

A New Species of *Tropidophis* from Cuba (Serpentes: Tropidophiidae)

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***Tropidophis fuscus* is described from native pine forests of eastern Cuba. It is a very dark brown species with a gracile habitus. In some aspects of scalation and coloration, it resembles species in the *maculatus* group, whereas in habitus it resembles members of the *semicinctus* group. Therefore, its relationship to other species of *Tropidophis* is presently unclear.**

THE genus *Tropidophis* includes 15 species of relatively small, boidlike snakes. Most (12) of these occur in the West Indies, and most of the West Indian species (10) are native to Cuba. In habits, these are predominantly ground-dwelling snakes that feed on lizards and frogs and have the unusual capacity of physiological color change (Hedges et al., 1989). Two Cuban species (*T. feicki* Schwartz and *T. wrighti* Stull) are known to be arboreal (Rehák, 1987; Hedges, pers. obs.), and a closely related species (*T. semicinctus* Gundlach and Peters) probably is arboreal. All three have the morphological traits associated with climbing, such as a laterally compressed body, long and thin neck, and relatively large eyes.

Taxonomically, *Tropidophis* has been a difficult group to study because of intra- and inter-specific variability in scale characters, which are usually diagnostic in other groups, and because of limited numbers of specimens. The taxonomic arrangement of *Tropidophis* species recognized today is largely the result of a revision made by Schwartz and Marsh (1960).

Recently, two adult specimens of a new *Tropidophis* were collected at separate localities in extreme eastern Cuba (Guantánamo Province). They differ from all other species in the genus because of their nearly uniform dark brown coloration and gracile body shape. In the following account, museum abbreviations follow standardized usage (Leviton et al., 1985) except for MNHNCU, which refers to the newly formed collection of the Museo Nacional de Historia Natural, Cuba (Havana).

Tropidophis fuscus n. sp.
Fig. 1

Holotype.—MNHNCU (Museo Nacional de Historia Natural de Cuba) 2705, an adult female, from Minas Amores (21.7 km NW, 7.7 km SE

Baracoa, by road), Guantánamo Province, Cuba, 76 m, collected by S. Blair Hedges on 27 July 1989. Original number 190300 (USNM field series).

Paratype.—USNM 309777, an adult male, from Cruzata, Municipio Yateras, Guantánamo Province, Cuba (500–700 m elevation), collected by Alberto R. Estrada and Antonio Perez-Asso on 19 March 1987. Original number CARE 60756 (Collection of Alberto R. Estrada).

Diagnosis.—A species of *Tropidophis* distinguished from all others by its very dark brown dorsal coloration, with darker brown or black spotting. Its elongate body, with distinct head, narrow neck, and protrusive eyes (protruding beyond edge of head when viewed from above), further distinguishes it from adults of most other *Tropidophis* (Figs. 2–3), especially when these traits are considered together. It differs from species in the *semicinctus* group (*T. feicki*, *T. semicinctus*, and *T. wrighti*), with which it shares the gracile habitus, in having fewer ventrals (160–185 versus 195–225), fewer subcaudals (32 versus 33–45), more (and smaller) dorsal body blotches (43–46 versus 18–29), and a dark rather than light ground color. Although occasional specimens of other species of *Tropidophis* have either large eyes or a relatively narrow neck (Fig. 2), none have the combined overall gracile habitus of *T. fuscus*, which includes a laterally compressed body as in species of the *semicinctus* group (see diagram in Stejneger, 1917).

In addition to these traits, *T. fuscus* can be readily distinguished from *T. caymanensis* Battersby, *T. greenwayi* Barbour and Shreve, *T. maculatus* Bibron, *T. melanurus* Schlegel, *T. pilsbryi galacelidus* Schwartz and Garrido, and all *T. haetianus* Cope (including populations of these species on Cuba, Hispaniola, and Jamaica) by its low number of dorsal scale rows at midbody (23



Fig. 1. *Tropidophis fuscus*, holotype.

versus 25 or more). From *T. canus* Cope, which has 23 midbody scale rows, it can be distinguished by its smaller size [220/304 mm SVL (M/F) versus 408/373 mm SVL in *T. canus*], lack of anterior (lateral) body stripes, narrower snout, larger frontal and narrower supraocular scales, and presence of occipital spots.

Detailed comparison is needed only for three Cuban species: *T. pardalis* Gundlach, *T. pilsbryi* Bailey, and *T. nigriventris* Bailey. From *T. pardalis*, which has 23 midbody scale rows, *T. fuscus* can be distinguished by its eight rows of blotches (versus six, or rarely eight), weakly keeled dorsal scales (versus smooth), and higher number of paramedian body blotches (43–46 versus 25–42). Also, *T. pardalis* is a stockier snake with a prominently spotted dorsum, smaller eyes, and a different head shape (Fig. 3). From *T. nigriventris* (also with 23 midbody scale rows), it can be distinguished by its weakly keeled dorsal scales (versus smooth, or rarely weakly keeled), three postoculars (versus two, or sometimes three in *nigriventris*), presence of occipital spots (versus absent), smaller body size [220/304 mm SVL (M/F) versus 351/355 mm maximum SVL in *T. nigriventris*], and a more distinct head (Fig.

2). Additionally, the nominate subspecies of *T. nigriventris*, which is geographically closer to *T. fuscus* than the other subspecies (*T. n. hardyi* Schwartz and Garrido), has fewer ventrals (144–150 versus 160 and 185 in *T. fuscus*). Although ventral counts of *T. fuscus* and *T. n. hardyi* (153–172) overlap, the latter taxon has six (rarely eight) rows of blotches versus eight rows in both specimens of *T. fuscus*, one preocular [2/2 (L/R) and 1/2 in *T. fuscus*], and an unpatterned venter (large dark brown blotches on venter in *T. fuscus*). All *T. pilsbryi galacelidus* and most *T. p. pilsbryi* can be distinguished from *T. fuscus* by their 25 or more midbody scale rows and 10 rows of blotches, but some specimens of *T. p. pilsbryi* have 23 scale rows and eight rows of blotches as in *T. fuscus*. From these specimens, *T. fuscus* can be distinguished by its gracile (not stocky) body shape, large and protruding eyes, distinct head (Fig. 3), and coloration (nearly uniform dark brown versus the prominent dorsal spotting, white occipital band, and yellow tail of *T. p. pilsbryi*).

Description.—Body relatively long and thin, slightly compressed laterally, head distinct from

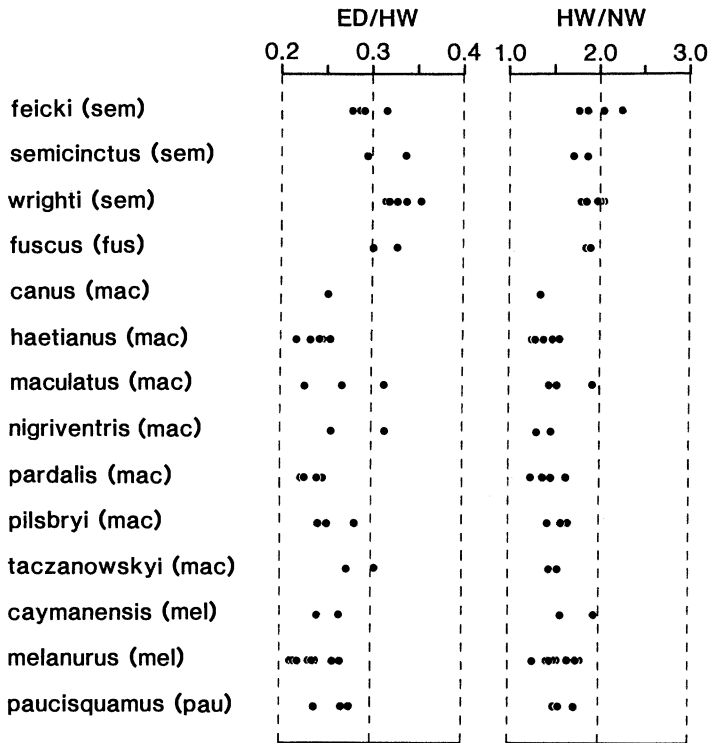


Fig. 2. Eye diameter (ED)/head width (HW) and head width/neck width (NW) in adults of 14 species of *Tropidophis*. Species group is indicated in parentheses: fus = *fuscus*, mac = *maculatus*, mel = *melanurus*, pau = *paucisquamus*, and sem = *semicinctus*.

neck, head long and pointed in female (Fig. 3), shorter and more blunt at tip in male, eyes relatively large and protrusive (protruding beyond edge of head when viewed from above); snout-vent length = 220/304 mm (male/female); tail length = 32/34 mm; live weight = 18.1 g (female); 160/185 ventrals, 32/32 (incomplete tail) subcaudals; 10 supralabials, 11 infralabials; 1:2 (left:right)/2:2 preoculars (lower much smaller than upper), three postoculars; dorsal scales weakly keeled and in 23-23-19/23-23-16 rows (middorsal row enlarged on tail and portion of body); 43/46 dorsal body blotches, barely discernible, in eight longitudinal rows at midbody; parietal scales not in contact; male (paratype) with spurs.

In alcohol and in life, dorsal ground color dark brown with faint indications of very dark brown or black dorsal body blotches, occasional middorsal scales in female with pale flecks; venter mostly cream, with lateral intrusion of dark brown dorsal coloration and blotches, although chin and anterior one-fifth of venter suffused with dark brown; occipital spots (lighter brown)

faint but visible; head uniformly dark brown above and below, with no markings; eye color brown; tail not differently colored than body, although last one-third of tail in female cream to yellow ventrally.

Etymology.—Latin, meaning dark or dusky; in allusion to the dark dorsal coloration of this species.

Natural history.—*Pinus cubensis* is native to eastern Oriente (Guantánamo and Holguin Provinces) and occurs on red, lateritic soil (Bisse, 1981). Both specimens of *T. fuscus* were collected in pine woods of this species and soil type. The male was found beneath a large log and the female beneath a large rock, both during the day. Although no other species of *Tropidophis* was found syntopically with *T. fuscus*, two species (*T. melanurus* and *T. wrighti*) were found together at a nearby locality (2 km N La Municipación, Guantánamo Province) in similar habitat. Two additional species occurring in eastern Cuba, *T. haetianus* and *T. pilsbryi*, have been

collected in Guantánamo Province and may also be sympatric with *T. fuscus*. A sixth species, *T. pardalis*, is known from adjacent Santiago de Cuba Province and may be yet another species sympatric with *T. fuscus*. Thus, at least three and as many as six species of *Tropidophis* are sympatric in eastern Cuba, compared with four species known to be sympatric at Soroa in western Cuba (Schwartz and Henderson, 1988; Hedges and Thomas, 1989).

The gracile habitus of *T. fuscus* suggests that it is an arboreal species, although this has not been confirmed. Two other species of *Tropidophis* with this body shape, *T. feicki* and *T. wrighti*, forage above the ground on vegetation at night and it is likely that *T. semicinctus* has these same habits. A laterally compressed body, thin neck, distinct head, and enlarged middorsal scales, are traits found independently in other arboreal snakes and in some other species of *Tropidophis*. It has been suggested that the compressed body and enlarged middorsal scales help to provide additional rigidity while spanning gaps between branches (Schmidt and Inger, 1957). However, the enlarged middorsal scales are a common variant in most species of *Tropidophis*, including terrestrial species, and therefore this character does not appear to have ecological (or taxonomic) significance. Color change (Hedges et al., 1989) which has been observed in *T. canus*, *T. feicki*, *T. greenwayi*, *T. haetianus*, *T. maculatus*, *T. melanurus*, and *T. pardalis* (Hedges et al., 1989; Hedges, pers. obs.), was not observed in this species during its brief time in captivity. The holotype (female) contains four or five well-developed young (the exact number cannot be determined due to their encasement in a large solidified mass of nematodes in the body cavity).

Distribution.—Known only from two localities in northeastern Guantánamo Province, Cuba (Fig. 4). The type locality lies on the northeast slope of the Alturas de Baracoa, an upland area forming a loosely defined ridge to the northwest of Baracoa. It is near the town of Camarones and adjacent to the Río Báez. Altitudinal distribution is from 76 m (type-locality) to approx. 500–700 m (Cruzata).

Remarks.—The large amount of variation among and within species of *Tropidophis*, in scalation and coloration, makes the task of species identification in this genus more difficult than usual. All of this variation must be considered when

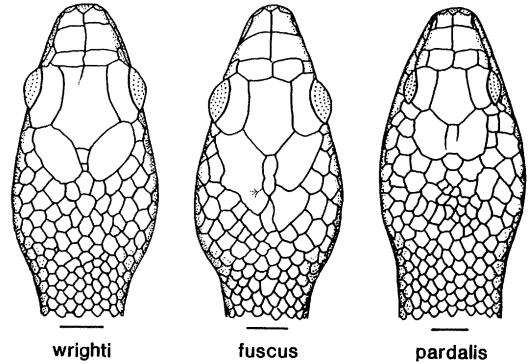


Fig. 3. Head shape and scalation in three species of *Tropidophis* (bar = 2 mm): *T. wrighti* (MNHNCU 3435), *T. fuscus* (holotype), and *T. pardalis* (USNM 309776).

attempting to accurately identify species. Unfortunately, errors and omissions in the recent key to West Indian *Tropidophis* (Schwartz and Henderson, 1985) seriously hinder its usefulness. These errors include the following: (1) Jamaica is not included, (2) *T. canus* has 6–12 rows of blotches (not just six), (3) *T. haetianus* has 25–29 midbody scale rows (not just 27), (4) it has smooth or keeled scales (not just smooth), (5) it has 8–10 dorsal body blotches (not just 10), (6) it has 166–194 ventrals (not 178–191), (7) it usually has a distinct spotted pattern (not “obscure”), (8) *T. maculatus* and *T. pilsbryi* have either smooth or keeled scales (not just keeled), (9) both *T. pardalis* and *T. nigriventris* have either six or eight rows of blotches and thus the number of rows is not diagnostic, (10) *T. melanurus* has 188–224 ventrals (not 198–224), and (11) both *T. caymanensis* and *T. melanurus* have 4–12 rows of blotches (not just two; although the paramedian blotches usually are enlarged). The correct information was taken from Schwartz and Marsh (1960), Schwartz and Thomas (1960), Thomas (1963), Schwartz (1975), and Schwartz and Garrido (1975). (It should be noted that many of the omissions in the key were common, not rare, variants.)

DISCUSSION

The relationships of the species of *Tropidophis* are not well known, but recent workers have recognized several clusters of species that appear to form natural groups (Schwartz, 1957; Schwartz and Marsh, 1960; Schwartz and Garrido, 1975). The largest is the *maculatus* group

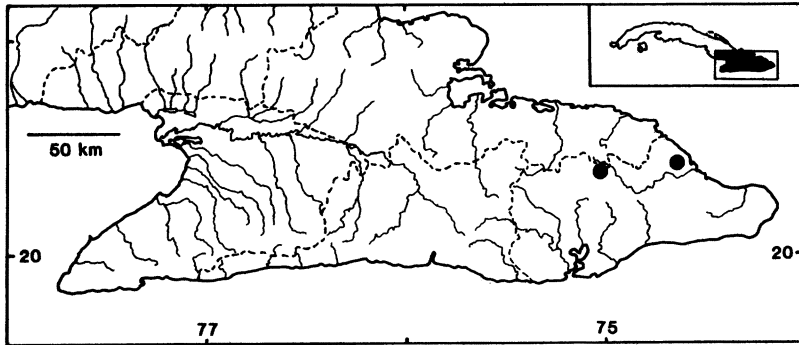


Fig. 4. Localities for *Tropidophis fuscus* in eastern Cuba: Cruzata (left) and Minas Amores (right).

[the *pardalis-maculatus* complex of Schwartz and Garrido (1975)], which includes *T. canus*, *T. haetianus*, *T. maculatus*, *T. nigriventris*, *T. pardalis*, *T. pilsbryi*, and *T. taczanowski* Steindachner. This group can be defined by species with a relatively low number of ventrals (140–192 for all except *maculatus*, which has 189–208), small body size [266–370 mm maximum SVL, except *haetianus* (636 mm)], a moderate to high number of small dorsal spots (25–90), dorsal spots in 6–12 rows, dorsal scales smooth or keeled, 21–29 midbody scale rows, and some species with occipital spots. The *semicinctus* group includes *T. feicki*, *T. semicinctus*, and *T. wrighti*. This group can be defined by species with a high number of ventrals (195–225), a low number of dorsal body spots (18–29; usually consisting of large blotches or saddles), dorsal spots in 1–4 rows, smooth dorsal scales, and an elongate and laterally compressed body with protruding eyes and a distinct head. The *melanurus* group includes *T. caymanensis* and *T. melanurus*, which are species with a high number of ventrals (183–217), large body size (500–950 mm maximum SVL), a moderate number of dorsal body spots (37–61), dorsal spots in 4–12 rows with the paramedian two rows enlarged, keeled dorsal scales, and 25–27 midbody scale rows.

The affinities of *T. greenwayi* and *T. paucisquamis* Müller were not obvious, and therefore Schwartz and Marsh (1960) treated them as separate lineages, with the possibility that *T. greenwayi* may eventually be found to be close to the other Bahamian species (*T. canus*) in the *maculatus* group. No mention was made of *T. battersbyi* Laurent of Ecuador, although with a high number of dorsal body spots, small body size, and 23 rows, it might be placed in the *maculatus* group.

The position of *T. fuscus* among these species groups of *Tropidophis* is unclear. In its possession of a relatively low number of ventrals, small body size, high number of dorsal body spots, occipital spots, and 23 midbody scale rows, it could be placed in the *maculatus* group. However, the gracile body shape, with distinct head and large eyes, suggests affinities with the *semicinctus* group. Because it does not closely resemble any of the existing groups of *Tropidophis*, we prefer to treat *T. fuscus* as a separate lineage (*fuscus* group), with unknown affinities, until additional data bearing on relationships become available (Hedges, unpubl.).

SPECIMENS EXAMINED

Tropidophis canus.—Bahamas: New Providence, USNM 36594–95.

T. caymanensis.—Cayman Islands: Little Cayman, USNM 108009; Grand Cayman, USNM 108042–43.

T. feicki.—Cuba: Pinar del Río Province, Cueva de San Miguel, MNHNCU 3418–20; Soroa, MNHNCU 3421.

T. haetianus.—Dominican Republic: Barahona Province, 23.8 km S Barahona, USNM 260674–81. Jamaica: St. Mary Parish, 9.4 km N Port Maria, USNM 252290.

T. maculatus.—Cuba: Ciudad de La Habana, La Habana; Pinar del Río Province, Soroa, MNHNCU 3422, USNM 309775.

T. melanurus.—Cuba: Guantánamo Province, 9.4 km ENE Acueducto, 245 m, MNHNCU 3423; Bernardo, 600 m, MNHNCU 3424; 3.5 km E Tortugilla, 10 m, MNHNCU 3425; 2 km N La Municipión, 730 m, MNHNCU 3426; Pinar del Río Province, Cueva del Indio, MNHNCU

3428; Cueva de San Miguel, MNHNCU 3429–30.

T. nigriventris.—Cuba: Las Villas Province, 16 km W Trinidad, USNM 138511–12.

T. pardalis.—Cuba: Pinar del Río Province, Soroa, USNM 309776, MNHNCU 3431; Ciudad de La Habana, Marianao, USNM 195802, 195811.

T. paucisquamus.—Brazil: Estado Espírito Santo, near Santa Teresa, USNM 208281; Estado Rio de Janeiro, near Teresopolis, USNM 208666; Estado Saõ Paulo, near Salesopolis, USNM 247873.

T. pilsbryi.—Cuba: Las Villas Province, Soledad, USNM 137084; “eastern Cuba,” USNM 12361; Santiago de Cuba Province, Simpatía (9.2 km W. Las Yaguas), 250 m, MNHNCU 3432–33.

T. semicinctus.—Cuba: Cienfuegos Province, Cienfuegos, USNM 56347; Sancti Spiritus Province, 11.2 km W Trinidad, USNM 139418.

T. taczanowski.—Ecuador: “alto Río Pastaza,” USNM 204105. Perú: Department Loreto, Fundo Cinchona, USNM 119009.

T. wrighti.—Cuba: Guantánamo Province, 2 km N La Municipión, 730 m, MNHNCU 3434–37; Santiago de Cuba Province, Ocuja, USNM 138513.

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