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SQUAMATA — LIZARDS

***SCELOPORUS JARROVII* (Yarrow's Spiny Lizard). NOVEL FECAL COLLECTION TECHNIQUE.** Previous literature does not provide detailed descriptions of fecal collection methods from lizards, other than to massage their bellies (Jorge 2013. Parasitol. Res. 112:4001–4007; Dodd 2016. *In* Reptile Ecology and Conservation: A Handbook of Techniques. Oxford University Press, Oxford, UK). We developed a novel and inexpensive method to extract fecal samples from lizards. Our method uses a foam pool noodle (a long cylindrical tube of polyethylene foam that is most commonly used for flotation or recreation in swimming pools). To create the fecal collection tool, a 4 cm-long piece of foam pool noodle was cut, and then sliced longitudinally on one side, so that it could be opened like a book (Fig. 1A). The lizard should then be inserted into the 4-cm piece of foam pool noodle so that it is secured between the front cover and back cover of the foam pool noodle (Fig. 1B). The foam pool noodle should be centered over the abdomen of the lizard, although it is acceptable if the noodle is a little longer or shorter than the full length of the abdomen. Once in place, firmly squeeze on the foam pool noodle in pulses (press and let go, press and let go), which in turn puts gentle pressure on the lizard, for no more than 60 seconds. If a fecal pellet was not passed after 60 seconds, the authors found that continued pressure was unlikely to produce one. In trials with this new method, we experienced a 97% success rate with *Sceloporus jarrovii* (N = 66), and 95% success rates with *S. virgatus* (Striped Plateau Lizard) and *Urosaurus ornatus* (Ornate Tree Lizard; N = 54 and 13, respectively). Although the snout–vent length of individual lizards varied from 4 to 15 cm, we found that a 4-cm length of foam pool noodle worked for this entire size range. A longer cut of pool noodle may be needed for larger lizards. We hope that this note proves useful for researchers searching for a reliable, non-invasive, and cost-effective method to collect fecal samples from lizards.

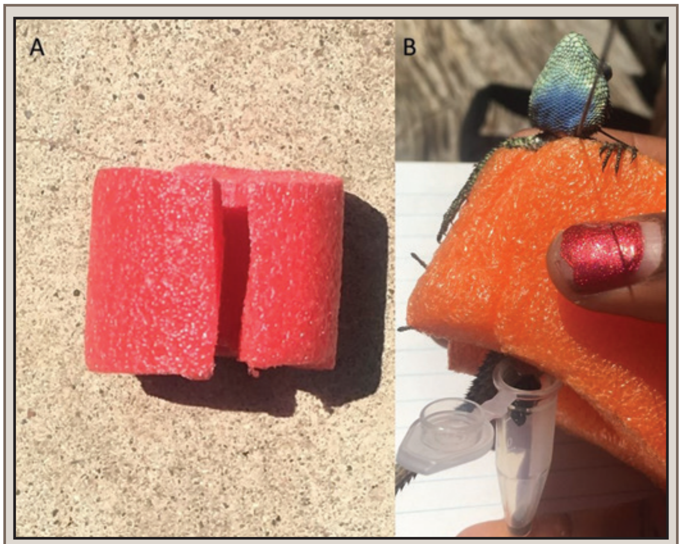

Fig. 1. A) 4-cm piece of a pool noodle with a cut on one side. B) Fecal sample being collected from *Sceloporus jarrovii* via the new pool noodle method.

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SQUAMATA — SNAKES

***ACROCHORDUS JAVANICUS* (Javan Wart Snake). HUNTING AND FEEDING BEHAVIOR.** Distributed throughout Southeast Asia, *Acrochordus javanicus* is a nocturnal, non-venomous aquatic snake that inhabits predominantly freshwater environments such as rivers, streams and estuaries (Lillywhite 1996. Zoo Biol. 15:315–327). These nocturnal snakes are characterized by their loose skin covered in small rough scales that do not overlap; the skin is commonly used in the commercial leather trade (Shine et al. 1995. J. Herpetol. 29:352–360). *Acrochordus* spp. feed mostly on fish (Shine 1986. Copeia. 1986:424–437) but may also prey on crustaceans (Voris and Glodek 1980. J. Herpetol. 14:108–111). Although prey selection is known, observations on hunting behavior in the wild are lacking, where observations on captive specimens can be helpful in elucidating the behaviors that these animals exhibit. Here I describe the hunting and feeding behavior of a wild-caught adult male *A. javanicus* that is currently housed in an aquatic enclosure at the River Safari, Singapore.

The *A. javanicus* is maintained on a diet of live common goldfish (*Carassius gibelio*) (total length = 12 cm) and is fed every 14 days. When *C. gibelio* were introduced into the enclosure, the snake actively foraged in search of the prey, appearing to rely more on chemoreception and tactile sensation than vision. Several occurrences were observed when the prey swam in front of the snake but elicited no response when it was not actively tongue-flicking. However, when the prey made physical contact with any part of the snake, the snake propelled itself in that direction with its mouth wide open. Whenever the snake failed to capture its prey, it used its tail to herd the prey back towards its head with what could be described as a whipping motion. Another hunting technique observed with this individual was the cornering and enveloping of prey with its body, confining the prey to a smaller space before striking.

The individual housed at the River Safari has been observed to consume live prey by means of constriction. However unlike true constrictors, the purpose of constriction seems to aid the positioning of its prey prior to consumption; this behavior has also been observed in *Acrochordus granulatus* (Lillywhite et al., *op. cit.*). The rough scales of this genus may have developed as an adaption to its feeding ecology.

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***MICRURUS PYRRHOCRYPTUS*. FEEDING HABITS.** *Micrurus pyrrhocryptus* (Elapidae) is a widely distributed coral snake that spans the countries of Argentina, Bolivia, Paraguay, and western Brazil (Silva Jr. and Sites 1999. Herpetologica. 57:1–22). Information on its ecology and natural history is sparse and scattered

Table 1. Diversity and size of prey consumed by a captive male *Micrurus pyrrhocryptus* from the Zoológico Municipal Santa Cruz in Santa Cruz de la Sierra, Bolivia. Values reported are mean (± SD). Blank spaces indicate that no data were recorded for that category.

Taxon	N	Total length (cm)	Tail length (cm)	Mass (g)
Amphisbaenidae				
Amphisbaena borelli	11	20.5 (± 1.8)	1.8 (± 0.4)	3.4 (± 0.9)
Amphisbaena camura	1	18		10.5
Amphisbaena sp.	2	21.3(± 5.3)		2.8
Gymnopthalmidae				
Bachia dorbignyi	1	14		1.1
Colubridae				
Erythrolamprus sp.	1	59.3	10.5	30.0
Dipsas turgidus	9	34.1(± 9.5)	5.6 (± 1.8)	11.4 (± 10.9)
Leptodeira annulata	1			16.0
Oxyrhopus guibei	1			
Tantilla melanocephala	1			
Xenodon pulcher	1	17.5	2.0	4.0
Leptotyphlopidae				
Epictia sp.	1	23.0	0.8	9.75
Typhlopidae				
Typhlops sp.	1	11.0	0.5	1
Viperidae				
Bothrops mattogrossensis	6			4.8 (± 0.3)

in reports on populations from Argentina and Brazil (Roze 1996. Coral Snakes of the Americas: Biology, Identification and Venoms. Krieger Publishing Company, Malabar, Florida; Leynaud et al. 2008. Stud. Neotrop. Fauna E 43:19–24; Ávila et al. 2010. S. Amer. J. Herpetol. 5:97–101). Under natural conditions, *M. pyrrhocryptus* exhibits typical coral snake dietary preferences and consumes snakes and amphisbaenians (Ávila et al., *op. cit.*). Here we present observations on the feeding habits of a wild-caught captive male *M. pyrrhocryptus* (total length [ToL] = 95.0 cm; tail length [TL] = 5.8 cm) housed at the Zoológico Municipal Santa Cruz in Santa Cruz de la Sierra, Bolivia.

From August 2018 to April 2019, we periodically offered the *M. pyrrhocryptus* a total of 41 live snakes and amphisbaenians as prey. On 37 occasions, the *M. pyrrhocryptus* consumed the prey item offered (Table 1). However, in four instances, the prey was not consumed, including three *Amphisbaena camura* (mean ToL ± SD = 28.0 ± 1.7 cm; mean TL = 2.9 ± 0.1 cm; mean body mass = 14.4 ± 5.1 g) and one *Dipsas turgidus* (ToL = 46.5 cm; TL = 8.1 cm; mass = 30.1 g). From these observations under captive conditions, it appears that *M. pyrrhocryptus* will readily consume snakes and other elongate vertebrates as has been reported for other species of *Micrurus* (Roze 1996, *op. cit.*; Sosa et al. 2013. Herpetol. Rev. 44:155).

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***PITUOPHIS MELANOLEUCUS MUGITUS* (Florida Pine Snake). LONGEVITY AND TUMOR DEVELOPMENT.** *Pituophis melanoleucus mugitus* is found on the Atlantic Coastal Plain from South Carolina southward throughout much of peninsular Florida, USA. Information on the life history of this species is summarized by Krysko et al. (2019. Amphibians and Reptiles of Florida. University of Florida Press, Gainesville), but no information is available on the longevity of wild-caught individuals. Maximum longevity in captivity is for a wild-caught male held 18 y, 11 m, 21 d by Zoo Atlanta (Snider and Bowler 1992. SSAR Herpetol. Circ. No. 21).

On 4 May 1987 at 2100 h, I captured a subadult male crossing County Road 29 (27.25870°N, 81.30521°W, WGS 84; 25.9 m elev.) northeast of Archbold Biological Station in Highlands County, Florida, USA. The snake was retained because the area to the west was being actively bulldozed for residential development; at the time, the species was not protected under state law. The snake lived in captivity until 30 May 2019 when it succumbed to cancer. Numerous large tumors formed external to the large intestinal tract anterior to the vent, thus inhibiting evacuation of fecal matter. An attempt to remove the tumors was unsuccessful. At the time of death, the snake had an SVL = 106 cm and tail length = 15 cm. The snake and its tumors were deposited in the herpetology collection at the Florida Museum of Natural History (UF 188718).

The minimum age of *P. m. mugitus* reported herein was 32 y. Although not measured at capture, the male was not considered to be an adult at that time. In *P. melanoleucus mugitus*, sexual maturity is reached at ca. 3 y (Krysko et al., *op cit.*), thus making it probable that this individual was 1–2 y older than 32 at death. In captivity, other subspecies of *P. melanoleucus* have reached 20–22 y of age (Animal Diversity Web, Museum of Zoology, University of Michigan; https://animaldiversity.org/accounts/Pituophis_melanoleucus/#lifespan_longevity), but this record of 32+ years for *P. m. mugitus* extends the maximum known age considerably. Reports of non-epidermal carcinomas are rare in snakes (e.g., Petterino et al. 2006. Vet. Clin. Pathol. 35:95–100), so this observation may be of interest to veterinary pathologists.

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