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Predation by the Western Pygmy Rattlesnake, *Sistrurus miliarius streckeri* Gloyd, 1935, on the Rough Earthsnake, *Virginia striatula* (Linnaeus, 1766), with comments on prey size and feeding ecology

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Rattlesnakes (Viperidae: genera *Crotalus* and *Sistrurus*) are a radiation of approximately 57 pitviper species distributed throughout the Americas (Uetz et al., 2025). While many species have been the focus of diligent research programs (e.g., Western Rattlesnake Complex, *C. viridis sensu lato*; Pook et al., 2000; Douglas et al., 2002; Mackessy 2010; Davis et al., 2016; Smith et al., 2023; Myers et al., 2024), other taxa remain poorly studied, and their ecology consequently remains largely uncharacterised. The Pygmy Rattlesnake, *Sistrurus miliarius* (Linnaeus, 1766), is the smallest species of rattlesnake, and is distributed throughout the south-eastern United States, occupying a variety of habitats ranging from swamplands to upland glades. Three subspecies are recognised: the Dusky Pygmy, *S. m. barbouri* Gloyd, 1935, in the south-eastern portion of the distribution, the Carolina Pygmy, *S. m. miliarius* (Linnaeus, 1766), in the north-eastern portion, and the Western Pygmy, *S. m. streckeri* Gloyd, 1935, in the western portion (Uetz et al., 2025). Of the three subspecies, most research efforts have focused on the Dusky Pygmy Rattlesnake (e.g., Farrell et al., 2018; Perelman and Farrell 2025), but its ecology may not be reflective of the other two due to differences in distribution and habitat preferences (see Maag et al., 2022; Maag and Greene, 2023).

Although the diet of the Pygmy Rattlesnake remains poorly characterised across its distribution, diet data from Florida populations of *S. m. barbouri* suggests it is a generalist, consuming large amounts of frog and lizard prey, along with smaller quantities of mammalian, centipede, and snake prey (Gibbs and Mackessy, 2009). Less is known about the diet of *S. m. streckeri*, though it is known to feed on squamate and mammalian prey (McKnight et al., 2014; Schalk et al., 2018). An investigation of stomach contents from 34 dissected specimens of *S. m. streckeri* revealed 64% lizard (n = 21), 21% mammalian (n = 7), and 15% snake (n = 5) prey items (N. Balchan and J. Whitlock, unpublished data). Of the five snakes consumed, three were *Virginia striatula*, but the effects of digestion complicate the approximation of relative prey sizes.

On 3 April 2025, a dead adult female Western Pygmy Rattlesnake was submitted to Hannah P. Eichelberger, after being accidentally struck with a lawnmower by a property worker in Noble, Cleveland County, Oklahoma (35.1265, -97.3174, elevation 357 m; WGS84). A palpated prey bolus from the rattlesnake contained a recently ingested adult female Rough Earthsnake, *Virginia striatula* (Linnaeus, 1766), which had been swallowed headfirst with no apparent digestion (Fig. 1). Following removal of this prey bolus, both animals were prepared for preservation as specimens at the Sam Noble Oklahoma Museum of Natural History (OMNH). The *S. miliarius* (without prey item; OMNH 49914) had a body mass of 26.4 g (318 mm snout-vent length [SVL], 19 mm tail length [TL]), and the *V. striatula* (OMNH 49915) had a body mass of 10.2 g (207 mm SVL, 46 mm TL). The resulting relative prey mass of this item was 38.6%, and the prey item had relative lengths of 79.6% (*V. striatula* total length / *S. miliarius* SVL) and 75.1% (*V. striatula* total length / *S. miliarius* total length).

V. striatula appears to be an important snake prey

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Figure 1. Fresh *Sistrurus miliarius streckeri* (OMNH 49914; left) with *Virginia striatula* (OMNH 49915; right) prey item, prior to fixation. Photo by Owen M. Edwards.

species for *S. m. streckeri*, with three of five snake prey items found in the stomach content dataset mentioned prior attributable to this species, in addition to the prey item presented herein. This prey item is noteworthy because it represents a Type II prey item (*sensu* Greene and Wiseman, 2023), possessing a high weight ratio but low ingestion ratio in comparison to the predator. More typical pitviper prey (i.e., rodents) comprise Type III items, being fusiform to ovoid in shape and possessing a larger prey bulk, and thus requiring a wider gape to consume a prey item of lower relative prey mass. While large prey are well known from rattlesnakes (e.g., Whitlock et al., 2024), they generally comprise Type III items with much higher relative prey bulk (RPB) than Type II items. Consumption of snakes may represent a strategy to consume large prey items (by relative prey mass) while circumventing the constraints associated with gape limitations that would otherwise complicate the consumption of Type III prey items of similar mass. Further work is needed to understand the prevalence and species diversity of snakes consumed by *S. m. streckeri*, and how this diversity of snake prey relates to more fine-tuned aspects of trophic ecology including prey handling (de Queiroz, 1984), risks imposed by harmful prey (Kornilev et al., 2022), and venom resistance dynamics (Balchan et al., 2024). Our present observation represents a starting point from which to better understand the trophic ecology of Pygmy Rattlesnakes and underscores the importance of collecting prey item and associated data.

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