

## The Friends of Nachusa Grasslands 2023 Scientific Research Project Grant Report

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**2023 grant amount:** \$4,750

**Research Project Topic:** We seek to develop and implement management strategies for the Blanding's Turtle, an Illinois endangered species, at Nachusa Grasslands and elsewhere in north-central Illinois. Blanding's Turtle management at Nachusa Grasslands focuses on determining the number and location of adults and enhancing juvenile recruitment using nest cages and head-starting. This work is being conducted in parallel with similar efforts at Richardson Wildlife Foundation and at other sites in northern Illinois.

**Research Project Purpose:** During 2023, we seek to

- (1) Conduct 10-12 days of intensive trapping for Blanding's Turtles *with a focus on capturing animals released as hatchlings and head-starts*
- (2) Track adult females using radio telemetry to monitor egg development and nesting and cage nests to prevent destruction by predators such as raccoons
- (3) Track those head-starts released in 2022 that still have operational radio transmitters and attach transmitters and track additional juveniles

**Research Project Outcomes to date:**

- (1) A total of 45 traps were deployed from May 2-12, 2023, for a total of 431 trap days across two sites, Tellabs Savanna, and Bivins Pond (including both TNC property and property owned by J. Bivins). This resulted in 31 captures of 16 individual Blanding's turtles as well as 70 painted turtle captures and 45 snapping turtle captures (146 turtle capture in total). Blanding's turtle captures included the following (details in Table 1):
  - Three adult females and one adult male at Tellabs Savanna. All four had been captured in marked in previous years and the three females were had functioning transmitters when captured. The male had last been encountered in 2021 when it's transmitter failed. It was equipped with a refurbished transmitter before release.
  - Three wild-hatched juveniles, including on at Tellabs Savanna and 2 at Bivins Pond. One of the latter had been trap-captured and equipped with a transmitter in 2022; the other two were equipped with transmitters before release.
  - Ten head-started turtles released in 2020 (5) and 2022 (5). Eight were trapped at Bivins Pond and two at Tellabs Savanna. Two were continuing telemetry subjects, five were equipped with transmitters before release, and three were too small for the transmitters available.
  - One juvenile that hatched from a caged nest in 2018 was trapped and equipped with a transmitter before release.

- (2) Efforts to track three adult females, two at Tellabs Savanna and one at Hay Road (property owned by the Meiners family by R. King, E. Bach, and Nachusa crew members and cage nests were unsuccessful in 2023. To make matters worse, one adult female died of unknown causes sometime after nesting.
- (3) Juveniles and adults equipped with transmitters were tracked throughout the active season (Table 1).

**Use of grant funds received from the Friends of Nachusa Grasslands:**

|   |           |
|---|-----------|
| D. Mauger & T. Anton - trapping           | \$3750.00 |
| R. King – trapping, mileage reimbursement | \$1000.00 |
| total                                     | \$4750.00 |

**Benefits to the work and goals of Nachusa Grasslands:**

- Determination of the timing and location (habitat) of key Blanding’s turtle life-history events (active season, nesting, hatching, overwintering)
- Collection of eggs, release of head-starts, assessment of Blanding’s turtle head-start survival
- Contributions to regional and state-wide Blanding’s Turtle management efforts

**Application to management practices for restoration effectiveness and species of concern:**

- This project has identified areas where encroachment by woody vegetation may reduce habitat quality for Blanding’s turtles, areas where care should be exercised in the application of management practices to avoid negative impacts on Blanding’s turtles, and areas adjacent to Nachusa Grasslands that are utilized by Blanding’s turtles.
- This project has identified predation as a major risk factor to eggs, hatchlings, and head-started Blanding’s turtles, and demonstrated the potential benefit of predator management for turtle conservation.

**Presentations/posters:**

*PVA-based assessment of Blanding’s turtle resiliency, redundancy, and representation.*

RB King. Emydine Conservation Symposium. Juniata College, Huntingdon, Pennsylvania, 10-12 July 2023

*What matters for the survival of head-started Blanding’s turtles?* C. Golba et al.

Emydine Conservation Symposium. Juniata College, Huntingdon, PA, 10-12 July 2023

*What matters for the survival of head-started Blanding’s turtles?* C. Golba et al. Joint Meeting of Ichthyologists and Herpetologists. Norfolk, VA, 12-16 July 2023

*What matters for the survival of head-started Blanding’s turtles?* (handout) Friends of Nachusa Grasslands Science Symposium, April 2024

**Manuscripts submitted to scientific journals:**

Rutter AU, Vanek JP, Glowacki GA, Golba CK, King RB, Pullins CK, Smith WE. 2024. Raccoon abundance indexing and removal: implications for Blanding's turtle nest success. *Wildlife Research* <https://doi:10.1071/WR23075>

King RB, Anchor C, Jablonski C, Jaeger C, Ludwig D, Roloff A, Thompson D. 2023. An ad hoc assessment of Blanding's turtle translocation success. *Herpetological Review* 54:358-362.

King RB. 2023. *PVA-based assessment of resiliency, redundancy, and representation in an imperiled freshwater turtle*. *Global Ecology and Conservation*. <https://doi.org/10.1016/j.gecco.2023.e02419>

Golba CK, Glowacki GA, King RB. 2022. *Growth and survival of wild and head-started Blanding's turtles (Emydoidea blandingii)*. *Ichthyology & Herpetology* 110:378-387.

**Anticipated follow-up research:**

- NIU researchers continue to monitor head-start survival at sites in Lake, Kane and Lee County.
- Results of this project will be used to develop best practices for Blanding's turtle head-starting.

Table 1. 2023 Nachusa Grasslands Blanding's turtle trap captures and telemetry subjects.

| ID              | 2023 Trap Captures    | Transmitter Status | Last Encounter | Status at Last Encounter | Site    | Age Class | Sex     | Origin    | Year of Release | Comments  |
|-----------------|-----------------------|--------------------|----------------|--------------------------|---------|-----------|---------|-----------|-----------------|---|
| <b>1L11R</b>    | 5-May-23              | replaced           | 25-Jul-23      | Alive                    | Tellabs | Adult     | male    | wild      | na              | no signal after 25-Jul-23, transmitter failed?          |
| <b>1L8R</b>     | 5, 7, & 9-May-23      | continued          | 18-Oct-23      | Alive                    | Tellabs | Adult     | female  | wild      | na              | tracking continues                                      |
| <b>1R8R</b>     | none                  | continued          | 21-Jun-23      | Dead                     | Tellabs | Adult     | female  | wild      | na              | Cause unknown   |
| <b>2L10R</b>    | 6 & 8-May-23          | continued          | 31-May-23      | Dead                     | Bivins  | Juvenile  | unknown | wild      | na              | Cause unknown   |
| <b>2L11R</b>    | 5, 8, & 11-May-23     | new                | 18-Oct-23      | Alive                    | Tellabs | Juvenile  | unknown | wild      | na              | tracking continues                                      |
| <b>T2L11R-b</b> | 7 & 10-May-23         | new                | 6-Jul-23       | Alive                    | Tellabs | Juvenile  | unknown | wild      | na              | no signal after 6-Jul-23, transmitter failed?           |
| <b>2L3R</b>     | none                  | continued          | 19-Sep-23      | Alive                    | Tellabs | Adult     | female  | wild      | na              | tracking continues                                      |
| <b>ABV</b>      | 4, 6, 11, & 12-May-23 | new                | 15-Sep-23      | Alive                    | Bivins  | Juvenile  | male    | headstart | 2020            | transmitter removed                                     |
| <b>ACL</b>      | 9-May-23              | new                | 15-Sep-23      | Alive                    | Bivins  | Juvenile  | female  | headstart | 2020            | transmitter removed                                     |
| <b>ACQ</b>      | 4-May-23              | new                | 7-Jun-23       | Alive                    | Tellabs | Juvenile  | male    | headstart | 2020            | off-site, no signal after 7-Jun-23, transmitter failed? |
| <b>AHK</b>      | 5-May-23              | new                | 15-Sep-23      | Alive                    | Bivins  | Juvenile  | female  | headstart | 2020            | transmitter removed                                     |
| <b>AHN</b>      | 9-May-23              | new                | 15-Sep-23      | Alive                    | Bivins  | Juvenile  | male    | headstart | 2020            | transmitter removed                                     |

| ID         | 2023 Trap Captures | Transmitter Status | Last Encounter | Status at Last Encounter | Site    | Age Class | Sex     | Origin    | Year of Release | Comments   |
|------------|--------------------|--------------------|----------------|--------------------------|---------|-----------|---------|-----------|-----------------|--|
| <b>AIP</b> | 6, 11, & 12-May-23 | continued          | 24-May-23      | Alive                    | Bivins  | Juvenile  | female  | headstart | 2022            | recovered transmitter, tooth marks suggest predator attack |
| <b>AIV</b> | 11-May-23          | continued          | 15-May-23      | Alive                    | Bivins  | Juvenile  | male    | headstart | 2022            | transmitter removed  |
| <b>AIW</b> | 4-May-23           | none               | 4-May-23       | Alive                    | Tellabs | Juvenile  | male    | headstart | 2022            | too small for transmitter                                  |
| <b>AIX</b> | 7, 11, & 12-May-23 | none               | 12-May-23      | Alive                    | Bivins  | Juvenile  | male    | headstart | 2022            | too small for transmitter                                  |
| <b>AJM</b> | 7, 9, & 12-May-23  | none               | 12-May-23      | Alive                    | Bivins  | Juvenile  | male    | headstart | 2022            | too small for transmitter                                  |
| <b>AN</b>  | 7 & 11-May-23      | new                | 6-Jul-23       | Alive                    | Bivins  | Juvenile  | unknown | nest cage | 2018            | no signal after 6-Jul-23, transmitter failed?              |