



FIG. 1. Adult *Osteopilus septentrionalis* cannibalizing a juvenile.

Treefrog (*Osteopilus septentrionalis*) in Florida. <http://edis.ifas.ufl.edu/pdffiles/UW/UW25900.pdf>; 8 December 2014). In fact, most use the word “cannibalism” to mean that they eat other frogs rather than conspecifics (<http://allaboutfrogs.org/info/species/cuban.html>; 8 December 2014). We fully expect that others have observed similar behaviors as our own in this species. And in fact, it has been demonstrated in lab experiments (Wyatt and Forsy 2004. Southeast. Nat. 3:695–700). However, definitive proof of post-metamorphic cannibalism has not been scientifically documented in wild populations of *O. septentrionalis*, which is the purpose of this note. Future research should be done to determine if this was an isolated event, a common opportunistic event with little impact at the population level, or if it is a density-dependent prey-switching behavior that represents a new self-regulation system within this invasive population.

JOHN E. HERMAN (e-mail: jherman@fgcu.edu), **ALEXANDRA BENTON**, and **IVETTE NIKOL IRIZARRY**, Department of Biological Sciences, Florida Gulf Coast University, 10501 FGCU Boulevard South, Fort Myers, Florida 33965, USA.

PELOBATES FUSCUS (Common Spadefoot). REPRODUCTIVE BEHAVIOR. Calling in immature amphibian specimens has been observed in several European anurans, including *Pelobates fuscus*. Calling in *P. fuscus* has been observed in pre-adults (SVL = 33–37 mm; Müller 1984. Salamandra 20:121–142). Males generally reach sexual maturity at the age of two and females at the age of three years (Wiener 1997. In Hödl et al. [eds.], Populationsbiologie von Amphibien: Eine Langzeitstudie auf der Wiener Donauinsel, pp. 165–181. Stapfia 51). As they mature, male *P. fuscus* develop oval glands on the dorsal surface of the front legs which can appear nine months after metamorphosis (SVL = 37.3–40.4 mm; mass = 5–10 g; Nöllert 1990. Die Knoblauchkröte. A. Ziemsen Verlag, Wittenberg Lutherstadt. 144 pp.). What is notable in *P. fuscus* is that the females also emit vocalizations (Seglie et al. 2013. Bull. Soc. Herpetol. Fr. 145–146:61–72). Here we describe calling activity and the forming of a lumbar amplexus in captive post-metamorphic *P. fuscus*.

On 20 April 2012 small portions (8–10 cm) of eleven *P. fuscus* egg strings were collected from Valthe population in Drenthe province, the Netherlands (52.505747°N, 6.525512°E; datum WGS84) and the subsequent larvae were reared as part of a reintroduction program. The majority of larvae were released into the wild prior to metamorphosis. Some specimens were

retained for educational purposes. Metamorphosis occurred at approximately eleven weeks of age after which they were kept terrestrially in groups of up to five animals in small terraria (30 x 38 x 25 cm) with a sandy soil substrate taken from their natural habitat. Invertebrates such as *Acheta domesticus*, *Alphitobius laevigatus*, and *Lumbricus terrestris* were offered twice a week and water was permanently available in a small bowl. After being kept in these terraria for two weeks, two individuals (SVL = 28 and 30 mm; mass = 3.0 g and 3.2 g) were placed in shallow water (approx. 4 cm deep) from 21–29 July 2012. Oval glands were absent in these specimens so sex determination was impossible. From 24 July 2012 on, calling activity was observed sporadically on a daily basis. During the only three visual observations, calling took place at the water surface; it is unknown if it also occurred in a submerged position, a behavior that *P. fuscus* normally exhibits. Calling was always brief and only observed during the day, mainly between 1000 h and 1700 h. The sound differed from that of adults in duration and pitch but was not recorded and it proved impossible to discern whether both specimens exhibited this behavior. On 27 July 2012, at 1500 h, two longer lasting calling periods were observed. A visual checkup showed the juveniles had formed a lumbar amplexus which lasted approximately 28 minutes. Our case further demonstrates that calling and the formation of lumbar amplexus can be observed in post-metamorphic *P. fuscus* only two weeks post-metamorphosis; thus prior to their first hibernation.

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RICHARD P. J. H. STRUIJK (e-mail: r.struijk@ravon.nl), **WILBERT BOSMAN**, Reptile, Amphibian & Fish Conservation Netherlands, Natuurplaza, Toernooiveld 1, 6525 ED Nijmegen, the Netherlands; **WARREN SPENCER**, Artis Royal Zoo, Plantage Kerklaan 38-40, 1000 HD Amsterdam, the Netherlands.

PELOBATES SYRIACUS (Syrian Spadefoot). CANNIBALISM. Cannibalism has been observed in early life history stages of many amphibian species (Babbitt and Meshaka 2000. Copeia 2000:469–474; Pfennig and Murphy 2000. Evolution 54:1738–1749; Vera Candioti 2005. Acta Zool. 86:1–11); however, less is known about cannibalism in the terrestrial phase of the anuran life cycle. Herein we report cannibalism in a *Pelobates syriacus*. On 12 July 2013 we witnessed an adult male *P. syriacus* (SVL =



FIG. 1. Adult male *Pelobates syriacus* attempting to ingest a conspecific juvenile.

66.2 mm, 35.9 g) trying to swallow a juvenile of the same species (SVL = 37.4 mm, 7.0 g; Fig. 1); while we were taking pictures the adult regurgitated its prey, which seemed to be unharmed, and we were able to measure them both. The observation was made in the southern part of the Danube Delta Biosphere Reserve (Constana Co., Romania), on a natural levee (Grindul Lupilor) separating Lakes Zmeica and Sinoe (44.620194°N, 28.812306°E, WGS84; elev. -2 m). After the mass land migration of newly metamorphosed spadefoots on 18–20 June 2013, a high density of juveniles was recorded at the site (up to 8800 juveniles/ha, unpubl. data). As far as we are aware, our observation is the first record of cannibalism for this species.

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DIANA SZÉKELY (e-mail: diana@butanescu.com), **PAUL SZÉKELY**, and **DAN COGĂLNICEANU**, University Ovidius Constanța, Faculty of Natural Sciences, Al. Universității 1, corp B, 900470 Constanța, Romania.

TESTUDINES — TURTLES

CHELYDRA SERPENTINA (Snapping Turtle). WATERFOWL PREDATION. *Chelydra serpentina* is an omnivorous resource generalist that has been observed preying on aquatic and semi-aquatic birds (Ernst and Lovich 2009. *Turtles of the United States and Canada*, 2nd ed. Johns Hopkins Univ. Press, Baltimore, Maryland. 827 pp.). Numerous species and age/size classes of waterfowl prey have been described in the diet of *C. serpentina*, such as adult *Aechmophorus occidentalis* (Western Grebe) (Igl and Peterson 2010. *Waterbirds*. 33:105–109), adult *Leucophaeus atricilla* (Laughing Gull) (Alexander 1921. *Auk* 38:596), and cygnet and adult *Cygnus buccinator* (Trumpeter Swan) (Moriarty 1990. *Minnesota Herpetol. Soc. Newsl.* 10:4; Lumsden 2013. *Can. Field Nat.* 127:138–145), among other species (see Coulter 1957. *J. Wildl. Manage.* 21:17–21; Ernst and Lovich 2009, *op. cit.*; Igl and Peterson 2010, *op. cit.*). Here we report predatory behavior and the first, to our knowledge, documented observation of predation of a *Mergus merganser* (Common Merganser) by *C. serpentina*.

At approximately 1000 h on 31 July 2014, an adult female *M. merganser* and five young-of-the-year juveniles were observed swimming along the shoreline of a shallow bay in Clear Lake, located in central Ontario, Canada (45.2530°N, 79.7877°W; datum WGS84). All individuals were repeatedly submerging their heads underwater, a characteristic definition of food searching behavior in *M. merganser* (Wood and Hand 1985. *Can. J. Zool.* 63:1260–1270). At approximately 1005 h, the female *M. merganser* was bitten on the lower right abdomen and flank by a *C. serpentina* (Fig. 1). The *M. merganser* silently struggled and beat its right wing and hind foot on the carapace and head of the *C. serpentina*. During this time, the juveniles rapidly swam away and were not observed in the bay again that day. At approximately 1007 h the *M. merganser*, with the *C. serpentina* still biting the lower flank, floated away from the shoreline and into deeper water in the bay. It, however, could not be determined which individual was instigating this movement (i.e., whether the *M. merganser* was moving on its own accord or being forcefully dragged into open water by the *C. serpentina*). Once out into deeper water, the *C. serpentina* began submerging the *M. merganser*, doing this three times over the course of approximately 10 minutes, each time holding the *M. merganser* underwater for approximately 15 seconds. In addition to maintaining a secure grip on the *M. merganser* with its jaws,

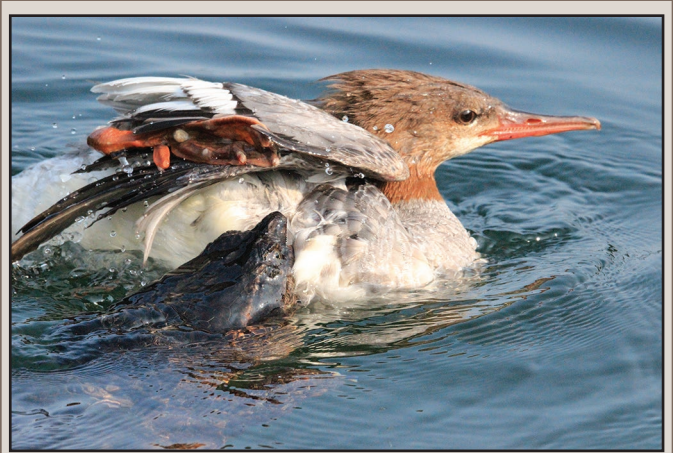


PHOTO BY C. B. BOBBIE

Fig. 1. *Chelydra serpentina* biting the lower right flank of an adult female *Mergus merganser*, Clear Lake, Central Ontario, Canada.

the *C. serpentina* used its foreclaws to hold the bird in place (as has been observed previously during oversized prey handling in *C. serpentina*; Igl and Peterson, *op. cit.*; pers. obs.). Initially the *M. merganser* struggled, beating its wings and trying to resurface when submerged. However, by the third submergence the *M. merganser* had stopped struggling. At approximately 1018 h, the *C. serpentina* again completely submerged the *M. merganser*. The bird struggled for approximately 30 seconds while underwater, released a stream of bubbles, then ceased all movement. Within 30 seconds of the bird's death, the *C. serpentina* released the bird from its jaws, abandoning the carcass, and the bird floated up to the surface of the water. We did not directly observe the *C. serpentina* consuming the *M. merganser*, however upon inspection the next day, the head and neck of *M. merganser* were gone from the body. It is unclear if this was by *C. serpentina* or a scavenger. The *C. serpentina* was not captured for measurement but was estimated to have a straight carapace length of ca. 40 cm, likely making the turtle a male (Ernst and Lovich 2009, *op. cit.*). This repeated submergence and drowning of avian prey has been documented in other instances of *C. serpentina* predation (Alexander 1921, *op. cit.*; Igl and Peterson 2010, *op. cit.*). This observation serves as a contribution towards the predatory behavior and feeding ecology of *C. serpentina*.

COLLEEN B. BOBBIE (e-mail: cbobbie@laurentian.ca), **PATRICK D. MOLDOWAN**, Laurentian University, Sudbury, Ontario, Canada, P3E 2C6 (e-mail: pmoldowan1@laurentian.ca); **BRIAN A. BOBBIE**, Altech Environmental Consulting, Toronto, Ontario, Canada, M4H 1E9.

CHELYDRA SERPENTINA (Snapping Turtle). WINTER MORTALITY. Turtles in northern latitudes may spend half the year in hibernation. Winter mortality is typically low, but overwintering can be stressful and lead to death due to freezing, prolonged anoxia, or predation (Ultsch 2006. *Biol. Rev.* 81:339–367). Mortality events can result in the death of many turtles. For example, 186 turtles from eight species died when a pond froze to the bottom in Iowa (Christiansen and Bickham 1989. *J. Herpetol.* 23:91–94).

On 6 May 2014, six adult Snapping Turtles were found dead at Mud Lake, a permanent waterbody >10 ha in size located in the Britannia Conservation Area in Ottawa, Ontario, Canada (45.371181°N, 75.794249°W, datum WGS84). There were four males (mean carapace length: 32.5 cm, range: 30.5–36.0 cm) and two females (mean carapace length: 28.8 cm, range: 27–30.5 cm). One adult male was found on shore, and the remaining turtles