observations report *C. serpentina* in proximity to carrion and assumed to have been scavenging: a DOR *C. serpentina* found beside a DOR Eastern Glass Lizard, *Ophisaurus ventralis* (Adams et al. 2017. Herpetol. Rev. 48:173–174), and a *C. serpentina* observed sheltering inside a submerged White-tailed Deer, *Odocoileus virginianus*, carcass (Nelson et al. 2018. Herpetol. Rev. 49:105). Thus, the two observations of scavenging presented herein represent additional documented examples of direct carrion use by *C. serpentina*. We encourage other researchers to report carrion utilization in future studies of the behavior and ecology of this species.

AARON R. KROCHMAL, Department of Biology, Washington College, Chestertown Maryland, USA (e-mail: akrochmal2@washcoll.edu); **NATHAN T. SIMMONS**, Maryland Department of Natural Resources, Millington, Maryland, USA (e-mail: nsimmons2@washcoll.edu); **TIMOTHY C. ROTH II**, Department of Psychology, Franklin and Marshall College, Lancaster, Pennsylvania, USA; (e-mail: timothy.roth@fandm.edu); **TRAVIS J. LADUC**, Biodiversity Collections, Department of Integrative Biology, University of Texas at Austin, Austin, Texas, USA (e-mail: travieso@austin.utexas.edu).

FIG. 1. *Chrysemys picta* basking on top of an aerially basking *Chelydra serpentina* in the Sandhills of Cherry County, Nebraska, USA, on 14 September 2019.

***CHRYSEMYS PICTA* (Painted Turtle) and *CHELYDRA SERPENTINA* (Snapping Turtle). INTERSPECIFIC BASKING.** *Chrysemys picta* occurs across much of the northern and eastern United States (Ernst and Lovich 2009. Turtles of the United States and Canada. 2nd Edition. John Hopkins University Press, Baltimore, Maryland. 827 pp.). *Chrysemys picta* commonly bask on natural structures protruding from water, including logs, rocks, small islands, sand bars, waterfowl nests, and even dead animals (Ernst and Lovich 2009, *op. cit.*; Hunt et al. 2018. Herpetol. Rev. 49:524–525; Davis and Farkas 2019. Herpetol. Rev. 50:770). *Chrysemys picta* also basks on human-made structures, such as partially submerged automobiles (Ernst and Lovich 2009, *op. cit.*), as do other species (Selman 2020. Herpetol. Rev. 51:829–830). Unusual basking sites are attributed to limited natural basking sites in wetland environments (Davis and Farkas 2019, *op. cit.*). When basking structures are limited, many *C. picta* may share the same basking site (Ernst and Lovich 2009, *op. cit.*; Stollery et al. 2019. Herpetol. Rev. 50:347–348), with some species known to bask on top of one another (Legler 1956. Trans. Kansas Acad. Sci. 59:461–462; Peterman and Ryan 2009. Northeast. Nat. 16:629–636).

In Nebraska, *C. picta* is the most common turtle species across the state and occurs in nearly all aquatic habitats (Fogell 2010. A Field Guide to the Amphibians and Reptiles of Nebraska. University of Nebraska-Lincoln, Lincoln, Nebraska. 158 pp.). The Sandhill Region of Nebraska occupies about one quarter of the state. Here, wetlands are surrounded by rolling sand dunes covered by grasses and forbs in uplands that generally lack trees (Bleed and Flowerday 1998. An Atlas of the Sandhills. 3rd Edition. Resource Atlas No. 5b., University of Nebraska-Lincoln, Lincoln, Nebraska. 260 pp.). Some trees grow along wetland margins, but most lakes and ponds have limited, if any, woody vegetation, especially in western portions of the Sandhills where our observation was made (K. Geluso, pers. obs.). Without natural woody or rocky structures protruding in wetlands in the region, many turtles bask on *Ondatra zibethicus* (Common Muskrat) structures (Kiviat 1978. Estuaries 1:196–200; K. Geluso, pers. obs.). Here, we report on an unusual observation of a *C. picta* basking upon another species of turtle in the Sandhill Region of Nebraska.

On 14 September 2019, a *C. picta* was observed aerially basking on top of a *Chelydra serpentina* that was aerially basking on a Common Muskrat lodge at Fawn Lake Ranch in Cherry County, Nebraska, USA (42.4869°N, 101.8876°W; WGS 84; 1122 m elev.; Fig. 1). The *C. picta* was observed from 1605–1625 h on the *C. serpentina*. In photographs from the camera trap, there were few clouds in the sky. At a weather station ca. 58 km to the northwest, air temperature was 28.3°C, relative humidity was 21%, and windspeed was 14.5 km/h at 1552 h (measured in Gordon, Sheridan County; wunderground.com). Additionally, three more *C. picta* were on the same platform beside the *C. serpentina* (Fig. 1).

Turtles of different species are known to share the same basking sites (Ernst and Lovich 2009, *op. cit.*; Weber and Layzer 2014. Herpetol. Rev. 45:117; Stollery et al. 2019, *op. cit.*). Our observation is apparently the first report of *C. picta* aerially basking on an aerially basking *C. serpentina*, although *C. picta* is known to bask on floating *C. serpentina* (Legler 1956, *op. cit.*). Some authors report that *C. serpentina* seldomly bask out of the water (Newman 1906. J. Comp. Neurol. Psych. 16:126–152; Elsey and Platt 2021. Herpetol. Rev. 52:628) but more commonly float alone at the water surface (Newman 1906, *op. cit.*; Ernst and Lovich 2009, *op. cit.*). However, Obbard and Brooks (1979. Can. J. Zool. 57:435–440) noted that *C. serpentina* bask aerially more frequently at more northerly latitudes. The Sandhills of Nebraska are relatively cold compared to areas farther east and south in the distribution of *C. serpentina*. This study and others noted above demonstrate that interspecific basking and (for *C. serpentina*) atmospheric (i.e., aerial) basking might be more common than previously known. Additional studies with camera traps could further document such behaviors.

JAMILA L. BAJELAN (e-mail: bajelanj@lopers.unk.edu), **KEITH GELUSO**, Department of Biology, University of Nebraska at Kearney, Kearney, Nebraska 68849, USA (e-mail: gelusok1@unk.edu); **CARTER KRUSE**, Turner Institute of Ecoagriculture, Bozeman, Montana 59718, USA; **MARY J. HARNER**, Departments of Biology and Communication, University of Nebraska at Kearney, Kearney, Nebraska 68849, USA.

***EMYDOIDEA BLANDINGII* (Blanding's Turtle). FERTILITY and HATCHLING SURVIVAL.** *Emydoidea blandingii* is a long-lived freshwater turtle with a late age of first reproduction and high rates of nest predation (Ernst and Lovich 2009. Turtles of the United States and Canada. Second Edition. The Johns Hopkins University Press, Baltimore, Maryland. 827 pp.). In addition to nest predation, nest failure due to environmental or demographic factors may also reduce reproductive success. Congdon

et al. (2000. Chelon. Conserv. Biol. 3:569–579) found 19.5% of *E. blandingii* nests in Michigan, USA, failed to produce any hatchlings, and limited or no embryonic development accounted for 16.5% of total nest failures among nests surviving predation. Upon emergence, hatchlings are prey for numerous predators (Ernst and Lovich 2009, *op. cit.*). Here we report on clutch fertility and survival of head-started hatchling *E. blandingii* during the course of a radio-telemetry study in Linn County, Iowa, USA.

In June 2013, seven radio-tagged adult female *E. blandingii* were captured and retained for oviposition induction, based on palpation confirming some were carrying eggs. Radiography confirmed three of the seven females were gravid, and oxytocin was administered to induce egg laying. All eggs were laid within 24 h of oxytocin injection, and the females were returned to their point of capture the day following egg-laying. Three clutches were laid totaling 33 eggs (9, 11, and 13 eggs respectively). Eggs were placed into one of two incubators set to 26.7 and 30°C, respectively. Each clutch was divided between the two incubators to increase hatching success in the event of incubator failure. Eggs from each female were kept separate in individual containers in each incubator. Eggs and incubators were monitored two to three times per week to avoid desiccation, heater failure, and molding.

Only five of 33 eggs successfully hatched. Two additional eggs were fertile (i.e., contained a nearly fully developed embryo), but did not survive to full term. The remaining 26 eggs showed no signs of fertility (e.g., veining, egg chalking, development, etc.). Individual fertility rates among the three females were 0%, 18.2%, and 55.6%. The low fertility rates could have been a result of artificial incubation; however, some eggs were viable and eggs in both incubators successfully hatched, suggesting that incubation was not a factor. Low fertility rates may also be the result of demographic issues within the population. As of June 2013, only eight adult females had been captured at the study site, and only one male, estimated to be ca. 12 years old at the time, had been captured. Based on literature reports, the male may have been too young at the time to be sexually mature (Ernst and Lovich 2009, *op. cit.*). *Emydoidea blandingii* females have the ability to store sperm (Harding and Davis 1999. Herpetol. Rev. 30:225–226) and it is possible that the three females in this study may have retained sperm from males that died before 2013, or that undetected males were present, although annual trapping and radio-telemetry monitoring of the population through 2017 failed to produce additional males.

The five hatchlings were kept over the winter and head-started for release in spring 2014. By May 2014, the juveniles weighed ca. 150 g, were in good health, and were deemed ready for release. Prior to release, each head-started individual was fitted with a radio transmitter (Holohil PD-2, 3.6 g). The juvenile turtles were released in late May 2014 into the wetland the adult *E. blandingii* at the site use as summer habitat and were tracked every two to three days thereafter. Radio-tracking revealed all five juveniles were predated within two weeks of release.

The area in which this population of *E. blandingii* is found has been subject to increasing pressure from urban development over the last 45 y, and as a result, no natural wetlands remain in the area and the wetlands that do exist are completely surrounded by urban development. The population was first recorded in 2002 by TJV and monitored from 2002–2004 using aquatic trapping, drift fences, and radio-telemetry. Although only 13 individuals were captured at that time, a mix of hatchlings, juveniles, and young and old adults were found. In addition, both sexes were well represented. Monitoring of the population occurred again from 2012–2017 and found no evidence of successful recruitment despite surveys specifically designed to target the capture of newly emerged hatchlings and young adults. This population illustrates the multiple threats faced by many small populations, including habitat loss, predation, and a biased sex ratio, which cumulatively can be devasting even to long-lived species.

We thank the Iowa Department of Natural Resources Wildlife Diversity Program for funding the study under the Wildlife Diversity Small Grant Program; Molly Stephenson, Stacey Parks, and Sarah VanDeWalle for assisting with the care of the hatchling turtles; Doug Peterschmidt for volunteering veterinary services and providing the necessary facilities and equipment for X-raying turtles and administering oxytocin; and Ryan Rasmussen and Luke Hodges for assistance with radio-tracking. All turtles were collected and handled under an Iowa Scientific Collector's Permit (SC388).

TERRY J. VANDEWALLE, Stantec Consulting Services Inc., 2300 Swan Lake Boulevard, Suite 202, Independence, Iowa 50644, USA (e-mail: terry.vandewalle@stantec.com); **JOSHUA G. OTTEN**, Department of Environmental Sciences, University of Toledo, Wolfe Hall Suite 1235, 2801 W Bancroft Street, Toledo, Ohio 43606, USA (e-mail: joshua.otten1@gmail.com).

***EMYDOIDEA BLANDINGII* (Blanding's Turtle). TERRESTRIAL ESTIVATION.** *Emydoidea blandingii* is a semi-aquatic emydid turtle. The habitat use of this species changes seasonally, with individuals typically visiting multiple wetlands throughout a year and sometimes making long distance terrestrial movements between wetlands (Ernst and Lovich 2009. Turtles of the United States and Canada. Second Edition. The Johns Hopkins University Press, Baltimore, Maryland. 827 pp.). In addition, deteriorating wetland health caused by decreasing water levels (i.e., drought) may influence turtle movements and behaviors. When subjected to decreasing water levels in wetlands, turtles may respond by moving to other wetlands or remaining in less desirable habitat and estivating until water returns (Roe and George 2008. Ecology 89:485–494).

Terrestrial estivation—defined here as a period of terrestrial inactivity or dormancy that coincides with increased temperatures or decreasing water availability in the local habitat—has been documented in some populations of *E. blandingii* (e.g., Ross and Anderson 1990. J. Herpetol. 24:6–12; Joyal et al. 2001. Conserv. Biol. 15:1755–1762). Although many studies on *E. blandingii* home range and habitat use have been completed throughout its range (e.g., Ross and Anderson 1990, *op. cit.*; Joyal et al. 2001, *op. cit.*; Beaudry et al. 2009. J. Herpetol. 43:636–645; Edge et al. 2010. Ecoscience 17:90–99), only a few have reported estivation behavior (Ross and Anderson 1990, *op. cit.*; Rowe and Moll 1991. J. Herpetol. 25:178–185; Joyal et al. 2001, *op. cit.*), ranging from 6 h to 5 d. Despite these studies, there is little direct evidence supporting the hypothesis that *E. blandingii* engages in terrestrial estivation in response to drought conditions. Furthermore, limited published data exist regarding the details of specific *E. blandingii* estivation behavior, including length of time, canopy coverage, and distance from wetlands. The following observations were made in the course of conducting a radio-telemetry study of *E. blandingii* in Linn County, Iowa, USA.

During 2012, six female *E. blandingii* were captured and fitted with temperature-sensitive radio-transmitters (HOLOHIL Systems LTD Model A1-2F [24 g]) and released at the point of capture. Turtles were relocated via radio-telemetry three times per