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Identifying Important Small Wetlands and Potential Sites for Rare Species in the Southeast



Gray's lily (*Lilium grayi*).

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The term “wetland” can have different meanings in different contexts. For official regulatory purposes, a wetland is defined as “those areas that are inundated or saturated by surface or groundwater for a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil condition.” In most areas of the Piedmont and Blue Ridge Mountains, wetlands are commonly referred to as swamps, marshes, bogs, wet flats, or bottomland hardwood forests.

The source of water (groundwater, rainwater, surface runoff, snowmelt) is the most important factor in the development of any wetland. The amount of water in an area and the amount of time flooded conditions persist determine the kind of wetland that develops in an area. Hopefully, you will find examples of the types of wetlands that occur naturally in your region. These can then be used as reference for restoration and management (Appendix A).

The various wetland types located in the Piedmont and Blue Ridge Mountain regions of the Southeast harbor many rare plant and animal species. Of the habitats mentioned in Appendix B (rare plants and animals), Southern Appalachian Bogs support more rare species than all other types of wetlands combined. The bog turtle, *Clemmys muhlenbergii*, is found in 3 of the 6 wetland types, and has been chosen as the prime example to illustrate the need to identify potential sites. It is a federally protected species and there is great interest in its status, distribution, and natural history. Many agencies and organizations use the bog turtle



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The bog turtle (Clemmys muhlenbergii) is often used as the flagship species for wetland protection throughout its range.

as the flagship species for wetland protection. If a site has potential as bog turtle habitat, then it is most likely potential habitat for other rare species.

The following guidelines can easily be modified to identify potential habitat for many species found on the rare plant and animal list. There are many similarities between bog turtle habitat in the northern and southern parts of the turtle’s range. However, most research used to produce this document took place in the turtle’s southern range, so the emphasis has been placed on wetlands in the Southeast.

If the possibility exists that protected species might be found in a wetland, it is suggested that landowners be informed by the investigators. A simple handout can be developed to ease legal concerns of landowners; a sample document summarizing the laws for one region is provided in Appendix C.

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Guidelines for Identifying a Potential Bog Turtle Wetland in the Southeast

- A. Contact the appropriate state wildlife agency where the potential site is located or Project Bog Turtle (see Appendix D) to find out if the wetland is known to support bog turtles.
- B. If it is not a known bog turtle wetland but has an emergent and/or shrub wetland component, then it should be surveyed to determine if it is potential bog turtle habitat.

Conditions for the determination of potential habitat:

1. Visual assessment can be performed in any month of the year.
2. Potential bog turtle habitat is recognized by 3 criteria or the 3-S system (Spring-fed, Soggy, and Sunny):
 - a) Suitable hydrology (Spring-fed) - spring-fed with shallow surface water or saturated soils present year-round, though in summer wet area may be restricted to spring head areas. These wetlands are typically interspersed with wet and dry pockets. Water flow is often subsurface. However, if you do not need boots to walk into the wettest portions of the site, it probably is not suitable habitat for bog turtles.
 - b) Suitable soils (Soggy) - a bottom substrate of soft muck, though in summers of dry years this may be limited to near spring heads. The saturated soils in bog turtle habitats in the Southeast have been classified as Chewacla, Codorus, Hatboro, Nikwasi, Toxaway, Wehadkee, and alluvial soils.
 - c) Suitable vegetation (Sunny) - open, sunny areas dominated with vegetation of grasses, sedges, and rushes (emergent wetland), often with a shrub component. Common herbaceous vegetation of Piedmont wetlands includes sedges (*Carex* sp.), lamp rushes (*Juncus* sp.), bog rushes (*Scirpus* sp.), rice cut grass (*Leersia oryzoides*), tearthumb (*Polygonum sagittatum*), spotted jewelweed (*Impatiens capensis*), skunk cabbage (*Symplocarpus*

foetidus), and arrowheads (*Sagittaria* sp.). Upland and Blue Ridge Mountain wetlands include these plants with the addition of panic grasses (*Panicum* sp.), sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmunda cinnamomea*), and peat moss (*Sphagnum* sp.), which are found more commonly in the Mountains than in the Piedmont. Common shrub subcanopy species in wetlands of both regions include tag alder (*Alnus serrulata*), red maple (*Acer rubrum*), deciduous hollies (*Ilex* sp.), and elderberry (*Sambucus canadensis*), and in disturbed sites, multiflora rose (*Rosa multiflora*).

3. The appropriate state wildlife agency or Project Bog Turtle should be sent a copy of survey results including a site map, surveyor's name, date of visit, opinion on potential/not potential habitat, and a description of the hydrology, soils, and vegetation. If rare plant species are found during the survey, then the appropriate state plant specialists or heritage programs should be contacted and sent the above survey results. (See Appendix D for directory). A sample data sheet is provided in Appendix E for making reports.
4. If the wetland is identified as potential bog turtle habitat, then it should be surveyed to determine the presence of bog turtles. This survey is not to estimate population size, just presence or absence of turtles. A special, long-term mark-and-recapture study would be required to determine population size.

Potential sites may be surveyed using visual techniques and hand capture, or turtles may be trapped (see Guidelines below). Most bog turtle sites are identified using visual searches. However, recent evidence clearly demonstrates that some sites containing bog turtles may be overlooked using visual-only surveys.

If a potential site is threatened with destruction and is being surveyed to fulfill a regulatory obligation, it is imperative that the site be trapped by a recognized and qualified turtle trapper, according to guidelines

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presented in this chapter, before survey results can be considered conclusive.

Guidelines for Visual Surveys:

1. Surveys should only be performed April 15 - June 15. This coincides with the period of greatest annual turtle activity (spring emergence and breeding) and before vegetation gets too dense to accurately survey. Surveys after June 15 should be avoided by inexperienced persons because of the potential of disruption of breeding or destruction of nests or neonates.
2. Air and water temperatures should be a minimum of 50°F.
3. Cloud cover should be no more than 50%, and surveys should not be conducted during electrical storms. However, a good time to survey for bog turtles is immediately after a rain.
4. A minimum of 3 people should survey each wetland together. At least one of these should be a qualified bog turtle surveyor recognized by the appropriate state agency or Project Bog Turtle, who will instruct the other surveyors in survey techniques.
5. A minimum of 3 surveys per wetland site, separated by 5 or more days, are needed to accurately assess the site for presence of bog turtles. At least 2 of these surveys must be performed in May. For best results, spread the surveys over a long period. If turtles are found on the first or second visit, the site does not need to be revisited.
6. Survey time should be a minimum of 2 hours per site visit or 1 hour per acre of wetland unless a turtle is found before the time has elapsed.
7. The appropriate state wildlife agency or Project Bog Turtle should be sent a copy of survey results including a site map, size of wetland surveyed (acres, hectares, or square meters), dates of site visits, time spent per site, surveyors' names per visit, weather per visit (air temperature, water temperature, % cloud cover, wind, precipitation), presence or absence of bog



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Bog turtles and many other animals use open muddy runs.

turtles found, and date, age/sex of turtles found (see Data Sheet, Appendix E).

Guidelines for Trapping Surveys:

1. Potential sites that do not yield bog turtles using visual-only surveys should be trapped by experienced personnel.
2. Trapping is a serious matter because animals are vulnerable while in the traps. Only qualified personnel of the state wildlife agency, Project Bog Turtle, or an appropriate federal agency should use this type of survey. All individuals involved in the effort must have the appropriate permits.
3. Prime areas of the site should be saturated with traps. At least 20 traps per acre of habitat should be set. Traps must be covered to shade captives and must be checked a minimum of every 48 hours.
4. A minimum of 9,000 trap hours should be required per site if the site is one hectare (2.2 acres) or less. This is approximately equal to setting 20 traps for 20 days and is called the "20-20 Rule." Only one turtle is needed to confirm a site as bog turtle habitat. Traps should be removed after 1 capture unless there is interest in population assessment or long-term data collection.

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5. Surveys should only be performed May 1 - June 15. This coincides with the period of greatest annual turtle activity (spring emergence and breeding) and before vegetation gets too dense. While turtles may be trapped outside of this time period, a result of no turtles would be considered inconclusive. Surveys after June 15 should be avoided by inexperienced persons because of the likelihood of disruption or destruction of nests or neonates.
6. The minimum number of traps or trap hours should be increased if:
 - a) it is a dry year.
 - b) novice trappers are setting traps.
 - c) the site is larger than 1 hectare (about 2.5 acres).
 - d) trapping is done at any time other than May or June.

Bog turtles may be encountered outside of a wetland site as they disperse or move between wetland habitat units. Although it may seem strange to find a bog turtle some distance from a wetland, it is a common occurrence and many observations have been reported in recent years.

What Should One Do if a Bog Turtle is Found?

A bog turtle, or any rare species listed in Appendix B, should be photographed and reported to the appropriate state or federal agency in the region and to Project Bog Turtle. A map of the locality and exact location description with mileage from the nearest intersection should be included in the report.

If a bog turtle is found on the road, move it to the side of the road to which it was heading, lest it get crushed by a vehicle. If dead, it should be kept on ice or frozen. Notify your local wildlife officer immediately and don't forget the photograph! Dead bog turtles are very important specimens and are only legally housed in a state natural history museum or the Smithsonian Institution. **Do not** keep a live bog turtle unless you have an endangered species permit issued by the state agency. It is a serious offense to illegally possess a federally protected species.

See Appendix D for directory of state and federal agencies, universities, museums, and independent organizations to contact if you find rare plant species or rare animals (bog turtles).

See Appendix F for informative handouts that address landowner concerns if bog turtles are found.

Bibliography

- Herman, D.W. 1999. The impacts of livestock grazing on bog turtle habitat in the Piedmont and Mountains of the Southeast. Report to US Natural Resources Conservation Service, Wetlands Science Institute. This study is the first to focus on the impacts of livestock grazing on bog turtle habitat in the Southeast. The results of the study indicate that limited grazing is not only beneficial, but also necessary for the continued survival of the bog turtle and its habitat.
- Klemens, M.W. 1993. Standardized bog turtle site-quality analysis. Submitted to the US Fish and Wildlife Service. American Museum of Natural History, New York. This important, practical instrument was used to help build the Wetland Site Assessment Worksheet, Appendix E (this volume). Conservationists and land managers can use this method to help decide which bog turtle sites merit conservation efforts.

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Lovich, J.E., D.W. Herman, and K.M. Fahey. 1992. Seasonal activity and movements of bog turtles (*Clemmys muhlenbergii*) in North Carolina. *Copeia* 1992(4):1107-1111. This paper discusses the results of a nine-month radio-telemetry study on the bog turtle—the first ever conducted in the Southeast. A comparison of frequencies and distances moved by male and female bog turtles indicated that bog turtles are more active during the hotter months than was previously thought.

Somers, A.B. 2000. A population of bog turtles in the Piedmont of North Carolina: Habitat preferences, capture method efficacy, conservation initiatives, and site enhancement. Report to US Natural Resources Conservation Service, Wetlands Science Institute. A detailed analysis of a small population of bog turtles studied over a 6-year period. Important implications for establishing guidelines to determine the presence of bog turtles in potential sites before they are altered (20-20 Rule).