New Snake (Tropidophis) from Western Cuba

S. BLAIR HEDGES, ALBERTO R. ESTRADA, AND LUIS M. DIAZ

A new species of Tropidophis is described from the northern coast of La Habana Province, western Cuba. It is tan and has two rows of prominent, dark brown dorsal spots and a pale neck band. It most closely resembles another species from western Cuba, T. maculatus, in having a high number of ventral scales and in being promi-
nently spotted. It differs from that species and others in aspects of scalation and coloration.

Se describe una nueva especie de Tropidophis de la costa norte de La Habana, en el occidente de Cuba. Esta es de color pajizo con dos filas de manchas bien definidas y una banda pálida en el cuello. Es semejante a otra especie del occidente de Cuba, T. maculatus, ya que tiene un alto numero de escamas ventrales y patron de manchas bien definidas. La nueva especie difiere de esta y de las restantes en aspectos de la escamación y coloración.

Snakes of the genus Tropidophis (Tropido-
phiidae) are Neotropical in distribution, and most of the species are endemic to the is-
land of Cuba (Schwartz and Henderson, 1991). They are mainly ground-dwelling snakes that feed on lizards and frogs, and most have the unusual ability to change color (Hedges et al., 1989; SBH, pers. obs.). The current taxonomy is largely the result of the comprehensive revi-
sion by Schwartz and Marsh (1960), with some recent additions (Schwartz, 1975; Schwartz and Garrido, 1975; Hedges and Garrido, 1992).

Recently, a new species of Tropidophis was col-
lected at a locality on the north coast of Cuba between the cities of La Habana and Matanzas. The single known specimen, an adult female, differs in scalation and pattern from all other species in the genus. Because most species of Tropidophis are rarely encountered, it may be many years before an additional specimen of this new species is collected. For this reason, and because of the relatively large number of diagnostic traits distinguishing it from its closest relatives, we are confident about describing this new species on the basis of a single specimen.

Comparison of the new species with described species of Tropidophis was made by examination of preserved material of the three most relevant species (Comparative Materials Examined) and published color pattern and scale count data of other species in the genus (e.g., Grant, 1940; Schwartz and Marsh, 1960; Thomas, 1963). In addition, the authors collectively have had field experience with all species of West Indian Tropidophis except T. greenwayi (Bahamas) and T. caymanensis (Cayman Islands).

Tropidophis celiae n. sp.

Figures 1A–2

Holotype.—MNHNCU 4474, an adult female (gravid), from the northern (coastal) side of Loma Canasi, at the mouth of Río Canasi, Santa Cruz del Norte Municipality, La Habana Province, Cuba, 3 m elevation, 23°08'37"N, 81°46'40"W, collected by Alberto R. Estrada and Luis M. Diaz on 7 June 1996. Original number CARE 60928.

Diagnosis.—A species of Tropidophis distin-
guished from all others by a combination of scalation and color pattern (Table 1). It has a high number (203) of ventrals, a high number of midbody scale rows (27), two rows of prominent dark brown spots on a pale tan ground color, a pale neck band, and an unpatterned venter. The high ventral count distinguishes it from all species in the genus except T. maculatus, T. cay-
manensis, T. melanurus, and the semicinctus group (T. feicki, T. semicinctus, and T. wrighti). The combination of high ventral count and midbody scale row count in T. celiae further distinguishes it from all species in the genus except T. melan-
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Fig. 1. (A) Tropidophis celiae, holotype (MNHNCU 4474); and (B) T. maculatus from Soroa, Pinar del Rio Province, Cuba (MNHNCU 3422).

urus (Cuba) and T. caymanensis (Cayman Islands). However, T. melanurus (Fig. 3), which is sympatric with T. celiae, is a much larger species (the gravid female T. celiae is smaller than the smallest gravid female T. melanurus) with a laterally compressed body (body not laterally compressed in T. celiae). Tropidophis melanurus also has four dorsolateral stripes (absent in T. celiae), no occipital spots or band (present in T. celiae), and a pigmented (stippled) rather than unpatterned venter (Table 1). Tropidophis caymanensis, once considered to be a subspecies of T. melanurus, differs from T. celiae in most of those same characters (Table 1).
Description of holotype.—An adult female with enlarged eggs (no embryos visible); body robust (stout), head slightly expanded laterally (distinct from neck; Fig. 2), head width (8.5 mm) ÷ neck width (6.5 mm) = 1.31 (Hedges and Garrido, 1992:fig. 2); eye diameter 2.4 mm, eyes protruding only slightly beyond edge of head when viewed from above, eye diameter ÷ head width = 0.28 (Hedges and Garrido, 1992:fig. 2); SVL = 344 mm, tail length = 41 mm; ventrals, 203; subcaudals, 30; supralabials, 10/11 (left/right), scales 4–5 in contact with eye; infralabials, 12/12 (no single scale distinctly larger than others); preoculars, 1/1; postoculars, 3/3; chin with long groove bordered by five scales on either side (arranged in pairs), the anterior two in contact with infralabials 1–2 and the remaining three chin-groove scales separated from the infralabials by 1–2 scales of same size as those along chin groove. Dorsal scales are smooth and scale rows (neck to region above vent) are 25 (corresponding to ventral rows 1–30), 27 (31–124; including midbody region), 25 (125–143), 23 (144–170), 21 (170–173), and 19 (174–203); scale row formula expressed as 25-27-19; the middorsal row is not enlarged, except a few scales on body and tail; parietal scales in contact; no apical scale pits.

In alcohol, dorsal ground color tan; dorsal spots dark brown, in two longitudinal rows near midline; each spot 2–3 scales in width; 60/60 spots on body, 12/12 on tail; 1–2 additional rows of small (one scale or less in width), less distinct and less well-organized spots lateral to the main rows; tail tip, dark brown; venter mostly cream, with almost no markings except for few small brown specks along ventrolateral edges; chin with fine, tan flecks and a few, small, dark brown spots on infralabial scales; dorsal surface of head with brown interocular bar fol-

### Table 1. Comparison of Characters of Selected Cuban Snakes of the Genus Tropidophis

<table>
<thead>
<tr>
<th>Character</th>
<th>T. celiae (1)</th>
<th>T. maculatus (27)</th>
<th>T. melanurus (99)</th>
<th>T. caymanensis (51)</th>
<th>T. semicinctus (38)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum SVL (mm)</td>
<td>344</td>
<td>347</td>
<td>957</td>
<td>512</td>
<td>408</td>
</tr>
<tr>
<td>Ventral scales</td>
<td>203</td>
<td>196 ± 4.4</td>
<td>202 ± 6.8</td>
<td>198 ± 6.1</td>
<td>208 ± 4.5</td>
</tr>
<tr>
<td></td>
<td>(189-208)</td>
<td>(183-217)</td>
<td>(183-212)</td>
<td>(183-212)</td>
<td>(201-223)</td>
</tr>
<tr>
<td>Midbody scale rows</td>
<td>27</td>
<td>24.9 ± 0.43</td>
<td>27.4 ± 1.04</td>
<td>25.7 ± 1.04</td>
<td>24.71 ± 0.86</td>
</tr>
<tr>
<td>Body shape</td>
<td>Robust</td>
<td>Robust</td>
<td>Laterally compressed</td>
<td>Laterally compressed</td>
<td>Gracile</td>
</tr>
<tr>
<td>Ground color</td>
<td>Pale tan</td>
<td>Red or reddish tan</td>
<td>Tan or brown</td>
<td>Gray to orange-tan</td>
<td>Yellow to orange</td>
</tr>
<tr>
<td>Dorsal pattern</td>
<td>Spots</td>
<td>Spots</td>
<td>Stripes and spots</td>
<td>Stripes and spots</td>
<td>Spots</td>
</tr>
<tr>
<td>Ventral pattern</td>
<td>None</td>
<td>Spots</td>
<td>Stippling</td>
<td>None or marked</td>
<td>None or marked</td>
</tr>
<tr>
<td>Spot rows</td>
<td>Two</td>
<td>8.2 ± 0.85</td>
<td>0–10</td>
<td>0–10</td>
<td>Two</td>
</tr>
<tr>
<td></td>
<td>(8–10)</td>
<td>(47–54; n = 20)</td>
<td>(48.8 ± 3.45)</td>
<td>(48–64)</td>
<td>(23.6 ± 2.86)</td>
</tr>
<tr>
<td>Body spots</td>
<td>60</td>
<td>44.9 ± 4.70</td>
<td>48.8 ± 3.45</td>
<td>55.6 ± 4.07</td>
<td>23.6 ± 2.86</td>
</tr>
<tr>
<td></td>
<td>(35–55)</td>
<td>(47–54; n = 20)</td>
<td>(48–64)</td>
<td>(18–29)</td>
<td></td>
</tr>
<tr>
<td>Tail spots</td>
<td>12</td>
<td>8.5 ± 1.72</td>
<td>5.3 ± 1.16</td>
<td>6.8 ± 1.45</td>
<td>5.8 ± 1.34</td>
</tr>
<tr>
<td></td>
<td>(4–11)</td>
<td>(5–7; n = 3)</td>
<td>(4–9)</td>
<td>(3–9)</td>
<td></td>
</tr>
<tr>
<td>Middorsal spot contact</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Pale neck band</td>
<td>Present</td>
<td>Absent</td>
<td>Absent</td>
<td>Absent</td>
<td>Absent</td>
</tr>
</tbody>
</table>
allowed by a less distinct brown hour-glass marking; side of head with indistinct pale brown postocular stripe; pale tan neck band, 5–6 scales in width, beginning two scales posterior to parietals, distinctly paler than tan ground color. Coloration in life was similar, except that the labial scales and tail were pale orange and the iris was golden.

*Etymology.*—We take great pleasure in naming this species for Señora Celia Puerta de Estrada, wife of Alberto R. Estrada.

*Comparisons.*—The species requiring the closest comparison with *T. celiae* is *T. maculatus* (Fig. 1B). It also occurs in western Cuba (Schwartz and Henderson, 1991) and is sympatric with *T. celiae*. The two species are similar in body size, have high numbers of ventral scales, and share dorsal patterns of dark spots on a pale ground color (Table 1; Schwartz and Marsh, 1960: fig. 4). However, *T. maculatus* has a lower number of dorsal scale rows at midbody and a lower number of dorsal body spots and dorsal tail spots. Also, *T. maculatus* lacks the pale neckband, lacks contact of middorsal spots, has 4–8 rows of dorsal body spots, and has two rows of large black spots on the venter (Table 1). As noted by Stull (1928), the specimen reported by Boulenger (1893) to have 27 midbody scale rows and 183 ventrals is not *T. maculatus*; both scale counts correspond to *T. haetianus* (then considered to be a subspecies of *T. maculatus*).

All other species of small, spotted, ground dwelling *Tropidophis* (*maculatus* and *fuscus* groups; Hedges and Garrido, 1992) have fewer ventral scales than *T. celiae* and differ in color pattern and other characters (Schwartz and Marsh, 1960). However, *Tropidophis seminictus* (*seminictus* group), another species sympatric with *T. celiae*, has a similarly high number of ventral scales and two rows of dark dorsal spots (Table 1). *Tropidophis seminictus* can be distinguished from *T. celiae* by its more gracile body shape, fewer dorsal scale rows at midbody, yellow-orange ground color, fewer (and larger) dorsal spots, absence of a pale neck band, and by its more distinct (expanded) head with larger eyes (Barbour and Ramsden, 1919: plate 15, figs. 4–6; Tolson and Henderson, 1993). One of the three mainland species, *T. battersbyi* of Ecuador, has a high number of ventrals (200) but only 23 dorsal scale rows at midbody (Peters and Orejas-Miranda, 1970).

*Natural history.*—The specimen was found crawling on limestone rocks at 0300 hours, only six meters from the ocean. Shortly after being collected, it regurgitated a new species of frog, *Eleutherodactylus blairhedgesi* (Estrada et al., 1997). Other species of frogs collected at the locality were: *E. atkinsi, E. planirostris, E. pinar-
ensis, and E. varleyi. Other snakes found at this locality were Tropidophis melanurus, T. semicinctus, Arrhyton taeniatum, Epicrates angulifer, Antilophis andrei, and Alsophis cantherigerus. This coastal region of La Habana province receives about 1000–1200 mm of annual precipitation, and the vegetation is characterized by sea-grape (Coccoloba uvifera) and dry scrub forest (Instituto Cubano de Geodesia y Cartografía, 1978).

**Distribution.**—Tropidophis celiae is known only from the type-locality, which is located about 57 km E La Habana (city) and 33 km west Matanzas (city) in the Alturas de la Habana-Matanzas physiographic region (Estrada et al., 1997:fig. 3).

**DISCUSSION**

The phylogenetic relationships of species within the genus Tropidophis are not well established. However, T. celiae shares several traits with some or all species in the maculatus species group (Schwartz and Marsh, 1960; Hedges and Garrido, 1992): robust body shape, high number of dorsal spots, small dorsal spots, presence of occipital spots or a neck band, and terrestrial habits. Within that group, the high number of ventral scales and pattern of prominent spots might suggest that T. celiae is closest to T. maculatus. Although T. celiae is considered here to have two rows of body spots, the much smaller spots (one scale or less in width) on the sides of the body of T. celiae may be homologous with the larger lateral body spots in other species of the maculatus group. If true, T. celiae would be considered to have six rows of spots, which is more typical of species in the maculatus group. However, DNA sequences of the mitochondrial rRNA genes indicate that T. celiae is most closely related to species in the T. melanurus group (SBH, unpubl.).

Besides the two additional species of Tropidophis found at the type-locality of T. celiae (T. melanurus and T. semicinctus), several other species also occur along the north coast of La Habana and Matanzas provinces (T. feicki, T. maculatus, and T. pardalis) and should be considered to be sympatric with T. celiae (Schwartz and Henderson, 1991). Six species of Tropidophis also are sympatric in eastern Cuba (Hedges and Garrido, 1992), and this represents the largest number of congeneric species of snakes occurring in sympatry in the West Indies. In addition, several other undescribed species of Tropidophis are known (S. B. Hedges and O. H. Garrido, unpubl.). Unfortunately, the apparent rarity of most species of Tropidophis and concomitant lack of ecological data limit our understanding of this remarkable adaptive radiation of snakes.

**COMPARATIVE MATERIALS EXAMINED**

**Tropidophis maculatus.**—Cuba: Ciudad de La Habana, La Habana, USNM 309775; Pinar del Río Prov., Soroa, MNHNCU 3422.

**Tropidophis melanurus.**—Cuba: Guantánamo Prov., 9.4 km ENE Acueducto, 245 m, MNHNCU 3423; Bernardo, 600 m, MNHNCU 3424; 3.5 km E Tortuguilla, 10 m, MNHNCU 3425; 2 km N La Municion, 730 m, MNHNCU 3426; Pinar del Río Prov., Cueva del Indio, MNHNCU 3428; Cueva de San Miguel, MNHNCU 3429–30.

**Tropidophis semicinctus.**—Cuba: Cienfuegos Prov., Cienfuegos, USNM 56347; Sancti Spiritus Prov., 7 mi. W Trinidad, USNM 139418.

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**LITERATURE CITED**


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