

Movements of Neonate Spotted Turtles Differ Between Ohio and Michigan



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Introduction

- Little is known about the neonate stage of spotted turtles (*Clemmys guttata*)
- Neonate survival and recruitment into the adult population is critical for population persistence
- Movements could potentially indicate habitat requirements, which may differ from adults

Objective

- Investigate the movements and survival of neonate spotted turtles

Methods

- Attached radio transmitter (Fig 1D) to wild-hatched neonates in a MI fen and an OH seasonal wet meadow
- Tracked neonates 1+ times a week until overwintering, apparent mortality (observed death, loss of signal before expiration), or signal expiration
- Measure distances between consecutive tracking locations
 - Calculate weekly movement rates (meters/week)
- Test for differences in movement rates between states, years, and their interaction

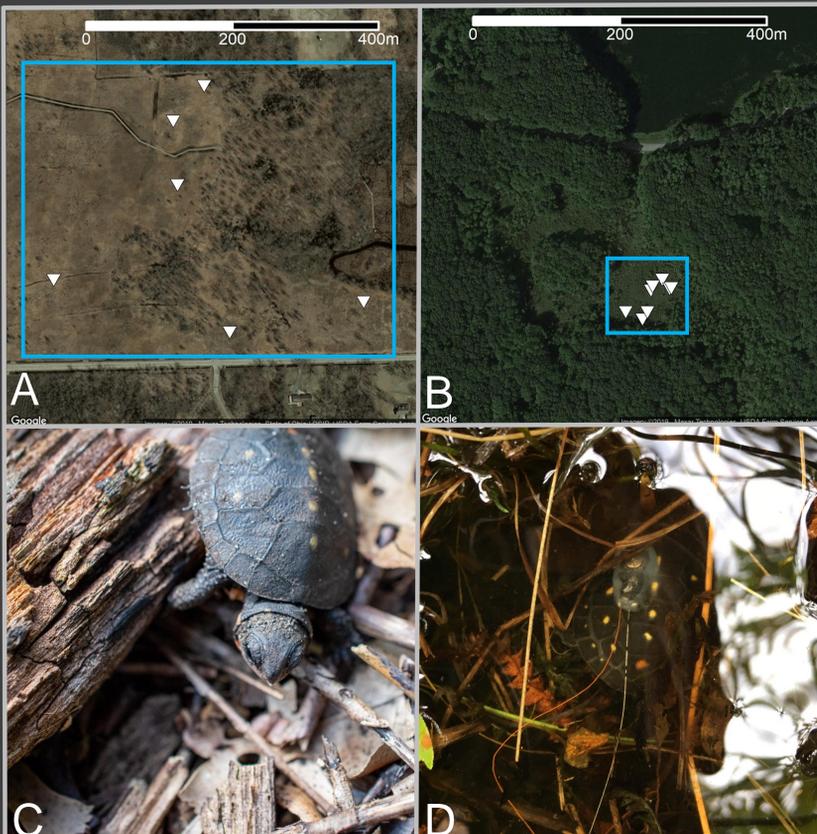


Figure 1. Satellite imagery of a portion of the study site in OH (A) and the entire study site in MI (B). Blue rectangles represent nesting and neonate movement areas, and white triangles are exact nest locations. Neonates from OH (C) and MI (D). While tracking neonates (Aug-Nov), the seasonal wet meadow in OH is dry, while the fen in MI retains ~ 3-6 cm deep water.

Results

- Tracked 16 neonates from 8 nests in Michigan and 22 neonates from 13 nests in Ohio
- Movements rates were larger and more variable in Ohio than MI ($p = 0.007$) (Fig 2, Fig3, Table 1)
- Tracked 50% of neonates to overwintering locations in 2018, and still tracking 75% of neonates in 2019 as of October 29 (Fig 4)

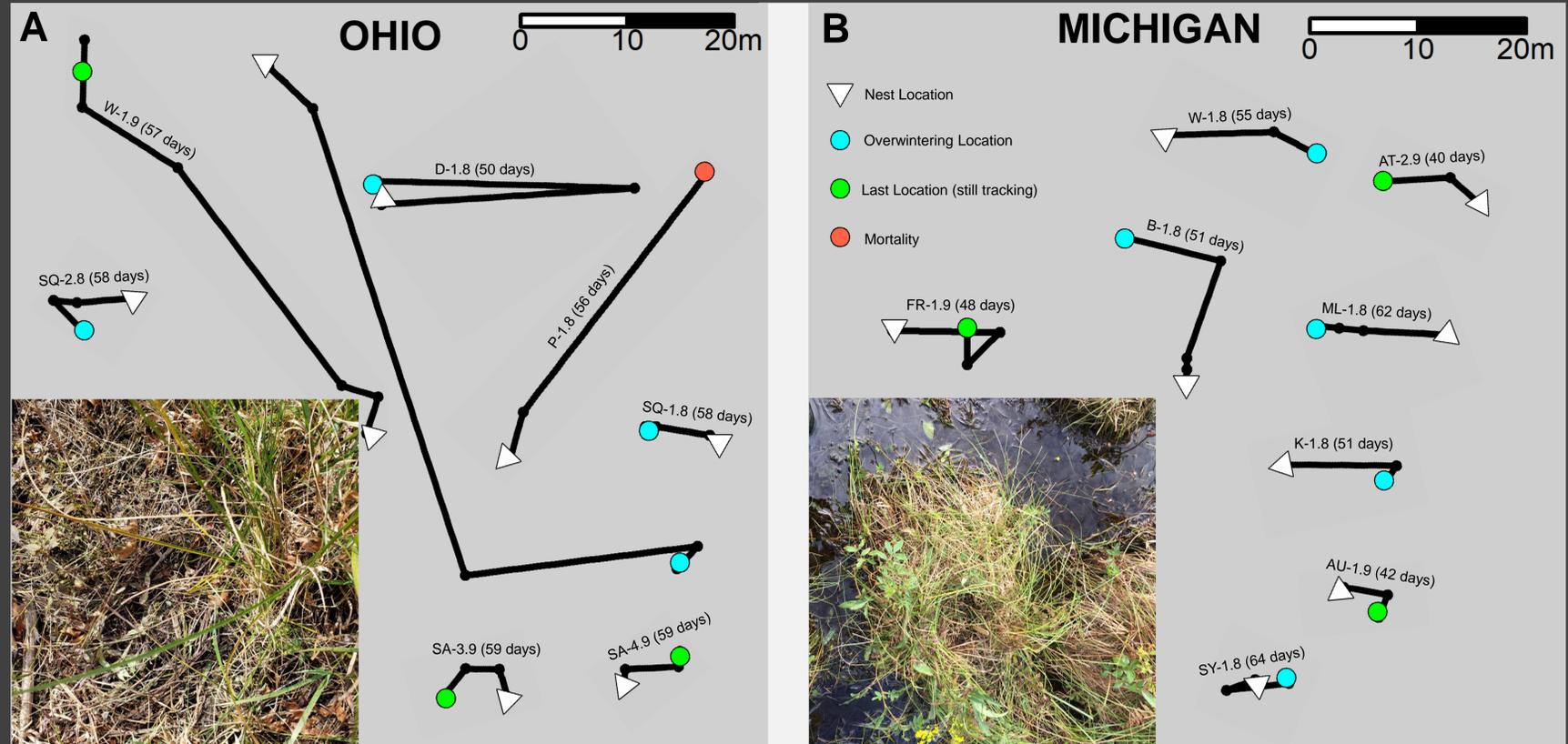


Figure 2. Movements of a selection of individual neonates from OH (A) and MI (B) with insets of representative microhabitat within each state. Displayed movements are not in actual geographic relation to each other. Last locations for 2019 are as of October 24. Individual names are next to lines, along with number of days that individual was tracked.

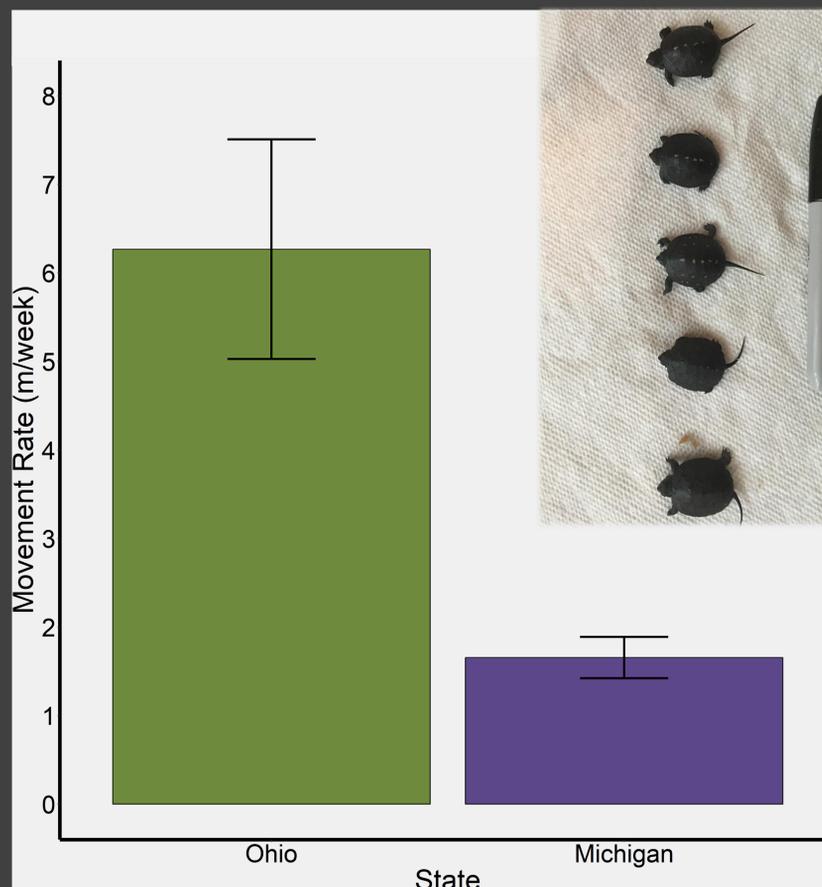


Figure 3. Mean (\pm S.E.) movement rates of neonates in OH and MI. 2018 and 2019 data were pooled since year did not statistically influence movement rate. Three individuals were excluded due to signal loss before first tracking event. The mean (\pm S.D.) of number days tracked for neonates from OH and MI were 50.3 (\pm 8.6) and 41.1 (\pm 14.4), respectively. Inset picture of a clutch of spotted turtles next to a sharpie marker for size reference.

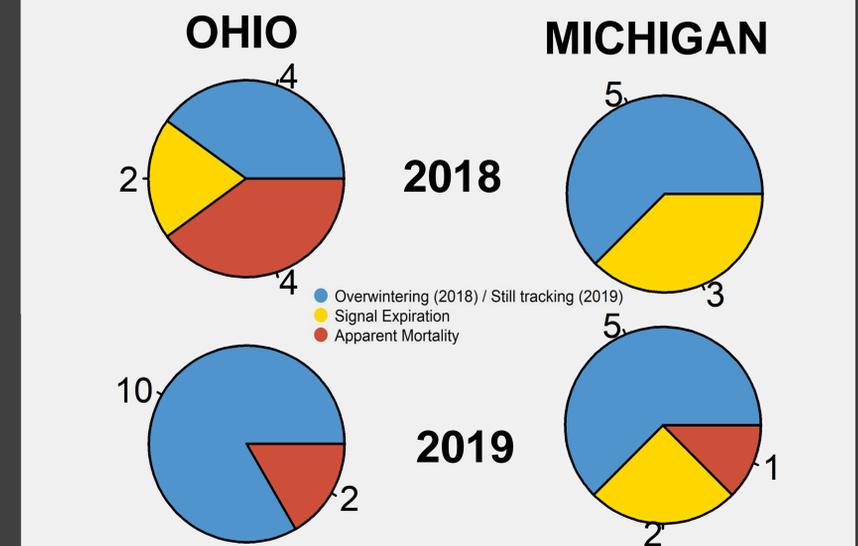


Figure 4. Fates of tracked neonates in OH and MI in 2018 and 2019. Numbers represent the number of neonates belonging to each pie slice

Future Directions

- Movements related to habitat?
 - MI: emerge next to shallow water
 - OH: emerge surrounded by dry land, searching for water?
- Environmental cues to make large movement?
- Need for site specific research on neonates and juveniles
- Ongoing analyses: neonate microhabitat use, adult home ranges, nest survival and microhabitat characteristics

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