Species Status Assessment

Common Name: Northern Spiny Softshell **Date Updated:** April 2025

Scientific Name: *Apalone spinifera spinifera*

Updated By: NYSDEC Wildlife Diversity Section

Class: Reptilia

Family: Trionychidae

Species Synopsis:

The northern spiny softshell (*Apalone s. spinifera*), formerly known as the eastern spiny softshell, is an aquatic turtle that inhabits lakes, reservoirs, protected bays, large rivers, and their associated marshes and tributaries. It is found in the central United States, including most of the Mississippi-Missouri-Ohio and Great Lakes systems, with several isolated populations around the Great Lakes and a disjunct population in the Vermont waters of Lake Champlain (Doody et al. 2024). Spiny softshells in Lake Champlain may be genetically unique (Weisrock and Janzen 2000), and none have been found on the New York side of the Lake.

The northern spiny softshell is one of six recognized subspecies of *Apalone spinifera* (*A. s. spinifera, A. s. aspera, A. s. atra, A. s. emoryi, A. s. guadalupensis,* and *A. s. pallida)*, and is the only subspecies native to New York. It was previously classified as *Trionyx spiniferus spiniferus,* but was reclassified into the genus *Apalone* by Meylan (1987). The standard English name was recently changed from Eastern Spiny Softshell to Northern to reflect its distribution relative to other US softshells (Nicholson 2025, Turtle Taxonomy Working Group 2021).

Habitat loss, mainly through shoreline development, erosion, and the submersion of nesting areas, poses the most significant threat to spiny softshell turtles (COSEWIC 2016, Lazure et al. 2019).

I. Status

a. Current legal protected Status

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

ii. **New York:** Special concern; HPSGCN

b. Natural Heritage Program

i. **Global:** G5

ii. **New York:** S2S3 **Tracked by NYNHP?:** Yes

Other Ranks:
-IUCN Red List: Least Concern
-COSEWIC: Endangered (*Apalone spinifera*)
-Northeast Regional SGCN List (2023): Watchlist [Assessment Priority]
-NEPARC Regional List (2010): Species of High Concern

Status Discussion:

The International Union for Conservation of Nature (IUCN) lists the spiny softshell as a species of Least Concern, citing that it appears to be “widespread and generally abundant” within the core of its range (Doody et al. 2024). However, the Northeast Partners in Amphibian and Reptile Conservation (NEPARC 2010) classifies the species as one of high concern because more than 50% of northeastern states have it designated as a Species of Greatest Conservation Need in their Wildlife Action Plans. Similarly, the Northeast Fish and Wildlife Diversity Technical Committee has placed the spiny softshell on the Northeast Regional Watchlist Assessment Priority list. This category includes species that are data deficient, have uncertain taxonomy, or are showing varying trends across the region, highlighting the need for further surveys and research (TC and NFWDTC 2023).
In Canada, the species is listed as endangered (COSEWIC 2016), and in Vermont it is classified as threatened (Vermont Fish and Wildlife Department 2009). Lake Champlain is the only known location of the spiny softshell in New England, where it is found exclusively on the Vermont side of the lake and has not been recorded on the New York side (Kart et al. 2005, Gibbs et al. 2007). The species has been extirpated from the Quebec portions of Lake Champlain.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Stable	Stable	Last 30 years		
Northeastern US	Yes	Declining	Declining	Last 30 years		Watchlist
New York	Yes	Unknown	Unknown		Special Concern	Yes
Connecticut	No	N/A	N/A			
Massachusetts	No	N/A	N/A			
New Jersey	Yes	Unknown	Unknown	Since 1961	Introduced	No
Pennsylvania	Yes	Stable	Stable		Not listed	No
Vermont	Yes	Declining	Declining	Since late 1980s	Threatened	Yes
Ontario	Yes	Declining	Declining	Since 1991	Endangered	
Quebec	Yes	Declining	Declining	Since 1991	Endangered	

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:

There are currently no regular monitoring activities in New York, however, the need for this work has been identified. Future work may include surveys of historic sites, monitoring of known sites, and protection and enhancement of nesting areas.

Research on the status, distribution, and life history of spiny softshells in New York was conducted under State Wildlife Grant T-22 during 2006 and 2007 (Czech and Gibbs 2008). Additionally, the New York Amphibian and Reptile Atlas Project (Herp Atlas), conducted from 1990-1999, documented the geographic distribution of all species of amphibians and reptiles in the state. The Herp Atlas database also includes pre-1990 records from various sources, such as museum records, researchers' field notes, and published literature.

Trends Discussion:

Populations in the core of the North American range are thought to be stable (Doody et al. 2024), but trends in the northeastern edge appear to be declining (Vermont Fish and Wildlife Department 2009, COSEWIC 2016). The long-term population trend in New York is unknown, though there is evidence that the species could be declining in at least parts of its range.

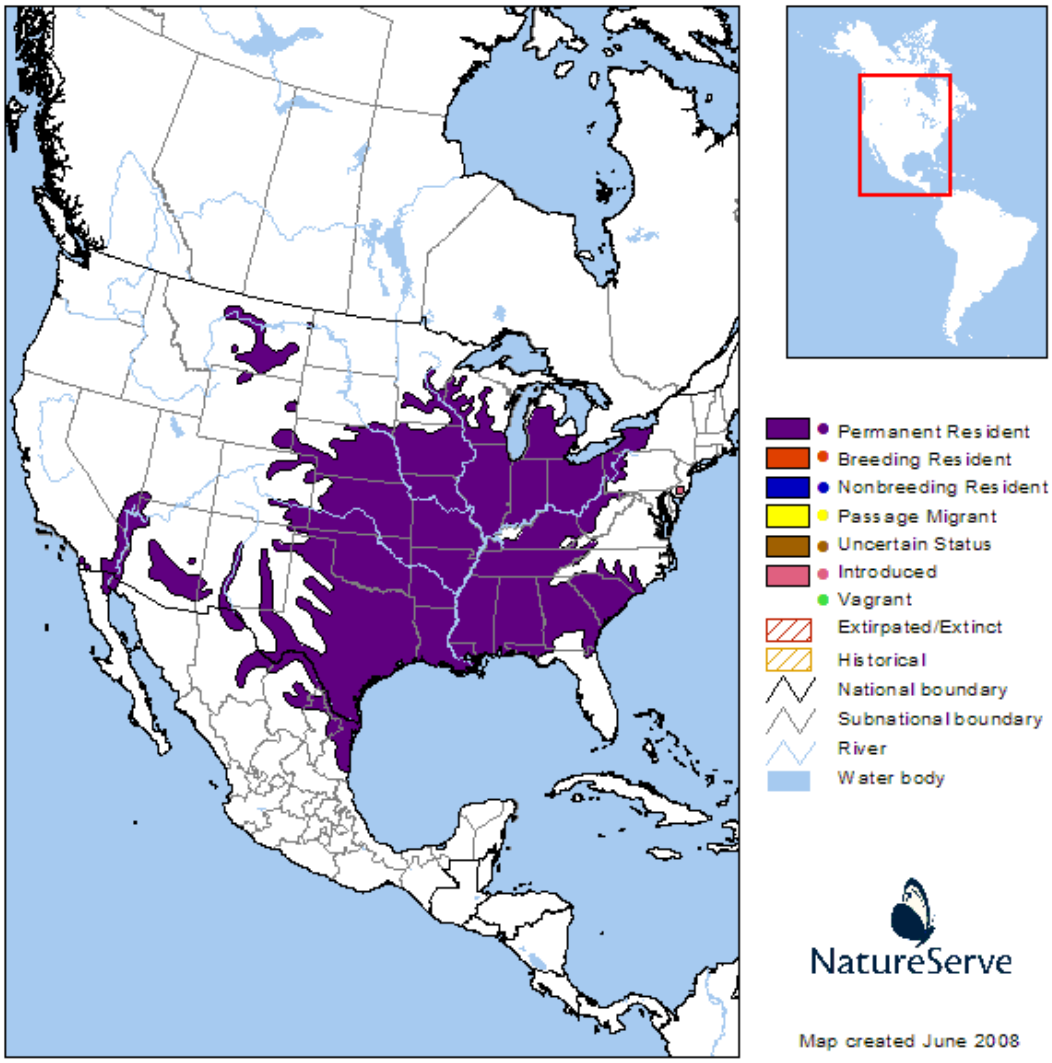

Figure 1: Distribution of the spiny softshell (*Apalone spinifera*) in the United States (NatureServe 2013)

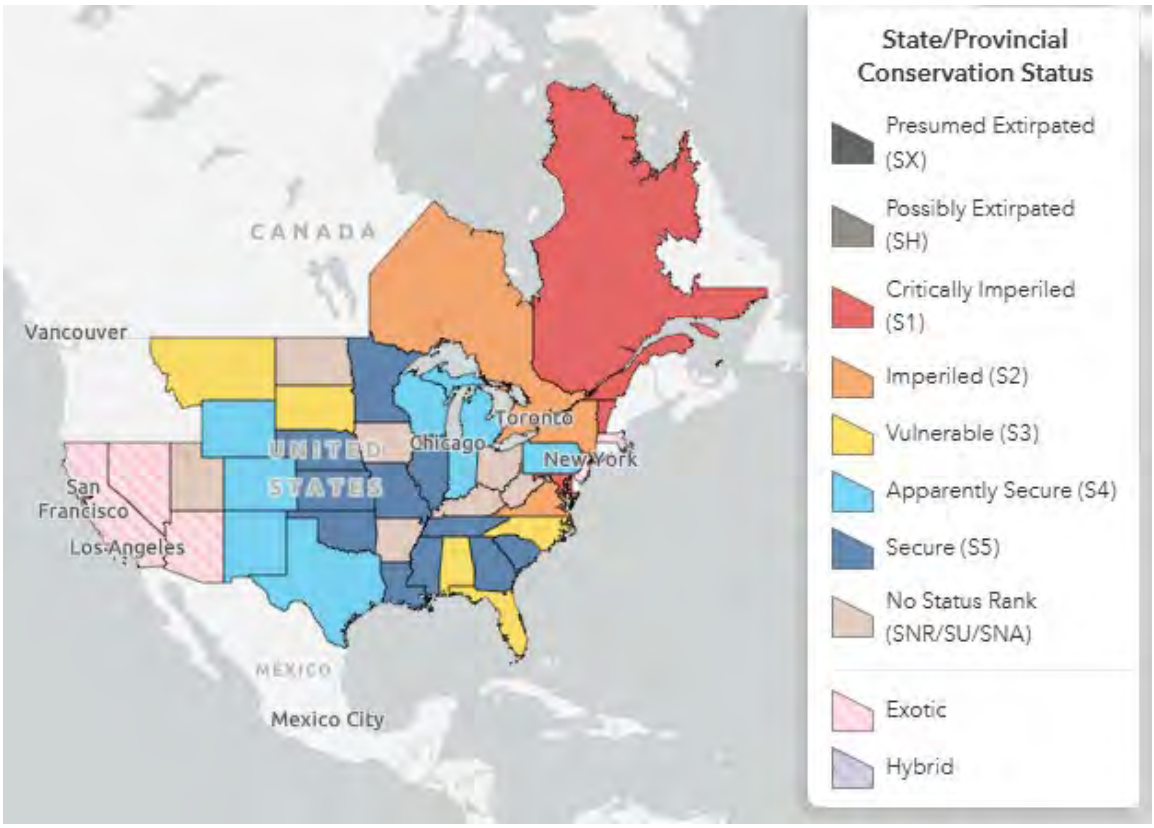

Figure 2: Conservation status of the spiny softshell turtle (*Apalone spinifera*) in North America (NatureServe 2024)

III. New York Rarity:

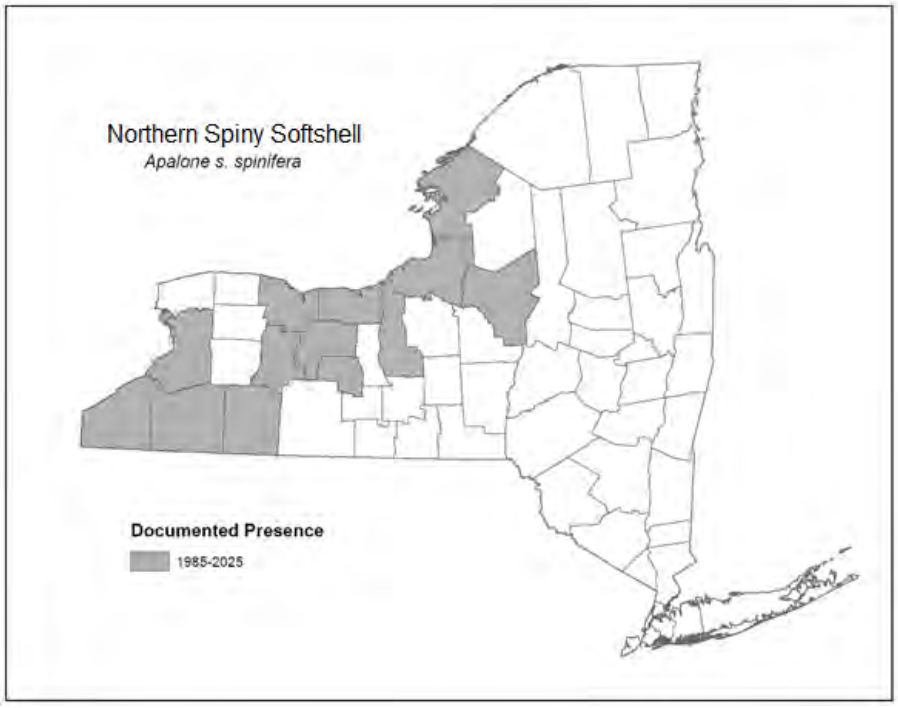

Figure 3: Distribution of the northern spiny softshell in New York, 1985-2025 (NY Herpetology Database, NYSDEC)

Details of historic and current occurrence:

Spiny softshells have been reported from several western New York counties and the Great Lakes drainages (including the Finger Lakes and Genesee River) (Gibbs et al. 2007). Although softshells are found on the Vermont side of Lake Champlain, there are no known records on the New York side of the Lake (Gibbs et al. 2007). Two historic sightings were also reported along the Mohawk River near Albany in 1842 and 1936 (Vermont Reptile and Amphibian Scientific Advisory Group 1999), though it is unknown whether a Mohawk River population ever existed.

The NY Amphibian and Reptile Atlas (1990-99) documented spiny softshells in 19 survey quadrangles (USGS 7.5 minute topographic quadrangle). Since 2000, records were added to the NY Herpetology database in seven additional survey quads, three of which are in eastern New York. One in southern Washington County, another in Orange County, and the third in Queens County. Observations in eastern NY are likely the result of releases.

The spiny softshell is also tracked by the New York Natural Heritage Program (NYNHP), and to date, this species has been documented at twenty-two sites in New York (NYNHP 2025). Since 2000, individuals have been sighted at seventeen of the twenty-two known locations. Five of the twenty-two known sites have not had turtles sighted in recent years.

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%	Peripheral	

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.** Large/Great River
- **b.** Reservoir/Artificial Impoundment
- **c.** Summer-stratified Monomictic Lake
- **d.** Riparian
- **e.** Lake and River Shore/Beach
- **f.** Great Lakes Freshwater Estuary Marsh

Habitat or Community Type Trend in New York

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

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.

Nesting occurs in well-drained sandy or gravelly soil with little vegetation and adequate 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. Species Demographic, 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:

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 require two to three months of incubation (Gibbs et al. 2007). 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 (VT Fish & Wildlife Department 2009). Males reach sexual maturity in 4 to 5 years (Gibbs et al. 2007). 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 juveniles 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 habitat loss from shoreline development, intense nest predation by subsidized predators, human disturbance from recreational activities, dam construction, and pollution (Kart et al. 2005, COSEWIC 2016).

Shoreline development has greatly reduced available habitat for spiny softshells, resulting in the loss of both nesting and basking areas. The preferred habitats of spiny softshells often overlap with areas favored by people, compounding the problem. Dams also pose a threat by restricting the movement of individuals, and deep-water structures, such as marinas, can disturb hibernacula. Nest predation is increased as softshells are forced to concentrate nesting efforts in the reduced remaining habitat, which can lead to higher predation by subsidized predators like 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, but repeated disturbances can disrupt their behavior and reduce their basking opportunities.

Spiny softshells are sometimes hooked by anglers (Babbitt 1936), which can result in injury or death. Boat propellers are also a source of recreation-related injuries and mortality (Kart et al. 2005). One particularly concerning issue is the bycatch of softshells in aquatic weed harvesters, which are 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 at al. 1992) and their relatively permeable carapace (Dunson 1960). Pollution may have contributed to the decline of the Winooski River population in Vermont, and concerns persist about contaminants in Lake Champlain, and possible impacts from toxic blue-green algal blooms (Kart et al. 2005).

Weather conditions associated with global climate change, such as heavy rain or extreme heat, can potentially affect the nesting period causing nest failure, which may negatively affect recruitment and consequently, population levels. While Lazure et al. (2019) did not find any significant temporal changes in nesting period in a Quebec subpopulation from 2009-2016, further research is needed to fully assess the potential effects of climate change on this species.

Recently, historically high water levels on Lake Ontario have caused widespread habitat loss and destruction. In 2017 and 2019, significant prolonged high water events resulted in severe shoreline flooding and erosion (ILOSLRB 2018, McNeil 2020). If such events continue in the future, they may cause lasting impacts to spiny softshells inhabiting the Lake Ontario coastline and connected waterways.

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	(loss/degradation of shoreline habitat)	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	5.4.1 Recreational or subsistence fishing (for food)	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	5.4.1 Recreational or subsistence fishing (bycatch)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
6. Human Intrusions & Disturbance	6.1 Recreational Activities	6.1.4 Recreational boating (strikes (Sodus Bay study))	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
7. Natural System Modifications	7.2 Dams & Water Management/Use	7.2.1 Water level management using dams (restrict movement)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
7. Natural System Modifications	7.3 Other Ecosystem Modifications	7.3.4 Beach development (shoreline bulkheads)	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	8.1.4 Aquatic plants (bycatch in aquatic weed harvesters)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.2 Problematic Native Plants & Animals	8.2.5 Increased predation by mesopredators(nest predation from subsidized predators including raccoons)	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.

Table 1. Threats to northern spiny softshell.

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

Yes: ✓ **No:** _____ **Unknown:** _____

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

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.

Under Article 15 Title 5 of the New York State Environmental Conservation Law, the Protection of Waters program provides protection for the state's water resources, including rivers, streams, lakes, and ponds. Environmental Conservation Law (section 15-0501 sub 1) prohibits the modification or disturbance of the course, channel, or bed of any stream without permit from the department.

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 across the state, particularly in the Lake Champlain Basin. Pending the results of surveys, restoration techniques should be employed for the spiny softshell at selected sites as needed. 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. Actions that have been accomplished, or where progress has been made, are indicated with a check.

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 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.

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct Habitat Management	Site/Area management
A.2 Direct Species Management	A.2.0.0.0 Direct Species Management	Invasive/problematic species control
A.2 Direct Species Management	A.2.0.0.0 Direct Species Management	Species Recovery
B.3 Outreach	B.3.1.0.0 Outreach, communication, and distribution	Awareness & Communications
B.4 Law Enforcement and Prosecution	B.4.0.0.0 Law Enforcement and Prosecution	Compliance and Enforcement

Action Category	Action	Description
C.6 Design and Plan Conservation	C.6.5.1.3 Develop a conservation, management, or restoration plan for protected private lands	Habitat and natural process restoration
C.7 Legislative and Regulatory Framework or Tools	C.7.1.2.0 Create, amend, or influence legislation	Legislation

Table 2. Recommended conservation actions for northern spiny softshell.

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