



FIG. 1. A) Regurgitated crayfish from a *Clonophis kirtlandii* in Ottawa County, Ohio, and B) pieces of partially digested crayfish regurgitated by a *C. kirtlandii* in Clark County, Ohio.

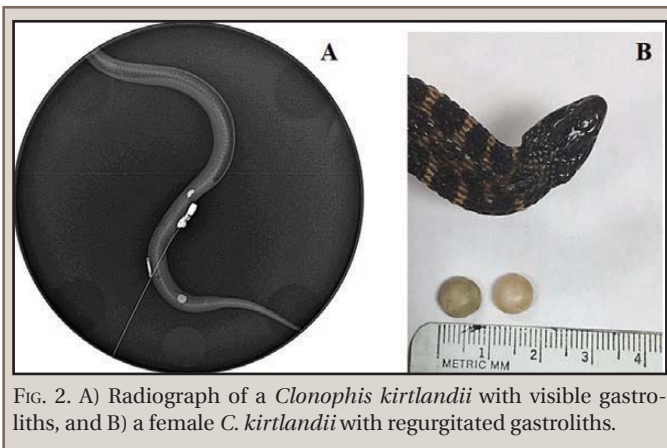


FIG. 2. A) Radiograph of a *Clonophis kirtlandii* with visible gastroliths, and B) a female *C. kirtlandii* with regurgitated gastroliths.

molted crayfish. The number of occurrences across a relatively large geographic area suggests that crayfish might account for a larger portion of *C. kirtlandii* diet than previously thought.

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***COLUBER CONSTRICTOR PRIAPUS* (Southern Black Racer). EGG RESILIENCE TO FLOODING.** On 28 September 2017, a clutch of 11 *Coluber constrictor priapus* eggs was uncovered while cleaning up debris in and around a screened butterfly exhibit that is adjacent to the Trout River at the Jacksonville Zoo and Gardens, Jacksonville, Florida, USA (30.39911°N, 081.64369°W; WGS84). The eggs were found scattered in a 1-m<sup>2</sup> area beneath ca. 15 cm of pine needles and other mixed plant debris at a distance of ca. 18 m from the river. One of the eggs was in the process of hatching with the offspring partially emerged from its egg; this individual, together with a recently emerged hatchling that was found in the immediate area, enabled species identification. The eggs were relocated to an adjacent garden area, reburied, and monitored for hatching progress. Returning to the nest later that day for measurements, six empty egg shells were present, along with one egg that had recently pipped, and four unhatched eggs that were healthy in appearance (mean = 3.5 × 2.1 cm; 9.2 g [range 7.9–10.8 g]). All remaining eggs hatched over the next few days, with the last hatchling found outside the nest on 1 October.

Much is known about the nesting biology and reproduction of *C. constrictor* (e.g., Iverson 1978. Florida Sci. 41:201–207; Swain and Smith 1978. Herpetologica 34:175–177; Hulse et al. 2001. Amphibians and Reptiles of Pennsylvania and the Northeast. Comstock Publishing Associates, Ithaca, New York. 419 pp.). This observation is significant because 17 days prior to their discovery, the eggs were submerged and inundated with as much as 34 cm of slightly brackish river water when the Trout River flooded as a result of the storm surge generated by Hurricane Irma. The site where the eggs were found was completely flooded for a period of at least 24 h, and it is also likely that the eggs saw periodic flooding over the following day as tidal swings continued to temporarily flood the area. Additionally, given the location of the clutch inside the walk-through vestibule of the exhibit which is normally lined with crushed stone as a substrate rather than the mixture of plant debris in which the eggs were found, it is clear that the eggs had been carried there by the flooding and undoubtedly experienced substantial turbulence, jostling and rolling in the process.

This observed hatching event demonstrates that *C. constrictor priapus* eggs have the ability to withstand considerable disturbance, temporary flooding and complete submersion during the latter half of their incubation. Documented incubation periods for *C. constrictor* vary according to incubation temperature and range from 39–65 days (Burger 1990. J. Herpetol. 24:158–163), suggesting that the eggs in the present account were at least half way through incubation at the time of their disturbance and submersion. The fact that all of the eggs found from this clutch were able to survive this event and hatch is remarkable, given the increased respiratory rates and oxygen uptake by snake embryos during later stages of their development (e.g., Clark 1953. J. Exp. Biol. 30:492–501; Dmi'el 1970. J. Exp. Biol. 23:761–772), and the potential osmotic imbalance that submersion in slightly brackish water might cause for eggs. Although studies on turtles have demonstrated the ability of some species' eggs to withstand submersion for extended periods (e.g., Kennett et al. 1993. Austral. J. Zool. 41:37–45; Polisar 1996. Chelon. Conserv. Biol. 2:13–25) or even hatch under water (Visser and Zwartepoorte 2005. Radiata 14:3–12), little is known about the ability of terrestrial snake eggs to withstand flooding and submersion. This information is valuable for understanding the potential effects, tolerances and responses of reptiles to flooding caused by extreme meteorological events,

especially since such occurrences are predicted to increase in both frequency and intensity (Emanuel 2005. *Nature* 436:686–688; Smith et al. 2010. *Nat. Geosci.* 3:846–849).

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**CROTALUS VIRIDIS (Prairie Rattlesnake). DIET / SCAVENGING.** *Crotalus viridis* is a well-known viperid snake in the western United States. Prey consumed by *C. viridis* as fresh kill or carrion include mammals, birds, reptiles, amphibians, fish, and insects (Ernst and Ernst 2003. *Snakes of the United States and Canada*. Smithsonian Books, Washington, DC. 668 pp.). *Crotalus viridis* previously has been observed feeding on lizards including *Aspidoscelis* spp., *Holbrookia maculata*, *Phrynosoma* spp., *Sceloporus* spp., and *Uta stansburiana* (Ernst and Ernst 2003, *op. cit.*).

On 13 June 2016, we photographed (Fig. 1) an adult male *C. viridis* feeding on a *Sceloporus clarkii* (Clark's Spiny Lizard) 4.0 km N, 2.1 km E Gila, Grant County, New Mexico, USA (33.00137°N, 108.55490°W; NAD83). Upon recovery of the lizard from the snake, the lizard was in two pieces, with much of the lizard not present. This suggests the snake scavenged this meal as carrion, as the individual was along a well-used dirt road located just above the flood plain of the Gila River.

Our observation appears to be the first documentation of a *S. clarkii* in the diet of *C. viridis* and another example of scavenging by the species. Earlier reports of scavenging for this species include Giovanni et al. (2005. *Herpetol. Rev.* 36:323) and Ernst 1992. *Venomous Reptiles of North America*. Smithsonian Books, Washington DC. 236 pp.). Scavenging accounts frequently were by individuals consuming animals killed on roadways (DeVault and Krochmal 2002. *Herpetologica* 58:429–436). Other *Crotalus* species also are known to scavenge on carrion (DeVault and Krochmal 2002, *op. cit.*; Ernst and Ernst 2003, *op. cit.*).

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**CROTALUS VIRIDIS (Prairie Rattlesnake). MELANISM.** Melanism occurs when an animal expresses abnormally high amounts of the black pigment melanin (Bechtel 1978. *J. Herpetol.* 4:521–532). In New World viperids, melanism has been documented in at least 11 species including *Agkistrodon contortrix* (Bechtel 1995. *Reptile and Amphibian Variants: Colors, Patterns, and Scales*. Krieger Publishing Co., Malabar, Florida. 113 pp.), *Bothrocophias hyoprora*, *Bothrops jararacussu*, *Bothrops leucurus*, *Crotalus atrox*, *C. cerberus*, *C. horridus*, *C. intermedius*, *C. molossus*, *C. viridis*, and *Sistrurus catenatus* (Campbell and Lamar 2004. *The Venomous Reptiles of the Western Hemisphere* [Volumes I and II]. Cornell University Press, Ithaca, New York. 870 pp.). This condition has been shown in rattlesnakes to fall into three separate categories: an infrequent congenital anomaly, a rare or regular ontogenetic shift, or a population-level substrate-matching adaptation (Klauber 1972. *Rattlesnakes: Their Habits, Life Histories, and Influence on Mankind*, 2 volumes, 2<sup>nd</sup> ed. University of California Press, Berkeley. 1533 pp.; Best and James 1984. *Copeia* 1984:213–215).

In *C. viridis*, documentation of melanism is vague and incomplete. Two brief, anecdotal accounts of melanism have been reported in this species—one from the foothills southwest of Fort Collins, Colorado, USA, and one from Spearfish, South Dakota (Gloyd 1934. *Pap. Michigan Acad. Sci. Arts. Lett.* 20:661–668). Additionally, a handful of accounts of albinism and one record of partial leucism have been documented in this species as well as patternless and aberrantly patterned individuals (Gloyd 1958. *Bull. Chicago Acad. Sci.* 10:185–195). Here, we confirm and illustrate melanism for the first time in *C. viridis*, and speculate on its cause.

On 7 July 2016, we observed a melanistic adult *C. viridis* while road cruising on Medicine Bow Road, 3.1 airline km WSW of the peak of Beer Mug Mountain, Carbon County, Wyoming, USA (42.03848°N, 106.46055°W, WGS 84; 2030 m elev.). This individual had the typical blotched dorsal pattern expected of this species, but the exhibited range of color was entirely dark gray to black (Fig. 1). The increase in pigment was enough to make the snake appear all black upon first observation. The dorsal blotches were faintly defined by slightly darker pigment than the surrounding

PHOTO BY KEITH GELUSO



FIG. 1. *Crotalus viridis* scavenging on carrion of *Sceloporus clarkii* in Grant County, New Mexico, USA.

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FIG. 1. Melanistic *Crotalus viridis* from near Medicine Bow, Carbon County, Wyoming.