged effluent can cause hypoxia, and toxic compounds may negatively impact survival and reproduction of this species. Commercial and recreational harvest of Blue Crab may potentially threaten this species if overexploited.

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes: _X__ No: _____ Unknown:_____

If yes, describe mechanism and whether adequate to protect species/habitat:

There are currently harvest limits and fishing regulations in place for recreational and commercial blue crab fisheries in New York. Each person is permitted to catch up to 50 crabs a day for personal use. There is a size limit from point to point across the back: 4.5 inches for hard crabs, 3.5 inches for soft crabs, and 3 inches for peeler crabs (a crab that is undergoing a molt). Possession of females with eggs is not permitted. A permit is necessary to take and/or sell more than 50 crabs (DEC 2023).

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

New York currently assesses trends in blue crabs with landing reports; this leaves a gap in the data because recreational fishers do not need to report their catch. Monitoring of New York Blue Crab populations is made primarily with the Great South Bay Beam Trawl Survey, which collects data on abundance, distribution, and productivity. Commercial landing reports and fisheries dependent surveys also supplement data on Blue Crab population abundance.

Action Category	Action	Description
C.6 Design and Plan Conservation	C.6.2.3.0 Conserve without acquisition (legally binding)	Manage harvesting of Blue Crab

Table 2: Recommended conservation actions for blue crab.

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