

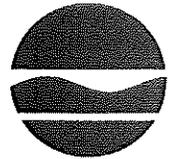
New York State Department of Environmental Conservation

Division of Fish, Wildlife and Marine Resources, Region 9

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Joe Martens
Commissioner

March 14, 2012

Stephen M. Schoenwiesner
Licensing Manager
New York Power Authority
123 Main Street
White Plains, New York 10601

Dear Mr. Schoenwiesner:

Please find enclosed a Habitat Restoration and Enhancement Fund (HERF) Pre-proposal for a collaborative project, "Defining habitat use and behavior of the map turtle in the upper Niagara River" between Buffalo State College and NYS DEC. We look forward to hearing feedback from the Ecological Standing Committee on the merits of this project with regard to the HERF funding criteria and would be happy to supply any additional information that may help in the ESC's review of the pre-proposal. You may contact me at (716) 851-7010 or tdeprie@gw.dec.state.ny.us.

Sincerely,

A handwritten signature in black ink, appearing to read 'T. DePriest'.

Timothy DePriest
Niagara River Habitat Specialist

TD/jmm

Enclosure

Cc: Mr. Kenneth Roblee, NYSDEC
Dr. Edward Standora, Buffalo State College

DEFINING HABITAT USE AND BEHAVIOR OF THE MAP TURTLE IN THE UPPER NIAGARA RIVER



A study proposal by:

Ed Standora, Ph.D.
Professor, Biology Department
Buffalo State College
1300 Elmwood Avenue
Buffalo, NY 14222

and

Region 9 Bureau of Wildlife
New York State Department of Environmental Conservation
270 Michigan Ave.
Buffalo, NY 14203

Defining habitat use and behavior of the map turtle in the upper Niagara River

Background:

The Common Map Turtle (*Graptemys geographica*) is infrequently found in the upper Niagara River and rarely observed in the nearby New York portion of Lake Erie. Partly due to its highly aquatic nature almost nothing is known of its habits or population status in either of these waterbodies. In New York it is known as a "big water" turtle inhabiting bays and inlets of Lake Ontario and in large rivers. This attractive species gets its name from the yellow-orange lines, on its brown to olive-green carapace, which resemble contour lines on a topographic map. Interestingly males are much smaller than females. Important to the life history of this species are: deep water areas for adults and shallow areas for younger individuals; well oxygenated winter hibernacula; logs, rocks and sandbars for basking; and suitable nesting sites.

What we know of this species in Lake Erie and the Niagara is the result of several accidental observations. A found frozen, but alive, turtle at Bennett Beach and a turtle carcass with a boat propeller wound at the mouth of Cattaraugus Creek are our only known Lake Erie records. In the Niagara map turtles have been reported in the Black Rock Canal by experienced herpetologists at the Army Corps, Buffalo Office; and there have been three incidental catches in fish traps at Strawberry Island, Spicer Creek and Buckhorn Island Marsh by Department of Environmental Conservation (DEC) staff and New York Power Authority consultants.

The persistence of map turtles in the Niagara River is somewhat of an enigma. How does this species meet all of its life history needs within a river which has had many of its natural features despoiled or removed through human uses? Certainly, shoreline bulkhead and other commercial and residential development of the Niagara and its tributaries have precluded turtle access to areas which could have been formerly used as basking or nesting sites. The clearing of trees from the river shore and removal of woody debris and logs from the river for navigation safety has undoubtedly further degraded turtle basking habitat. In addition, map turtles are in constant danger of collision with boat propellers as they share deep water habitats with the intense seasonal boat traffic of the Niagara.

We propose the collection of information on habitat use and behavior which is critical for protecting and enhancing map turtles and their required habitats on the Niagara River. This information will be collected through trapping, tagging and the use of radio and sonic telemetry employed by Buffalo State College students under the direction of Dr. Ed Standora with study oversight from Region 9 DEC Wildlife staff. The information which we are seeking includes answers to the following questions.

1. How many map turtles inhabit the Niagara River?
2. Do they also use adjacent Lake Erie?
3. How far do individual turtles move in the river to meet life history needs?
4. Where do map turtles nest along the river?
5. Are they reproducing successfully?
6. How big and where are map turtle home ranges in the river?
7. What deep and shallow water habitats are being used by map turtles.
8. Where do map turtles brumate in the winter?

9. Where are map turtles basking?
10. Are map turtles being killed through collisions with watercraft?
11. Do the turtles use habitat proportional to its availability or are certain areas preferred?
12. In what part of the water column does a map turtle spend most of its time?
13. What proportion of time is spent doing various behaviors?

The information in answer to these questions will allow for future protection of map turtles and allow for biologically sound enhancement and restoration of their habitats. Potential future actions can include: the establishment of no wake zones or speed limits in basking and feeding areas; enhancement and or creation of nesting areas; exclusion of mammalian nest predators by nest protection fencing; creation of turtle basking habitat adjacent to both shallow and deep water habitats; and protection and possible enhancement of winter map turtle hibernacula.

Relevant Habitat Enhancement and Restoration Fund Eligibility Criteria:

- *Projects that preserve rare, threatened, and endangered ("RTE") plant, aquatic, or terrestrial species and/or their habitat in the Niagara Basin:* The project seeks to advance the knowledge of a locally rare species, Common Map Turtle, to ultimately preserve the species in the Niagara River.
- *Projects with a strong scientific foundation:* This project is proposed to advance the science of the species based on standard scientific sampling methods by researchers from an academic research institution.
- *Projects that contribute to long-term protection and enhancement of RTE plant, aquatic, or terrestrial species and/or their habitat in the Niagara Basin:* The purpose of the project is to provide the information necessary for long-term protection of the species.
- *Projects that achieve multiple ecological goals:* A large emphasis of the project is to determine the ecological needs of the species for conservation, which include multiple aspects such as food, cover, reproductive requirements, and hibernacula.
- *Projects that preserve and restore Haudenosaunee cultural, religious, and historic Features:* The turtle is a widely recognized figure in the Haudenosaunee culture, and by working to preserve turtles in the region, this cultural feature will also be preserved.
- *Projects that involve multi-stakeholder collaboration:* SUNY Buffalo State and NYS DEC are the project collaborators.
- *Projects consistent with applicable local, State, and Federal resource management plans:* The Wildlife conservation strategy for NYS recognizes riverine turtles as species of greatest conservation need.
- *Projects that feature matching resources:* If funded under HERF, the project will conceivably be able to be matched to Federal State Wildlife Grant Funds.

- *Projects that are time-sensitive:* Because turtles are long-lived species and take longer to reach reproductive age than most other wildlife species, their population may be in jeopardy before actual declines are observed, giving urgency to this study.
- *Projects that are feasible from a cost/probability of success perspective:* The methods of the proposed study (trapping, telemetry) have been employed in a variety of other wildlife studies with proven success.

Study Methods:

Turtles will be captured using baited hoop nets set at locations where the turtles have been reported, e.g., Motor Island, Strawberry Island. Standard morphological measurements will be recorded for each captured animal. For future identification turtles will be either tagged with Passive Integrated Transponder (PIT) tags or identified through the use of a system of notches in their marginal scutes. Up to twenty animals will be selected for intensive monitoring. Each of these individuals will be outfitted with both miniature radio and sonic transmitters. This approach has been used successfully in aquatic turtle studies. The radio transmitter provides signals for distances of several kilometers when the turtle is at the surface or on land. The sonic transmitter makes it possible to track the turtle when it is submerged and more importantly makes it possible to recapture an animal underwater. The ability to recapture a tagged animal, either by hand or by trapping is crucial as the turtle will also be fitted with a temperature/depth data logger which must be retrieved. These data loggers record minute by minute changes in temperature and water depth for several weeks.

Six submersible sonic receiving stations will be deployed around Grand Island. These units record the presence of turtles equipped with sonic transmitters as they pass through an area. This provides continuous surveillance of areas without the need for intensive manpower. The units are recovered weekly from the river bottom and the data downloaded into a computer.

The waters around Grand Island are ideal for such a telemetry study because of numerous dry land locations from which radio signals can be received. The Niagara River is narrow enough that a radio signal could be detected even if an animal is near the opposite shore. The entire west shoreline of Grand Island (Beaver Island State Park) provides numerous vantage points for the detection of telemetry signals. The east shoreline of Grand Island has several town owned access points which could be used for signal reception. Once a general area of turtle activity has been determined using radio telemetry, researchers in a boat can use a hydrophone and submersible sonic receiver to pinpoint the exact location of an individual for continuous tracking or possible recapture. Once a turtle has been precisely located GPS coordinates will be recorded. These data can then be entered into a GIS program to correlate turtle locations with physical parameters such as water depth, underwater topography, water temperature, and flow rate.

In addition to locating turtles every several days, random turtles will be selected as focus animals and their hourly movements and behaviors will be recorded on a finer scale. Biweekly surveys will be conducted by circumnavigating Grand Island by a boat equipped with both radio and sonic telemetry receivers in an attempt to locate all the transmitter equipped animals.

With such constant monitoring seasonal and daily shifts of habitat use should become apparent.

Fish and Wildlife Habitat Enhancement and Restoration Fund Conceptual Pre-Proposal
Estimate of Project Cost and Funding Requested

Title of project: Defining habitat use and behavior of the map turtle in the upper Niagara River

	Design/Build/Execute	Operate/Maintain
Total Project Cost:	\$ 260,000	\$
Cost Sharing:	\$ 20,000	\$
Funding Requested: <i>(Total cost minus co-funding)</i>	\$ 240,000	\$