

BEST MANAGEMENT PRACTICES:

ROW Vegetation Management in State-listed Turtle Habitat



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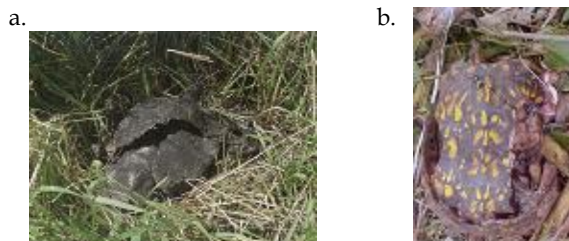
Freshwater turtles in Massachusetts are increasingly threatened by habitat loss, road mortality, increases in the density of certain predators associated with suburban sprawl (e.g. skunks & raccoons), and other factors. Because turtles naturally suffer high rates of nest failure and hatchling/juvenile mortality, adults must be very long-lived, on average, in order to successfully reproduce. As a result, even small increases in adult mortality resulting from human activity can have significant impacts on turtle populations. Given these increasing threats, 6 of the 10 freshwater turtle species native to Massachusetts are listed as “Endangered”, “Threatened” or of “Special Concern” and tracked by the Natural Heritage & Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries & Wildlife (for more information on listed species, and turtle biology, in general, see Appendix A).

Utility ROWs provide important open-canopy nesting, basking, and feeding habitat for turtles in Massachusetts (Figure 1). During certain times of year some turtle species such as the state-listed Eastern Box Turtle and Wood Turtle may occur at high densities within some ROWs. Unfortunately, adult turtles may be inadvertently injured or killed by mowing equipment and other heavy machinery used for ROW vegetation management (Figure 2).

Figure 1. Blanding’s Turtle Nesting Area within ROW, Bristol County, MA. Photograph courtesy of ENSR/AECOM.



Figure 2. Wood Turtle (a) and Eastern Box Turtle (b) hit by mowing equipment within ROW’s, Essex & Barnstable Counties, MA.



Management Goal

Maintain important shrubland, grassland, and nesting habitat while minimizing risks of adult turtle mortality from mowing/heavy equipment.

Best Management Practices

The following practices must be implemented within sections of ROW indicated as “Turtle Habitat” on maps and shapefiles provided by the NHESP

- *Turtle Inactive Season; 16 October–14 April:* No special procedures required.
- *Staff Training:*
 - All staff conducting vegetation management work within Turtle Habitat during the period April 15 – October 15 shall have completed a training seminar on turtle life history, species identification, and protection procedures conducted by a qualified biologist. NHESP staff will conduct 2 or more training seminars on an annual basis. Each utility shall provide the NHESP with a list of staff who have completed the training.

- Each work crew conducting vegetation management work within Turtle Habitat during the period April 15 – October 15 shall have a designated and NHESP-approved turtle “Team Leader” who has completed an expanded version of the training described above. The Team Leader shall be responsible for overseeing turtle “sweeps,” if necessary, reporting observed state-listed turtles to the NHESP, and taking other measures to protect state-listed turtles, as described below. Turtle “sweeps” require qualified individuals to visually search the work area for turtles prior to any heavy machinery entering the work zone. A Scientific Collection Permit must be obtained from the NHESP to handle state-listed species.
- *Turtle Active Season; 15 April–15 October:* Vegetation management activities occurring during this period may harm state-listed turtles, and must be conducted as follows under the supervision of an NHESP-approved “team leader.”
 - No special conditions are required for hand-cutting of trees, tree limbs, or saplings, or for herbiciding.
 - Avoid work between 25 May and 5 July if at all possible. This will avoid the primary nesting season for most state-listed turtle species.
 - Raise mower blades to 10 to 12 inches above the ground to reduce the likelihood of turtle mortality. Mow from the center of the utility ROW out toward the forested edges, if possible.
 - Immediately prior to vegetation cutting or driving of equipment off of existing roads, visual “turtle sweeps” must be conducted in the work area by trained personnel under supervision of the turtle team leader. Any turtles encountered must be removed from the path of vehicles or heavy equipment. All observed state-listed turtles should be identified, reported to the NHESP, and moved a safe distance in the direction the turtle was oriented when observed and outside of the limit of work (e.g. 250 - 500 feet).
- *Reporting requirements:* The NHESP shall be provided, on an annual basis, a written summary of the vegetation management activities which occurred within Turtle Habitat, including dates, approximate work area boundaries, description of vegetation management techniques at each work site, and the BMPs which were implemented.
- *Optional turtle enhancements:* Utility companies may choose to work with NHESP turtle biologists in key areas to create and maintain exposed soil for turtle nesting areas. Additionally, high turtle activity areas could be identified and the vegetation management adjusted accordingly.

Appendix A

Turtle Habitat Descriptions and Identification

While many turtles occur primarily in wetlands, most species spend at least a part of their lives in uplands, and the Eastern Box Turtle makes extensive use of upland habitats. ROWs primarily provide nesting (e.g. open, well-drained, and sandy soils) and basking (sun-exposure for warmth) habitat for state-listed turtles. ROW's also provide important terrestrial foraging habitat for two state-listed species, the Wood Turtle and the Eastern Box Turtle (e.g. slugs, fruiting shrubs, mushrooms, etc.), ROW's also provide terrestrial migratory, estivation, and breeding habitat for turtles. Finally, wetlands within ROW's can provide important habitat for both listed and more common aquatic turtle species such as the Blanding's Turtle and Painted Turtle. Turtles generally nest in open-canopy upland habitats with sparse vegetation and exposed soil. Further details regarding habitat descriptions can be found in the rare species fact sheets for each species.

- *Semi-Aquatic Turtles*

Northern Red-bellied Cooter (*Pseudemys rubriventris*) - "Endangered"

These state and federally listed turtles typically use freshwater ponds that have abundant aquatic vegetation and reside within aquatic habitats, except during the nesting season. This species is only documented to occur within Plymouth County. The Northern Red-bellied Cooter overwinters in freshwater ponds including coastal plain ponds. This species is similar in appearance to the Eastern Painted Turtle, a very common species in MA. The Northern Red-bellied Cooter can be distinguished most readily by its large size relative to the Painted Turtle, and lack of a yellow spot that is prominent near the eye of Painted Turtle.

Blanding's Turtle (*Emydoidea blandingii*) - "Threatened"

These turtles use a variety of wetlands (e.g. marsh, vernal pool, river/stream, shrub swamp, forested wetlands, etc.), and migrate, estivate, and nest within uplands (e.g. forest, shrubland, field, orchards, grasslands, etc.) habitats. This species has been documented to move greater than two kilometers (> 6,700 feet) between wetlands (upland and aquatic movement) and overland to upland nesting habitat in Massachusetts. The Blanding's Turtle overwinters in deep marshes, shrub swamps, and areas of deep open water. This species is most easily recognized by the yellow coloration of the chin and neck and the highly-domed "helmet" shape of the shell.

Wood Turtle (*Glyptemys insculpta*) - "Special Concern"

The primary habitats of the Wood Turtle are rivers/streams followed closely by early successional/non-forested habitats. Usually, the migratory corridor between all utilized upland and wetland habitats is the primary river/stream. This species utilizes early successional shrub/field habitat between early May and October before returning to the primary river/stream to hibernate. The Wood Turtle overwinters in perennial streams and rivers, preferring less steeply inclined streams. This species is recognized by the coarse texture of the shell (resembling wood) and the orange/bronze coloration of the throat and legs.

- *Terrestrial Turtle Species*

Eastern Box Turtle (*Terrapene carolina*) - "Special Concern"

The primary habitats of the Eastern Box Turtle include forested uplands and wetlands and a variety of mostly upland early successional habitats (shrublands, grasslands, etc.). This species also occasionally visits shallow wetland (vernal pool, shrub swamp, marsh) habitats for brief periods of time between April and October to hydrate, feed, and estivate. The Eastern Box Turtle overwinters in forests, in burrows or otherwise underground. This species' shell is highly domed

and very colorful with a gradient of yellow, orange, light browns, and gold resembling oak leaves on the forest floor.

Turtle Biology

The general annual activity cycle of turtles is as follows:

- In the early spring, turtles emerge from hibernation and move to breeding, foraging, and basking habitat (overland and aquatic migration).
- Throughout June, most female turtles nest in upland habitats with open canopy, loose, and often sandy soil (overland migration).
- During mid to late summer (after nesting), turtles may have a period of reduced activity or dormancy called estivation that occurs in wetlands and forests, and other upland habitat that may surround wetland habitat utilized earlier that year.
- In early to mid fall, turtles move to hibernation habitat (overland and aquatic migration).
- Late November through late March turtles are in hibernation (inactive).

The state-listed turtle species referenced above vary in amount of time spent in upland, which for a single species may be up to two to three months for semi-aquatic turtles (Wood, Blanding's, and Northern Red-bellied Turtles) and upwards of seven months for upland turtles (Eastern Box Turtle) during the annual activity period. All state-listed turtle species can be observed on land from late March through November in upland non-forested (e.g. field, shrubland, ROW, etc.) and forested (e.g. oak and mixed forest) habitats. Eastern Box Turtles primarily utilize upland habitats throughout their active period, but occasionally hydrate and feed in shallow wetlands (<5 ft) for short periods of time during the year. In general, turtles are relatively easy to detect when moving, for example when traveling overland and nesting, however when estivating or at rest, they can be hard to detect (well-camouflaged with leaf litter and vegetation and enclosed in shell).

Turtle nesting occurs largely during the month of June, as females travel to open-canopy habitat with well-drained, loose, sandy-loam soils. Turtle nesting may occur in small open areas along trails, fields, grasslands, stream banks, and within the ROW. Usually, turtles will nest between dusk and dawn hours when light is low and they are most protected against mammalian predators. Once eggs are deposited in the ground, turtles vacate the nesting habitat and in most cases hydrate in nearby wetlands. The majority of hatchling turtles will emerge between mid August and late October, however some hatchlings may overwinter within the nest cavity.