

Nota Científica
(Short Communication)

HELICOPS MODESTUS (OPHIDIA: DIPSADIDAE): REPRODUCTION

Recibido: 30/01/2014; aceptado: 07/04/2015

Maia, D. C., da Silva, A. G. & Travaglia-Cardoso, S. R. 2015. *Helicops modestus* (Ophidia: Dipsadidae): reproducción. *Acta Zoológica Mexicana* (n. s.), 31(2): 333-334.

RESUMEN. Los datos sobre la reproducción de serpientes son escasos, sobre todo porque es difícil encontrar a estos organismos en su hábitat natural. Se proporcionan algunos datos inéditos sobre la reproducción de *Helicops modestus* (Günther, 1861), un dipsádido con amplia distribución geográfica en Brasil.

The genus *Helicops* is widely distributed in South America (Giraud 2001). The species *Helicops modestus* (Günther, 1861) occurs in Southern, Southeastern and Midwestern Brazil (Costa *et al.* 2009, Braz 2013, Kawashita-Ribeiro *et al.* 2013), with one record for the Northeastern region (Freitas & Silva 2011). They have morphological adaptations to the aquatic environment of different habitats (Cunha & Nascimento 1978, Scartozzoni 2005). *H. modestus* feeds mainly on fishes and occasionally on amphibians (Costa *et al.* 2009, Marques *et al.* 2009, Barbo *et al.* 2011). It is a viviparous species with some aspects of its reproduction unknown. This note presents information on birth, litter size and mass, and unpublished data about sexual dimorphism in *H. modestus* neonates.

One pregnant specimen of *H. modestus*, 590 mm snout-vent length (SVL), 180 mm tail length (TL), and 144 g mass after parturition, was collected in Barueri, São Paulo (23°51'S 46°87'W) and brought to Instituto Butantan where it was kept in captivity. On January 31, 2011, it gave birth to 24 snakes. The relative clutch mass (RCM, see Shine, 1980) was 0.34. The RCM was high but similar to the values reported for other snakes of the genus *Helicops* (see Scartozzoni 2009).

Male neonates ($n = 15$ / mean \pm SD) measured 146 ± 11.8 mm (SVL, range = 120-160 mm); 56.3 ± 5.8 mm (TL, range = 45-60 mm), and weighed 2.03 ± 0.4 g (range = 1.1-2.5 g). Female neonates ($n = 9$ / mean \pm SD) measured 146.1 ± 10.2 mm (SVL, range = 120-155 mm); 44.4 ± 6.8 mm (TL, range = 30-50 mm) and weighed 2.1 ± 0.3 g (range = 1.3-2.3 g).

Sexual dimorphism among adults is well reported for snakes, but few studies show the sexual dimorphism in

neonates (King *et al.* 1999). Male and female neonates of this litter did not differ significantly in mean SVL ($t = 0.02$; $P = 0.98$) or mass ($t = 0.42$; $P = 0.67$), but sexual dimorphism in tail length was observed with males being born with a longer tail ($t = 4.54$; $P = 0.0002$). For *H. modestus*, sexual dimorphism in body size (females larger) and tail size (males with larger tail) was reported in adults (Scartozzoni 2009). Therefore, here we suggest ontogenetic variation in SVL, since among adults the females are significantly larger (SVL). Additional neonate data of this species should be analyzed to corroborate our findings.

LITERATURE CITED

- Barbo, F. E., Marques, O. A. V., & Sawaya R. J.** 2011. Diversity, natural history, and distribution of snakes in the municipality of São Paulo. *South American Journal of Herpetology*, 6: 135-160.
- Braz, H. B. P.** 2013. Evolução da viviparidade nas serpentes da tribo Hydropsini. Tese de Doutorado, Faculdade de Medicina Veterinária e Zootecnia, Universidade de São Paulo, São Paulo.
- Costa, H. C., Pezzuti, T. L., Leite, F. S. F. & Científicos, C.** 2009. *Helicops modestus* (water snake): Prey. *Herpetological Bulletin*, 109: 35-36.
- Cunha, O. R. & Nascimento, F. P.** 1978. Ofídios da Amazônia. X: as cobras da região leste do Pará. *Publicações Avulsas, Museu Paraense Emílio Goeldi*, 31: 1-218.
- Freitas, M. A. & Silva, T. F. S.** 2011. Geographic distribution: Serpentes: *Helicops modestus*. *Herpetological Review*, 42: 394.
- Giraud, A. R.** 2001. *Serpientes de la Selva Paranaense y del Chaco Húmedo*. Literature of Latin America, Buenos Aires. 328 pp.
- Kawashita-Ribeiro, R. A., Ávila, R. W. & Morais, D. H.** 2013. A New Snake of the Genus *Helicops* Wagler, 1830 (Dipsadidae, Xenodontinae) from Brazil. *Herpetologica*, 69: 80-90.
- King, R. B., Bittner, T. D., Queral-Regil, A. & Cline, J. H.** 1999. Sexual dimorphism in neonate and adult snakes. *Journal of Zoology (London)*, 24: 19-28.
- Marques, O. A.V., Pereira, D. N., Barbo, F. E., Germano, V. J. & Sawaya, R. J.** 2009. Os Répteis do Município de São Paulo: diversidade e ecologia da fauna pretérita e atual. *Biota Neotropica*, 9(2):139-148.
- Scartozzoni, R. R.** 2009. Estratégias reprodutivas e ecologia alimentar de serpentes aquáticas da tribo Hydropsini (Dipsadidae, Xenodontinae). Tese de Doutorado, Programa de Interunidades em Biotecnologia Instituto Butantan e Univesidade de São Paulo, São Paulo.

- Scartozzoni, R. R.** 2005. Morfologia de serpentes aquáticas neotropicais: um estudo comparativo. Tese de Mestrado, Instituto de Biociências, Universidade de São Paulo, São Paulo.
- Shine, R.** 1980. Costs of reproduction in reptiles. *Oecologia*, 46: 92-100.

DANUSA C. MAIA, ANGÉLICA G. DA SILVA & SILVIA R. TRAVAGLIA-CARDOSO

Museu Biológico, Instituto Butantan, Avenida Vital Brasil, 1500, 05503-900. São Paulo, SP, Brasil. <danusa.maia@butantan.gov.br>