

Pop goes the muskrat: First evidence of muskrat in the diet of the Blanding's turtle



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Background

Identifying diet and other requirements of an organism is essential to the proper management and conservation of a species. The Blanding's turtle (*Emydoidea blandingii*) is an imperiled semi-aquatic emydid turtle with a distribution concentrated on wetland habitats within the Great lakes region of the United States and Southern Canada. Diet and food habits of *E. blandingii* are characterized as omnivorous with a variety of plant and animal items reported.



As part of a long-term recovery project on Blanding's turtles, we discovered unknown mammal-like hair in the feces of an adult *E. blandingii*. Hair comparison analysis identified the hair to be that of the common Muskrat (*Ondatra zibethicus*). The consumption of mammals by *E. blandingii* has been proposed in the literature and never documented. We report the first occurrence of the consumption of a mammal by *E. blandingii*.

Methods

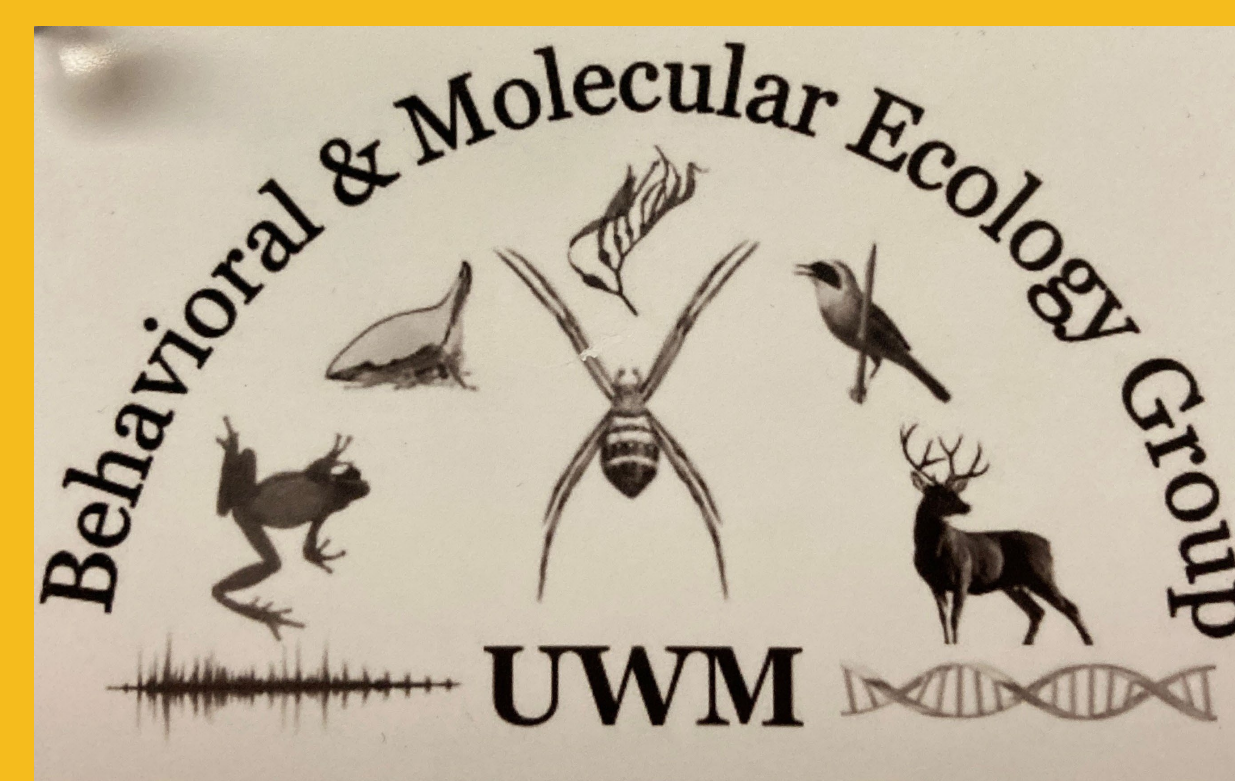
Scale casts, whole mount preparations (Fig.1) and cross-sections (Fig 2) of guard hairs were made from the sample. Samples were compared to known mammal hairs at high magnification (200x-500x) using a comparison microscope to assess scale pattern, pigmentation, and medullary patterns along the length of the hairs.



Figure 1.) Shield region of hairs – Comparison of unknown sample (likely *O. zibethicus*) on the left vs reference sample of *O. zibethicus* to right

References

- ¹Deedrick, D. W., and S. L. Koch, 2004 "Microscopy of hair part II: a practical guide and manual for animal hairs." *Forensic science communications* 6, no. 3
- ²Ernst, C.H. and Lovich, J.E., 2009. *Turtles of the united states and Canada*. JHU Press.
- ³Errington, P.L., 1939. Observations on young muskrats in Iowa. *Journal of Mammalogy*, 20(4), pp.465-478.



Results and Discussion

Unknown hairs were consistent with a Muskrat (*O. zibethicus*). The chevron pattern observed in the proximal shaft region, is diagnostic of muskrat guard hair (Fig.1) (Deedrick and Koch 2004). Furthermore, cross section proximal regions of the hair shaft appeared round to a slightly irregular oval shape (Fig. 2). Both sample patterns and shapes match Muskrat reference material (Moore et al. 1974). We infer two explanations for this novel diet event. The first being that *E. blandingii* scavenged a muskrat carcass while foraging within the wetland. Alternatively, the turtle consumed a neonatal *O. zibethicus*, which are very small in size at birth and are born with fur (Errington 1939). Regardless of the genesis of this event, this observation expands the knowledge of the diet of *E. blandingii*.



Figure 2.) Cross-section of proximal shaft of likely *O. zibethicus* hair sample. Note diagnostic irregular oval shape