



Pennsylvania Natural Heritage Program

information for the conservation of biodiversity

Wild Heritage News

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Blanding's Turtle Assessment Finds Daily Adventures

by
Ryan Miller

In 2009 the Pennsylvania Natural Heritage Program was awarded a State Wildlife Grant from the Pennsylvania Fish and Boat Commission to complete surveys and a status assessment for the Blanding's turtle in Pennsylvania.

The Blanding's turtle (*Emydoidea blandingii*) has been designated as an "Immediate Concern" species in the Pennsylvania Wildlife Action Plan, and has been on the Pennsylvania Fish and Boat Commission's candidate list since the 1970s. Until this project, very little information on the species' distribution in Pennsylvania existed. It was last officially documented in the state in 1983. During the project, we investigated the three historic locations where Blanding's turtles had been found, as well as other wetlands within a few miles of the historic locations. These three areas included Presque Isle State Park in Erie County, and Pymatuning and Conneaut in Crawford County. Fragmentation, loss, and alteration of wetland habitats are the main contributing factors in this species range wide decline. This study proposed to collect the necessary data to determine the current status of the Blanding's turtle in the state.

Blanding's turtles have a high domed black shell with yellow flecks. Their plastron is yellow with black blotches on the outer edge. Its most distinguishing characteristic is its bright yellow chin and neck. They are a very secretive species that does not bask in open areas as much as other turtles. They prefer marshes, wet meadows, ponds, and other mosaic type wetlands.

The turtle surveys were very time intensive. The work consisted of setting 60 D-frame mesh traps in the remote wetlands of the areas mentioned above. Some areas had to be accessed by canoe or small motorboat. In other areas we were wading for hundreds of meters through waist deep muck and water. The



Blanding's Turtle

Ryan Miller

traps were baited with sardines in soybean oil and checked seven days a week for two months straight.

The daily trap checks were never routine. They started with picking up volunteers and loading cans of sardines and other gear into a canoe, boat, or backpack. Every trap was like opening a present on Christmas morning. Some interesting “presents” were discovered. Large snapping turtles (or any snapping turtles) were always a treat to untangle and release from the mesh net traps. Multiple turtles were captured between checks. As many as 14 painted turtles or seven snapping turtles were found in one trap. Other interesting captures included carp, catfish, bowfin, bass, bluegill, baby geese, and beavers, muskrats, and river otters that luckily chewed their way out.

The best presents were the four Blanding’s turtles that were captured in 2009. On the second day of trapping my volunteer lifted a trap out of the water from the front of the canoe and asked “What kind of turtle is this?” I was so excited I almost flipped the canoe. I was even more excited when we ended up catching another Blanding’s turtle in a different trap later that day. The Blanding’s turtles were not trap shy. They were captured a total of 8 times in a month. It must have been the free sardines.

Unprecedented access was granted to us by the Pennsylvania Game Commission and the Pennsylvania Fish and Boat Commission to survey Sanctuary Lake. This large shallow impoundment to the east of Pymatuning Lake is completely closed to the public as a wildlife propagation area. The lake is also where the Fish and Boat Commission collects its brood stock for warm water fish species propagation. Daily trips into this 2500 acre wildlife sanctuary were always an adventure. Navigating the shallow lake in a



One of only four Blanding’s turtles captured in the study.

Ryan Miller

motorboat proved to be difficult with the large stumps left over from the inundation and uncharted topography. Rare birds such as bitterns, sandhill cranes, bald eagles, and ospreys were spotted on every trip. The largest snapping turtles of the project were captured here (some with a shell length over 55

centimeters). Trap raiding raccoons stole the sardines from my traps regularly (sometimes they sat on my traps as I approached). White tailed deer were observed swimming in the lake on more than one occasion and also could be found bedding on the smallest of islands on the lake. It was truly amazing how limited public access created such a different reaction from wildlife.

After the two seasons of surveys, the targeted effort of 1000 trap hours per hectare of turtle habitat was met in all of the wetlands but three. The three locations where effort was not met were very large lakes and wetlands. The number of turtle captures was as follows: 779 painted turtles, 747 snapping turtles, 43 musk turtles, and 8 Blanding’s. That’s a total of 1,577 turtle captures!

At the end of the project it was determined that the state conservation rank of S1 (critically imperiled) was suitable for Pennsylvania’s population of Blanding’s turtles. Only four individuals were captured during the whole project in one location. It is possible that two of the historic populations are extirpated from the state due to habitat destruction from damming and wetland manipulation. The remaining population needs more study. A DNA study could be helpful to look at population origin (it has been hypothesized that the turtles are occasional waifs from other populations along Lake Erie). Also, a telemetry study could help determine if the population is breeding, and could show habitat usage throughout their active season. These proposed projects could be vital for better protection of the state’s last remaining population of Blanding’s turtles.



Ryan Miller holding a “present” - a very large snapping turtle

Charlie Eichelberger

Scotia Barrens—A Mystery in Our Midst

by
Jessica McPherson

The Scotia Barrens has long been known as a unique habitat supporting rare and unusual plants and animals, from purple blazing stars and sand cherries to rare tiger beetles and dragonflies. When Clearwater Conservancy, based in Centre County just to the north of the Scotia Barrens, contacted PNHP to help with a regional conservation assessment of similar barrens habitats, we were quite excited at the chance to gather updated information about this unique habitat. However, finding examples of the habitat proved more difficult than expected, due to the advances of forest succession. To make intelligent conservation decisions about this habitat, we need to understand more about how it formed, what maintains it, and what its conservation value is.

Clearwater decided to focus on the barrens because they host many species that are not found in other habitats, and even as the Scotia region is fragmented by development, no regional assessment has ever been done for barrens systems. Clearwater's initial plan was to identify a set of known barrens sites, then use GIS modeling to analyze their similarities and predict where more sites could be found. Then a regional conservation plan could be developed. Many signs suggested that barrens should be found in other parts of the region. The Gatesburg geological formation and Morrison soil series, which underlies the Scotia barrens, extends from Clinton to Bedford County; many colloquial place names reference "barrens"; and historical PNHP records of barrens species were



A central PA barrens indicator species, Kalm's brome grass, also known as "prairie brome" (*Bromus kalmii*)

Jessica McPherson

sprinkled throughout the region. However, the plan had to change when we couldn't find enough barrens habitats to create the model in the first place. We chased old barrens species records and found mesic forests; searched for pine on aerial photos and found white pine, not pitch. After decades of fire suppression in the region, the barrens habitats appeared to have largely succeeded to forest. Further complicating the picture was the fact that most old records were not precise. Which of the mesic forests now spanning the landscape were once barrens, and possibly could be again?

In the second year of fieldwork, we changed our strategy, searching out areas we knew had been



recently disturbed in various ways. We searched clearcuts, powerline right of ways, and shooting ranges. Barrens species were indeed found on powerline rights of way, especially steep slopes with erosion; and shooting ranges were also good habitat. Clearcuts alone, however, did not appear to produce barrens, even on Gatesburg geology and Morrison soils; they produced fern and blackberry thickets.

Since the barrens were no longer to be found in the form we expected them – pitch pine and scrub oak mosaics with occasional openings – we realized that Clearwater’s conservation plan needed to be approached as a restoration plan, and successful restoration needed a good understanding of the ecosystem’s character and dynamics. Clearly, barrens depended on disturbance, but how much? Did they form over centuries from Native American fire management? Over decades from early scorched-earth industrial practices? Do they require landforms with extreme exposure or drought? Since this degree of investigation was clearly outside the scope of our project, we opted to summarize existing knowledge about barrens systems in nearby regions.

Several decades of research on barrens systems in the Northeast and Midwest has fortunately developed a comprehensive picture of barrens ecosystem dynamics in those regions. In almost all cases the barrens ecosystems did not arise solely because of inherent site limitations, but formed in response to fire and disturbances that create mineral soil. Some barrens likely did exist pre-settlement, but were enlarged by major post-settlement disturbances, maintained for decades by frequent fire, and then greatly reduced by forest succession in the last several decades of



John Kunsman walking through prime barrens habitat.

Jessica McPherson

widespread fire suppression.

Experimental restoration management studies have found techniques that work to restore barrens in the Northeast; most involve frequent fire as well as physical habitat manipulation. Dry, well-drained, exposed sites fare better.

Detailed historical research, as well as studies of succession dynamics and restoration effects, has created a much more comprehensive picture of barrens ecosystems. However, much of this research has not yet been done in Pennsylvania. While the past does not have to determine the future, historical research can provide valuable insight in determining conservation goals. How much of the barrens system should be restored, and where are efforts most likely to meet with success? As fire management and other efforts to restore or maintain early successional habitats increase in Pennsylvania, it is important to conduct good monitoring studies surrounding these efforts so their effects on various species of conservation interest can be fully evaluated and the knowledge transferred to other sites.



Showy goldenrod (*Solidago speciosa*)

Jessica McPherson

Notes from the Field

County Inventory

The last quarter of 2010 has seen the close of field season activities for Delaware and Pike Counties. Important natural habitats in Pike County include glacial peatlands (bogs), while the most significant natural habitats in Delaware County are serpentine barren remnants and coastal plain forest remnants. All plant specimens have been processed and species of concern entered into the fieldform database. Insect specimens collected during the field season are currently being processed and identified.



John Kunsman and Jeff Wagner straddle the line between "leatherleaf-bog rosemary peatland" and "leatherleaf-cranberry peatland" natural communities at Rock Hill Pond in Pike County.

Rocky Gleason

Report writing for Butler, Cameron, Delaware, Erie, Indiana, Jefferson and Pike Counties has resumed following the field season hiatus. The process includes creating conservation polygons for species of concern, developing introductory materials, preparing maps, species fact sheets, writing site descriptions and conservation recommendations. The Indiana CNHI report was returned from the Draft Review Committee. Edits are being incorporated and the final report is being prepared for printing.

A statewide CNHI layer of all CNHI polygons was assembled from the various polygons developed for the individual CNHI projects over the past 20-year period. We have merged all existing polygons into a single statewide layer and added descriptive attributes. We are currently in the process of reviewing full site descriptions for sensitive species information before

linking them to the individual site boundaries on the web-map tool. The web site, hosted by DCNR, was released to the public in late January (<http://www.naturalheritage.state.pa.us/cnhi/cnhi.htm>). Future efforts for the state-wide layer will focus on drawing conservation planning polygons for each species of concern, so that all polygons will be drawn based on prescribed taxa specifications to provide state-wide polygon continuity.

Conservation Planning

The Conservation Opportunity Areas project was completed in January. This statewide project mapped our priority landscapes for Species of Greatest Conservation Need that can serve as focal areas that will assist in the implementation of the State Wildlife Action Plan. Funding for the project was provided by the PFBC through a State Wildlife Grant and by a DCNR WRCP grant.

Conservation Information Management

As part of our annual Data Exchange with NatureServe, we have received and begun processing our data upload from NatureServe's Central Database. This will update taxonomy and Global Rarity Ranks for the species lists in our Biotics database.

GIS and Conservation Information Management Staff are continuing the development of an integrated Field Survey Geodatabase. The goals for this database are that it will house information about areas surveyed, survey results and citation information and be accessible to staff and Partners for viewing and submitting Heritage Information. A database overview was presented at the PA Natural Heritage Program meeting at Fallingwater in November.

With the help of volunteers, Conservation Information Management is continuing its "Reference Improvement Project." The goals of the project include increasing the security of our unique data holdings, making these holdings more accessible to the scientists and environmental reviewers, and greatly increasing the searchability of our data holdings by bringing them into a geodatabase. One volunteer is currently using GIS to create spatial features for each reference which will be easily accessed through our

field survey geodatabase. All other surveys in electronic format are now being integrated with the scanned surveys, which are now housed on the W drive. The Heritage Reference Archive now contains 2819 Biotics References. The spatial reference layer now has 3939 digitized reference polygons.

Information Management staff have been processing data received from our Partner agencies, including bald eagle data received from the PA Game Commission, and timber rattlesnake data received from the PA Fish and Boat Commission. Work on these 2 large datasets is nearly complete.

Zoology

Staff Zoologists conducted water shrew surveys in Elk, Moshannon and Sproul State Forests. Three new populations of this rare mammal were located in Sproul State Forest.

WPC collaborated with The Nature Conservancy to complete the design of 4 vernal pool educational kiosks that will be installed at the TNC Forest Pool Preserve in Cumberland County near Kings Gap State Park. Topics on the displays include a photo guide to vernal pool indicator animals, vernal pool conservation zones, and best management practices.

WPC has initiated an inventory of the invertebrates at Slaughtering Ground Barrens adjacent to Sproul State Forest in Clinton County. This study is being conducted in collaboration with the Carnegie Museum of Natural History, and will help identify the biodiversity of this unusual ecosystem.

WPC recently completed freshwater mussel surveys in Conewango Creek and in Pool 9 of the Allegheny River. Surveys identified 18 species of native mussels in Conewango Creek and Pool 9 contained 16 native species. 2010 also saw mussel surveys at 23 sites in the Lower Susquehanna River Basin as part of an ongoing study and surveys at 7



Yellow Lampmussel (*L. cariosa*) in Susquehanna River substrate.

Matt Kowalski



Betsy Leppo/Sally Ray

High quality vernal pool in Huntington County.

sites in the Juniata River watershed for the Susquehanna River Basin Commission.

Ecology/Botany

PNHP is working on a project in which it developed and applied a monitoring protocol to assess and track changes in plant populations and plant community composition at 30 long-term monitoring sites within high-elevation wetlands in Pennsylvania. From October to December 2010, PNHP staff compiled and analyzed data collected from 19 sites surveyed during the 2010 field season and reviewed historic aerial photography dating back to 1939 to analyze the plant community change over time at each site. In addition, 10 rare species records, surveyed during the summer months, were updated in the PNHP database.

Through the Wetland Rarity project, the Pennsylvania Natural Heritage Program will provide information and tools to support the Pennsylvania Department of Environmental Protection's (PA DEP) effort to incorporate wetland plant community rarity into its wetland permitting program. Staff have developed fact sheets for each plant community type and validated a draft wetland plant community key at over 300 accuracy assessment points. A meeting was held in October 2010 to discuss structural issues with the vegetation key and any additional provisional wetland plant communities recorded during validation of the vegetation key. The meeting resulted in revisions to the current state classification as well as the vegetation key. A separate meeting was held in October 2010 to discuss provisional communities with the Pennsylvania Biological Survey (PABS) and set a schedule for finalizing state rarity ranks.

Measures of Progress

The following Measures of Progress have been expanded and defined more precisely for 2011. We believe that these measures represent a significant cross-section of results of the work that we do as a program. These measures will be reviewed and updated, as needed, to best reflect the activities and goals of PNHP.

Measure of Progress	Annual Goal (2011)	Annual Total (2010)
No. of PNDI Records Updated	200	156 (> than 10 years old)
No. of New EOs Documented and Entered into Biotics	800	658
No. of Records Entered into HGIS	300	*
Percent of HGIS Records > 10 Years Old	50	*
No. of Field Surveys Performed	400	*
No. of Records with CPPs Developed	(existing =2300) 1000	2677
No. of Site Polygons Created and Attributed	400	*
No. of Management Plans/guidelines Developed	50	44
LIP		38
State Parks		4
Other		2

*This information was not collected for 2010, but will be recorded for 2011.

PNHP performs many functions and provides many services as part of its mission. The measures of progress that are detailed here are meant to capture a number of important program activities and provide a picture of our progress in achieving our essential goals. The program goals and the measures provided for those goals will change over time as we complete certain aspects of our work and as new program responsibilities arise.

No. of PA Natural Diversity Inventory (PNDI) Records Updated references a change in the last observed date of the record and indicates the amount of activity expended in improving and updating the more than 20,000 records in the PNDI database.

No. of New EOs Documented and Entered into Biotics is a way to measure the success of our inventory effort in finding new occurrences of plants, animals, and exemplary natural communities. Any survey that results in a new Element Occurrence is counted.

No. of Records Entered into HGIS indicates our level of activity in reviewing, quality controlling, and entering records into the environmental review data layers. The timely and consistent refreshment of these data are critical to providing protection to the state's species of greatest concern.

Percent of HGIS Records > 10 Years Old is an indicator of the currency of data critical to the environmental review process. Keeping records as current as possible helps reduce the time needed to make decisions and determine a course of action for a given project under review.

No. of Field Surveys Performed is a strong indicator of the effort expended on one of the basic functions of the program – inventory of the state's flora and fauna. Every field visit results in the entering of a field survey, regardless of the outcome of the survey.

No. of Records with Conservation Planning Polygons (CPPs) is a measure of our progress in creating ecological based mapping for the species and natural communities that we track as part of the PNDI database. Our goal is to have CPPs for all records that we track.

No. of Site Polygons Created and Attributed is a measure of our effort in developing, mapping, and describing sites that are important to conservation of Pennsylvania's biodiversity. This process began with County Natural Heritage Inventory projects and will now continue at a statewide level with the updating of existing sites and the creation of new sites. Site polygons will be based upon and consistent with CPPs.

No. of Management Plans Developed is a direct indicator of our activity in utilizing our data and expertise to write management plans for a variety of clients and projects. We are increasingly called upon to provide this service and it will likely represent a substantial programmatic effort.