



Birds in the Diet of Snakes in the Genus *Tropidophis* (Tropidophiidae): Do Prey Items in Museum Specimens Always Reflect Reliable Data?

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The Neotropical snake genus *Tropidophis* (Tropidophiidae) comprises five species in continental South America and 27 in the West Indies, with Cuba exhibiting the greatest diversity with 16 species (e.g., Hedges et al. 2002; Domínguez et al. 2006; Curcio et al. 2012). The feeding habits of these constricting snakes are poorly studied. The sparse information available suggests that species within this genus have a diet comprised largely of frogs and lizards (Henderson and Powell 2009; Curcio et al. 2012; Fong et al. 2013; Torres et al. 2014). Endothermic prey (birds and rodents) have been reported as a very small proportion in the diet of only two of the largest and stoutest species, the Cuban Giant Trope, *T. melanurus* (Schlegel 1837; Fig. 1), and the Hispaniolan Trope, *T. haetianus* (Cope 1879) (Barbour and Ramsden 1919; Stull 1928; Greene 1983; Schwartz and Henderson 1991). Birds in particular seem to be rare in the diet of those two species; indeed, consuming avian prey has been documented only in *T. melanurus*. Barbour and Ramsden (1919: 189) commented that “a large individual once crawled during the night into the junior author’s aviary and having devoured a dove found it impossible to repass through the wire of the cage,” but they provided no additional data. We presume the reference was to a small species such as the Common Ground Dove (*Columbina passerina*), because it is the only Cuban columbiform of which adults could be consumed by *T. melanurus*; alternatively, it might have been a small chick of a larger species. Stull (1928: 41) mentioned that she “found a small bird in the stomach of No. 8606 M.C.Z.,” but also provided no additional information beyond mentioning the sex of the snake (male), listing scale counts, and noting the locality. Greene (1983: 435) mentioned “two birds” among 26 items obtained from *T. melanurus*, again with no additional details.

More than a century after its collection, we examined the specimen reported by Stull (the only one with a declared voucher number) and deposited in the herpetological collection of the Museum of Comparative Zoology (MCZ), Harvard University (current voucher number: MCZ-R-8606). The snake measured 428 mm snout-vent length (SVL), 51 mm tail length, and weighed 101.9 g (including stomach contents; Fig. 2). It was collected in San Carlos (20°09’21”N, -75°08’56”W; 40 m elevation; datum WGS 84), Guantanamo Province, Cuba, by Charles T. Ramsden, during January–March 1913. Despite the fact that the bird was in an advanced state of digestion (Figs. 2B & 3), it was tentatively identified by the ornithologist Jeremiah Trimble



Fig. 1. An adult Cuban Giant Trope (*Tropidophis melanurus*). Photograph by Raimundo López-Silvero.

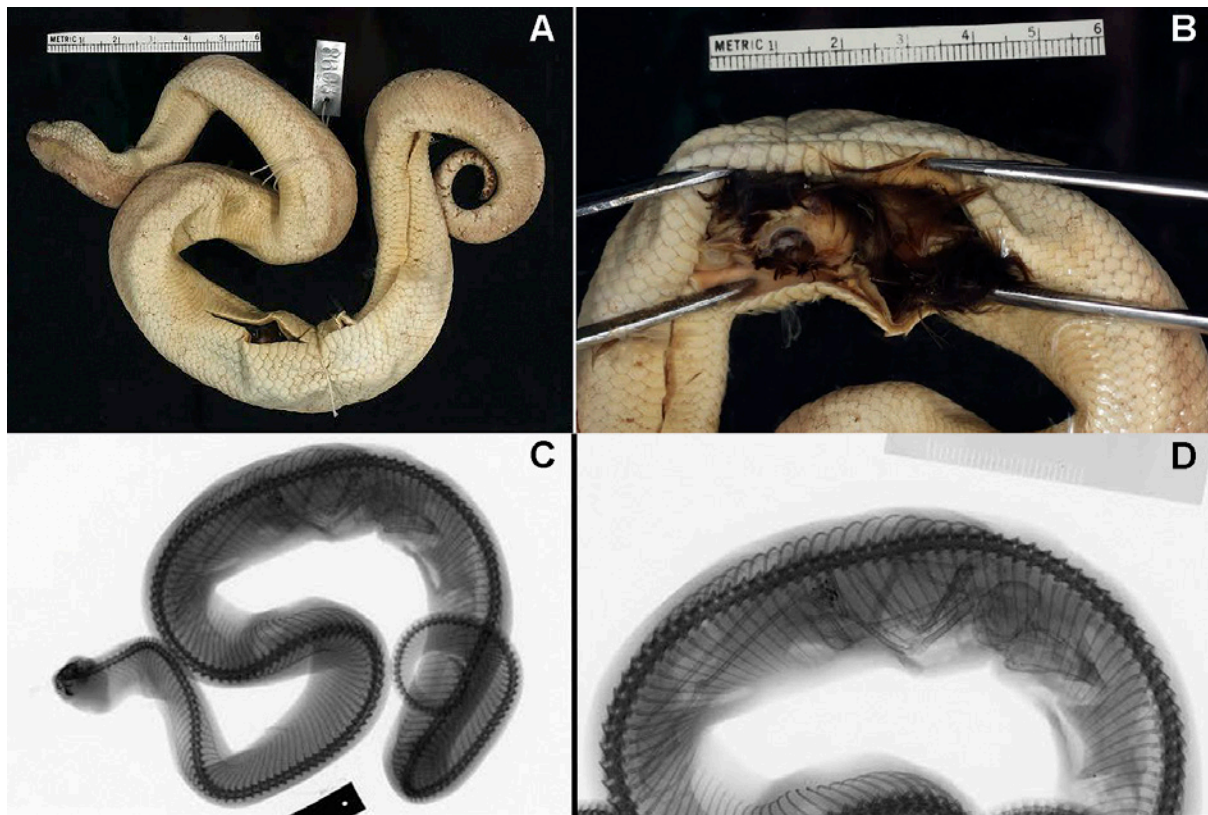


Fig. 2. *Tropidophis melanurus* specimen MCZ-R-8606: external view of the venter (A), the bird in the stomach (B), and radiographs showing the position of bird and relative prey size (C–D). Photographs by Jonathan Woodward.

(Museum of Comparative Zoology) as a Yellow-faced Grassquit, *Tiaris olivaceus* (Passeriformes: Emberezidae; Fig. 4; J. Trimble, pers. comm.) and measured approximately 62 mm (excluding tail). The fully emerged feathers indicated that it was an adult.

The natural range of the Yellow-faced Grassquit extends from eastern Mexico southward to Ecuador, Colombia, and Venezuela; in the West Indies it occurs in Cuba, Hispaniola, Navassa Island, Jamaica, Puerto Rico, and the Cayman Islands, and it was introduced to New Providence (Bahamas) in 1963 and to Oahu (Hawaiian Islands) in at least 1974 (see Lever 2005 for a review). It inhabits primarily open grassy areas, thickets, weeds of abandoned fields, agricultural areas, pinewoods, dry forest, and desert scrub. It is more common in lowlands and at moderate elevations, but can occur on high mountains with suitable habitats. This species nests low above the ground in clumps of grass or in the branches of low trees and scrubs, and aggregates during the non-breeding season (e.g., Raffaele et al. 2003; Latta et al. 2006; Haynes-Sutton et al. 2009; Garrido and Kirkconnell 2011). It is a small (11–12 cm long, 9 g), diurnally active finch that forages primarily on seeds, usually from grass spikes or on the ground (e.g., Pérez and Ayón 2002; Raffaele et al. 2003; Latta et al. 2006; Haynes-Sutton et al. 2009). In Cuba, this species is a very common caged songbird (authors, pers. obs.).

The Cuban Giant Trope is by far the largest species in the family Tropidophiidae, with SVLs usually approaching one meter (Tolson and Henderson 1993; Henderson and Powell 2009; Fig. 5), although Alayo (1951) mentioned having seen a specimen exceeding four feet (> 1,220 mm) in total length in Santiago de Cuba Province. This species feeds mostly on frogs (*Osteopilus septentrionalis*), toads (*Peltophryne* spp.), and lizards (*Anolis* spp.; see Henderson and Powell 2009 for a review). Nevertheless, its large size allows this snake to exploit other trophic resources that would certainly include endotherms, a feat that seems improbable for most of the remaining, smaller congeners. However, the length of MCZ-R-8606 corresponds to a young of the year or barely older (although it appears to be too stout for such an age); such smaller individuals rarely eat endotherms in the wild (Rodríguez-Cabrera et al., in prep.). Like most if not all species of *Tropidophis*, *T. melanurus* is largely a nocturnal forager (see Henderson and Powell 2009 for a review), but it can be active by day in filtered sun and shaded situations (TMR and JTL, pers. obs.). These snakes apparently employ both active and sit-and-wait foraging strategies, and frequently use vegetation, large rocks, and human buildings as foraging sites (e.g., Henderson and Powell 2009). Therefore, the Cuban Giant Trope and the Yellow-faced Grassquit potentially overlap both in space and time, leading to the possibility of a predator-prey relationship.



Fig. 3. The bird (presumably a Yellow-faced Grassquit, *Tiaris olivaceus*) removed from the stomach of MCZ-R-8606 *Tropidophis melanurus*: full body in ventral (A) and dorsal (B) views, detail of the head in lateral view (C), and legs (D), showing the inflamed toes, missing claws, and hyperkeratosis, a typical affliction of caged birds. Photographs by Jonathan Woodward.



Fig. 4. A male Yellow-faced Grassquit (*Tiaris olivaceus*) in nature. Photograph by Tomás M. Rodríguez-Cabrera.

Nonetheless, MCZ-R-8606 was shipped to the MCZ and received by T. Barbour in March 1913, shortly after being collected. Although the collection of MCZ-R-8606 predated Barbour and Ramsden's (1919) review, they did not include any reference to this case. Initially, we had no logical explanation for such an omission, because the small size of the snake would render it unlikely that neither author noticed the bulging midsection. Moreover, evidence from the bird suggests that it was caged for some time before being consumed by the snake; i.e., toes inflamed, some claws missing, and hyperkeratosis (Fig. 3; Soto and Bert 2008; Y. Pino, pers. comm.). Such a foot infection can reflect trauma combined with articular inflammatory processes produced by some bacteria in the genus *Enterobacter* (Soto and Bert 2008). This syndrome is common in caged birds (Soto and Bert 2008), which suggests that the prey might have been offered in captivity just before the snake was killed, preserved, and shipped to the MCZ. Ramsden was known to keep birds



Fig. 5. The senior author holding two very large captive female Cuban Giant Tropes (*Tropidophis melanurus*), both approaching 1 m SVL and exceeding 500 g. Photograph by Raimundo López-Silvero.

in captivity, possibly as a hobby and/or business (R. Teruel, pers. comm.), as reflected in Barbour and Ramsden (1919: 189). Although we cannot rule out the possibility that the bird had escaped from captivity and became an easy meal for the snake before it was collected, the evidence better supports the first explanation.

Acknowledgements

We thank the curators, curatorial associates, and curatorial assistants from the Museum of Comparative Zoology (Harvard University) for their help with MCZ-R-8606; James Hanken facilitated our work, Jeremiah Trimble helped in identifying the bird, and Jonathan Woodward took the photographs. Photographs of MCZ-R-8606 are used with permission of the Museum of Comparative Zoology. We

also thank Rolando Teruel (Centro Oriental de Ecosistemas y Biodiversidad, Santiago de Cuba, Cuba) for help in locating the collecting site for MCZ-R-8606 and providing unpublished data on the lifestyle of C.T. Ramsden. Raimundo López-Silvero allowed us to use his photographs. Finally, Yanaisy Pino, a veterinarian with the Cuban Society of Ornithology, helped diagnose the foot ailment of the bird and provided literature references.

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