

## Species Status Assessment

**Class:** Reptilia  
**Family:** Emydidae  
**Scientific Name:** *Terrapene carolina carolina*  
**Common Name:** Woodland box turtle

### Species synopsis:

The box turtle is widely distributed from southern Ontario southward to Florida and westward to the Rocky Mountains and the Yucatan Peninsula. One of six subspecies, the woodland box turtle occurs from southern Ontario and Maine through central Michigan, Illinois, and Georgia. New York is at the northern edge of the main distribution. Box turtles are generally terrestrial, using a variety of dry and moist woodlands, but also may use marshy areas; sandy soil is typical of occupied habitats. Populations are thought to be declining, although long-term trends in abundance are not widely available. In addition to facing threats of habitat loss, road mortality, and collection for the pet trade, this species is challenged by delayed sexual maturity and high mortality of eggs and young (Erb 2011).

### 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**    S3      **Tracked by NYNHP?**    No

#### Other Rank:

NY Natural Heritage Program – Watch List  
CITES Appendix II  
IUCN – Vulnerable  
NEPARC – Species of Severe Concern  
Species of Northeast Regional Conservation Concern (Therres 1999)

**Status Discussion:**

Box turtles are relatively uncommon in New York, occurring primarily on Long Island, in the southeastern part of the state, and sparsely northward along the Hudson Valley. The species is listed as endangered in Maine and as Special Concern in New Hampshire, Massachusetts, New York, Connecticut, and Ohio. Although Maine and New Hampshire have numerous reports of box turtle, no extant populations are currently known in either state; box turtle is not native in Vermont (Erb 2011). Populations that occur in central and western New York, as well as those in southern Ontario may be the result of released pets (Gibbs et al. 2007, COSEWIC 2013). NEPARC (2010) lists woodland box turtle as a species of severe concern because more than 75% of northeastern states list it as SGCN.

**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:**   Last 50 years  

**b. Regional**

**i. Abundance**

  X   declining    \_\_\_increasing       \_\_\_stable    \_\_\_unknown

**ii. Distribution:**

  X   declining    \_\_\_increasing       \_\_\_stable    \_\_\_unknown

**Regional Unit Considered:**   Northeast  

**Time Frame Considered:**   Since 1950s

**c. Adjacent States and Provinces**

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

**i. Abundance**

\_\_\_\_ declining    \_\_\_\_ increasing            \_\_\_\_ stable              X   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**

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

**ii. Distribution:**

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

Time frame considered:   Not specified (401 occurrences 1980-2004)  

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:   Not Specified  

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



**d. NEW YORK**

No data \_\_\_\_\_

**i. Abundance**

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

**ii. Distribution:**

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

Time frame considered:  Last 30 years \_\_\_\_\_

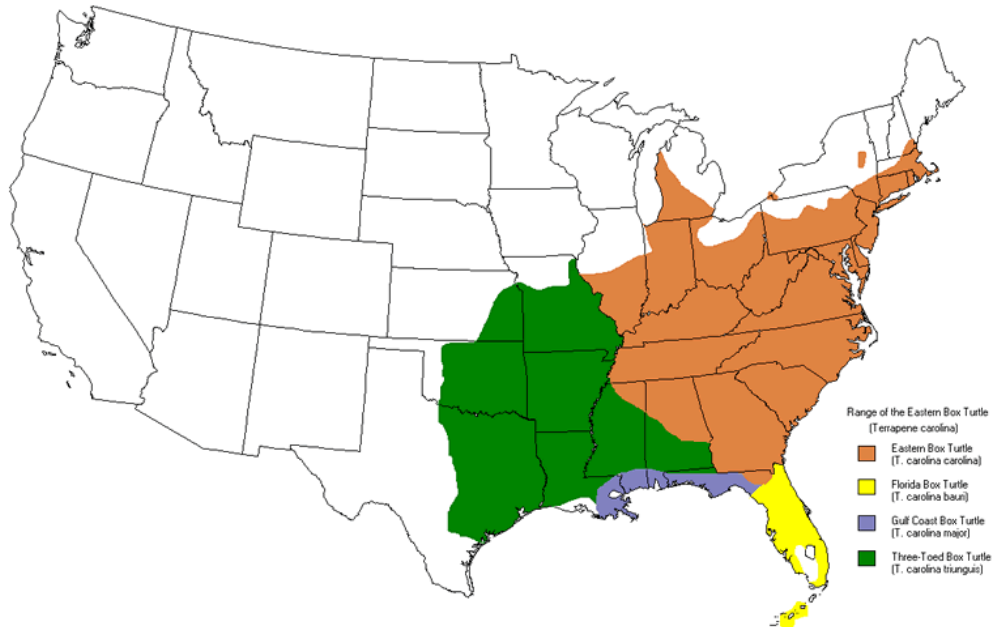
**Monitoring in New York.**

There are no regular monitoring activities.

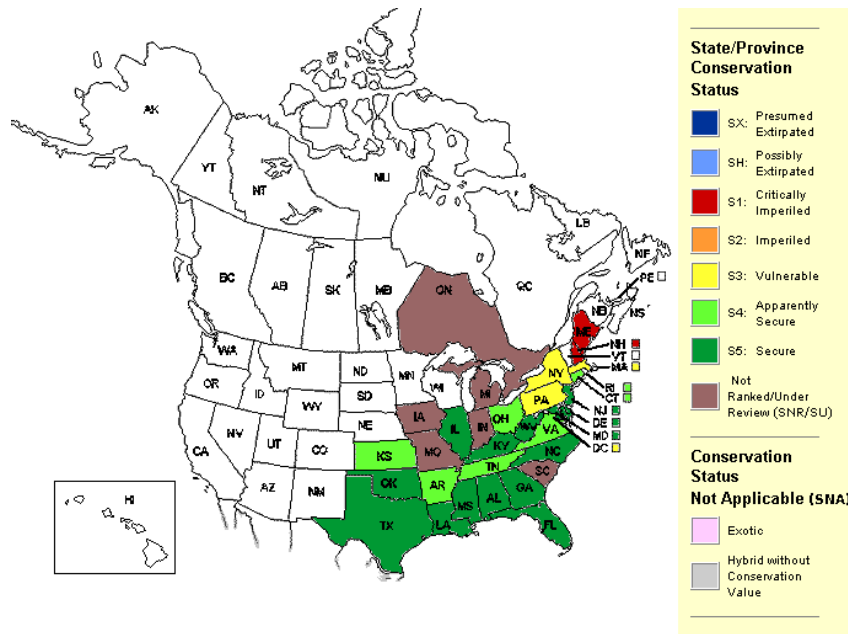
**Trends Discussion:**

The IUCN notes that box turtle populations have undergone a widespread, persistent, and ongoing gradual decline over the last 50 years (van Dijk 2011). Stickel (1978) documented a severe decline in a Maryland population that was surveyed in 1955, 1965, and 1975. The numbers were reduced by half in the last ten year period.

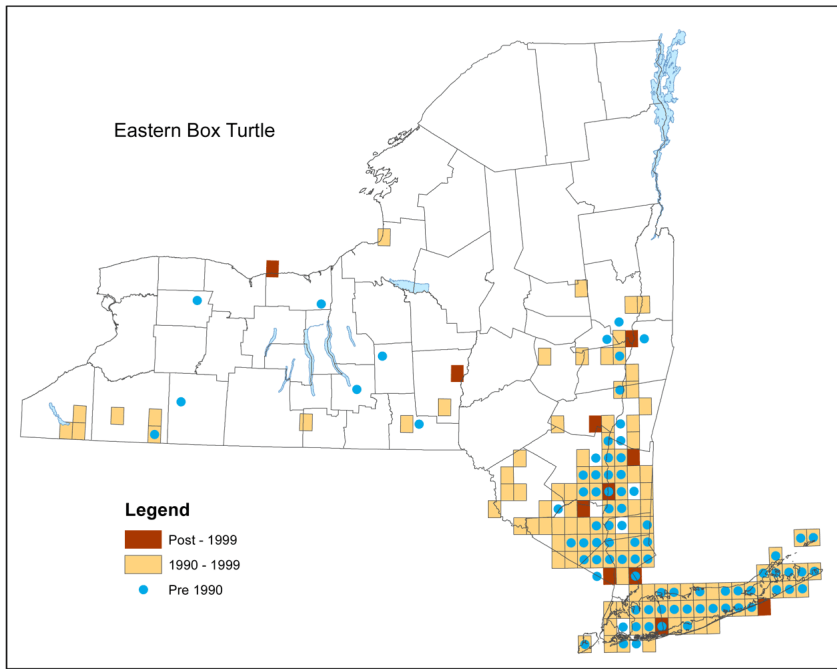
There is uncertainty regarding the native status of the woodland box turtle in Ontario. The species was previously considered extirpated, and it is unknown whether the extant population represents a native population in severe decline or an introduced population (COSEWIC 2013). It is unclear whether box turtles in central and western New York are the result of pets being released, or whether these are remnant populations (Gibbs et al. 2007). Box turtles occur in the most highly populated regions of New York and populations have undoubtedly been affected by loss of habitat from urbanization, road mortality, and collection. However, specific trends are not available.



**Figure 1:** Distribution of box turtle in North America. Used by permission. Credit: John D. Willson, [www.herpsOfNC.org](http://www.herpsOfNC.org)



**Figure 2:** Conservation status of woodland box turtle in North America (NatureServe 2013).



**Figure 3:** Current and historical distribution of woodland box turtle in New York (New York Herpetology database, NYSDEC)

**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>	_____	<u>83 quads</u>	_____

**Details of historic occurrence:**

The NYS Herp Atlas has historic (pre 1990) records in 83 survey blocks. Most of these are on Staten Island, Long Island, and the lower Hudson Valley where the species has been documented recently. There are five historical locations in central New York where box turtles have not been confirmed since at least 1990: Allegany, Genesee, Wayne, Tompkins, and Cortland.

<b>Current</b>	<b><u># of Animals</u></b>	<b><u># of Locations</u></b>	<b><u>% of State</u></b>
	_____	_____	<u>14%</u>

**Details of current occurrence:**

The NYS Herp Atlas (1990 to 1999) documented woodland box turtle in 125 survey quads, primarily on Long Island, Staten Island, and the lower Hudson Valley. Since 2000, records were added in 11 additional survey quads.

The distribution follows the historical records with the exception of the 2006 record of a female with eggs near the shore of Lake Ontario in Wayne County.

**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>   </u> Core
<u>   </u> 76-99	<u>  X  </u> Peripheral
<u>   </u> 51-75	<u>   </u> Disjunct
<u>   </u> 26-50	<b>Distance to core population:</b>
<u>  X  </u> 1-25	_____



**IV. Primary Habitat or Community Type:**

1. Powerline
2. Non-native Shrublands
3. Old Field Managed Grasslands
4. Native Barrens and Savanna
5. Pine Barrens
6. Oak-Pine Forest
7. Coastal Hardwoods
8. Coastal Coniferous Barrens
9. Riparian
10. Urban and Recreational Grasses

**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:**

Woodland box turtles are found in dry and moist woodlands. In the Northeast, this species is also associated with pastures and meadows as well as old fields and powerline cuts. There is a preference for sandy, well-drained soil, and occupied habitat is typically near ponds or streams (Gibbs et al. 2007). Nesting occurs in a variety of open habitats including road sides, gardens, lawns, and woodlands.

In Harriman State Park (Rockland and Orange counties) box turtles are limited to patches of early successional habitat, especially where it is bordered by sandy-bottomed, low gradient streams (McGowan et al. 2012). Japanese barberry, a non-native plant, is used extensively in the Harriman State Park study area and was noted to provide important cover and shade in areas where most native shrub growth is heavily browsed by deer (McGowan et al. 2012).

**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:**

From Gibbs et al. (2007): Box turtles reach sexual maturity in 5 to 10 years and generally live 30 to 40 years, although marked individuals 80 to more than 100 years have been documented (Stickel 1978, Gibbs et al. 2007). Home ranges are small (about 3 hectares; Hall et al. 1999) as long as conditions are stable. Box turtles will burrow under logs or vegetation during dry periods and may then appear in large numbers during periods of summer rain. Perhaps because of their small home range, females are capable of storing sperm for extended periods. They lay a clutch of 4 to 7 eggs in sandy or loamy soils with good sun exposure, typically in June. Hatching occurs in September or October and hatchlings may emerge or remain in the nest during the winter hibernation period. Adults hibernate for an extended period; they are active from May through October in New York. The primary sources of mortality are roads and collection (removal from the breeding population). McGowan et al. (2012) suggested that recruitment is limited by loss of nests soon after egg-laying, as demonstrated in an Illinois study where Flitz and Mullin (2006) reported a nest depredation rate of 87.5% in the first 72 hours after nest completion.

## VI. Threats:

The greatest threat to box turtles is loss and fragmentation of habitat due to residential and commercial development. Roads associated with this development result in road mortality, which is particularly detrimental to species that are long-lived and slow to reach sexual maturity such as this (Erb 2011). Nazdrowicz et al. (2005) found that mowing of agricultural fields was the most significant source of human-induced mortality, even more than road mortality.

Box turtles are commonly collected for the pet trade and populations may also be affected by translocation of individuals after capture (NYSDEC 2005). Box turtles suffer increased predation from human commensal species including raccoons and skunks, which are efficient nest predators. In a well-studied population at the Patuxent Wildlife Research Center in Maryland, long-term declines were attributed to changes in hydrology from an upstream impoundment compounded by a significant flood event (Hall et al. 1999).

Open areas where females lay eggs, including powerline cuts and gravel pits, are also frequented by ATVs. Although direct mortality of adults has not been documented, this type of recreation causes substantial habitat alteration (Erb 2011).

Herpesvirus and Ranavirus are serious diseases affecting box turtle populations across the range. Ranavirus was documented in turtles in Georgia, Florida, New York (Long Island), and Pennsylvania between 2003 and 2005 (Johnson et al. 2008). The disease has been confirmed in two cases in Massachusetts (Erb 2011). Invasive plants including Phragmites and black swallow-wort make box turtle habitat unsuitable if it is not controlled (Klemens 2000, McGowan et al. 2012).

Woodland box turtle was classified as “presumed stable” or “increase likely” to predicted climate change in an assessment of vulnerability conducted by the New York Natural Heritage Program (Schlesinger et al. 2011).

### **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 woodland box turtle is listed in Appendix II of the Convention on International Trade in Endangered Species (CITES).

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

A combination of regenerating woodlands (from abandoned agriculture), selective cutting, and selective burning may be beneficial to box turtles (MA Division of Fisheries and Wildlife 2005).

Because of the high mortality associated with mowing of agricultural fields, Nazdrowicz et al. (2005) recommends that fields adjacent to box turtle habitat be planted crops that do not require mowing, or that are mowed at a minimum of 15cm. When mowing must occur, Erb and Jones (2011) recommend sickle bar mowers rather than rotary mowers.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for woodland box turtle. Conservation actions following IUCN taxonomy are categorized in the table.

**Easement acquisition:**

\_\_\_ Secure habitats critical to species survival by acquisition of easements, or by other land protection mechanisms.

**Habitat management:**

\_\_\_ Manage vegetative succession and invasive plant species by means of prescribed burns, herbicide applications and/or by mechanical removal, and evaluate the effectiveness of such measures in enhancing habitat suitability for the species.

\_\_\_ Develop and implement mitigation strategies to manage adverse effects of habitat fragmentation.

**Habitat research:**

\_\_\_ Develop standardized habitat survey protocols, 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.

**Other action:**

\_\_\_ Enhance law enforcement and public education to limit collection/translocation of specimens, and to prevent (illegal)sale of specimens in the pet trade.

**State land unit management plan:**

\_\_\_ Incorporate box turtle conservation into state land management planning.

<b>Conservation Actions</b>	
<b>Action Category</b>	<b>Action</b>
Land/Water Protection	Site/Area Protection
Land/Water Protection	Resource/Habitat Protection
Land/Water Management	Site/Area Management
Land/Water Management	Habitat and Natural Process Restoration
Land/Water Management	Invasive/Problematic Species Control
Law/Policy	Legislation
Law/Policy	Compliance & Enforcement
External Capacity Building	Alliance & Partnership Development

**VIII. References**

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