

# Eastern Box Turtle Survey Instructions

## Appendix A

### Northeast Eastern Box Turtle Working Group

*Supported by the Regional Conservation Needs Grant Program*

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#### **Site Selection**

- Select your sampling site (e.g., a 4-6 ha patch of field/forest edge habitat within a state park).
- Map the survey area (using 28-m radius circles or a feature polygon) using Google Earth, ArcGIS or some other mapping app.
- Visit the site to determine the mapped area is appropriate habitat for eastern box turtles, feasible to survey and determine if any modifications need to be made to the survey area mapping. You may want to flag/mark the survey area boundary while you're there in preparation for surveys at a later time.
- Send an electronic copy (as shp or kmz file) of the final survey area boundary to the state project lead.

#### **Other Field Season Preparations**

- Obtain appropriate state permits (or letters of authorization) and landowner access permissions.
- Contact your state lead to obtain turtle notch codes and a diagram of that state's marking scheme (only for those with permission to notch turtles).
- Determine field equipment needs (clip board, calipers, pesola scales, etc) and obtain needed equipment.
- Print site maps and/or upload circular plot center point coordinates (or survey area boundary points) into a GPS unit of mapping app on your phone.
- Print data sheets. Consider using weatherproof paper if you'll be surveying during rain events.
- Clean and disinfect all sampling equipment with 10% bleach solution and rinsed well. For sensitive equipment like pesola scales you can wipe down the tool with a paper towel wetted in 10% bleach.
- Review the survey protocol, procedures, and survey sheets.

#### **Survey Procedures**

- Use maps, GPS or phone app to navigate to the site.
- If needed determine and mark the survey area boundary. If doing this immediately prior to the survey try not to walk through the survey area as little as possible.

- If you plan to use a GPS unit or a mapping app to track your survey path (recommended when possible), turn the GPS unit/app on, clear the previous track and start tracking.
- Fill out the *Box Turtle Visual Rapid Assessment* field form.
  - Review the field form and fill in what you can prior to the survey (e.g., site name, site code, date, annual visit, observers, cloud cover, rain, etc.).
  - Survey option descriptions:
    - Non-random sites = survey areas that were non randomly selected.
    - Random site = survey areas selected using a randomized point generator in ArcGIS or some other mapping app.
    - Full Random = survey areas where the effect of habitat management actions is being monitored and points were randomly placed within the management area or entire park/property.
- When you are ready to start surveying, set a timer or stopwatch.
  - Optional - If you find it helpful, each time you stop the survey for any reason (e.g. process turtles, answer a phone call), record the stop time on the *Site Visit Log*, and then record the time when you resume the survey. Keep track of total time spent looking for turtles on this form (see example below).
- Walk/survey the entire survey area as evenly as possible, but giving slightly more time to thickly vegetated areas and less time to open areas where visibility is good. Your total survey time should equal approximately 0.75 person hrs/ha (e.g. 11.25 min per circular plot or 45 min per 4 plots assuming one surveyor). You will be walking at a fairly brisk pace. For larger survey areas (> 2 ha) it helps to visually divide the feature into sections and time your survey of each section. For example, if you have a square 4 ha feature you can divide it into quadrants and time your survey of each quadrat making sure you finish each within 45 minutes (assuming one surveyor).
- At the end of the survey, record the end time and complete the *Box Turtle Visual Rapid Assessment* form. Also record the end time on the *Site Visit Log* (if used).
- *Save your track and label it "SiteID\_YMMMDD.*

### **Turtle Processing**

- Complete a *Box Turtle Individual Form* for each turtle found (including recaptures).
- Record the following information
  - *site name*
  - *site code (optional)*
  - *Survey type* (options are feature or plot). For plot surveys please note which of the four plots you are surveying by checking the appropriate box.
  - *visit* - note whether this is your first, second, or third visit. An additional option is available if you visit the site more than 3 times.
  - *observer(s)* that found the turtle (full name)
  - *date* of the survey (mm/dd/yyyy)
  - *time* the turtle was found
  - *turtle ID#* (coordinate with you state lead for a notch code system)
  - *sex* (male, female, unknown)

- *age* (A=adult, J=juvenile)
- *waypoint ID* (where appropriate)
- *unmarked, marked 1<sup>st</sup> capture, within yr recap* – unmarked is for turtles that have not been marked to date. Marked 1<sup>st</sup> capture is for turtles that were marked in previous years but where this is the first time they were captured during the field season. Within yr recap is for any turtles that were captured previously during the same field season.
- *coordinates* of the location where the turtle was found. Please use decimal degrees for the lat long (dd.dddd)
- *SCLmin (mm)* – straight line carapace length measure down the middle of the carapace. See the diagram below.
- *CW (mm)* – measure of the widest point of the carapace
- *AntSPL (mm)* – measure down the middle of the anterior portion of the plastron
- *PostSPL (mm)* – measure down the middle of the posterior portion of the plastron
- *SPLmin* (optional) - if the turtle hinge is completely open and you are able to get a straight line measure of the full plastron length you may use this field opposed to the AntSPL and PostSPL.
- *PW (mm)* – measure the width at the humeral-pectoral seam
- *SH (mm)* – measure the maximum height of the carapace (typically at the hinge)
- *mass (g)*
- *photo file names* (optional) if it helps you organize your photos at the end of the field season. Always take a full frame photo of the carapace and plastron for each capture.
- *PIT number* (optional) if you PIT tag the turtle
- *wear class* of the right pectoral scute
- *visible annuli* - the number of annuli that are visible
- *gravid* or *not gravid* for females that you are able to palpate
- *general health* of the turtle including any signs of sickness (lethargy, nasal discharge, swollen eyes, etc.)
- *injuries* observed including missing limbs or toes, eye wounds, or stub tails.
- *Scute morphology* - note if the turtle has a normal number of marginal, vertebral and costal scutes. If not normal please note what irregularity is present.
- use the shell sketch to note the notches and any injuries
- *comments* to provide any additional information that may be important
- Check with your state lead to determine how to handle notching of turtles with an irregular number of marginal scutes (e.g. 11 or 13) on one or both sides of the carapace. Researchers use several ways to count marginal scutes including from the anterior to the posterior, head to the bridge and tail to the bridge, and posterior to anterior.

### **Data Management**

Data should be entered into the regional database using the Excel spreadsheet or an online data entry platform (once one is developed). GPS track data collected should be labeled with the following convention: SiteID\_YYMMDD. The turtle photos should be labeled as follows: StateCode\_SiteID\_TurtleID\_YYMMDD\_C or P. Photos of the carapace should end with a C and photos of the plastron should end with a P.

### **Equipment List**

- Field Forms
- Survey Protocol and Instructions
- Camera
- Transect tape 28 m or longer (to set up circular plots)
- Flagging (optional; to mark survey area boundaries)
- Site maps (optional)
- GPS unit or mapping app (optional)
- Clip board
- Pencil or pen
- Thermometer
- Caliper(s) or ruler (e.g., 200 mm)


