



Commonwealth of Massachusetts

# Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

February 23, 2011

Charles Martel  
Environmental Health & Safety Coordinator  
City of Holyoke Gas & Electric Department  
99 Suffolk Street  
Holyoke, MA 01040-5082

**RE:** Applicant: City of Holyoke Gas & Electric Department (HG&E)  
Project Description: Guidelines for Vegetation Management Plan - 2011  
File Number: 11-29127

Dear Mr. Martel:

The routine vegetation management of existing electrical/transmission lines (ROW) are exempt from review pursuant to the newly revised MA Endangered Species Act Regulations (MESA) (321 CMR 10.00; effective date October 15, 2010) that are administered by the Natural Heritage and Endangered Species Program (NHESP) of the MA Division of Fisheries and Wildlife (Division). The exemption is conditional based on the NHESP's annual review and approval of a Vegetation Management Plan (VMP) (321 CMR 10.14 (16)). We have been evaluating your 2011 Yearly Operational Plan (YOP) and the associated shapefiles submitted for approval under 333 CMR 11.04(3)(a-c) and 321 CMR 10.14(16). Below, we provide guidelines for vegetation management activities scheduled to occur within areas harboring specific types of state-listed species (i.e. turtles, rare plants, etc.). These areas are identified and labeled in a shapefile that the NHESP has provided to you via email attachment. Management guidelines listed below shall be incorporated into the VMP, and must be followed by Vegetation Management crews in the field. All activities occurring anywhere within *Priority Habitat (PH)* shall follow the strictest Best Management Practices described for Sensitive Areas in standard YOP documents for Right-of-Way Vegetation Management.

The following procedures should be incorporated into the VMP and shall be implemented within PH and within portions of the Right-of-Ways (ROW) indicated in the enclosed shapefiles:

1. Shrubs species (e.g. scrub oak) less than 8 feet tall shall not be cut or have herbicide applied except:
  - a. within a 30-foot diameter area surrounding electrical towers and pole structures
  - b. within an existing vehicle access road
  - c. to improve access to a work site after review and approval by NHESP
  - d. if the shrub species is considered to be an invasive species (see [http://www.mass.gov/dfwele/dfw/nhesp/conservation/invasives/invasive\\_plant\\_info.htm](http://www.mass.gov/dfwele/dfw/nhesp/conservation/invasives/invasive_plant_info.htm) for more information on invasive species in Massachusetts)
2. Areas dominated by low-growing native shrub species (e.g., lowbush blueberry, huckleberry, sheep laurel, New Jersey tea, sweet-fern) shall not be cut or have herbicide applied.

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3. Within areas labeled as "Turtle Habitat" the Best Management Practices (BMPs) described in the document "ROW Vegetation Management in State-listed Turtle Habitat" shall be implemented (provided via email attachment). Please note that the NHESP is developing a turtle training seminar which will be offered in the early Spring of 2011 to all Utility Companies in order to fulfill requirements outlined in the BMPs in the above-listed document.
4. Within areas labeled as "VP Habitat" the BMPs described in the document "ROW Vegetation Management in Vernal Pool Habitat" shall be implemented (provided via email attachment).
5. A subset of ROW areas proposed for vegetation management activities in 2011 are mapped, in part, for the presence of state-listed plant, lepidoptera (moth and butterfly), bird, and snake species. Within these ROW areas, extra care should be taken to avoid direct impacts to these state-listed species. Within areas labeled as "Other" the management guidelines described in the document "Vegetation Management of Existing Right-of-Ways (ROW) in State-listed Plant and Lepidoptera, Bird, and Snake Priority Habitats" and presented in the shapefile (provided via email attachment) must be implemented. **Please note that the vegetation management guidelines have significantly changed from past years.** In particular, the number of state-listed plant species designated as "Delineate Population and Avoid" has been greatly reduced. Consequently, the NHESP may require some follow-up monitoring within ROW areas of particular concern to determine whether the new management guidelines are adequate in protecting state-listed species and their habitats.
6. A subset of ROW areas proposed for vegetation management activities in 2011 are mapped, in part, for the presence of "Data Sensitive Species" (denoted with an \* within the shapefile). These species are highly susceptible to collection and are therefore of high concern to Natural Heritage. Information about these species (including presence/absence) cannot be released to anyone else (especially including release to third parties or published) unless such release is agreed to in writing by the Natural Heritage Program (See Massachusetts Public Records law: M.G.L. chapter 66 section 17D). If you know the species list we are providing will be published (based on application) do not release the species name instead use "sensitive plant (invertebrate or vertebrate)".

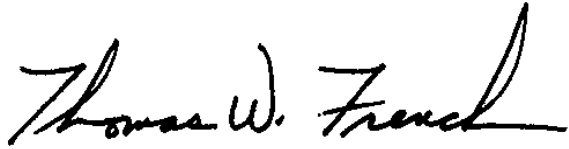
As part of this management plan, the NHESP shall be provided in writing with the names and phone numbers of key contacts who will know where work is happening at any given time. This will facilitate site visits by NHESP personnel. **Additionally, within one (1) year from the date of this NHESP approval letter, a written summary (and/or shapefile) of activities which occurred within PH, including locations, dates, a description of vegetation management techniques, and the BMPs which were implemented, shall be submitted to the NHESP.**

A minimum of 72-hour notification shall be given to NHESP for any vegetation management activities not shown in the current VMP. The NHESP will respond with any procedures or conditions necessary to protect state-listed rare species and their habitats. Additionally, emergency maintenance and repair activities within *PH* may be conducted without prior NHESP notification. However, the NHESP should be notified of such emergency activities pursuant to 321 CMR 10.15, and mitigation may be required for any damage done to state-listed species habitats. If possible, we recommend that the NHESP be notified in advance of emergency management activities, so that we can provide immediate information about rare species associated with the work area. An emergency work form is also provided via email attachment which will assist you in providing us the necessary information for emergency work within *PH*.

Provided that the management recommendations contained in the 2011 shapefile provided by the NHESP and found in the accompanying documents are adhered to, the VMP for 2011 is approved and meets the requirement for exemption from review by the NHESP pursuant to 321 CMR 10.18 through 10.23. The NHESP approval of the 2011 HG&E VMP is valid for one year from the date of issuance of this letter. We

appreciate the measures that HG&E is taking to manage and protect rare species habitats within ROW's, and we look forward to working with you to further streamline the rare species review process for ROW management. If you have any questions or suggestions, please contact Eve Schlüter, Endangered Species Review Biologist, at (508) 389-6346 ([eve.schluter@state.ma.us](mailto:eve.schluter@state.ma.us)).

Sincerely,

A handwritten signature in black ink that reads "Thomas W. French". The signature is written in a cursive style with a large, sweeping flourish at the end of the name.

Thomas W. French, Ph.D.  
Assistant Director

cc: Michael McClean, Pesticide Board



Commonwealth of Massachusetts

# Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

February 2011

## Vegetation Management of Existing Right-of-Ways (ROW) in State-listed Plant, Lepidoptera, Bird and Snake Priority Habitats

The routine vegetation management of existing electrical/transmission lines in right-of-ways (ROW) are exempt from review pursuant to the revised MA Endangered Species Act Regulations (MESA) (321 CMR 10.00) that are administered by the Natural Heritage and Endangered Species Program (NHESP) of the MA Division of Fisheries and Wildlife (Division). The exemption is conditional based on the NHESP's annual review and approval of a Vegetation Management Plan (VMP) (321 CMR 10.14 (16)). If ROW vegetation management activities occur in *Priority Habitat (PH)*, measures must be taken to minimize the mortality of state-listed species, including plants, moths, butterflies, and birds. This document is meant to accompany shapefiles, also provided by NHESP, of known state-listed plant, Lepidoptera (moth and butterfly), and bird habitat and is meant to provide guidance to ROW managers preparing VMPs for these areas. It includes an outline of procedures that shall be implemented to safeguard these species.

### STATE-LISTED PLANTS

There are 259 species of native plants that are officially listed as "Endangered", "Threatened" or of "Special Concern" in Massachusetts and tracked by the NHESP. State-listed plants occur in a variety of habitats across the Commonwealth of Massachusetts, including along utility ROW. They can occur in wetlands, dry forests, on banks of streams or ponds, grasslands and shrublands, seasonally flooded depressions, and wet meadows. Many of the state-listed plants found along ROW thrive in the early successional habitats that are maintained through the removal of overstory trees and shrubs and the removal of competing plant species. However, state-listed plants in utility ROW can also be negatively impacted by herbicides, vehicles and heavy machinery, and the introduction of invasive plant species. Below and in the accompanying shapefile, the NHESP provides management guidelines for the areas identified to contain state-listed plant species found along the ROW scheduled for Vegetation Management activities.

### Management Guidelines

Many state-listed plant species will thrive in low-shrub and herbaceous communities that are compatible with ROW vegetation management goals. Efforts to promote and maintain low-growing stable plant communities as a method of biological control of trees, which would otherwise interfere with electrical transmission, are strongly encouraged.

1. In general, management activities associated with VMPs, *excluding the broadcast application of herbicides*, which are conducted between 2 November and 14 April, will pose minimal or no risk to state-listed plants and can proceed as described in the submitted Yearly Operational Plan (YOP) or VMP. However, vegetation management activities occurring between 15 April and 1 November may cause harm to state-listed plants. Included in the shapefile is a column labeled "Sens\_Dates" which identifies the dates within which proposed activities may harm state-listed species. Please note that certain plants have year-round sensitive dates since management activities at any time of year may cause harm.

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2. If management activities occur during the sensitive dates for state-listed plants certain steps must be taken to avoid such harm. Below are the management guidelines for state-listed plants found in the "Guide\_1" and "Guide\_2" columns of the shapefile. Exact guidelines are clarified below, and **must be followed** where state-listed plant species are identified. **If management guidelines for state-listed plant species can be followed as described below in the locations identified in the accompanying shapefile, no further restrictions are placed on vegetation management activities described in the associated YOP/VMP document (provided any other guidelines for other state-listed species in the same area are also followed).** However, if these guidelines cannot be followed, or if the management guideline is to identify and avoid the extent of the population, botanical surveys will be required.

**Detailed descriptions of "Guide 1" and "Guide 2":**

*"No herbicide on grasses/sedges, ferns or forbs"*: Certain state-listed plants could be inadvertently harmed by even selective herbicide use. No herbicide shall be used to target grasses/sedges, ferns or forbs in these areas, nor shall herbicides be allowed to reach grasses/sedges, ferns or forbs when targeting other species. **Extra caution should be used with herbicides in these areas.** Activities which necessitate use of herbicide on grasses/sedges, ferns or forbs within state-listed plant areas of ROW may require botanical surveys as described under "Delineate population and avoid" below.

*"No herbicide on grasses/sedges, ferns, forbs, or vines"*: Certain state-listed plants could be inadvertently harmed by even selective herbicide use. No herbicide shall be used to target grasses/sedges, ferns, forbs, or vines in these areas, nor shall herbicides be allowed to reach grasses/sedges, ferns, forbs, or vines when targeting other species. **Extra caution should be used with herbicides in these areas.** Activities which necessitate use of herbicide on grasses/sedges, ferns, forbs, or vines within state-listed plant areas of ROW may require botanical surveys as described under "Delineate population and avoid" below.

*"Delineate population and avoid"*: Certain state-listed plants are particularly sensitive to vegetation management practices and/or are at very high risk of extinction or extirpation from the state. In areas known to harbor these species (identified in the accompanying shapefile), surveys must be conducted by a qualified botanist. The NHESP-approved botanist will be required to identify the extent and condition of populations of state-listed plants, flag populations for work crews, and file a report with the NHESP *prior* to commencement of vegetation management in these areas. **Work crews are required to avoid these areas.**

Additionally, areas identified in the accompanying shapefile as harboring state-listed plants for which the other management guidelines described above (i.e. no herbicide use) cannot be followed must also be surveyed for state-listed plants. **These areas must also be avoided by work crews.**

All observed state-listed plants shall be identified, reported, and mapped. Observations of state-listed species will require the submittal of an NHESP Rare Species Observation Form, including photographs, characters used for identification, observer contact information, locus map and signature. Rare Species Observation Forms must be received by the NHESP within *90 days* of completion of the survey. Additionally, results for surveys which failed to find state-listed species should be reported to the NHESP and should include a map and description of the area that was surveyed. A copy of the NHESP Botanical Survey Protocols and the Rare Plant Observation Form are included with this document.

Based on these efforts and information currently found in the NHESP database, subsequent annual management guidelines may be revised.

## **STATE-LISTED LEPIDOPTERA (MOTHS AND BUTTERFLIES)**

State-listed moths and butterflies occur in a variety of habitats across the Commonwealth of Massachusetts, including along utility ROW. These species spend a portion of their lives as larvae (caterpillars) feeding on very specific host plants which may benefit from the maintenance of early successional habitats within ROW. Additionally, some Lepidoptera species feed on the nectar of flowers as adults, and often utility ROW provide prime growing conditions for such nectar sources. State-listed moths and butterflies and their host plants can be negatively impacted by broadcast herbicides, pesticides, heavy machinery, mowing during the larval stage, loss of nectar sources, and the introduction of invasive plant species. In order to protect and maintain state-listed moth and butterfly species found within utility ROW, the NHESP will require specific management for the host plants found along ROW scheduled for Vegetation Management.

### **Management Guidelines**

The host plants of many state-listed moth and butterfly species will thrive in low-shrub and herbaceous communities that are compatible with ROW vegetation management goals. Efforts to promote and maintain low-growing stable plant communities as a method of biological control of trees, which would otherwise interfere with electrical transmission, are strongly encouraged.

1. In general, management activities associated with VMPs, *excluding the broadcast application of herbicides*, which are conducted between 2 November and 14 April, will pose minimal or no risk to state-listed Lepidoptera species and can proceed as described in the submitted Yearly Operational Plan (YOP) or VMP. However, vegetation management activities occurring between 15 April and 1 November may cause harm to state-listed Lepidoptera species. Included in the shapefile is a column labeled "Sens\_Dates" which identifies the dates within which proposed activities may harm state-listed species.
2. If management activities occur during the sensitive dates for state-listed Lepidoptera species certain steps must be taken to avoid such harm. Below are the management guidelines for state-listed plants found in the "Guide\_1" column of the shapefile. Exact guidelines are clarified below, and **must be followed** where state-listed Lepidoptera species are identified. **If management guidelines for state-listed Lepidoptera species can be followed as described below in the locations identified in the accompanying shapefile, no further restrictions are placed on vegetation management activities described in the associated YOP/VMP document (provided any other guidelines for other state-listed species in the same area are also followed).** However, if these guidelines cannot be followed, the NHESP should be contacted and alternative methods of managing these areas shall be developed.

### **Detailed descriptions of "Guide 1":**

*"Avoid host plant to greatest extent possible":* Certain host plants for state-listed species are fairly easily identified in the field with minimal training, and can be avoided by vegetation control crews. If crews cannot easily identify these host plants to avoid them, botanical surveys will be required as described above to delineate the host plant populations so crews can avoid them. **Extra caution should be used with herbicides in these areas.**

## STATE-LISTED BIRDS

A subset of ROW areas proposed for operation and maintenance activities in 2011 are mapped, in part, for the presence of known Bald Eagle nesting sites. Within these ROW areas, extra care should be taken to avoid disturbing breeding birds by following the recommendation provided in the "Guide\_1" column of the shapefile table. The recommendation is as follows:

### Detailed descriptions of "Guide\_1":

*"Avoid work during breeding season"*: The breeding season for Bald Eagles in Massachusetts begins with courtship during late fall or early winter. The entire breeding cycle, from nest construction to fledging of young, lasts 6-8 months. They are very sensitive to disturbance throughout this time period (usually 1 January - 15 August).

## STATE-LISTED SNAKES

A subset of ROW areas proposed for vegetation management activities are mapped, in part, for the presence of state-listed snake species. **Crew members should be aware that any snakes observed during vegetation management activities may be state-listed and protected species. Direct harm to or capture of these species without a permit from the Division of Fisheries and Wildlife is considered an unauthorized "taking" of a state-listed species and may be punishable by fines or imprisonment (321 CMR 10.06).**

## Management Recommendations

1. Vegetation Management Conducted between 2 November and 31 March: In general, maintenance activities associated with VMPs that are conducted between 1 November and 31 March will pose minimal or no risk to state-listed snakes and can proceed as described in the submitted VMP.
2. Vegetation Management Conducted between 1 April and 1 November: Vegetation management activities occurring between 1 April and 1 November may cause harm to state-listed snakes and certain steps must be taken to avoid such harm. Included with this document is a shapefile of ROW areas documented to support state-listed snakes. Below are the management recommendations for state-listed snakes found in the "Mgmt\_rec1" and "Mgmt\_rec2" columns of the shapefile table. Exact recommendations are clarified below, and must be followed where state-listed snake species are identified.

### Detailed descriptions of "Mgmt\_rec1" and "Mgmt\_rec2" guidelines

*"Raise mower blades"*: Raising the height of mower blades to greater than 8 inches above the ground will reduce the likelihood of snake mortality, if the mower does not have a weighted stability bar mounted behind the blades.

*"Avoid all snakes"*: Any snakes encountered should be avoided by vehicles or heavy equipment.

Based on these efforts and information currently found in the NHESP database, subsequent annual management guidelines may be revised.

**BEST MANAGEMENT PRACTICES:**

**ROW Vegetation Management in State-listed Turtle Habitat**



## **BEST MANAGEMENT PRACTICES:** **ROW Vegetation Management in State-listed Turtle Habitat**

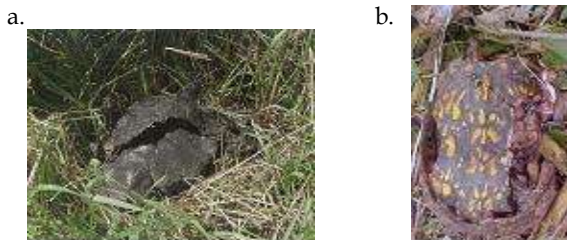
Freshwater turtles in Massachusetts are increasingly threatened by habitat loss, road mortality, increases in the density of certain predators associated with suburban sprawl (e.g. skunks & raccoons), and other factors. Because turtles naturally suffer high rates of nest failure and hatchling/juvenile 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 a significant impact 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 rights-of-way (ROW) 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. As a result, the potential exists for adult turtles to 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.

***Turtle Active Season; 15 April-15 October:*** Follow the special procedures described below.

## **Training and Pre-treatment Requirements**

1. *Staff Training:* All staff conducting vegetation management work within Turtle Habitat from April 15 - October 15 shall have completed a training seminar conducted by a qualified biologist on turtle life history, species identification, and protection procedures.
  - a. NHESP staff will conduct two or more training seminars on an annual basis.
  - b. In consultation with the NHESP, utility companies may elect to conduct their own NHESP approved turtle training programs for staff.
  - c. Upon request, utilities shall provide the NHESP with a list of staff and contract personnel who have completed the training. The list shall be updated as necessary during the turtle active season.
  
2. *Team Leader Training:*
  - a. Each work crew conducting mechanized vegetation management work with large equipment within Turtle Habitat from 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.
  - b. 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.
  - c. Prior to April 15<sup>th</sup> each calendar year, utilities shall provide the NHESP with a list of staff and contract personnel who have completed the "Team Leader" training. The list shall be updated as necessary during the turtle active season.
  
3. *A Scientific Collection Permit* must be obtained from the NHESP and held by the "Team Leader" to handle state-listed species.

## **Treatment Practices**

Using a variety of treatment practices, vegetation management activities on electric utility rights-of-way target specific vegetation. These targets obscure or impede access to the ROW corridors and structures, and grow tall enough to interfere with the safe, efficient and legal operation of an electrical power line. Targets, include but are not limited to, trees and limbs, tall growing shrubs, vegetation growing around substations, structures, access roads, gates, equipment, and where applicable, invasive and other noxious or poisonous vegetation species.

Some vegetation management activities occurring during the Turtle Active Season will not harm State-listed turtles while others have the potential to harm State-listed turtles, and must be conducted under the supervision of an NHESP-approved "Team Leader" following the practices listed below.

### ***Herbicide Applications and Hand Cutting:***

1. No special conditions are required for hand-cutting target vegetation or for herbicide applications.

### ***Mowing and the Use of Heavy Equipment:***

1. 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.
2. Raise mower blades to 10 to 12 inches above the ground to reduce the likelihood of turtle mortality. Preferably, if possible, mow from the center of the utility ROW out toward the forested edges.
3. Immediately prior to mowing, the use of large mechanical operational equipment or driving large equipment off existing roads, visual "turtle sweeps" must be conducted in the work area by trained personnel under the supervision of the turtle "Team Leader." Any turtles encountered must be moved a safe distance from the path of the vehicles or heavy equipment in the direction the turtle was oriented when observed and outside of the limit of work (e.g. 250 - 500 feet).
4. All observed state-listed turtles should be identified and reported to the NHESP.

### **Data Collection & Reporting**

The NHESP shall be provided 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 by the end of the treatment year. Observations of state-listed turtles shall be reported within 30 days of each observation.

### **Optional Turtle Enhancement Activities**

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.

**BEST MANAGEMENT PRACTICES:**

**ROW Vegetation Management in Vernal Pool Habitat for State-listed Species**



## **BEST MANAGEMENT PRACTICES:**

### **ROW Vegetation Management in Vernal Pool Habitat for State-listed Species**

Vernal pools provide unique wildlife habitats for four species of amphibians (3 salamanders and 1 toad) and 2 invertebrates that are officially listed as “Endangered”, “Threatened” or of “Special Concern” in Massachusetts 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).

State-listed amphibians occur in a variety of habitats across the Commonwealth of Massachusetts, including along utility rights-of-way (ROW). As a result, the use of heavy machinery, vehicles, and the alteration of wetland hydrology which may occur during vegetation management activities can negatively impact state-listed amphibians found within utility ROW.

#### **Management Goal**

Maintain the integrity of vernal pool habitat and reduce mortality from mowing/heavy equipment.

#### **Vernal Pool Identification**

1. GIS data layers or maps containing NHESP designated Vernal Pool Habitat will be provided by the NHESP;
2. GIS data layers containing NHESP Certified, Potential Vernal Pools, and other significant wetland areas likely containing vernal pool habitat will also be provided by the NHESP;
3. All certified vernal pools and potential vernal pools within “VP Habitat” shall be identified prior to any work.

#### **Best Management Practices**

Work within these areas should be avoided if at all possible however, if work within the pools is not avoidable, the following practices must be implemented within sections of ROW indicated as “VP Habitat” and should be implemented within other Certified and Potential Vernal Pools.

##### ***Vegetation Management conducted between 1 December and 15 March:***

In general, maintenance activities associated with VMPs that are conducted between 1 December and 15 March will pose minimal or no risk to state-listed amphibians and can proceed.

If appropriate, swamp mats should be used in conjunction with heavy equipment to avoid altering the hydrology of the “VP Habitat.” Mats shall be removed immediately upon completion of the project.

Fueling of equipment shall not take place within “VP Habitat” all year long.

*Vegetation Management conducted between 16 March and 30 November:* Follow the special procedures described below.

## **Treatment Practices**

### ***Hand Cutting:***

1. Hand-cutting and trimming of vegetation within these areas is permitted without restriction *except*;
2. All slash material resulting from mechanical operations shall be removed from “VP Habitat.”

### ***Mowing and the Use of Heavy Equipment:***

1. In advance of equipment operation, qualified personnel shall flag or otherwise visibly delineate the boundaries of vernal pool habitat to facilitate avoidance by equipment operators;
2. If mowing or any other operation of heavy equipment is to occur between 15 March and 1 December, no large heavy equipment (e.g. tracked or wheeled vehicles including skidder buckets and access vehicles) shall enter the designated wetland areas constituting vernal pool habitat;
3. If the qualified personnel find other potential vernal pool habitat within the ROW not included in the NHESP GIS datalayer, utility staff shall make a good faith effort to delineate these areas as well for avoidance by heavy equipment;
4. All slash material resulting from mechanical operations shall be removed from “VP Habitat.”

### ***Herbicide Applications:***

1. Herbicide applications must follow the restrictions in 333 CMR 11.00, Rights of Way Regulations.

## **Reporting**

A report summarizing the management activities implemented within VP Habitat shall be submitted to the NHESP by the end of the treatment year. Said report should include dates, the management techniques implemented, and information on any vernal pools identified.

## **State-listed Amphibian Descriptions and Biology**

The three state-listed salamanders are in the same family of mole salamanders (*Ambystomatidae*): the Blue-spotted Salamander (*Ambystoma laterale*), Jefferson Salamander (*Ambystoma jeffersonianum*), and the Marbled Salamander (*Ambystoma opacum*). These species are often thought of in association with their aquatic breeding habitat, which is primarily in ephemeral vernal pools. Although these aquatic habitats are essential for reproduction, these salamanders are only in the breeding pools for a few days to a couple of weeks per year. It is the surrounding upland forest habitat where the juvenile and adult salamanders spend 90% of their lives. Breeding migration to and from aquatic habitat occurs in the early spring for Blue-spotted and Jefferson Salamanders, while for Marbled Salamanders it occurs in the late summer and fall. Outside of these breeding periods, the adult salamanders reside in underground burrows and tunnels and beneath moist coarse woody debris.

The final state-listed amphibian is the Eastern Spadefoot Toad (*Scaphiopus holbrookii*) and is the most fossorial species of frog or toad in Massachusetts. These toads live in areas with dry sand or sandy loam. They spend most of their time up to eight feet underground – hibernating during the cold months and avoiding desiccation during the rest of the year. In warmer months, from April to September, the Eastern Spadefoot Toad comes up at night to breed in temporary ponds after prolonged warm and heavy rains.

