

## Species Status Assessment

**Class:** Reptilia  
**Family:** Emydidae  
**Scientific Name:** *Glyptemys insculpta*  
**Common Name:** Wood turtle

### Species synopsis:

Formerly classified in the genus *Clemmys*, the wood turtle was recently placed in the newly created genus, *Glyptemys* (Parham and Feldman 2000). This relatively large turtle is both aquatic and terrestrial, using riparian corridors along clean, flowing streams and rivers, and adjacent woodlands and meadows (Gibbs et al. 2007). The range extends from Nova Scotia southward to Virginia and westward to Minnesota (Ernst and Lovich 2009). In New York, wood turtles occur statewide, with concentrations in the southeastern part of the state.

Although wood turtles remain common, widespread declines have resulted in a high level of concern for the species. Wood turtles are threatened by mortality from agricultural practices and vehicles, habitat loss and fragmentation, and pollution, and are also severely affected by collection for the pet trade. Their life history characteristics of delayed sexual maturity and low juvenile recruitment increase their vulnerability to these threats.

### 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**      G3
- ii. **New York**    S3      **Tracked by NYNHP?**    No

### Other Rank:

NYNHP – Watch List

IUCN Red List – Endangered

NEPARC – Species of Severe Concern and high responsibility

Species of Northeast Regional Conservation Concern (Therres 1999)

COSEWIC - Threatened

**Status Discussion:**

The IUCN ranked wood turtle as Vulnerable in 1996 and changed it to Endangered in 2011. It has been listed as Threatened in New Jersey since 1979, and is ranked as Vulnerable, Imperiled, or Critically Imperiled in all but two states and provinces where it occurs. The Northeast Endangered Species and Wildlife Diversity Committee has recommended that wood turtles be considered for listing under the federal Endangered Species Act.

The Northeast Partners in Amphibian and Reptile Conservation (NEPARC) recognizes the wood turtle as a species of high regional responsibility because >50% of the wood turtle's range is in the Northeast. NEPARC (2010) identified the wood turtle as a species of severe concern because it is listed in more than 75% of Wildlife Action Plans in northeastern states, and as a high responsibility species because the Northeast comprises more than 50% of the distribution.

**II. Abundance and Distribution Trends**

**a. North America**

**i. Abundance**

X  declining \_\_\_ increasing \_\_\_ stable \_\_\_ unknown

**ii. Distribution:**

X  declining \_\_\_ increasing \_\_\_ stable \_\_\_ unknown

**Time frame considered:**  Since late 1970s

**b. Regional**

**i. Abundance**

X  declining \_\_\_ increasing \_\_\_ stable \_\_\_ unknown

**ii. Distribution:**

X  declining \_\_\_ increasing \_\_\_ stable \_\_\_ unknown

**Regional Unit Considered:**  Since late 1970s

**Time Frame Considered:**  Northeast

**c. Adjacent States and Provinces**

**CONNECTICUT**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

  X   declining    \_\_\_ increasing            \_\_\_ stable            \_\_\_ unknown

**ii. Distribution:**

  X   declining    \_\_\_ increasing            \_\_\_ stable            \_\_\_ unknown

Time frame considered:   Not Specified  

Listing Status: \_\_\_\_\_   Special Concern                        SGCN?   Yes  

**MASSACHUSETTS**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

  X   declining    \_\_\_ increasing            \_\_\_ stable            \_\_\_ unknown

**ii. Distribution:**

  X   declining    \_\_\_ increasing            \_\_\_ stable            \_\_\_ unknown

Time frame considered:   Declining by 6.6-11.2% annually (Jones 2009)  

Listing Status: \_\_\_\_\_   Special Concern                        SGCN?   Yes  

**NEW JERSEY**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

  X   declining    \_\_\_ increasing            \_\_\_ stable            \_\_\_ unknown

**ii. Distribution:**

  X   declining    \_\_\_ increasing            \_\_\_ stable            \_\_\_ unknown

Time frame considered:   Listed in 1979; monitored since then  

Listing Status: \_\_\_\_\_   Threatened                        SGCN?   Yes





In Ontario, three wood turtle populations that have been studied for at least ten years have experienced declines ranging from 30% to 70% (Ontario Wood Turtle Recovery Team 2010).

There are no specific population trends available in New York.

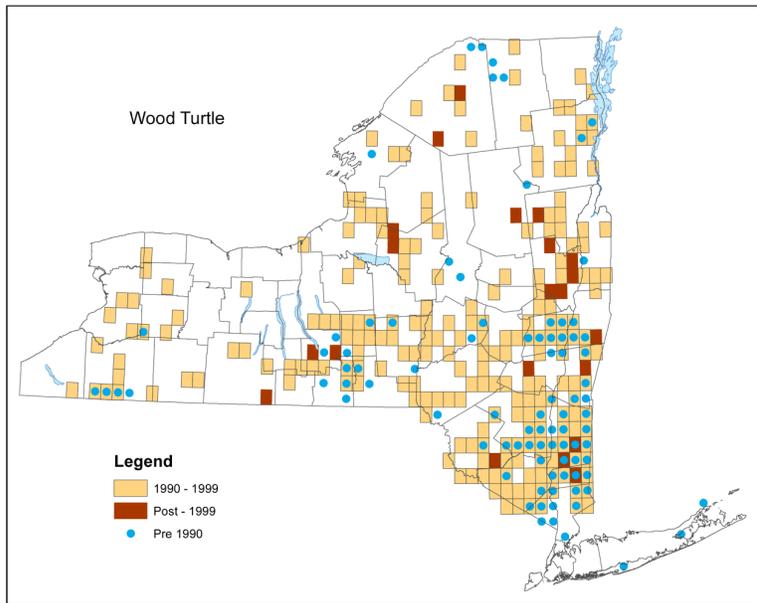


Figure 1: Distribution of wood turtle in New York (NY Herpetology database, NYSDEC)

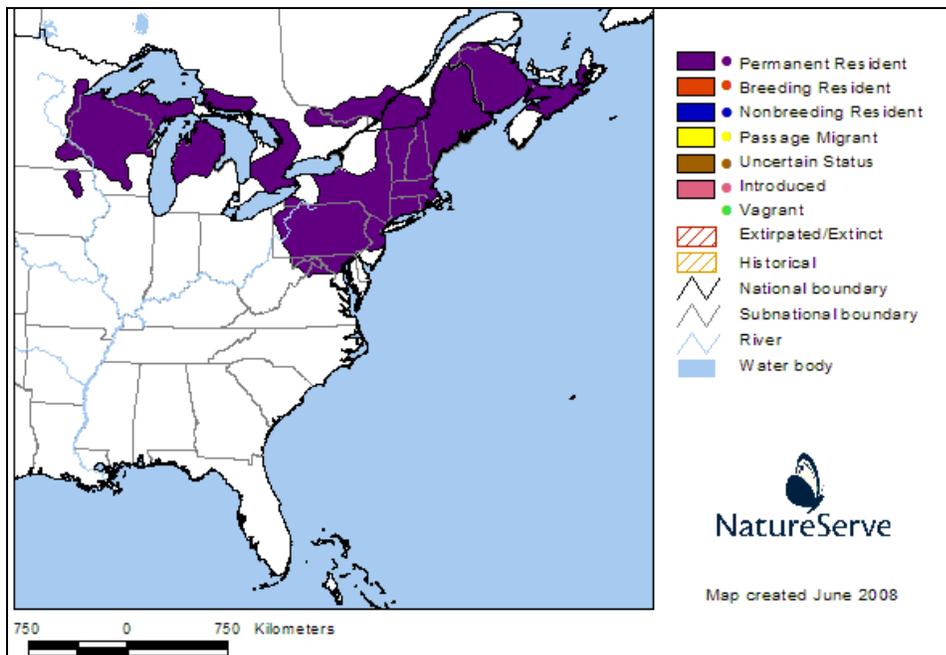


Figure 2: Distribution of wood turtle in North America (NatureServe 2013)

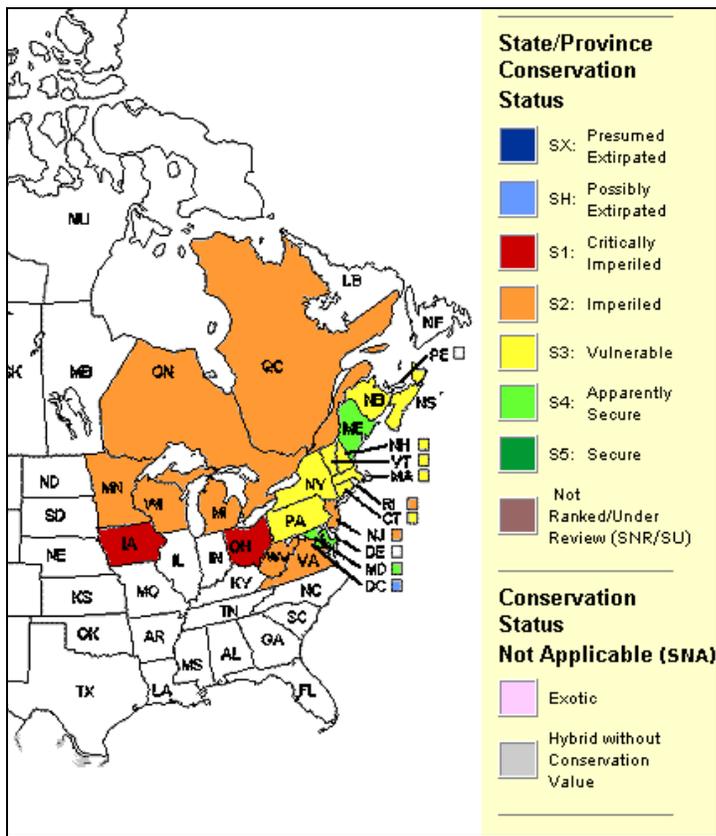


Figure 2: Conservation status of wood turtle in North America (NatureServe 2013)

**III. New York Rarity, if known:**

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

**Details of historic occurrence:**

Although historical records in the NY Herpetology database do not represent a thorough historic survey, the distribution map suggests that wood turtles have been extirpated from Long Island.

<b>Current</b>	<b><u># of Animals</u></b>	<b><u># of Locations</u></b>	<b><u>% of State</u></b>
	_____	_____	<u>25%</u>

**Details of current occurrence:**

The NY Amphibian and Reptile Atlas (1990-99) documented wood turtles in 198 survey quads statewide (out of 979); most records are in the Hudson River Valley. Records were added after 1999 in additional 22 survey quads.

**New York's Contribution to Species North American Range:**

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



Terrestrial habitats are used extensively. Quinn and Tate (1991) found that only 14% of observations were in aquatic habitats, and Kaufmann (1992) notes terrestrial use for as many as 33 consecutive days. Fields and meadows—frequently containing alder, willow, or meadowsweet thickets or multiflora rose—adjacent to streams and rivers are used for basking and feeding. Early to mid-successional forests composed of oak, black birch, and red maple are also used, as are hemlock forests and agricultural land (Kaufman 1992). Nesting occurs on railroad grades, sand/gravel pits, eroding river banks, sand bars, and dirt roads (Bowen and Gillingham 2004).

Hibernation occurs in water, and large numbers of individuals may hibernate together. A variety of places are used as hibernacula including muskrat burrows, tree roots along stream banks, beaver ponds, and stream bottoms (Bowen and Gillingham 2004). Smaller creeks offer a more diverse assortment of refugia, and turtles are encountered in smaller numbers over a longer stretch of creekbed (W. Hoffman pers. comm.).

## **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:**

Wood turtles mate in both spring and fall (Kaufmann 1992), and nesting occurs in New York from May to early July (Gibbs et al. 2007). One clutch of 5 to 18 eggs is laid each year. Incubation lasts for about 70 days and hatchlings emerge sometime between mid-August and October. Wood turtle hatchlings are not known to overwinter in the nest as some other turtle species sometimes will. Both males and females reach sexual maturity between the ages of 10 and 18 years. Adults regularly reach 80 years of age and older, and do not exhibit signs of senescence (Jones 2009).

While wood turtles spend considerable time using terrestrial habitats, they generally remain within 300m from their home wetland (Kaufmann 1992). Significant long-range movements have been reported as well, up to 600m in Pennsylvania (Kaufmann 1992), and 1,700m along a stream corridor in Vermont (Parren, unpubl. data *in* Fowle 2001). In Rensselaer County, a marked wood turtle was recaptured 7.6km upstream from the original point of capture (W. Hoffman, unpublished data). Wood turtles exhibit site fidelity (Bowen and Gillingham 2004). Jones (2009) reported that floods are a mechanism of population connectivity, noting that 7% of wood turtles in one watershed were displaced annually; some overwintered in displaced areas and others returned.

Jones (2009) reported population densities in New Hampshire and Massachusetts ranged from 0 to 40.4 turtles/river kilometer, and that density was negatively correlated with agriculture. Observed mortality resulted from agricultural machinery followed by road mortality and mammalian predation. Brooks et al. (1992) report high nest predation rates and a high incidence of injury to adults by predators; 15 of 17 nests were predated, and 60% of all adults in the study had injuries from predators. Raccoons are common predators of adult wood turtles (Harding 1991), and ravens, crows, and coyotes consume eggs (Harding and Bloomer 1979). Leeches are common on wood turtles, affecting as many as 90% of captured individuals (Farrell and Graham 1991), but infestation declines during summer months when turtles are dry for longer periods of time (Koffler et al. 1978).

## **VI. Threats:**

Jones (2009) reports that wood turtle populations in New Hampshire and Massachusetts are declining due to anthropogenic and natural factors. Wood turtle populations have been reduced by pollution of streams, development of wooded stream banks, the increase in predation due to human-subsidized predators including raccoons and skunks, and agricultural activities.

Commercial collection for the pet trade is a serious problem (Levell 2000). Wood turtles are highly prized in the pet trade, commanding \$100 to \$125 for an adult (Reed and Gibbons 2002). Reed and Gibbons (2002) estimated that 30% of wood turtles in the pet trade were wild-caught, and included wood turtle in the top ten turtle species that are most vulnerable to collecting.

Wood turtles are susceptible to disturbance from recreational activities ranging from hiking to ATV use. Garber and Burger (1995) found a correlation between population decline at two sites and the introduction of recreational activity (fishing and hiking) at those sites. Females are likely to abandon a nest if disturbance occurs before egg-laying begins (Fowle 2001).

Road mortality is a significant threat to this species, as the number and density of roads continues to increase and further fragment the remaining habitats. Other barriers to wood turtle movement include fences, roadside curbs, railroad tracks, and retaining walls (Fowle 2001).

Because wood turtles use open, upland habitats including meadows and agricultural fields, they are vulnerable to activities that occur there. Wood turtles are killed by farm equipment during hay-mowing operations, plowing, and mowing (Fowle 2001, Jones 2009). Due to their requirement for clean water, wood turtles can be considered pollution intolerant, thus they may be affected by pesticide use (Harding and Bloomer 1979). Kaufman (1992) noted that some agricultural operations and moderate logging may benefit wood turtles by providing a mixture of food types and cover types near wooded streams.

Damming and channelizing of rivers can degrade or destroy wood turtle habitat (Harding and Bloomer 1979). Water released from dams can flood nests that are located on banks and sandbars downstream from the dam. Such flooding is likely to kill the incubating eggs (Compton 1999). Climate change may negatively affect populations through increased flooding (Jones 2009).

Wood turtles may also suffer from ingesting litter such as plastics and fishing gear (Burger and Garber 1995).

**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, and most turtle species are not open to harvest. The legislation also outlaws the sale of any native species of herpetofauna regardless of its origin.

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. However, subsection 6 of the same section provides the authority to override the need for a permit to conduct activities that will modify or disturb a water channel for the immediate safe-guarding of any person or persons or to prevent damage to personal or real property.

Wood turtle is protected under Appendix II of CITES.

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

The Northeast Wood Turtle Working Group was convened in 2009. As a result of working group coordination, a status assessment and conservation planning process was initiated in 2011, and was funded in 2012. Bowen and Gillingham (2004) list five publications that suggest steps and guidelines for conservation of wood turtles. Suggestions are generalized as protection of habitat, particularly nesting habitats, and ensuring that populations remain undisturbed.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for lake and river reptiles, which includes wood turtle. 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
External Capacity Building	Alliance & Partnership Development

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