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The Blind Snakes (*Typhlops*) of Bimini, Bahama Islands, British West Indies, with Description of a New Species

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In March, 1954, M. Graham Netting and I were privileged to spend two weeks at the Lerner Marine Laboratory in Bimini, Bahamas, British West Indies. While there, we collected three specimens of what appeared to be two distinct forms of *Typhlops*. Further study of these and six additional specimens in the American Museum of Natural History shows that one of the forms is *T. lumbricalis*, widely distributed in the West Indies, while the other represents an undescribed species not closely related to any of the previously known West Indian *Typhlops*.

The three specimens of *Typhlops* collected by us were kept alive for several days for observation and photographing. Notes on coloration and behavior made by Netting are quoted at appropriate places in the following pages.

I wish to express our appreciation to Dr. C. M. Breder, Jr., the Director of the Lerner Marine Laboratory, for making possible our visit there. Mr. and Mrs. Marshall Bishop were in residence there during our stay and helped in many ways, especially in making it possible to visit the principal islands in the Bimini group. For the loan of specimens I am indebted to Dr. Arthur Loveridge, Museum of Comparative Zoölogy (M.C.Z.), and Mr. Charles M. Bogert, the American Museum of Natural History (A.M.N.H.).

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DESCRIPTION

Typhlops biminiensis, new species

HOLOTYPE: Carnegie Museum No. 32604, near Nixon's Harbor, along trail to "Buck Lands," South Bimini Island, Bahama Islands, at base of termite nest in dead trunk of young thatch palm (*Thrinax*); March 27, 1954; collected by M. Graham Netting and Neil D. Richmond.

PARATYPES: Five specimens in the American Museum of Natural History: A.M.N.H. Nos. 68809, 73500, west end of South Bimini; 71382, South Bimini; 73497-73498, Bimini.

DIAGNOSIS: Body long and slender, maximum number of scale rows 22-24, middorsal scales from rostral to spine 465-500, snout broad and rounded. Rostral broad, one-half of head width. This species may be distinguished from all other *Typhlops* known from the West Indies, except *caymanensis* Sackett, by the position of the preocular which is in contact with upper labials 2 and 3, and from *caymanensis* by the greater number of scale rows.

DESCRIPTION OF HOLOTYPE: Body long, slender; head slender, slightly depressed; snout projecting; rostral broad, width at tip of snout contained about twice in width of head in ocular region, dorsally the rostral is rounded, does not extend to level of eyes; nostrils lateral, on a suture that completely divides the nasal and terminates on second supralabial; anterior nasal in contact with first and second, posterior nasal in contact with second supralabial; preocular slightly narrower than ocular, its anterior angle rounded, in contact with the second and third supralabial; ocular in contact with third and fourth supralabial; eyes distinct and located near the preocular-ocular suture; supralabials four, increasing in size posteriorly, the fourth at least twice as long as the third; prefrontal slightly wider than frontal and interparietal; supraocular very slightly enlarged; one pair of enlarged parietal scales, each about as wide as two body scales; one postocular, strap-shaped, in contact with both the fourth supralabial and parietal; scale rows 24-24-22 (fig. 1), about 465 scales from rostral to spine, tail spine acuminate. Dorsal color brown, venter yellowish white; the junction between the two colors abrupt but irregular; head scales dark brown with light borders. The light ventral color does not extend dorsally in the anal region. Total length, 257 mm.; tail length, 5.6 mm.; width of head in ocular region, 3.50 mm.; maximum width of body 4.5 mm.; total length divided by maximum width is 57.0. Color in life (from notes by M. G. Netting): "Body fully twice as long as *lumbricalis* and very slender. Snout white; skin on top of head so transparent, skull shows through; eyes jet black and more noticeable

than in *lumbricalis*. Dorsum light brown but so transparent anteriorly that blood shines through giving snake pinkish appearance on anterior fourth. Brown deepens progressively posteriorly and on posterior half of body is sharply distinct from white skin of belly. Line of demarcation not straight, however, for many lateral scales in uppermost row of white scales are just as brown as those on back and hang down like a serrated row or fringe. Anal faint pinkish. Caudal spine brown."

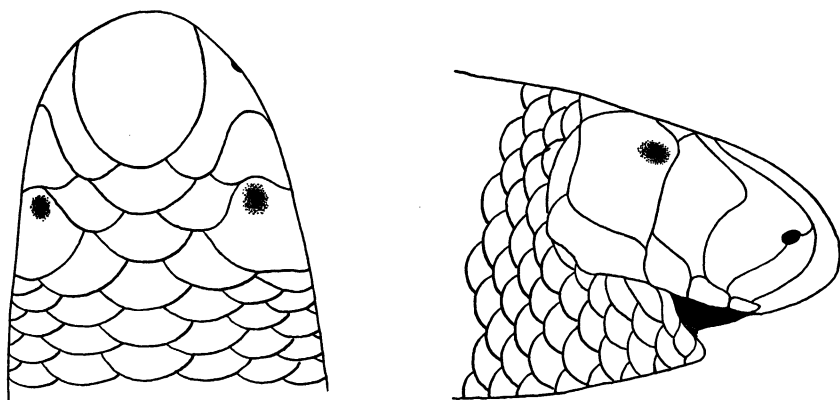


FIG. 1. *Typhlops biminiensis*. C.M. No. 32604, from South Bimini Island, Bahamas.

PARATYPES: The five paratypes range in total length from 145 to 293 mm. The maximum number of scale rows is 24 in two specimens and 22 in three others. Two specimens have two pairs of enlarged parietal scales, two have but one pair, and one specimen has two enlarged scales on the right side and one on the left. All have a single strap-shaped postocular and agree with the type in other details of head scutellation and in color pattern.

In all specimens the nasal suture is distinct from the second supralabial to the nostril and very faint from nostril to rostral. Table 1 summarizes the characters of the six specimens of this species available.

HABITAT: The type was found in a termite nest at the base of a thatch palm stump; other specimens have been found crawling on the surface of the ground after rains. All the specimens were in areas of loose sandy soil.

RANGE: All the specimens available have come from the Bimini Islands in the Bahamas. Probably the specimen from Andros listed by Rosén (1911) as *tenuis* is of this species. Rosén (1911, p. 37) recorded *Typhlops tenuis* Salvin with regrettable brevity, as follows: "One specimen

TABLE 1
MEASUREMENTS OF *Typhlops biminiensis*

	C.M. No. 32604	A.M.N.H. No. 68809	A.M.N.H. No. 71382	A.M.N.H. No. 73497	A.M.N.H. No. 73498	A.M.N.H. No. 73500
Scale rows	24-24-22	22-22-22	24-24-22	22-22-22	22-22-22	24-22-22
Middorsal scales	465	464	511	^a	^b	472
Total length, in mm.	257	228	293	145	244	234
Tail length, in mm.	5.6	3.0	5.3	2.0	4.0	4.0
Maximum diameter, in mm.	4.5	5.0	4.0	2.5	5.5	4.3
Total length/ maximum diameter	57.0	46.0	73.2	58.0	44.4	54.4
Number of enlarged parietals	1-1	2-2	2-1	1-1	1-1	2-2
Head width at eye, in mm.	3.5	3.2	3.9	2.0	3.6	3.1
Rostral width, in mm.	1.7	1.7	1.8	1.0	1.4	1.4

^a The small size of this specimen made an accurate count impossible.

^b This specimen has several damaged areas along the back and sides.

collected at Mastic Point, Andros. It seems to agree in all characters with *T. tenuis*, except having 22 scales around the body." No other specimens meeting this description have since been found in the islands, and Barbour (1937) felt that it was probably an undescribed form wrongly identified. The known range of *tenuis* is in Guatemala and Mexico, and it has but 18 scale rows. However, Rosén's brief description does fit *T. biminiensis*, most of which have 22 scale rows at mid-body, and resemble *tenuis* in body proportions and position of preocular. Furthermore, it is logical to expect *biminiensis* or a closely related form to occur on Andros. It is of interest that Rosén also collected one specimen of *T. lumbricalis* at Mastic Point, so that on Andros as on Bimini there are two species of *Typhlops*.

Typhlops lumbricalis Linnaeus

Three specimens of this species from South Bimini were examined. These agree with the characters of *lumbricalis* as redefined by Cochran (1924). They all have 20-20-18 scale rows, one pair of enlarged parietals, and two postocular scales. Habitat data are not available for one of these,

but the other two were found under small rocks on moist clay soil in an area shaded by dense vegetation.

The three specimens from South Bimini were compared with five *lumbricalis* from other islands in the Bahamas, and the only variation noted was that one specimen from Abaco and one from Long Island each had 20-18-18 scale rows instead of 20-20-18.

SPECIMENS EXAMINED: C.M. Nos. 32575-32576, South Bimini; A.M.N.H. No. 73499, South Bimini; M.C.Z. No. 6970, Abaco; M.C.Z. No. 8770, Nassau; M.C.Z. No. 42270, Long Island; M.C.Z. Nos. 42343, 44323, Water Cay, Little Bahama Bank.

REMARKS

The two species of *Typhlops* on South Bimini are apparently restricted to different types of habitat. *Typhlops lumbricalis* is found under rocks on moist clay soils in areas of dense vegetation, and *biminiensis* occurs in the dry sandy areas where there are no rocks on the surface. After rains *biminiensis* has been found crawling on the lawn of the Lerner Marine Laboratory.

In captivity the two species displayed differences of behavior as follows (M. G. Netting notes): "*T. biminiensis* quieted down after being held in hand for five minutes under desk lamp but much more restive than *lumbricalis*. Hung over fingers like piece of soft cord; did not grip or coil around fingers like *lumbricalis*; I had to hold it. Flicked tongue only once in half hour and then extended it so slightly that I couldn't see color. Caudal spine rarely used after snake quieted and hung limply; when used pricked more than those of *lumbricalis* but tail not curled around to engage it so constantly or tightly.

"When placed in aquarium on damp but not wet sand, it pushes into sand but less skillfully than *lumbricalis*. Head not angled so sharply, less evidence of 'swimming,' stayed so close to surface that head reappeared several times, also sand was noticeably pushed up and cracked as snake moved along. Tail gradually disappeared almost in earthworm fashion. When water was poured in to cover sand, snake was not flooded out but did move about more than *lumbricalis* popping tip of snout out about once a minute to take breath. Once it stayed down over three minutes without my being able to observe snout poked out, although it might have taken quick breath under a bubble. Certainly did not rest with snout out continuously as did *lumbricalis*. *T. lumbricalis* (C.M. No. 32575) is fast-moving and extremely hard to pick up in flat-bottomed cage. Under warmth of desk lamp curled around one or two fingers and gripped tightly enough to hold on. Tail always bent sharply so caudal spine can

be pressed against skin. When placed on damp sand layer one quarter inch deep in terrarium, tilted head at forty-five degree angle, pressed into sand and 'swam' into sand with undulatory movement, finally pulling last two inches of body into sand perfectly straight. Continued undulatory forward movement after completely buried as raised disturbance of sand indicated. When held on fingers close to desk lamp appeared to enjoy warmth and did not show any evidence of trying to hide head from intense light.

"(C.M. No. 32576) behavior same. When sand was flooded with fresh water to extent that it was completely saturated and thin film was standing on surface, snakes did not emerge completely but merely poked one-eighth inch of head above surface to breathe, then ducked under to swim farther and poke head out in another spot. One rested for ten minutes with snout just projecting, so covered with sand grains that it was scarcely visible. Passing finger above did not cause it to retract but touching caused it to jerk head down leaving a small hole like earthworm hole: a few minutes later it projected snout a few millimeters away."

The relationships of *biminiensis* appear to be with the Central and South American species, all but two of which have the preocular touching both the second and third supralabials. However, it differs from all but one of the known continental species by the number of scale rows. *Typhlops psittacus* Werner is described as having 24 scale rows, but it also has a strongly hooked snout and a subocular (Werner, 1921). All the West Indian species except *caymanensis* and *biminiensis* have the preocular in contact with the third supralabial only.

The two species of *Typhlops* occurring on Bimini can be distinguished by the characters in the following summary:

CHARACTER	<i>biminiensis</i>	<i>lumbricalis</i>
Rostral	Almost circular above	Strap-shaped
Postoculars	1 strap-shaped scale	2 unmodified scales
Preocular touches labials . . .	2 and 3	3 only
Meeting of dorsal and ventral color	Abrupt but irregular	Evenly blended
Length/maximum diameter	Greater than 45	Less than 40
Maximum number of scale rows	22-24	20
Middorsal scales	460-500	Fewer than 300

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