

Blanding's Turtle Research at Roosevelt-Vanderbilt NHS

By David J. Hayes

In the spring of 1988 a two-year effort to determine the population status of the Blanding's turtle (*Emydoidea blandingii*) was launched at Roosevelt-Vanderbilt NHS (Hyde Park, Dutchess County, upstate New York). Blanding's turtles are listed as threatened by the New York State Department of Environmental Conservation. Scattered populations are present in the St. Lawrence and Hudson Valley regions, with the heart of the species' range located in southern Ontario and the Great Lakes states.

The study took place at Eleanor Roosevelt National Historic Site (known as "Val-Kill"), located in the Fall-Kill Creek watershed. In the 1920s, the Roosevelt family constructed a small dam on the creek that formed a pond and several acres of marsh and shrub wetland. Eventually, siltation and deposition decreased the amount of open water available for swimming, fishing, and boating, prompting Franklin D. Roosevelt to have the main pond area dredged periodically.

In the decades following the last dredging, up to 9 feet of silt has accumulated. Lower water levels and rising nutrient loads have allowed the establishment of native emergent aquatic plants as well as Purple Loosestrife (*Lythrum salicaria*), an invasive non-native perennial. As the growing season progresses, plant growth reduces the amount of open water and changes the character of the historic landscape.

In order to retain the historic scene, the National Park Service (NPS) is considering dredging once again. Here the clash between cultural resource integrity and natural resource protection becomes acute, since the act of dredging results in considerable site disturbance and a potential temporary drawdown of the water level. While dredging is unnecessary from a strict biological perspective, it becomes important when considering the park's need to provide an accurate portrayal of the historic landscape to the public. To determine what effects this action might have on Blanding's turtles, which were known from three specimens to be present since 1979, a population census was initiated.

Blanding's are medium sized turtles with a high-domed, blackish-gray carapace covered by white or gray streaks. Obvious field marks are the solid lemon-yellow chin and throat, prominently displayed when the turtle basks in the sun and stretches its very long neck. Little is known of their behavior. Like box turtles (*Terrapene* spp.), the Blanding's has a hinged plastron allowing it to close its shell as protection against predators. We found the species to be extremely wary and difficult to approach, diving to the bottom at the hint of human intrusion, and not reemerging for several minutes if at all. It was necessary to use 10X binoculars or a 25X spotting scope to locate basking specimens.

Blanding's are long-lived; individuals present today may well have been alive within the historic period (ca. 1962). Although determining age is somewhat conjectural due to plastron wear, all captured Blanding's turtles were estimated to be between 15 and 25 years old, theoretically placing them in the reproductive population.

A primary objective of the project was to determine which areas in the park are utilized by the Blanding's turtle. During spring, early summer, and fall, funnel traps baited with canned sardines were placed in the Fall-Kill wetlands complex as well as all other potential habitat, including several permanent and ephemeral

woodland ponds. After capture, turtles were marked with individual file-notched codes on the marginal scutes, measured, and released. Over 300 trap-days of effort in each of the two years of the study indicate that Blanding's turtle is not likely to be found in the open, deepwater sections of Fall-Kill Creek. No individuals were actually trapped in the stream channel, but one Blanding's was trapped in wetlands directly connected with it. Most captures took place in partially shaded woodland pools with abundant aquatic vegetation.

In addition to Blanding's turtles, the non-selective nature of the traps allowed us to census all turtle species. An auxiliary survey of other reptiles and amphibians was conducted concurrently with the turtle research. Of special note were large populations of Spotted Turtle (*Spottedmys guttata*) and Jefferson's Complex Salamander (*Ambystoma jeffersonianum x laterale*), as well as the presence of Spotted Salamander (*Ambystoma maculatum*) and Wood Turtle (*Clemmys insculpta*), all listed as "Species of Special Concern" by New York State. In all, 30 species of reptiles and amphibians were documented in the park.

What have we learned?

The primary objective of the study – to determine which areas are inhabited by Blanding's turtles – was accomplished. Blanding's turtles are known to occur at low densities throughout their range, giving unusual importance to the survival and reproductive success of individual turtles as components of the population. This was borne out at Val-Kill, where the population seems to be small but stable. One individual has been captured in the same general location three out of the last six years. Individuals captured as part of this study have been trapped previously on private, adjacent land, indicating home ranges in excess of 1300 meters. Literature had reported a rather small home range for Blanding's turtles of less than 100 meters. (Ernst, C.H., and R.W. Barbour, 1972).

There is the possibility that traditional dredging in the main impoundment will have a negative impact on the population. With such low densities, individual turtles take on unusual importance, and any work must be done with this in mind. The NPS must make every effort to ensure that Blanding's turtle habitat is not adversely affected by our actions. Alternative means of removing the silt that has accumulated on the pond bottom will be explored, and the full range of environmental compliance requirements will be satisfied

before any modification to the site is attempted.

What do we still need to know?

The study did not produce any information on breeding activity or nest locations. Without radiotelemetry data, movements outside capture zones are unknown. Perhaps the most crucial remaining questions: why aren't we capturing any young turtles? Is the population growing, stable, or declining? What impacts do external land use practices and local development have on the population? What is the long-term cumulative impact resulting from the loss of small wetlands over an extensive area? As usual, the questions generated by this study outnumber the answers.

However, data from this project have produced park-specific information that will be of great use to site managers. It has allowed us to identify critical habitat for Blanding's turtles and other rare and threatened reptiles and amphibians in the park. It has resulted in modifications to maintenance mowing and hay harvesting schedules. The study has contributed to baseline knowledge of Blanding's turtle in the region, with data and information shared between the NPS and other researchers working with this species.

It also has helped to raise public awareness of the plight of Blanding's turtle. The Hudson Valley population is on the eastern fringe of this species' range, but there is considerable concern about the future of the Blanding's turtle even in the heart of its distribution in the Great Lakes region. The primary threat appears to be habitat loss. The Blanding's turtle population on NPS lands in Hyde Park, although small, provides a stable and relatively well-protected study group for future research. However, the ability of individual turtles to move long distances outside the park onto private land, possibly in search of nest sites, is a concern.

The study was coordinated by Resource Management Specialists Robert Cook of Gateway NRA and David Hayes of Roosevelt-Vanderbilt NHS. Most of the field work was completed by Michael Klemens of the American Museum of Natural History (1988) and Marla Emrich of Bard College (1989). Members of the park's Visitor Services staff and Volunteers-in-Parks Program also assisted with field work. Klemens prepared an interim report based on data from 1988; Hayes will produce a final report later this year. Support was provided by the Office of Scientific Studies, North Atlantic Region, as well as park base funding.

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Blanding's Turtle. This 15-year-old female shows the high-domed, "army helmet" shell characteristic of the species. Her picture was taken on Oct. 31, 1989.