

S
6
IX
I

507.73
P4P6842

ISSN 0097-4463

ANNALS of CARNEGIE MUSEUM

CARNEGIE MUSEUM OF NATURAL HISTORY

4400 FORBES AVENUE • PITTSBURGH, PENNSYLVANIA 15213

VOLUME 55

23 MAY 1986

ARTICLE 6

RESULTS OF THE CARNEGIE MUSEUM OF NATURAL HISTORY EXPEDITIONS TO BELIZE. I. SYSTEMATIC STATUS AND GEOGRAPHIC DISTRIBUTION OF *SIBON NEILLI* (REPTILIA, SERPENTES)

C. J. McCoy

Curator, Section of Amphibians and Reptiles

ABSTRACT

The nominal species *Sibon neilli* Henderson, Hoevers and Wilson (type-locality, "vicinity of Belize City, Belize") is shown to be a southern subspecies of *Sibon sanniola* Cope (type-locality, "Chichen Itza, Yucatan, Mexico"), confirming the arrangement proposed by Kofron (1985). *Sibon sanniola neilli* differs from *Sibon s. sanniola* in having a banded, rather than spotted, color pattern, and higher ventral and subcaudal scale counts.

INTRODUCTION

Sibon neilli Henderson, Hoevers, and Wilson (1977) is an enigmatic member of the snake fauna of Caribbean Central America. The species was described from a unique type-specimen, collected in "the vicinity of Belize City, Belize District, Belize." Henderson et al. (1977) recognized that *Sibon neilli* is very similar to *S. sanniola*, a species endemic to the northern part of the Yucatan Peninsula, but diagnosed *S. neilli* on the basis of higher ventral and subcaudal scale counts, a different pattern of supralabial, postocular, and temporal scale contacts, and a banded color pattern. Kofron (1985), without examining addi-

Submitted 24 September 1985.

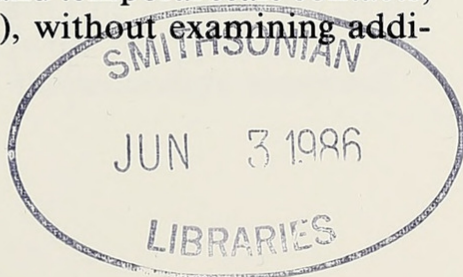


Table 1.—*Ventral and subcaudal scale counts in Sibon sanniola and S. neilli.*

Population	Ventals		Subcaudals	
	♂♂	♀♀	♂♂	♀♀
<i>S. sanniola</i> *	145-159 (Mean = 153.7 ± .64) N = 26	144-160 (Mean = 151.8 ± .79) N = 24	67-83 (Mean = 75.0 ± .61) N = 24	58-74 (Mean = 65.0 ± .82) N = 23
<i>S. neilli</i> **	162		88	
<i>S. neilli</i> ***	153-162 (Mean = 159) N = 3	146, 157	83-89 (Mean = 86.7) N = 3	70, 81

* Yucatán and Quintana Roo, México.

** Holotype only.

*** All Belize and Guatemala specimens, except FMNH 4247.

tional specimens of *S. neilli* and without comment, considered *S. neilli* a subspecies of *Sibon sanniola*.

During field work in Belize in 1984 we collected a specimen of *Sibon* at Chaa Creek, Cayo District, that has the characteristic banded dorsal pattern of *S. neilli*. In addition, there is a specimen in Carnegie Museum of Natural History from El Petén, Guatemala, that also fits the description of *Sibon neilli*. I have compared these specimens with the holotype and previously only known specimen of *S. neilli*, with all other *Sibon* of this group available from Belize, and with an extensive series of *Sibon sanniola* from Yucatán and Quintana Roo, México (see Specimens Examined).

RESULTS

Ventral and subcaudal scale counts.—Data summaries for ventral and subcaudal scale counts for *Sibon sanniola* and *Sibon neilli* are presented in Table 1. Both the ventral and subcaudal counts for the holotype of *Sibon neilli* exceed the known ranges for these counts in *S. sanniola*, as pointed out by Henderson et al. (1977). The range of ventral counts for males in the "southern" population overlaps the range for the "northern" population, as do the ranges of ventral counts for females in the two populations. Subcaudal counts in males barely overlap in the two populations, and overlap slightly in females. Although the sample size for the southern population is small, it appears that the differences in segmental counts are consistent. A specimen from "British Honduras" (FMNH 4247, male) has 153 ventrals and 67 caudals, both counts within the ranges for the northern population.

Supralabial-postocular-temporal contact.—The holotype of *Sibon neilli* has 9-9 supralabials, with the 4th, 5th, and 6th entering the orbit. The 7th supralabial is in contact with the lower postocular and the primary temporal. Henderson et al. (1977) regarded the 7th supralabial-postocular-temporal contact as a distinctive character of *S. neilli*, stating that it "occurs occasionally in *S. sanniola*, but in no other species of *Sibon*." In reality, this is the contact pattern that is most common in *Sibon sanniola*. In a series of 51 *S. sanniola* from Yucatán and Quintana Roo the 7th supralabial contacts only the lower postocular and primary temporal 88% of the time (right and left sides of the head scored separately). In the remaining 12% the upper tip of the 7th supralabial, posterior angle of the lower postocular, and anterior tips of the primary and secondary temporals make a single point contact. In specimens with the more common pattern, the anterior tip of the primary temporal makes a broad contact with the postocular, preventing contact of the 7th supralabial with the secondary temporal.



Fig. 1.—*Sibon sanniola neilli* (CM 105981), Chaa Creek, Cayo Dist., Belize; from a Kodachrome photo of the living specimen by Paul S. Freed.

Color pattern.—The holotype of *Sibon neilli* has a series of 34 dark dorsal crossbands on a lighter ground color, faded almost to white in the specimen. The widest crossbands are $2\frac{1}{2}$ scales long at the middorsal line, and taper to about $1\frac{1}{2}$ scales at the lowermost dorsal scale rows. The edges of the bands are jagged, not straight. The bands extend ventrally only to the outer ends of the ventral scales. The center of the belly is marked with a series of roughly paired, longitudinal dark “dashes,” each usually two ventral scales long. There are about 21 dark crossbands on the tail, which become increasingly crowded toward the tail tip. The dark nuchal band extends ventrally to the edges of the ventrals, and anteriorly as a middorsal dark bar that reaches the frontal scale. The holotype is much faded, resulting in enhanced contrast between the dorsal dark bands and the interspaces (Henderson et al., 1977:fig. 1).

The specimen from Chaa Creek, Belize (CM 105981), has 42 dorsal body bands that taper ventrally from $2\frac{1}{2}$ to $1\frac{1}{2}$ scales wide, and 22 bands on the tail. The nuchal band has a broad anterior extension that reaches the parietals, and the top of the head is lighter brown. The sides of the head are much lighter. The belly is lightly marked with indistinct brown smudges. The only significant difference between the

pattern of this specimen and that of the holotype is the amount of contrast between the dorsal bands and the interspaces. In life, the dorsal bands of CM 105981 were medium brown, and the interspaces dark tan, providing minimal contrast (Fig. 1).

The specimen from Las Cañas, Guatemala (CM 58282), has 38 barely discernible dark bands on the body, and a banded tail. The bands are only slightly darker than the medium brown ground color. The head and nuchal pattern are typical, and the belly is moderately well-marked with longitudinal dashes.

The typical color pattern of *Sibon sanniola* is a series of dark, light-edged middorsal spots, frequently fused to form an irregular "zig-zag" line, on a light brown to ash gray background. The lateral and ventrolateral spot series may either persist, be reduced, or fade completely. The tail is spotted along the middorsal line. The belly typically is marked with pairs of dark longitudinal dashes. The nuchal band, with anterior extension onto the head, is as described for *Sibon neilli*.

A juvenile specimen from Xunantunich, Belize (MCZ 56994, 180 mm total length), has a pattern of about 47 middorsal spots (many fused), and two series of lateral dark spots on each side. A very similar pattern occurs in juvenile *S. sanniola* (CM 49739, 140 mm; CM 49754, 156 mm). This suggests that the banded adult pattern of *S. neilli* may result from ontogenetic fusion of the dorsal, lateral, and ventrolateral spot series, which remain discrete in *S. sanniola*.

CONCLUSIONS

In size, habitus, and most details of scutellation *Sibon neilli* and *Sibon sanniola* are identical. The supposedly diagnostic arrangement of supralabial, postocular, and temporal scales of *S. neilli* actually is consistent with the pattern usually found in *S. sanniola*. Only the color pattern and numbers of ventral and subcaudal scales are distinctive characters of the *S. neilli* population. Although Kofron (1983) shows the range of *S. sanniola* (including *S. neilli*) as being continuous from northern Yucatán and Quintana Roo southward into Belize and El Petén, no specimens are available from the critical areas where intergradation would be expected (Lee, 1980 and personal communication). The southernmost precise locality for *Sibon sanniola* is Felipe Carrillo Puerto, Quintana Roo (Peters, 1953), although FMNH 4247 from "British Honduras" has both scale counts and color pattern typical of *S. sanniola*. The range of *S. neilli* extends from coastal central Belize (Belize City), southwestward into El Petén, Guatemala. Despite the apparent hiatus, I assume that the range of the species is continuous, as there is no ecological discontinuity between southern Quintana Roo and central Belize, and I interpret the morphological differences be-

tween the southern and northern populations as clinal variation within a single species.

Clinal variation is common in colubrid snake species that have extensive latitudinal ranges on the Yucatan Peninsula. Such clinal variation typically involves either the color pattern or segmental counts, or both. Examples are *Conophis lineatus* (Wellman, 1963), *Leptodeira frenata* (Duellman, 1958), *Ninia sebae* (Schmidt and Rand, 1957), and *Leptophis mexicanus* (Oliver, 1948), to cite a few of many species that illustrate this variational pattern. I conclude that Kofron (1985) was correct in allocating the name *Sibon neilli* to the southern population of *Sibon sanniola* that is characterized by a banded color pattern and higher ventral and subcaudal scale counts.

SPECIMENS EXAMINED

Sibon sanniola neilli. —BELIZE: Belize Dist., vicinity of Belize City (MPM 8929, holotype). Cayo Dist., Chaa Creek, 5 mi. S San Ignacio (CM 105981); vicinity of Augustine (MPM 8208); Xunantunich (MCZ 56994). GUATEMALA: El Petén, Las Cañas (Municipality San Luis) (CM 58282). Total 5 specimens.

Sibon sanniola sanniola. —BELIZE: "British Honduras" (FMNH 4247). MÉXICO: Quintana Roo, Pueblo Nuevo X-Cán (CM 45778–45785, 46844–46845, 46881–46883, 49056, 49062, 49136, 49154, 49159, 49163). Yucatán, Chichén Itza (FMNH 20609, 20613, 26988, 36257–36258, 36268, 36272, 36276, 36285, 36287, 36289, 36296); Kantuníl (FMNH 36264, 36286, 36288, 36270); Libre Unión (FMNH 36259, 36262, 36266, 36273, 36278, 36280–36283, 36290, 36294–36295); Pisté (CM 46955–46958, 47004, 47142–47148, 49734–49741, 49742–49748, 49749–49756); Progreso (FMNH 40734–40735); Yokdzonot (FMNH 36261, 36263, 36265, 36267, 36269, 36271, 36274–36275, 36277, 36279, 36284, 36290–36293, 36297). Total 101 specimens.

ACKNOWLEDGMENTS

Field work in Belize was supported by a grant from the O'Neil Museum Trust, Carnegie Museum of Natural History. For assistance in the field I thank D. Scott Wood, Robert C. Leberman, Paul and Mara Freed, and a column of anonymous army ants that enabled us to capture the Chaa Creek *Sibon*. I am indebted to the Flemings of Chaa Creek for their hospitality, to Ray E. Ashton, Jr., of International Expeditions, Inc., for logistical aid, and to Dora Weyer for steadfast support of our work in Belize. Collecting permits were granted by Mr. O. Rosado, Department of Forestry, Belize Ministry of Natural Resources. For loans of specimens I thank R. F. Inger and Hymen Marx, Field Museum of Natural History (FMNH), Robert W. Henderson, Milwaukee Public Museum (MPM), and Pere Alberch, Museum of Comparative Zoology, Harvard University (MCZ). I also thank Julian C. Lee for information on localities, and Ellen J. Censky for technical help.

LITERATURE CITED

- DUELLMAN, W. E. 1958. A monographic study of the colubrid snake genus *Leptodeira*. *Bull. Amer. Mus. Nat. Hist.*, 114:1–152.
- HENDERSON, R. W., L. G. HOEVERS, AND L. D. WILSON. 1977. A new species of *Sibon* (Reptilia, Serpentes, Colubridae) from Belize, Central America. *J. Herpetol.*, 11: 77–79.
- KOFRON, C. P. 1983. Female reproductive cycle of the Neotropical snail-eating snake *Sibon sanniola* in northern Yucatan, Mexico. *Copeia*, 1983:963–969.

- . 1985. Systematics of the Neotropical gastropod-eating snake genera, *Tropidodipsas* and *Sibon*. *J. Herpetol.*, 19:84–92.
- LEE, J. C. 1980. An ecogeographic analysis of the herpetofauna of the Yucatan Peninsula. *Univ. Kansas Mus. Nat. Hist., Misc. Publ.*, 67:1–75.
- OLIVER, J. A. 1948. The relationships and zoogeography of the genus *Thalerophis* Oliver. *Bull. Amer. Mus. Nat. Hist.*, 92:157–280.
- PETERS, J. A. 1953. Snakes and lizards from Quintana Roo, Mexico. *Lloydia*, 16:227–232.
- SCHMIDT, K. P., AND A. S. RAND. 1957. Geographic variation in the Central American colubrine snake, *Ninia sebae*. *Fieldiana: Zool.*, 39:73–84.
- WELLMAN, J. 1963. A revision of snakes of the genus *Conophis* (Family Colubridae, from Middle America). *Univ. Kansas Publ., Mus. Nat. Hist.*, 15:251–295.



McCoy, Clarence J. 1986. "Results of the Carnegie Museum of Natural History expeditions to Belize. I. Systematic status and geographic distribution of *Sibon neilli* (Reptilia, Serpentes)." *Annals of the Carnegie Museum* 55, 117–123.
<https://doi.org/10.5962/p.330596>.

View This Item Online: <https://www.biodiversitylibrary.org/item/216940>

DOI: <https://doi.org/10.5962/p.330596>

Permalink: <https://www.biodiversitylibrary.org/partpdf/330596>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In Copyright. Digitized with the permission of the rights holder

Rights Holder: Carnegie Museum of Natural History

License: <https://creativecommons.org/licenses/by-nc-sa/4.0/>

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.