

# Bog Turtle



Bog turtle



Photo credits: Jesse W. Jaycox

**Scientific Name** *Glyptemys muhlenbergii*  
(Schoepff, 1801)

**Family Name** Emydidae

## Did you know?

The bog turtle is one of the smallest turtles in North America. Bog turtles in the northern part of the range are generally less than 100 millimeters (4 inches) in length, while turtles farther south reach sizes of up to 115 millimeters (4.5 inches) (USFWS 2001).

## Summary

**Protection** Endangered Species in New York State, listed as Threatened federally.

This level of state protection means: any species which meet one of the following criteria: 1) Any native species in imminent danger of extirpation or extinction in New York. 2) Any species listed as endangered by the United States Department of the Interior.

This level of federal protection means: this species is formally listed as threatened.

**Rarity** G3, S2

A global rarity rank of G3 means: Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors.

A state rarity rank of S2 means: Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably make it very vulnerable in New York State.

## State Ranking Justification

While more than 20 extant populations are currently known in New York, significant threats to these populations exist. Many of the populations are comprised of few individuals and the habitats that support them are often small in size. While additional bog turtle sites will probably be discovered, some of these may be determined to be part of existing metapopulations and most new sites are expected to have at least some threats.

# Conservation Issues

## Threats

A spotty distribution and specialized habitat requirements make this species vulnerable to local extirpation. Declines are primarily due to loss, degradation, and fragmentation of habitat. Road mortality, an increase in subsidized predators, natural succession, and the expansion of invasive exotic vegetation are associated with these primary threats. Illegal collecting for the pet trade is also a direct threat to populations.

## Management Considerations

The control of exotic species and natural succession is warranted at a number of sites. The control of subsidized predators may be desirable if predation of eggs and juveniles is unusually high.

## Research Needs

Additional research on population size, intra-habitat use, and inter-habitat movements and migration is needed.

## Short Term Trends

Survey efforts have recently been aimed at marking individual turtles at multiple sites to obtain population data and it is too early to determine short-term trends. The best populations are likely to contain fewer than 100 individuals and most are likely to have far fewer individuals. Twelve populations have between 10 and 92 individuals documented from them and it is probable that an unknown number of additional turtles are also present. Far fewer individuals are known from the remaining 73 populations. Four populations are known to be extirpated and it is likely that many of the populations with records from the 1970s or earlier are extirpated as well.

# Habitat

In New York, bog turtles occur in open-canopy wet meadows, sedge meadows, and calcareous fens. The known habitat in the Lake Plain region of the state includes large fens that may include various species of sedges, such as slender sedge (*Carex lasiocarpa*), bog buckbean (*Menyanthes trifoliata*), mosses (*Sphagnum* spp.), pitcher plants (*Sarracenia* sp.), scattered trees, and scattered shrubs. In the Hudson River Valley, bog turtle habitats may be isolated from other wetlands or they may exist as part of larger wetland complexes. These wetlands are often fed by groundwater and the vegetation always includes various species of sedges. Other vegetation that is frequently found in southern New York bog turtle sites includes shrubby cinquefoil (*Potentilla fruticosa*), grass-of-parnassus (*Parnassia glauca*), mosses (*Sphagnum* spp.), horsetail (*Equisetum* sp.), scattered trees such as red maple (*Acer rubrum*), red cedar (*Juniperus virginianus*), and tamarack (*Larix laricina*), and scattered shrubs such as willows (*Salix* spp.), dogwood (*Cornus* spp.), and alder (*Alnus* spp.).

## Associated Ecological Communities

### Marl Fen

A wetland that occurs on a bed of marl. Marl is a whitish substance that is deposited from water that has a lot of calcium dissolved in it. The whitish substance is calcium carbonate, people used to harvest marl to lime agricultural fields. The marl substrate is always saturated, may be flooded, and has a very high pH, generally greater than 7.5. The main source of water is always groundwater. The plants are often sparse and stunted. Marl fens may occur as small patches within a rich graminoid fen.

### Medium Fen

A wetland fed by water from springs and seeps. These waters are slightly acidic (pH values generally range from 4.5 to 6.5) and contain some dissolved minerals. Plant remains in these fens do not decompose rapidly and thus the plants in these fens usually grow on older, undecomposed plant parts of woody material, grasses, and mosses.

### Red Maple-hardwood Swamp

A hardwood swamp that occurs in poorly drained depressions, usually on inorganic soils. Red maple is usually the most abundant canopy tree, but it can also be codominant with white, green, or black ash; white or slippery elm; yellow birch; and swamp white oak.

### Red Maple-tamarack Peat Swamp

A swamp that occurs on organic soils (peat or muck) in poorly drained depressions. These swamps are often spring fed or enriched by seepage of mineral-rich groundwater resulting in a stable water table and continually saturated soil. The dominant trees are red maple and tamarack. These species usually form an open canopy (50 to 70% cover) with numerous small openings dominated by shrubs or sedges.

### Rich Graminoid Fen

A wetland of mostly grasses usually fed by water from highly calcareous springs or seepage. These waters have high concentrations of minerals and high pH values, generally from 6.0 to 7.8. Plant remains do not decompose rapidly and these grasses usually grow on older, undecomposed plant parts.

### Rich Shrub Fen

A wetland with many shrubs that is usually fed by water from springs and seeps. These

waters have high concentrations of minerals and high pH values, generally from 6.0 to 7.8. Plant remains in these fens do not decompose rapidly and thus the plants in these fens usually grow on older, undecomposed woody plant parts.

### **Rich Sloping Fen**

A small, gently sloping wetland that occurs in a shallow depression on a slope composed of calcareous glacial deposits. Sloping fens are fed by small springs or groundwater seepage. Like other rich fens, their water sources have high concentrations of minerals and high pH values, generally from 6.0 to 7.8. They often have water flowing at the surface in small channels or rivulets.

### **Sedge Meadow**

A wet meadow community that has organic soils (muck or fibrous peat). Soils are permanently saturated and seasonally flooded. The dominant herbs must be members of the sedge family, typically of the genus *Carex*.

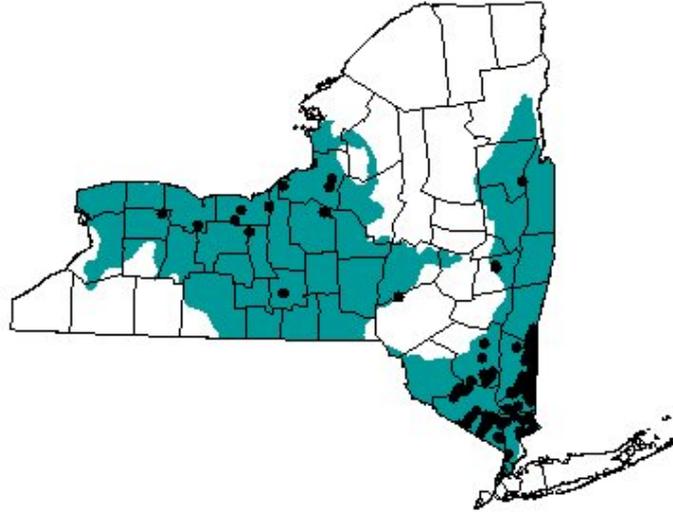
### **Other Probable Associated Communities**

Black spruce-tamarack bog  
Dwarf shrub bog

### **Associated Species**

Spotted Turtle (*Clemmys guttata*)  
Wood Turtle (*Clemmys insculpta*)

# Range



The map shows the known locations for bog turtle (black dots) based on the New York Natural Heritage Program database . A general approximation of the potential range (blue shading) throughout the state is based on the U.S. Forest Service Ecological Units (Keys et al. 1995).

## Data Sources

- New York Natural Heritage Program (Natural Heritage Element Occurrences)
- NYS GIS Data Sharing Cooperative, simplified by NYS Department of Environmental Conservation, Habitat Inventory Unit (County Boundary for New York State)
- U.S. Department of Agriculture, Forest Service (Subregions of the conterminous United States)

## Best Places to See

As this species is vulnerable to illegal collection, no naturally occurring populations are listed.

Bog turtles are currently on display at Cold Spring Harbor Fish Hatchery and Aquarium in Cold Spring Harbor, New York (<http://www.csh.edu>) (Nassau County)

Bog turtles are currently on display at the Rosamond Gifford Zoo at Burnet Park in Syracuse, New York (<http://www.rosamondgiffordzoo.org/>) (Onondaga County)

Bog turtles are currently on display at the Seneca Park Zoo in Rochester, New York (<http://senecaparkzoo.org/>). (Monroe County)

## New York State Distribution

Although historical records come from a larger area of the state, extant populations are known from small portions of six counties in the lower Hudson River Valley (Columbia, Dutchess, Putnam, Ulster, Orange, and Sullivan). There are a few records of bog turtles in Westchester County from the 1990s, but it is not known if any extant populations remain in this county. Extant bog turtle populations are also known from a small portion of Oswego County and single locations in Seneca County and Wayne County.

## Global Distribution

The bog turtle occurs in twelve states in the United States and has a discontinuous distribution throughout its range. The northern portion of the range includes central and eastern New York, western Massachusetts, western Connecticut southward to Pennsylvania, New Jersey, Maryland, and northern Delaware. The southern part of the species range includes southeastern Virginia, western and central North Carolina, extreme western Tennessee, and western South Carolina and Georgia. There is a large hiatus of about 250 miles between the northern population and the southern population. Bog turtles occur from sea level to 4,200 feet in elevation in the Appalachians, although populations are usually found below 800 feet in the north. Bog turtles are believed to be extirpated in western Pennsylvania and in the Lake George region of New York.

## Identification Comments

### Identifying Characteristics

This is a small turtle with adult carapace (upper shell) lengths ranging from 3 to 4.5 inches in length. The carapace is light brown to black, may have a faint yellowish or reddish pattern visible on the large scutes, and is strongly sculptured with growth lines visible, except in very old adults where the growth lines may be worn smooth. An inconspicuous keel is also present along the dorsal midline of the carapace. The plastron (lower shell) is mainly dark brown to black and may also have large yellowish or reddish blotches present. The head is black with two large orange or yellow blotches above and behind the tympanum (ear) on each side of the head.

### Characteristics Most Useful for Identification

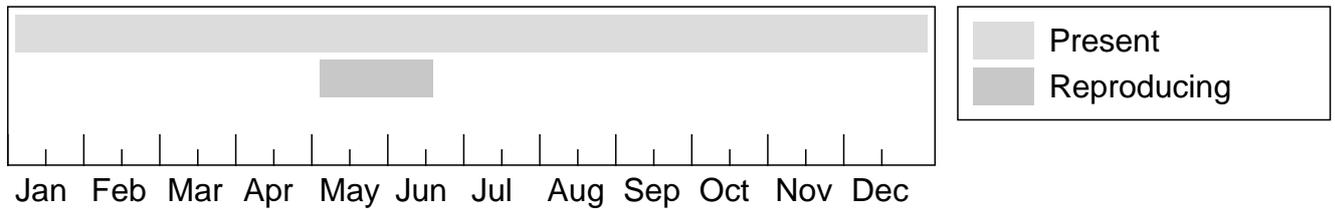
The small size and normally orange (sometimes yellow) head blotches are split into two parts and are characteristic of the species.

### Diet

The diet of the bog turtle has been reported to include insects, plants, frogs, and carrion (Bury 1979). Fecal samples from Massachusetts have contained spiders (Aracnida), beetles (Coleoptera), millipedes (Diplopoda), flies (Diptera), snails (Gastropoda), ants (Hymenoptera), moths (Lepidoptera), dragonflies (Odonata), caddisflies (Trichoptera), and plant fragments (Klemens 1993). Slugs (*Arion subflavus*) have been reported as food items in southeastern New York, while slugs and crayfish have been reported as food items in North Carolina (USFWS 2001).

### The Best Time to See

Bog turtles are diurnal and are normally active during the early morning to mid-day hours, often in the direct sun. This species hibernates communally and shows site-fidelity to hibernacula.



**The time of year you would expect to find Bog Turtle in New York.**

### Similar Species

**Spotted Turtle(*Clemmys guttata*):** Some individual spotted turtles may lack the characteristic yellow spots on their shells. This is rarely the case, however, and this species can always be distinguished from bog turtles by the many yellow spots that are present on their heads and necks (Conant and Collins 1998).

## Taxonomy

Kingdom Animalia  
 └─ Phylum Craniata  
 └─ Class Turtles (Chelonia)  
 └─ Order Turtles (Cryptodeira)  
 └─ Family Emydidae

### Synonyms

*Clemmys muhlenbergii* ((Schoepff, 1801))

## Additional Resources

### Links

#### Google Images

<http://images.google.com/images?q=CLEMMYS+MUHLENBERGII>

#### NatureServe Explorer

<http://natureserve.org/explorer/servlet/NatureServe?searchName=CLEMMYS+MUHLENBERGII>

#### New York State Department of Environmental Conservation

<http://www.dec.ny.gov/animals/7164.html>

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**New York Natural Heritage Program**

625 Broadway, 5th Floor,  
Albany, NY 12233-4757  
Phone: (518) 402-8935  
acris@nynhp.org

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