

NATURAL HISTORY NOTES

SALVADORA MEXICANA (Mexican patchnose snake): COMBAT BEHAVIOR. The difficulties in monitoring much of the natural history in secretive snake species warrants the documenting of snake behavior when it is observed (Gillingham *et al.*, 1977). Male combat has been documented in many species of snakes (Gillingham, 1987), however the full extent to which male combat occurs among most snake species likely remains unknown or undocumented (Shine, 1994).

Although seven species make up the genus *Salvadora* (*bairdi*, *deserticola*, *grahamiae*, *hexalepis*, *intermedia*, *lemniscata*, and *mexicana*) much of the basic natural history for the genus is lacking (Ernst & Ernst, 2003). Some reproductive data have been collected for species within *Salvadora* (Vitt, 1978; Stebbins, 1985; Goldberg, 1995; Werler & Dixon, 2000; Ernst & Ernst, 2003) but to our knowledge male combat behavior has not been reported for the genus.

On 9th June 2007 (15:19 h) we observed two male *Salvadora mexicana* during a combat session in a tropical deciduous forest just west of Ostuta in Michoacán, México (18.51394N, 103.46616W, WGS84; 171 m elev.). The combatants (Figure 1) had begun their bout on a hill near the side of the road before we first observed them. These individuals were intertwined with one another in stereotypical combat behavior (Lowe, 1948) without indication of biting or serious aggression between them. This combat bout took place over a period of ca. 3 min and five photographs were taken of the account (UTA digital images 1078–1082), during which time they were either oblivious to or undaunted by our movements. Both males appeared similar in length and mass. They quickly separated as we rushed towards them and one of the two individuals was collected (UTA R-55373). This adult male (SVL 85.7 cm, TBL 104.8 cm) was of reproductive age and possibly fighting for territorial dominance (see Lowe & Norris, 1950), however Gillingham (1987) states that there is little evidence for territoriality in snakes. This documents the first observation reported of male combat in *S. mexicana* and the genus *Salvadora*. These observations suggest that other species in the genus may conduct similar male combat as well.

ACKNOWLEDGEMENTS

Financial support for this trip was provided by grants to E. N. Smith from Bioclon and the National Science Foundation (DEB-0416160). We thank C.

M. Sheehy, III and S. A. Orlofske for providing helpful comments to the manuscript.

REFERENCES

- Ernst, C. H. & Ernst, E. M. (2003). Snakes of the United States and Canada. Smithsonian Institution Press.
- Gillingham, J. C. (1987). Social behavior. In: *Snakes: Ecology and Evolutionary Biology*, pp. 184–209. Siegel, R. A., Collins, J. T., & Novak, S. S. (Eds.). Macmillan Publishing Company.
- Gillingham, J. C., Carpenter, C. C., Brecke, B. J. & Murphy, J. B. (1977). Courtship and copulatory behavior of the Mexican milk snake, *Lampropeltis triangulum sinaloae* (Colubridae). *Southwest. Nat.* **22**, 187–194.
- Goldberg, S. R. (1995). Reproduction in the western patchnose snake, *Salvadora hexalepis*, and the mountain patchnose snake, *Salvadora grahamiae* (Colubridae), from Arizona. *Southwest. Nat.* **40**, 119–120.
- Lowe, C. H. (1948). Territorial behavior in snakes and the so-called courtship dance. *Herpetologica* **4**, 129–135.
- Lowe, C. H. & Norris, K. S. (1950). Aggression behavior in male sidewinders, *Crotalus cerastes*, with a discussion of aggressive behavior and territoriality in snakes. *Nat. Hist. Misc. Chic. Acad. Sci.* **66**, 1–13.
- Shine, R. (1994). Sexual size dimorphism in snakes revisited. *Copeia* **1994**, 326–346.
- Stebbins, R. A. (1985). field guide to the amphibians and Reptiles of Western North America. Houghton Mifflin.
- Vitt, L. J. (1978). Caloric content of lizard and snake (Reptilia) eggs and bodies nad the conversion of weight to caloric data. *J. Herpetol.* **12**, 65–72.
- Werler, J. E. & Dixon, J. R. (2000). Texas Snakes: Identification, Distribution, and Natural History. University of Texas Press.

ROBERT C. JADIN¹ and URI OMAR GARCÍA-VÁZQUEZ²

¹*Amphibian and Reptile Diversity Research Center, Department of Biology, University of Texas at Arlington, Arlington, Texas, 76019, USA. snakeman1982@hotmail.com*

²*Museo de Zoología, Facultad de Ciencias, Universidad Nacional Autónoma de México, A.P. 70-399, C.P. 04510, México D.F. -m*

Natural History Notes



Figure 1. Two combatant male *Salvadora mexicana* in Michoacán, México (UTA digital image 1082). © R. Jadin