

## **Population and Movement Ecology of Wood turtles (*Glyptemys insculpta*) on Maine's Working Lands**

**Matthew Chatfield, Project Lead**

The overarching objectives of this project are to measure population demography and movement ecology at fine and broad scales at sites in Maine with differing land management histories and regimes. This annual report covers project activities that took place during Year 1 of the project from January–September 2023. Broadly, our primary aims during this period were to: (1) set up the project and (2) begin data collection. Status updates on these aims are provided in detail below.

### **Project setup**

The major goals for this aim were to: organize the working group, identify field sites, recruit a graduate student, obtain required permits from the State and University, and purchase field equipment. These are essential preliminary steps before fieldwork can begin, and I am pleased to report that we achieved every goal during the planning stage of the project (approximately January–May).

#### *Organizing the working group*

I created a working group to help inform, set up, and carry out the proposed research. This group consists of me (Matthew Chatfield), Assistant Professor at the University of Maine; Michael Jones, American Turtle Observatory and Massachusetts State Herpetologist at the Massachusetts Division of Fisheries and Wildlife; Derek Yorks, Wildlife Biologist at the Maine Department of Inland Fisheries and Wildlife (MDIFW); Brad Compton, Research Associate at the University of Massachusetts in Amherst; and Sequoia Dixson, graduate student at the University of Maine. This group met four times during the spring and once in the fall to finalize details of the project design, select field sites, plan fieldwork, and discuss desired project outcomes. In late winter, a subset of this group also met with NCASI personnel and NAFO member representatives to discuss study objectives and project design.

#### *Identifying field sites*

Using Google Earth, we identified potential field sites based on segments of suitable stream habitat and the presence of nearby managed forestry lands. Derek Yorks and I subsequently visited most sites to confirm suitability of habitat, the presence of turtles, and site access. The three sites that we ultimately selected for this project are:

- The South Branch of the Dead River (SBD; Site 1) was chosen because it is an existing MDIFW study site. Surveys conducted in 2021, 2022, and early 2023 by MDIFW field biologists resulted in 42 wood turtle captures, which reveal a large population that will aid in creating a robust demographic model. This site is on property owned by NAFO member Wagner Forest Management, Ltd.
- Alder Stream (ALDER; Site 2), which flows into the North Branch of the Dead River, was chosen due to its proximity to Site 1 and because it passes through property owned by NAFO member American Forest Management. While there are reliable accounts of wood turtle sightings at this site in recent years, mostly by bridge construction crews, no known research or monitoring is known to have taken place at this site.

- The main stem of the Dead River (DEAD; Site 3) from Long Falls Dam to the confluence of Spencer Stream is a long-known wood turtle site. A wood turtle habitat study was conducted on this section in 1998 and 1999 by working group member Brad Compton as part of his graduate thesis. This made it an excellent candidate for re-surveying efforts. The surrounding area is largely managed by non-NAFO member landowners; however, NAFO member Weyerhaeuser Company does own property at the downstream end of the site.

#### *Recruiting a graduate student*

Master's student Sequoia Dixson entered the Ecology and Environmental Science program at the University of Maine in August of this year. The majority of her thesis work, which is largely being funded by the WCI grant, closely aligns with the objectives of the project. Besides seeing to her coursework, Sequoia is in the process of becoming acquainted with the project, organizing existing data, collecting new data, and helping to plan future fieldwork. She has also submitted a grant to the UMaine Graduate Student Organization to cover the cost of purchasing a canoe motor, which is an unplanned expense but will aid in next year's fieldwork at Site 3.

#### *Purchasing field equipment*

I have purchased most of the essential equipment and supplies for the project, including: 50 VHF transmitters (Advanced Telemetry Systems, model R1860; \$9,184), 50 GPS tags (Lotek Wireless, Inc., model Pinpoint-240; \$33,867), PIT tags (\$1,080), and some miscellaneous supplies (\$283).

#### *Requesting MDIFW and IACUC permits*

Amendments to my existing Scientific Collection Permit (No. 2023-685) from MDIFW and my current protocol (No. A2022-01-01) from the University of Maine's Institutional Animal and Use Committee (IACUC) were approved in spring prior to beginning fieldwork.

### **Data collection**

The major goals of this aim were to begin stream surveys to locate and mark turtles for the population demography and viability study and affix VHF transmitters to turtles for the movement and habitat selection study. As this work is now ongoing, below is a status update that includes our achievements during a portion of this year's field season (approximately June–September)

#### *Population demography and viability study*

We will estimate population demographic characteristics (e.g., population size, age class structure, and sex ratio) and conduct site-specific population viability analyses by using data from field surveys of fixed transects and capture-mark-recapture methods. Fieldwork this summer and early fall (prior to Sequoia joining the group) has been conducted by me with assistance from two consultants: field biologist Cheryl Frederick from the Center for Wildlife Studies and Lindsay Ware from Science Dogs of New England. Lindsay uses a conservation scent detection dog (Chili) that is trained to find wood turtles. To date, our team of three people and the detection dog completed four surveys of Site 1 (SBD), with a combined total of 16 turtles captured, and five surveys of Site 2 (ALDER), with a total of 16 turtles captured. In addition, five working group members visited Site 3 (DEAD) on a scouting trip. No turtles were found

during the scouting trip, but during August when the excursion took place, turtles are in the uplands and not easily found without a detection dog (Lindsay and Chili were unavailable at that time).

*Movement and habitat selection study*

We will investigate movement ecology (e.g., habitat selection, home ranges, movement patterns, and behavior) by tracking turtles using long-life VHF transmitters and GPS tags. To date, seven VHF transmitters have been deployed (four on turtles at Site 1 and six at Site 2); in the spring of 2024, these turtles will be located again and a GPS tag affixed for the active season from April–October. Additional surveys are planned for this fall to find more turtles and affix additional VHF transmitters.