



New Jersey Field Office

Northeast Region

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Bog Turtle (*Clemmys [Glyptemys] muhlenbergii*) [threatened]

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Habitat Restoration

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IN BRIEF

Habitat:
Emergent and shrub/scrub wetlands

Diet:
Insects, snails, worms, seeds, carrion

Main Threats:
Habitat degradation and succession
Past wetland destruction
Collection

Fun Fact:
At only about 4 inches long, the bog turtle is one of North America's smallest turtles.



Overview

The bog turtle was federally listed as a threatened species in 1997.

At only about 4 inches long, the bog turtle is one of North America's smallest turtles. This species typically shows a bright yellow, orange, or red blotch on each side of the head. The nearly parallel sides of the upper shell (carapace) give bog turtles an oblong appearance when viewed from above. These small, semi-aquatic turtles consume a varied diet including insects, snails, worms, seeds, and carrion.

Bog turtles usually occur in small, discrete populations, generally occupying open-canopy, herbaceous sedge meadows and fens bordered by wooded areas. These wetlands are a mosaic of micro-habitats that include dry pockets, saturated areas, and areas that are periodically flooded. Bog turtles depend upon this diversity of micro-habitats for foraging, nesting, basking, hibernating, and sheltering. Unfragmented riparian (river) systems that are sufficiently dynamic to allow the natural creation of open habitat are needed to compensate for ecological succession. Beaver, deer, and cattle may be instrumental in maintaining the open-canopy wetlands essential for this species' survival.

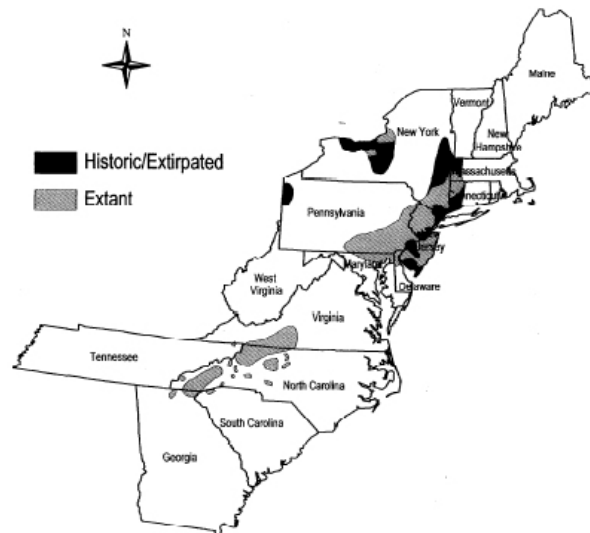
Bog turtles inhabit open, unpolluted emergent and scrub/shrub wetlands such as shallow spring-fed fens, sphagnum bogs, swamps, marshy meadows, and wet pastures. These habitats are characterized by soft muddy bottoms, interspersed wet and dry pockets, vegetation dominated by low grasses and sedges, and a low volume of standing or slow-moving water which often forms a network of shallow pools and rivulets. Bog turtles prefer areas with ample sunlight, high evaporation rates, high humidity in the near-ground microclimate, and perennial saturation of portions of the ground. Eggs are often laid in elevated areas, such as the tops of tussocks. Bog turtles generally retreat into more densely vegetated areas to hibernate from mid-September through mid-April.

The greatest threats to the bog turtle are the loss, degradation, and fragmentation of its habitat from wetland alteration, development, pollution, invasive species, and natural vegetational succession. The species is also threatened by collection for illegal wildlife trade.

Distribution

Species Range: The northern population of bog turtles ranges from New York and western Massachusetts south to Maryland. Disjunct populations, some of which are extirpated, have been reported from western Pennsylvania and the Lake George and Finger Lakes regions of New York. The southern population, which occurs in the Appalachian Mountains from Virginia to Georgia, is listed as threatened due to similarity of appearance to the northern population. There is a 250-mile gap in the species' current known distribution from northeastern Maryland to southern Virginia.

Distribution in New Jersey: The bog turtle occurs in Sussex, Warren, Morris, Union, Somerset, Hunterdon, Mercer, Monmouth, Ocean, Burlington, Gloucester, and Salem Counties. The species formerly occurred in Passaic, Bergen, Middlesex, Camden, Atlantic, and Cape May Counties.



Bog turtle distribution in U.S. (Click for full-size)

Examples of actions that may affect this species

The following is provided as technical assistance only and is not intended as a comprehensive list of all activities that may affect this species. (See also [Bog Turtle Conservation Zones](#).)

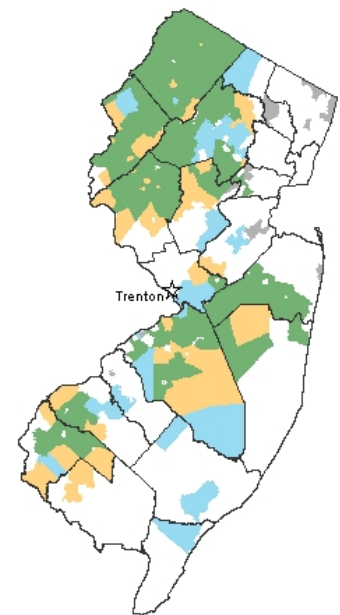
Within wetlands and visible spring seeps occupied by bog turtles (Zone 1):

- any activity, especially:
 - development (e.g., roads, sewer lines, utility lines, storm water or sedimentation basins, residences, driveways, parking lots, and other structures)

- wetland flooding, draining, ditching, tiling, filling, excavation
- stream channelization, diversion, stabilization or impoundment
- discharge of storm or waste water
- heavy grazing
- herbicide, pesticide or fertilizer application *
- mowing or cutting of vegetation *
- mining
- delineation of lot lines (e.g., for development, even if the proposed building or structure will not be in the wetland)

* Except when conducted as part of a bog turtle habitat management plan approved by the Fish and Wildlife Service or State wildlife agency.

- Some activities within Zone 1 may be compatible with bog turtle conservation but warrant careful evaluation on a case-by-case basis:
 - light to moderate grazing
 - non-motorized recreational use (e.g., hiking, hunting, fishing)



Bog Turtle (By Municipality)

- Current (Presently Known to Occur)
- Historic (May Still Be Present)
- Potential (May Be Present)
- Extirpated (No Longer Present)

Bog turtle distribution in NJ by municipality
(click for full-size)

Within 500 feet of wetlands or visible spring seeps occupied by bog turtles (Zone 2):

- any ground or vegetation disturbances, especially
 - construction or development (e.g., residential or commercial structures, sewers, utilities, roads, parking lots, driveways, and other structures or impervious surfaces)
 - storm water or sediment control facilities (e.g., basins, manufactured treatment devices)
 - discharge of storm or waste water
 - mining
 - herbicide, pesticide or fertilizer application *
 - farming (except light to moderate grazing, see below)
 - stream channelization, diversion, impoundment, and certain stabilization techniques (e.g., rip-rap)
 - delineation of lot lines (e.g., for development, even if the proposed building or structure will not be in the wetland)

* Except when conducted as part of a bog turtle habitat management plan approved by the Fish and Wildlife Service or State wildlife agency.

- permanent or temporary increases in disturbance or human activity including but not limited to installation of new public access facilities (e.g., parking lots, trails)

Activities that are likely to be compatible with bog turtle conservation, but that should be evaluated on a case-by-case basis within this zone include:

- light to moderate grazing
- non-motorized recreational use (e.g., hiking, hunting, fishing)
- mowing or cutting of vegetation

Within 0.5 mile of wetlands or visible spring seeps occupied by bog turtles and/or in the same (HUC14) subwatershed (Zone 3):

- temporary or permanent increases in erosion or sediment-generating activities
- potential changes in surface or groundwater hydrology, including but not limited to the significant addition, modification, or expansion of:

- roads or other impervious surface
- storm water control facilities
- storm water or waste water discharges (ground or surface)
- water withdrawals (ground or surface)
- water control structures (e.g., dams, stream diversions, impoundments)
- mining operations
- activities in, or within 150 feet of, streams that flow to wetlands occupied by bog turtles

Best Management Practices

The following Best Management Practices are examples of typical Conservation Measures frequently recommended by the New Jersey Field Office in the course of **consultation or technical assistance**.

- Avoid direct modifications to wetlands supporting bog turtles (e.g., clearing, flooding, filling, draining, ditching, tiling, excavating), and to streams that flow to bog turtle habitat (e.g., channelizing, diverting, stabilizing, impounding, dredging).
- Provide adequate upland buffers around wetlands supporting bog turtles, often at least 300 feet of native vegetation. A site-specific buffer design is often necessary.
- Provide at least 150-foot buffers of native vegetation along streams that flow to wetlands supporting bog turtles.
- For activities throughout the watershed, avoid permanent changes to the hydrology or sedimentation rates of wetlands supporting bog turtles. For example:
 - minimize net increases in impervious surface;
 - minimize soil compaction;
 - design storm water management plans to minimize long-term hydrologic changes to bog turtle habitat (often by maximizing infiltration);
 - avoid storm and waste water discharges in or upgradient of bog turtle habitat;
 - ensure adequate recharge of groundwater; and
 - evaluate proposed surface or groundwater withdrawals to ensure bog turtle habitat is not affected.

See Low Impact Design Techniques in the **New Jersey Stormwater Best Management Practices Manual**.

- For activities within 500 feet of bog turtle habitat, take particular care to avoid permanent changes to the hydrology or sedimentation rates of wetlands supporting bog turtles. For example:
 - Implement all of measures listed above for activities throughout the watershed.
 - Use Appendix A of the **New Jersey Stormwater BMP Manual** to complete a thorough alternatives analysis of nonstructural stormwater management measures.
 - Seek to mimic the pre-development 2 and 10-year hydrographs.
 - Seek to recharge 100% of the site's pre-development annual average recharge amount.
 - Seek a score of 100% or greater in the **Nonstructural Stormwater Strategies Point System** regardless of Planning Area or project size.
 - Grade lawn and landscaped areas with lightweight equipment (maximum equipment load of 8 PSI).
- Avoid temporary changes to the hydrology or sedimentation rates of wetlands supporting bog turtles from ground disturbances within 500 feet of bog turtle habitat, or within 150 feet of streams that flow to bog turtle habitat. For example:
 - locate temporary work areas and access routes outside of wetlands;
 - construct storm water management infrastructure prior to all other components of a development project to control storm water and sediment during the remaining construction;
 - install two rows of silt fencing around work areas, with daily inspection and maintenance;
 - minimize the duration of exposed soils;
 - use jute matting or other erosion control blankets on disturbed areas immediately after project completion to minimize sedimentation; and
 - promptly re-vegetate areas of temporary disturbance with native species.

- Avoid injuring or disturbing transient bog turtles during construction activities near occupied habitat. For example:
 - have work areas inspected for transient or burrowing bog turtles before and during construction;* and
 - seasonally restrict certain activities.**

*Employ a recognized, qualified bog turtle surveyor to conduct inspections for any such work between April 1 and October 15. Contact the Service immediately if a bog turtle is found - do not move the animal except to avoid imminent injury.

**The need and specific dates for seasonal restrictions depend on the nature and location of the activities.
- Avoid introductions of invasive species to wetlands supporting bog turtles. For example:
 - thoroughly wash construction equipment offsite before use within 500 feet of bog turtle habitat; and
 - use only native plant species and weed-free mulches and soils for landscaping within 500 feet of bog turtle habitat.
- For vegetation management activities (e.g., in utility rights-of-way, on airports), see [Recommended Conservation Measures to Minimize Adverse Effects to the Federally Listed \(Threatened\) Bog Turtle \(*Clemmys \[Glyptemys\] mühlenbergii*\), and to Known and Potential Bog Turtle Habitat, from Vegetation Management in New Jersey](#).[\[PDF\]](#)
NEW
- Avoid public access or other human activities in and around wetlands supporting bog turtles.
- Place wetlands supporting bog turtles and associated upland buffers in permanent conservation ownership or easement.

What to do if this species occurs on your property or project site

- Contact the Service early in planning for any project or activity that may affect the bog turtle or its habitat. See [New Jersey Field Office Procedures for Consultation and Technical Assistance](#) for instructions. Through the technical assistance or consultation processes of the Endangered Species Act, the Service will provide project-specific recommendations to avoid or minimize adverse effects to listed species.
- Individual landowners with suitable habitat can also contact the Service for site-specific, proactive conservation recommendations. In addition, technical and/or material assistance may be available through various State and or Federal programs to restore or maintain bog turtle habitat. Most land in New Jersey is privately owned. Voluntary conservation efforts by New Jersey's residents are critical in the conservation and recovery of threatened and endangered species.
- Also see "[Endangered Species and You](#)" Frequently Asked Questions.

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Last updated: April 26, 2017