# Final Report - Spotted Turtles in New York

Grant Program, Number and Title: RCN, GSA 00045, Spotted Turtle in New York

Organization: SUNY Potsdam Research Foundation

Project Leader: Glenn Johnson, SUNY Potsdam

Contracting Organization: Wildlife Management Institute (WMI)

## Summary

Over the two-year sampling period a total of 20 distinct sites in northern New York were sampled using the Spotted Turtle Assessment Protocol. Spotted turtles were captured in eight of those sites, resulting in a total of 107 unique individuals. Additionally, 89 unique blood samples were obtained for DNA analysis, however at only two sites did we meet the desired minimum threshold of 20 samples.

## Introduction

The overall goal of this Regional Coordination Network project is to support the strategic implementation of regional conservation planning for at-risk turtles in the Northeastern States, addressing the most time-sensitive research and management needs for at least five priority species (Blanding's, Eastern Box, Wood, Spotted Turtles, and Northern Diamondback Terrapins) through four separate but complementary initiatives. SUNY Potsdam was contracted by WMI to conduct population monitoring and DNA collection for spotted turtles during the active seasons in 2019 and 2020 at up to 20 study areas in New York.

SUNY Potsdam has specific tasks (objectives) to contribute toward this overall goal for Spotted Turtles. These are:

1. Coordinate selection of study areas with the State, and permissions and permits that will be required.

2. Conduct Trap Rapid Assessments (TRA), Demographic Assessments (DA) or Visual Rapid Assessments (VRA) surveys for spotted turtles at up to 20 sites.

3. Collect DNA samples of each individual spotted turtle encountered.

## Methods

In 2019 and 2020, SUNY Potsdam conducted population monitoring and DNA collection for spotted turtles at 20 study areas in New York following methods as outlined in the "Spotted

Turtle Assessment Protocol" developed by the Spotted Turtle Working Group (dated March 2, 2018).

Identification of possible survey sites was initiated by searching the New York State Amphibian and Reptile Atlas records and consultation with regional experts on this species. Selection was initiated by viewing a combination of recent remote imagery available from the NYS GIS Clearinghouse and Google Earth followed by field visits. After identifying a potential site an attempt was made to contact the landowner. Not all sites identified were surveyed owing to a lack of permission. Wetlands were on a combination of state and privately-owned lands. A single day at the start of a new trap period was set aside for reconnoitering possible wetlands and establishing reference sites. The assessment was made by first inspecting the wetland by air using a drone and then following up on the most promising wetlands on foot. Two determining factors for site suitability were the presence of narrow channels in the wetland and the verification of sufficient water depth to allow deployment of turtle traps. After deciding on potential reference sites with the overall site as well as trap number and placement, personnel were dispatched to conduct trapping on the following day using the protocol developed by the Spotted Turtle Working Group.

This protocol details the trap arrangement and other details of the survey methodology. Survey Sites were assigned as either a Trap Rapid Assessment (TRA) site or a Demographic Assessment (DA) site. Both assessments consist of establishing 4 reference sites at each survey location and spacing 5 traps in each. Reference sites consist of 200 m radius plots centered on potential spotted turtle habitat with reference plot centroids 400-800 m apart. Reference TRAs are conducted for one 4-day trap period and then traps are closed. DAs consist of three 4-day trap periods resulting in 12 days of trapping. Depending on wetland configuration and water levels, some promising sites were conducted as a high density (HD) trap site, where fewer reference sites were established but the trap density was increased to 8 traps/reference site.

Standardized survey forms (Trap Set and Trap Check) were completed for each site which detailed the reference and trap locations and habitat elements of each trap site.

Traps used for TRAs and DAs were ProMar TR-502 24" x 12" collapsible turtle traps. Traps were equipped with flotation devices (empty plastic bottle, floats, or pool noodles) to ensure adequate air space for any animals captured. Traps were firmly staked to the ground or affixed to adjacent structures to keep them in place. Traps were baited with at least half a can of sardines packed in oil. Bait was placed in separate bait containers with numerous holes punched in them and placed in each trap. Each trap was numbered sequentially, marked, and its GPS location recorded. Figure one depicts a typical trap set.

Regardless of survey technique, standard shell measurements (±1 mm), mass (±1 g), sex, reproductive status, age class, and turtle identification (notching and PIT tag number) were recorded on standardized Individual turtle capture forms. The reproductive status of adult females was determined by palpation.

For each adult turtle captured or encountered, an attempt was made to collect 0.1 mL of blood from the caudal vein for DNA extraction. Blood samples were stored in 95% ethanol and individually labelled with date, state, study area, and turtle ID. Samples were shipped at the end

of each field season to Dr. Rodney Dyer, Virginia Commonwealth University, Center for Environmental Studies, Richmond, VA 23116.

All data from all field forms were entered into a standardized Excel spreadsheet which will be submitted to the NYSDEC, WMI as well as Lori Erb, who is coordinating the Middle Atlantic state effort for the RCN.

# Results

### ***2019 Sampling Period***

Objective 1: Coordinate selection of study areas with the State, and permissions and permits that will be required.

Following consultation with Angelena Ross, Senior Wildlife Biologist with Region 6 of the New York State Department of Environmental Conservation (NYSDEC), 16 sites were selected to evaluate for the project. Of these, eight had records of spotted turtle presence. We selected 11 to attempt to sample this 2019 field season and received permission to visit and survey at all. Figure 1 shows the general location of all trap sites from both 2019 and 2020.

Objective 2: Conduct Trap Rapid Assessments (TRA), Demographic Assessments (DA) or Visual Rapid Assessments (VRA) surveys for spotted turtles at 10 – 15 sites.

This task was completed for 11 sites in NY (Table 1). Of these, there were records of spotted turtle presence in six sites. Ten sites were designated as TRA sites. One was used as a DA site (NY-OS-SL, Sloperville Bog) where 38 unique individuals were captured and marked. Spotted turtles were detected at only one site not previously known to have their presence (NY-LE-HR)

Nine sites were TRA sites and one additional one was a HD (high-density) site due to it wetland configuration. Of these, we captured spotted turtles in 4 of them. Three had records of spotted turtle presence (two were sampled by Rosenbaum) while at one, there were no records of spotted turtle presence. Two sites with no captures did have records of spotted turtle occupancy. At site NY-SL-BL, trap results were unusual in that 4 individuals were captured over the sampling period and all 4 were caught simultaneously in the same trap. In addition, all four were males.

Three sites surveyed in Oswego County where we had the highest capture rates, were part of a long-term study by Dr. Peter Rosenbaum from SUNY Oswego. Dr. Rosenbaum supplied us with all the notch codes from these sites. We had one recapture from his study at NY-OS-NP and three recaptures from his study at NY-OS-SL, our DA site.

A total of 88 unique spotted turtles from 5 sites were captured this field season. Our survey efforts were limited to Oswego, St. Lawrence, Jefferson, and Lewis counties.

Objective 3: Collect DNA samples of each individual spotted turtle encountered.

This task has begun with 70 samples collected. Only two reached the desired minimum sample size threshold. Finally, the 2019 data was submitted to Lori Erb and the blood samples were stored for shipment to Rodney Dyer's lab.

Table 1. Summary of the 2019 Spotted Turtles (GLGU) captures by site in northern New York.

| Site | Type | Dates Trapped | # Trap-nights | # unique GLGU captured | # unique Blood Samples/site |
|---|---|---|---|---|---|
| **NY-OS-NP** | TRA | 5/21 – 5/25 | 80 | 32 | 26 |
| **NY-OS-SM** | TRA | 5/26 – 6/1 | 80 | 9 | 9 |
| **NY-SL-BL** | TRA | 6/4 – 6/8 | 68 | 4 | 4 |
| **NY-SL-BF** | TRA | 6/4 – 6/8 | 40 | 0 | 0 |
| **NY-JE-LW** | TRA | 6/10 – 6/14 | 80 | 0 | 0 |
| **NY-JE-BP** | TRA | 6/11 – 6/15 | 80 | 0 | 0 |
| **NY-LE-HR** | TRA | 6/18 – 6/22 | 80 | 5 | 5 |
| **NY-SL-TC** | TRA | 6/18 – 6/22 | 60 | 0 | 0 |
| **NY-LE-OS** | TRA | 6/25 – 6/29 | 80 | 0 | 0 |
| **NY-SL-MP** | TRA* | 6/25 – 6/29 | 64 | 0 | 0 |
| **NY-OS-SL** | DA | 5/21 – 6/2 | 240 | 38 | 26 |
| **Totals** | | | 952 | 88 | 70 |

*NY-SL-MP was a High-Density site (8 traps/reference plot)

***2020 Sampling Period***

Objective 1 Coordinate selection of study areas with the State, and permissions and permits that will be required.

Sixteen sites were selected for initial assessment as potential survey sites and of these, 11 were assessed in 2019. The remaining five plus an additional four were assessed in 2020. One site, NY-SL-BL, was resampled Permission was granted for all and all were sampled with trapping events. Three of the 4 new sites sampled in 2020 were in northeastern New York, one each in Washington, Essex, and Saratoga counties. All three had prior records of spotted turtle presence.

Objective 2: Conduct Trap Rapid Assessments (TRA), Demographic Assessments (DA) or Visual Rapid Assessments (VRA) surveys for spotted turtles at 10 – 15 sites.

This task was completed for 10 sites in NY in 2020 (Table 2). Of these, there were records of spotted turtle presence in seven sites. Ten sites were TRA sites, however, three were treated as High Density sites because either there were not enough reference wetlands available or water levels were too low to set traps.

A total of 19 unique spotted turtles from 3 sites were captured this field season and all three had previous records of spotted turtle presence. Four sites that yielded no captures did have records of prior spotted turtle occupancy. At one site, NY-WA-DB, only a single spotted turtle was captured. This site also yielded the only other turtle species aside from painted and snapping

turtles, a single common musk turtle. Our survey efforts were limited to St. Lawrence, Jefferson, Lewis, Washington, Essex, and Saratoga counties.

All field data was entered into a spreadsheet and was submitted to Lori Erb who is coordinating the Middle Atlantic state effort for the RCN.

Objective 3: Collect DNA samples of each individual spotted turtle encountered.

Blood samples were obtained from all 19 captured turtles. All blood samples were submitted to Rodney Dyer's lab.

Table 2. Summary of the 2020 Spotted Turtles (GLGU) captures by site in northern New York.

| Site | Type | Dates Trapped | # Trap-nights | # unique GLGU captured | # unique Blood Samples/site |
|---|---|---|---|---|---|
| **NY-LE-JA** | TRA | 5/26 – 5/30 | 80 | 0 | 0 |
| **NY-SL-BL** | TRA* | 5/26 – 5/30 | 64 | 0 | 0 |
| **NY-LE-SB** | TRA* | 6/2 – 6/5 | 48 | 3 | 3 |
| **NY-LE-ML** | TRA* | 6/2 – 6/5 | 48 | 15 | 15 |
| **NY-JE-PS** | TRA | 6/9 – 6/13 | 80 | 0 | 0 |
| **NY-JE-PN** | TRA | 6/9 – 6/13 | 80 | 0 | 0 |
| **NY-WA-DB** | TRA | 7/6 – 7/10 | 80 | 1 | 1 |
| **NY-SA-WI** | TRA | 7/6 – 7/10 | 80 | 0 | 0 |
| **NY-ES-BR** | TRA | 7/12 – 7/20 | 76 | 0 | 0 |
| **NY-JE-CF** | TRA | 7/19 – 7/23 | 80 | 0 | 0 |
| **Totals** | | | 716 | 19 | 19 |

* High Density sites (8 traps/reference plot)

## Discussion

In 2019, there were a few difficulties, but these proved to be relatively minor. There was some difficulty setting and checking traps by one person at several hard-to access sites, however this was solved by adding an additional person during trap set and trap removal days. As data collection time is substantial in each day for both turtle processing and trap setting, we were limited to sampling only two, or in some cases one, site per day. For some sites, there were delays in obtaining permission to access, but we were not denied at any site over the course of the project. At state sites, Temporary Revocable Permits were required, and these were produced very quickly, typically within a few days.

In 2020, we experience some difficulties at several sites. At NY-JE-PN, establishment of the trap sets required a paddle in a canoe over open water; motorized access was prohibited at this

state site and alternate overland routes were very difficult and time consuming. In the middle of a trapping event, there were two days of very high winds that became quite dangerous and nearly resulting in capsizing the canoe. Water levels were unusually low this field season at most sites and was very noticeable at the NY-ES-BR and NY-SA-WI sites, neither of which produced any spotted turtles.

Collecting and quantifying of some of the habitat data, for example percent underwater vegetation, was often fairly subjective however we believe we provided reasonable estimates in all cases.

The COVID-19 pandemic, which became evident by early March 2020, was projected to interfere with or delay the start of the 2020 field season of this project. However, we were able to develop a COVID protocol that allowed us to conduct the field work. These measures included driving in separate vehicles, disinfecting equipment or assigning equipment to one individual for the duration of the season, masking when together, and maintain social distancing in the field. These measures increased the travel costs to some degree, but we were still able to stay within the budget.

Spotted turtle sampling was conducted under NYS Licenses to Collect and Possess 1353 issued to G. Johnson. SUNY Potsdam IACUC Protocol 19-S-038 approved the project. Field personnel included J. Bittner, J. Briggs, S. Simmons, and B. Berne.

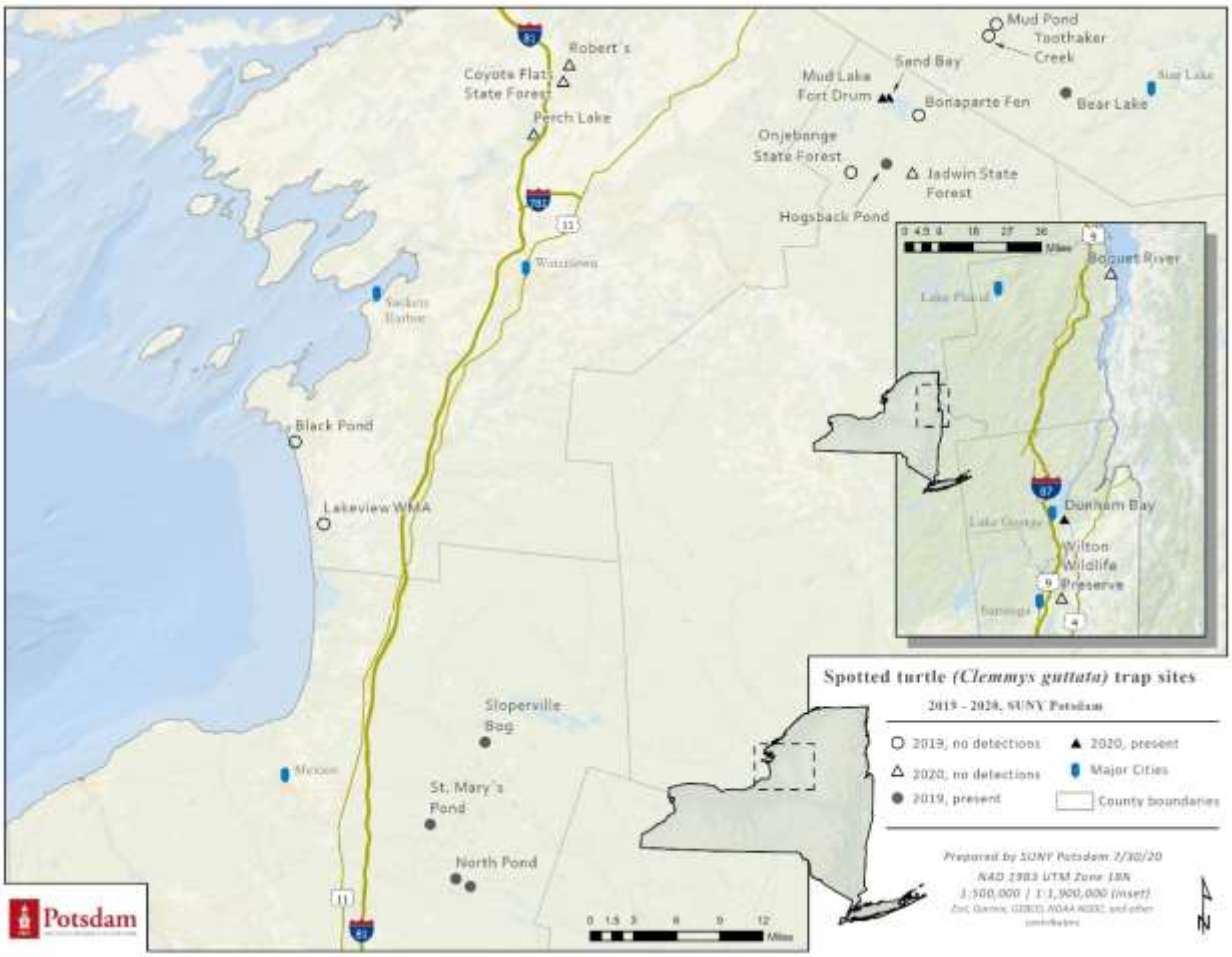


Figure 1. New York study site location map for RCN Project Number 00045.

Site Key:NY-LE-JA – Jadwin State Forest
NY-SL-BL – Bear Lake
NY-LE-SB – Sand Bay
NY-LE-ML – Mud Lake (Fort Drum)
NY-JE-PS – Perch Lake south; Note: both Perch Lake sites combined on map
NY-JE-PN – Perch Lake north
NY-WA-DB – Dunham Bay
NY-SA-WI – Wilton Wildlife
NY-ES-BR – Bouquet River
NY-JE-CF – Coyote Flats Sate Forest; Note: Robert's site on the map was never surveyed
NY-OS-NP – North Pond
NY-OS-SM – St. Mary's Pond
NY-SL-BF – Bonaparte Fen
NY-JE-LW – Lakeview WMA
NY-JE-BP – Black Pond
NY-LE-HR – Hogsback Pond
NY-SL-TC – Toothacre Creek
NY-LE-OS – Onjebonje State Forest
NY-SL-MP – Mud Pond
NY-OS-SL – Sloperville Bog

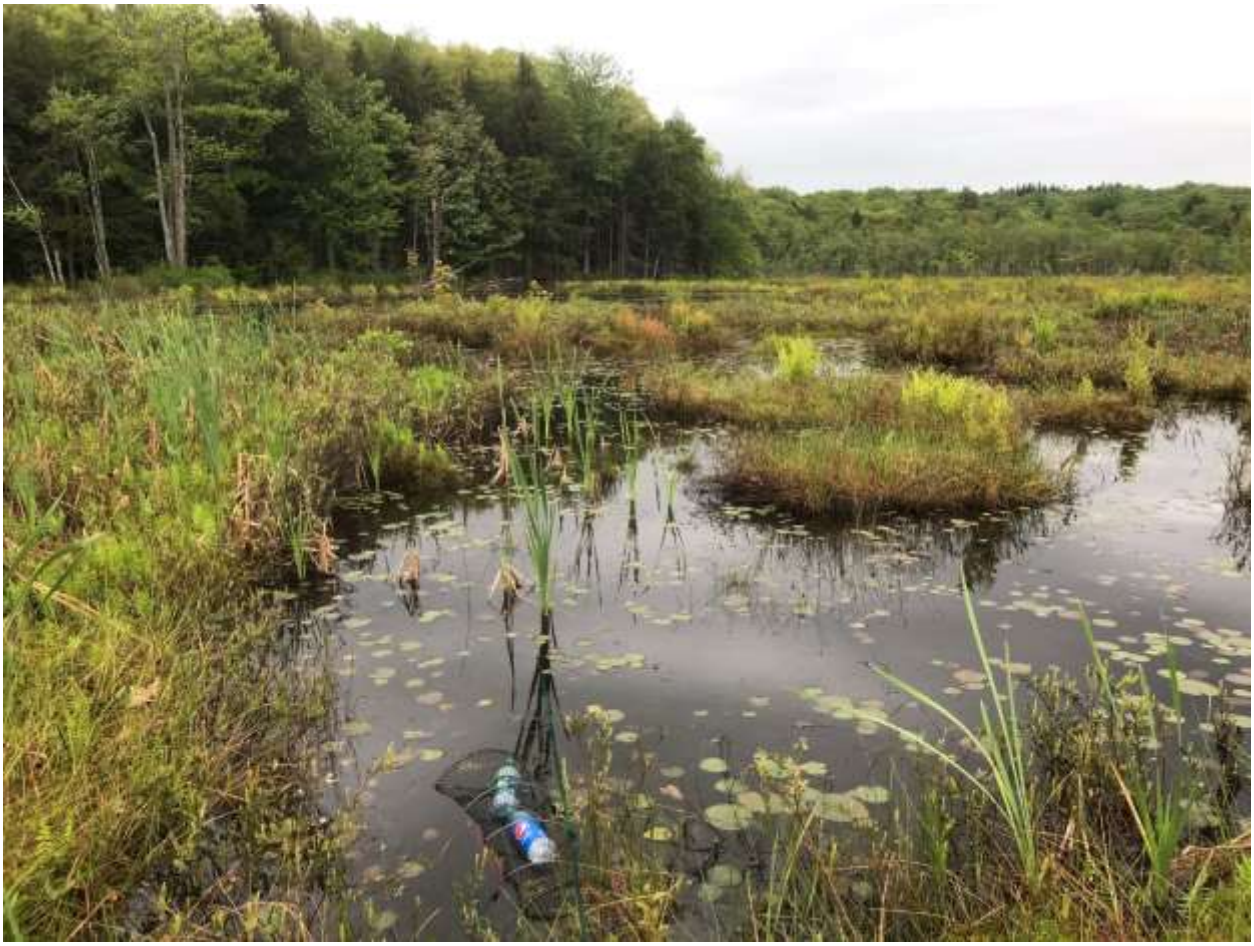

Figure 2. Typical trap set within a reference plot for RCN Project Number 00045.