

Species Status Assessment

Class: Reptilia
Family: Trionychidae
Scientific Name: *Apalone spinifera spinifera*
Common Name: Eastern spiny softshell

Species synopsis:

The spiny softshell is an aquatic turtle that occurs in lakes and large rivers and their associated wetlands. It is found in the central portion of the United States, reaching the eastern extent of its range in New York; there is a disjunct population in the Vermont waters of Lake Champlain. The eastern spiny softshell turtle was previously known as *Trionyx spiniferus spiniferus*, and is the only species in this family found in New York. Several other subspecies are known from North America. Spiny softshell turtles in Lake Champlain may be genetically unique (Weisrock and Janzen 2000); none have been found on the New York side of the lake. Shoreline development is the most significant threat to spiny softshell turtles.

I. Status

a. Current and Legal Protected Status

- i. Federal Not Listed Candidate? No
- ii. New York Special Concern; SGCN

b. Natural Heritage Program Rank

- i. Global G5
- ii. New York S2S3 Tracked by NYNHP? Yes

Other Rank:

IUCN – Least Concern
Species of High Concern (NEPARC 2010)

Status Discussion:

This species is listed as Threatened in Vermont.

Lake Champlain is the only known location of the spiny softshell turtle in New England. It occurs only on the Vermont side of the lake and has not been documented on the New York side (Kart et al. 2005, Gibbs et al. 2007). It has been extirpated from Quebec portions of Lake Champlain. NEPARC (2010) lists spiny softshell as a species of high concern because more than 50% of northeastern states list it as SGCN.

II. Abundance and Distribution Trends

a. North America

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Time frame considered: Last 30 years

b. Regional

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Regional Unit Considered: Northeast

Time Frame Considered: Last 30 years

c. Adjacent States and Provinces

CONNECTICUT Not Present X No data _____
MASSACHUSETTS Not Present X No data _____
NEW JERSEY Not Present X No data _____
ONTARIO Not Present _____ No data _____

i. Abundance

____ declining ____ increasing ____ stable X unknown

ii. Distribution:

____ declining ____ increasing ____ stable X unknown

Time frame considered: _____

Listing Status: _____ Threatened _____

PENNSYLVANIA Not Present _____ No data _____

i. Abundance

____ declining ____ increasing X stable ____ unknown

ii. Distribution:

____ declining ____ increasing X stable ____ unknown

Time frame considered: _____

Listing Status: _____ Not Listed _____ SGCN? No

QUEBEC Not Present _____ No data _____

i. Abundance

 X declining ____ increasing ____ stable ____ unknown

ii. Distribution:

 X declining ____ increasing ____ stable ____ unknown

Time frame considered: Since 1991 _____

Listing Status: _____ Threatened _____

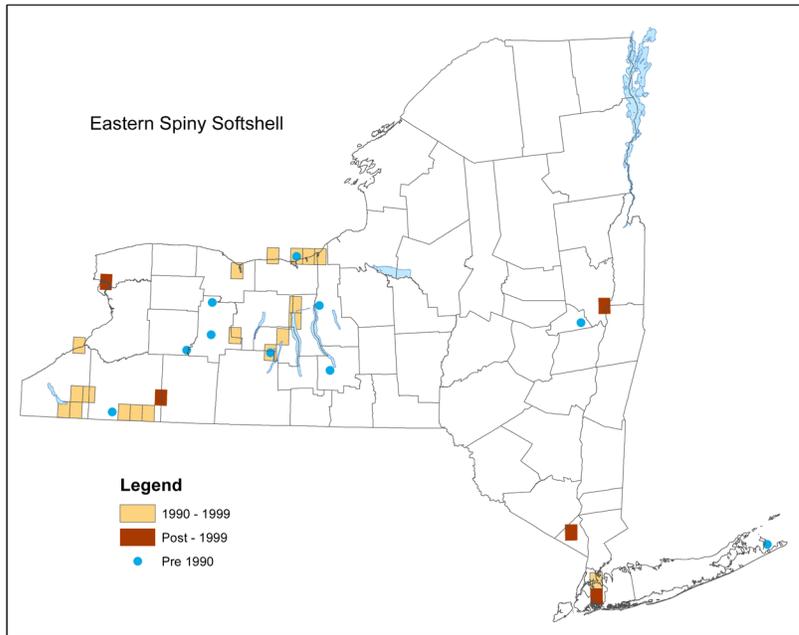


Figure 1: Distribution of spiny softshell turtle in New York (NY Amphibian and Reptile Atlas, NYSDEC)

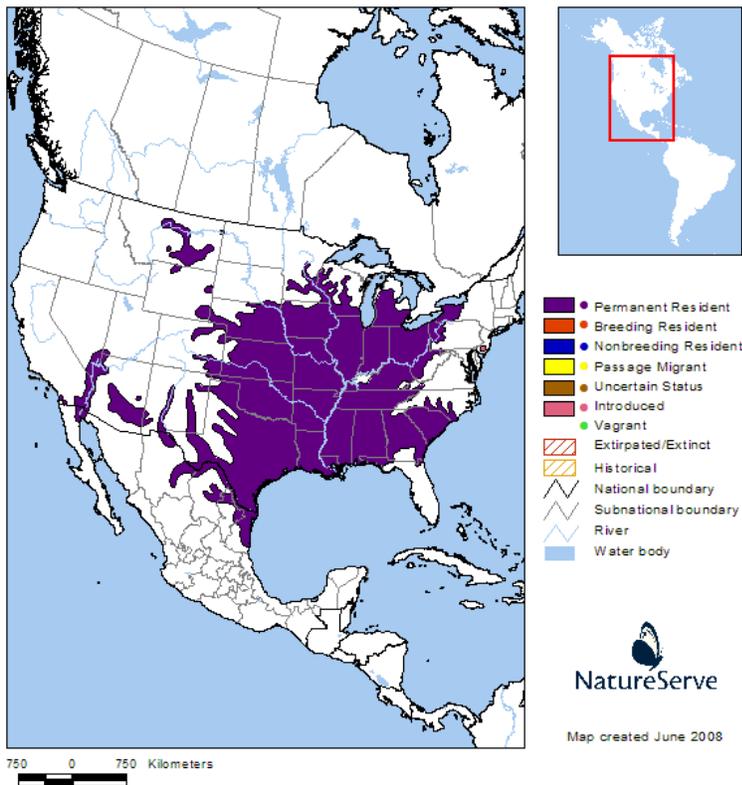


Figure 2: Distribution of spiny softshell turtle in the United States (NatureServe 2013)

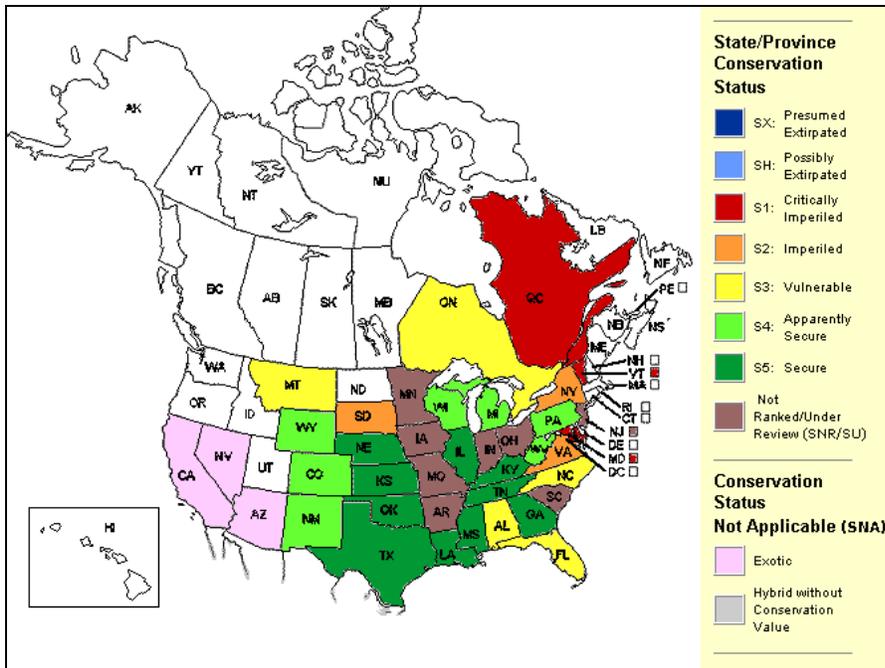


Figure 3: Conservation status of spiny softshell turtle in North America (NatureServe 2013)

III. New York Rarity, if known:

| Historic | <u># of Animals</u> | <u># of Locations</u> | <u>% of State</u> |
|----------------------|----------------------------|------------------------------|--------------------------|
| prior to 1970 | _____ | _____ | _____ |
| prior to 1980 | _____ | _____ | _____ |
| prior to 1990 | _____ | _____ | _____ |

Details of historic occurrence:

Two historic sightings were along the Mohawk River near Albany in 1842 and 1936 (Vermont Reptile and Amphibian Scientific Advisory Group 1999). It is unknown whether a Mohawk River population ever existed.

| Current | <u># of Animals</u> | <u># of Locations</u> | <u>% of State</u> |
|----------------|----------------------------|------------------------------|--------------------------|
| | _____ | _____ | <u>2%</u> |

Details of current occurrence:

The NY Amphibian and Reptile Atlas (1990-99) documented spiny softshell in 19 survey blocks (2%). Populations are known in Sodus Bay, Lake Ontario, the Allegheny and Genesee rivers, and the Great Lakes drainage (particularly the Finger Lakes). Only one survey quad in eastern NY had a record during the Atlas: Flushing in Queens County.

Since 2000, records were added to the NY Herpetology database in 5 additional survey quads, 3 of which are in eastern New York. One is in southern Washington County, another is in Orange County, and the third is in Queens County adjacent to the Flushing quad.

New York's Contribution to Species North American Range:

| % of NA Range in New York | Classification of New York Range |
|----------------------------------|---|
| <u> </u> 100 (endemic) | <u> </u> Core |
| <u> </u> 76-99 | <u> X </u> Peripheral |
| <u> </u> 51-75 | <u> </u> Disjunct |
| <u> </u> 26-50 | Distance to core population: |
| <u> X </u> 1-25 | _____ |

IV. Primary Habitat or Community Type:

1. Large/Great River
2. Reservoir/Artificial Impoundment
3. Summer-stratified Monomictic Lake
4. Riparian
5. Lake and River Shore/Beach
6. Great Lakes Freshwater Estuary Marsh

Habitat or Community Type Trend in New York:

Declining Stable Increasing Unknown

Time frame of decline/increase: _____

Habitat Specialist? Yes No

Indicator Species? Yes No

Habitat Discussion:

Spiny softshell turtles are found in large lakes, rivers, reservoirs and the protected bays and river mouths of the Great Lakes (Gibbs et al. 2007). Areas with a soft mud or sand bottom are preferred and rocky areas are avoided. This species is highly aquatic, basking on the surface of the water or on aerial perches provided by logs, rocks, or other structures that provide good solar exposure and little disturbance. Wetlands associated with large water bodies are used in the spring for basking. Areas of an inhabited lake or river with water depths greater than 20 feet deep are not used.

Nesting occurs in well-drained sandy or gravelly soil with little vegetation and with good solar exposure for long periods of the day. Hibernation occurs in areas with highly oxygenated water. Hibernation areas must also be free of ice scour and disturbance (VT Fish & Wildlife Department 2009).

V. New York Species Demographics and Life History

- Breeder in New York**
- Summer Resident**
- Winter Resident**
- Anadromous**
- Non-breeder in New York**
- Summer Resident**
- Winter Resident**
- Catadromous**
- Migratory only**
- Unknown**

Species Demographics and Life History Discussion:

Spiny softshells become active in April and nesting occurs in June or early July. A second clutch may be laid a few weeks later. Although females have been documented traveling as far as 4.3 miles to a nesting site (Daigle et al. 2002), the process of nesting—site selection, excavation, deposition, and closure—generally occurs in less than an hour. A range of 9 to 38 eggs are laid and will require 2 to 3 months of incubation. Hatching occurs in late September or early August, though some individuals will remain in the nest until the following spring (Gibbs et al. 2007).

Females are distinctly larger than males and reach sexual maturity at about 12 years of age. Males reach sexual maturity in 4 to 5 years. Spiny softshell turtles may live to be more than 50 years of age.

Adults have few predators. Eggs and hatchlings that remain in the nest are susceptible to infestations by sarcophagid flies. Hatchlings and small juvenile are vulnerable to raccoons and other mammals, herons, snakes, other turtles, and large fish (Ernst et al. 1994, Harding 1997).

VI. Threats:

Spiny softshells are subject to a number of threats including loss of shoreline habitat from development, intense nest predation from subsidized predators, human disturbance from beach and water recreation, dam construction, and pollution (Kart et al. 2005).

Development on lake shorelines has reduced habitat for spiny softshells, resulting in the loss of both nesting and basking habitat since areas that are preferred by turtles are also favored by people. Dams can restrict the movement of individuals and deep water structures such as marinas can disturb hibernacula. Nest predation is increased by the need for softshells to concentrate nesting efforts in reduced remaining habitat and by an increase in subsidized predators including raccoons.

Basking spiny softshell turtles are highly sensitive to disturbance by human activity including shoreline fishing (Freeman 2000) and motorized and non-motorized boats (Meyer 2001). Graham and Graham (1997) reported that disturbed turtles returned to bask within 10 to 15 minutes.

Adults are sometimes hooked by anglers (Babbitt 1936) and may die as a result. Boat propellers are also a source of recreation-related injury and mortality (Kart et al. 2005). A particularly problematic issue is the by-catch of softshells in aquatic weed harvesters used to clear navigation channels (Gibbs et al. 2007).

It is believed that spiny softshell turtles may be more susceptible to contaminants and toxins than other turtle species because of their ability for cutaneous respiration underwater (Stone et al. 1992) and their relatively permeable carapace (Dunson 1960). Pollution may have played a role in the decline of the Winooski River population in Vermont and there remains concern about contaminants in Lake Champlain and possible impacts from toxic blue-green algal blooms (Kart et al. 2005).

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

No Unknown

Yes

In 2006, the State of New York adopted legislation (ECL section 11-0107 sub 2) that gave all native frogs, turtles, snakes, lizards and salamanders legal protection as game species, with very few open to harvest. The legislation also outlaws the sale of any native species of herpetofauna regardless of its origin.

The Protection of Waters Program provides protection for rivers, streams, lakes, and ponds under Article 15 of the NYS Conservation Law.

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

It is important to develop population survey protocols and to implement protocols at known and potentially suitable sites to determine the extent of occupied habitat in the Lake Champlain Basin. Pending the results of surveys, restoration techniques should be employed for the spiny softshell at selected sites as needed, including captive breeding, head starting, nest protection, and repatriation/relocation strategies. Restoration efforts, if needed, should focus on suitable habitats in close proximity to locations where this species is observed.

Work conducted by Czech and Gibbs (2008) at Sodus Bay in central New York followed radio-tagged individuals and may provide the basis for future trend analyses. Habitat use, migration patterns, and locations of nesting sites and hibernacula were examined.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for lake and river reptiles, which includes spiny softshell. Conservation actions following IUCN taxonomy are categorized in the table.

Habitat management:

- ___ Manage the variety of adverse influences which might reduce lake/river habitat suitability for the subject reptile species, including invasive aquatic plant species, water pollutants, lake level manipulations, aquatic weed control measures, excessive disturbance by watercraft, and fishing practices which incidentally take lake/river reptiles in significant numbers.
- ___ For lake/river turtles in this group, manage uplands adjacent to aquatic habitat in order to provide adequate and secure nesting habitat sites and to provide dispersal routes for migrating animals.

Habitat research:

- ___ Develop standardized habitat survey protocols for the subject species, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Life history research:

- ___ Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and wetland/upland habitat requirements.

Modify regulation:

- ___ Adopt into New York's Environmental Conservation Law provisions which designate queen snake, eastern ribbonsnake, northern map turtle and spiny softshell as a protected small game species.

Other action:

- ___ Enhance law enforcement and public education to limit collection/translocation of wood turtles.

Population enhancement:

- Employ restoration techniques for the spiny softshell and the queen snake at selected sites as needed, including captive breeding, head starting, nest protection, and repatriation/relocation strategies.

Population monitoring:

- Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

- Develop population survey protocols and implement protocols at known and potentially suitable sites to determine the extent of occupied habitat in New York

| Conservation Actions | |
|-----------------------|---|
| Action Category | Action |
| Land/Water Management | Site/Area Management |
| Land/Water Management | Habitat and Natural Process Restoration |
| Land/Water Management | Invasive/Problematic Species Control |
| Species Management | Species Recovery |
| Education & Awareness | Awareness & Communications |
| Law/Policy | Legislation |
| Law/Policy | Compliance & Enforcement |

VII. References

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