

The data verify the activity pattern reported by Rodda et al. (*op. cit.*), support an activity pattern hypothesized by Gibbons and Semlitsch (*op. cit.*) for tropical snakes in seasonal environments, and suggest that seasonal activity patterns can be discerned for some species of tropical snakes using highway mortality statistics.

Submitted by **MICHAEL JAMES MCCOID**, 2121 Ivy Street, Port Charlotte, Florida 33952, USA (e-mail: mccooid@isni.net), and **REBECCA A. HENSLEY**, Fish and Wildlife Conservation Commission, Florida Marine Research Institute, 1481 Market Circle, Port Charlotte, Florida 33953, USA.

BOTHROPS CAMPBELLI (Campbell's Lancehead). **DIET and REPRODUCTION.** The poorly known pitviper *Bothrops campbelli* Freire 1991 inhabits lower montane wet forests and cloud forests along the western versant of the Cordillera Occidental of the Andes in Colombia and Ecuador (Kuch 1997. Bull. Zool. Nomenclature 54:245–249). Here we provide the first data on diet and reproduction in this species. A large female *B. campbelli* (SVL 920 mm, tail length 137 mm), collected in Huagal, Cantón Pallatanga, Province of Chimborazo, Ecuador (1500 m elevation; ca. 79°02'W, 2°10'S) on 29 April 1992 by A. Lema, contained a partly digested, rat-sized rodent. In addition, this snake contained 36 follicles measuring 10 mm in diameter, nine of 5–10 mm, and about 50 of 2–4 mm. The specimens are deposited in the herpetological collection of the Instituto Nacional de Higiene y Medicina Tropical, Guayaquil (INHMT 2622). The reproductive potential of this *B. campbelli* resembles that of a large *B. microphthalmus* (750 mm SVL), which contained 36 embryos (Kuch and Freire 1995. Herpetozoa 8:81–83). *Bothrops microphthalmus* is found in comparable habitat and altitude in the Amazonian versant of the Andes in Colombia, Ecuador, and Peru.

Submitted by **ANTONIO FREIRE**, Departamento Ofídios, Instituto Nacional de Higiene y Medicina Tropical "Leopoldo Izquierda Pérez," Casilla 3961, Guayaquil, Ecuador, and **ULRICH KUCH**, Sektion Herpetologie, Forschungsinstitut Senckenberg, Senckenberganlage 25, D-60325 Frankfurt, Germany (e-mail: kuch@stud.uni-frankfurt.de).

BOTHROPS NEUWIEDI PAULOENSIS (Jararaca Rabo-de-osso). **PREDATION.** Records of predation on neotropical snakes are scarce. Here we report predation on *Bothrops neuwiedi pauloensis* by the burrowing owl *Athene cunicularia* (Aves: Strigidae). The observation occurred on 7 September 1998 at 2020 h in Parque Nacional da Emas (18°06'S, 52°55'W, 760–880 m elev.), municipality of Mineiros, Goiás, Brazil. *Bothrops neuwiedi pauloensis* occurs in high densities in open habitats in the park. The predation occurred in a recently burned area of "campo limpo" (open grasslands). The snake (young male, 365 mm SVL, 65 mm tail length) was found decapitated on the ground, where the owl left it as we approached. The snake was still showing motor reflexes, indicating that it had just been attacked. A termite mound (1.6 m high), 7 m from the prey, was apparently used by the owl as a perch, similar to the hunting tactics described by Martins and Egler (1990. Rev. Bras. Biol. 50:579–584). There were many bird droppings on the ground near this hunting perch, indicating fre-

quent use of the site by the predator. Snakes are among prey items of *Athene cunicularia*, and no reports of predation on *B. neuwiedi* are available (Clark et al. 1997. J. Raptor Res. Report 9:145–170). The snake was deposited in the herpetological collection of the Instituto Butantan (IB 59909).

Submitted by **PAULA H. VALDUJO** and **CRISTIANO NOGUEIRA**, Laboratório de Herpetologia, Instituto Butantan, Av. Vital Brasil, 1500, CEP 05503-900, São Paulo, SP, Brazil, and Depto. de Ecologia Geral, Instituto de Biociências, Universidade de São Paulo, CP. 111461, CEP 05508-900, São Paulo, SP, Brazil (e-mail: paulahv@ib.usp.br).

CROTALUS SCUTULATUS SCUTULATUS (Mojave Rattlesnake). **DEFENSIVE BEHAVIOR.** Neck spreading is a defensive display that previously has been reported in rattlesnakes only for *Crotalus scutulatus salvini* (Glenn and Lawler 1987. Herpetol. Rev. 18:15–16). An adult *C. s. scutulatus* ca. 1 m total length (TL) was AOR at 1700 h, 13 October 1996, on Hwy 54, 30 mi north of Van Horn, Culberson County, Texas, USA. A photograph of its defensive display showed the neck immediately posterior to the head to be spread laterally and the cervical spine to be straight and aligned with the head (Fig. 1). Based on an estimated SVL/TL proportion, this individual appears to be a male.

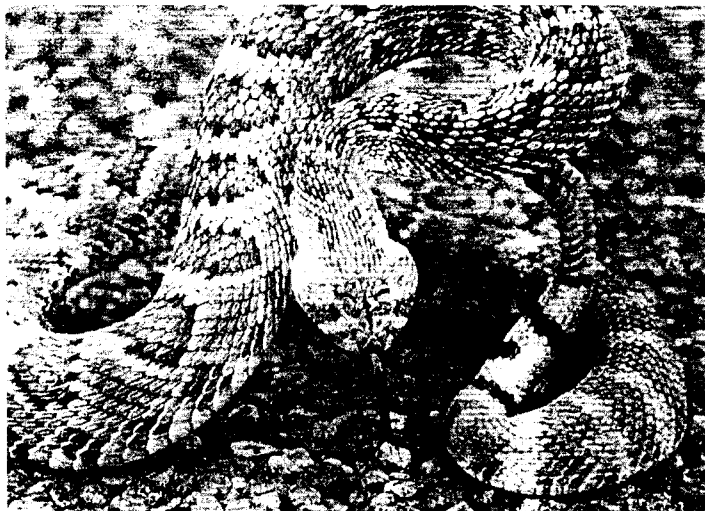


FIG. 1. Defensive display of *Crotalus s. scutulatus*, illustrating the neck spreading described in the text.

Submitted by **JAMES F. W. BROWN**, **WENDY M. MARDEN**, 4305 North Sanders Road, Tucson, Arizona, 85743, USA, and **DAVID L. HARDY, SR.**, 585 South Main Avenue, Tucson, Arizona, 85701-2229, USA.

EUNECTES MURINUS (Green Anaconda). **CANNIBALISM.** One instance of cannibalism in the green anaconda (*Eunectes murinus*) has been reported in the literature (O'Shea 1994. Herpetol. Rev. 25:124). This observation involved a female eating a smaller conspecific of unknown sex. Here, we report three other cases of female anacondas eating conspecifics. These observations occurred during the breeding (dry) season in the Venezuelan llanos, Distrito Muñoz, Apure State (7°30'N, 69°18'W).

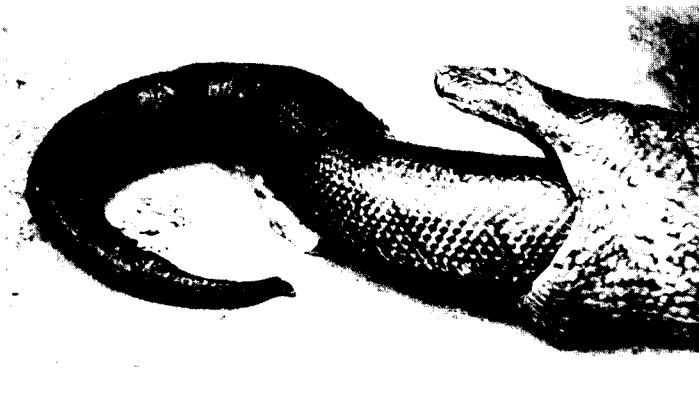


FIG. 1. Female anaconda regurgitating a male (note the hemipenis). Photograph courtesy of Tony Rattin.

The first observation involved a large female (434.7 cm total length [TL], 40 kg) that was caught 27 April 1995 next to a breeding aggregation (Rivas 1999. *Life History of the Green Anaconda with Emphasis on its Reproductive Biology*. Ph.D. dissertation. Univ. Tennessee, Knoxville, 269 pp.), but not participating in it. The snake had the engorged stomach that indicates a recent meal. After being put in a cage, she regurgitated a male anaconda (42 cm tail length, 283 cm estimated TL, 5.7 kg, Fig. 1). On 28 May 1996, at the end of the breeding season, we discovered another female constricting a medium-sized male (230 cm TL; 5 kg). The male was dead by the time we found it, and the female (370 cm estimated TL) managed to escape when we tried to capture her. Judging by the girth and overall condition of the snake, she was most likely breeding, and probably had just recently finished her mating activity. Lastly, on 18 March 1997 we collected a fecal sample that contained anaconda scales. The sample was from a female anaconda (300 cm TL, 14.8 kg) that was breeding that season.

All four records of cannibalism in green anacondas involve cannibalistic females, and the sex of the cannibalized individual has been male in the two instances in which sex could be determined. This asymmetry is probably a consequence of the strong sexual size dimorphism found in the species, with females much larger than males (Rivas, *op. cit.*). Green anacondas concentrate around the more permanent water sources during the dry season, and at this time breeding occurs (Rivas, *op. cit.*). Male anacondas looking for water and/or breeding females appear to be especially vulnerable to cannibalism by females. After mating, pregnant females do not eat for seven months (Rivas, *op. cit.*). It is possible that breeding females eat their mating partners in order to help them survive the long fast associated with pregnancy.

We thank The Wildlife Conservation Society and The National Geographic Society for funding this research, and COVEGAN for allowing us to work on their land. We also thank G. M. Burghardt for comments on the manuscript.

JESÚS A. RIVAS, Graduate Program in Ethology, Department of Ecology & Evolutionary Biology, University of Tennessee, Knoxville, Tennessee 37996-0900, USA (e-mail: anaconda@prodigy.net), and **RENEE Y. OWENS**, Vegueros Wildlife Biology, 348 Field Street, Brockton, Massachusetts 02302, USA. Current address for correspondence (JAR and RYO): 17126 Lawson Valley Road, Jamul, California 91935, USA.