

## CUBAN SNAKES OF THE GENUS *ARRHYTON*: TWO NEW SPECIES AND A RECONSIDERATION OF *A. REDIMITUM* COPE

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**ABSTRACT:** Two new species of *Arrhyton* are described from Cuba. *Arrhyton supernum* occurs in extreme eastern Cuba (Guantánamo Prov.), and is a dark species with occipital spots. It is placed in the *vittatum* group, which includes other moderate-sized species with relatively short tails. *Arrhyton procerum* occurs near Playa Girón (Matanzas Prov.) and is a slender species with a very long tail. It is placed in the *dolichura* group with other long-tailed species. The status of *A. redimitum* Cope is reviewed, and it is determined that the specimen currently designated as the holotype is not, and that the original holotype cannot be located. Although *A. redimitum* now is removed from the synonymy of *A. taeniatum*, the holotype description is insufficient to associate *A. redimitum* with either *A. landoi* or *A. supernum*. The genus *Arrhyton* now comprises 12 species, eight of which are endemic to Cuba.

*Key words:* Reptilia; Squamata; Serpentes; Colubridae; Caribbean; West Indies; Cuba

FROM a phylogenetic standpoint, the colubrid snake subfamily Xenodontinae is one of the most poorly known vertebrate groups in the West Indies. The current taxonomic arrangement of 35 species placed in nine genera (Schwartz and Henderson, 1988) is based largely on a study of osteological and hemipenial morphology (Maglio, 1970). About one-third of the species (10), all relatively small and sharing some osteological similarities, are placed in the genus *Arrhyton*. Cuba has the most (six) species of *Arrhyton*; three occur on Jamaica, and one is endemic to the Puerto Rico Bank.

Largely due to the secretive nature of snakes in the genus *Arrhyton*, they tend to be poorly represented in museum collections. This has posed a problem in understanding intra- and interspecific variation, and consequently in making taxonomic decisions regarding the species' status of some populations. Thus, the systematics of Cuban *Arrhyton* was considerably improved when a large number of new specimens was reported upon by Schwartz and Garrido (1981), who described two new species.

In the summers of 1989 and 1990, new material of Cuban *Arrhyton* was collected during joint expeditions organized by the

Museo Nacional de Historia Natural (La Habana), the Universidad de La Habana, and Pennsylvania State University. Among these specimens are two new species: one from Matanzas Province and the other from Guantánamo Province. In the course of comparing the new species from Guantánamo Province with other species of *Arrhyton*, we discovered a nomenclatural problem. Because the proper allocation of several species' names of Cuban *Arrhyton* relies on the resolution of this problem, we begin by reviewing the taxonomic history and current status of the principal name in question, *Arrhyton redimitum* (Cope, 1863). In the following accounts, museum abbreviations follow standardized usage (Copeia 1985:802–832), except for MNHNCU, which refers to the newly formed collection of the Museo Nacional de Historia Natural, Cuba (La Habana).

### *The Status of Arrhyton redimitum*

In their review of the Cuban snake *Arrhyton dolichura* Werner, 1909, Schwartz and Garrido (1981) stated that "certainly no other species of *Arrhyton* has had such a checkered nomenclatural history". As we show below, the nomenclatural history of *A. redimitum* is not only longer, but is more confusing.

During the years 1856–1867, the American botanical collector Charles Wright visited Cuba and, in addition to plants, collected amphibians and reptiles, some of which were later described by Edward D. Cope. Among these was a single specimen of a small colubrid snake, described by Cope (1863) as *Colorhogia redimita*. Although the type-locality was given only as “Eastern Cuba”, it is known that Wright spent most of his time at Monte Verde, a small coffee plantation on the Meseta del Guaso north of Guantánamo (Underwood, 1905).

A second specimen of *Arrhyton redimitum* from Cuba (no specific locality given) was described by Bocourt (1883), who received it from W. Peters (Berlin). Unlike Cope’s brief description, the important scale counts (ventrals and subcaudals) were given, further distinguishing that specimen (and apparently *A. redimitum*) from *A. taeniatum* Günther, 1858 and *A. vittatum* (Gundlach and Peters, 1862), the other species of Cuban *Arrhyton* known at that time. Also, Bocourt illustrated the head and neck (dorsal view) of that specimen. As will be shown below, this specimen almost certainly was not *A. redimitum*. Unfortunately, Boulenger’s (1894) account of *A. redimitum* was based entirely on Bocourt’s specimen, not on the holotype description.

The next mention of *A. redimitum* was by Stejneger (1917), who reported that the holotype was lost. He did not doubt the validity of *A. redimitum*, especially given the description of the presumed second specimen by Bocourt. Although the single prefrontal scale, present in both specimens, was considered a key character, it is now known to be a variable trait present in several species of *Arrhyton* (Grant et al., 1959; Schwartz and Garrido, 1981). However, Stejneger showed that these species (*A. redimitum*, *A. vittatum*, and *A. taeniatum*) were distinguished by ventral, subcaudal, and loreal scale counts. Barbour and Ramsden (1919) followed Bocourt and Stejneger in considering *A. redimitum* to be valid, but stated “it is either not Cuban at all or else excessively rare”, because so few specimens had turned up. It is im-

portant to point out that the validity of *A. redimitum* was based on scale counts taken from the second specimen, not from the holotype, and that the second specimen apparently was examined only by Bocourt (1883).

A century after Cope’s description of *A. redimitum*, no additional specimens were known and the species still was considered valid. This changed with the publication of a paper resurrecting *A. dolichura* (Grant et al., 1959). In it, the lost holotype of *A. redimitum* was reported to have been discovered and determined to be a specimen of *A. taeniatum*. Although Grant et al. synonymized *A. redimitum* with the older taxon *A. taeniatum*, they concluded that the second specimen of *A. redimitum*, described by Bocourt, was one of only three known specimens of *A. dolichura*. They did not examine the Bocourt specimen but based their conclusions on scale counts given by Bocourt. Also, they did not examine the “rediscovered” holotype of *A. redimitum*, but based their findings on an examination of that specimen by the USNM curator who rediscovered it, Doris Cochran. Two later reviews of Cuban *Arrhyton* (Schwartz, 1965; Schwartz and Garrido, 1981) followed the nomenclatural arrangement of Grant et al. (1959), and it remains the latest taxonomic opinion on *A. redimitum*.

Because two of our recently collected specimens of *Arrhyton* agree in several respects with the original description of *A. redimitum* (Cope, 1863), and because one of the two specimens was collected at Monte Líbano, very near the locality where Charles Wright spent most of his time in Cuba, we investigated the possibility that *A. redimitum* is a valid species. Examination of the “rediscovered” holotype of *A. redimitum*, the catalog ledgers at the USNM, and the literature pertaining to this species has clarified most of the confusion surrounding *A. redimitum*.

Grant et al. (1959) stated that, according to Cochran, the lost holotype of *A. redimitum* has 181 ventrals and 83 subcaudals. Presumably based on other characteristics observed by Cochran, Grant et al. then stated that “the specimen agrees with

Cope's original description, and cannot seriously be questioned as constituting the actual type". The senior author has examined this specimen (USNM 29769), which is in very good condition, and is confident that it is **not** the actual holotype because it differs in a number of important respects from Cope's description of *A. redimitum*. For example, it lacks a loreal (present in *redimitum*), has two prefrontal scales (one in *redimitum*), two large temporals (three in *redimitum*), a raised rostral scale (low in *redimitum*), and a significantly longer body (177 mm) and shorter tail (51 mm) than reported by Cope ("5 in. 0 lin." and "2 in. 9 lin.", = 127 and 69 mm, respectively). The loreal scale character is especially revealing: it is absent in all known *A. taeniatum* (37 examined by Schwartz and Garrido, 1981) yet Cope described it as present in the holotype of *A. redimitum*, and further described its shape. Also, Cope considered the single fused "postfrontal" (= prefrontal) to be an important diagnostic character of *redimitum*, and therefore it is unlikely that he would have incorrectly scored that character. Finally, the coloration differences are not those associated with fading over time, but are real differences in pattern: USNM 29769 has a wide middorsal band (narrow in *redimitum*), and wide lateral stripes on rows 4-6 ("narrow line" on middle of fourth row in *redimitum*). USNM 29769 has the identical number of ventrals (181) and nearly the same number of subcaudals (86) reported by Cochran (for the "rediscovered" holotype), therefore we have no doubt that it is the specimen that was examined by her, and later by Schwartz and Garrido (1981). Also, we agree with Stejneger (1917), who figured the specimen, Grant et al. (1959), and Schwartz and Garrido (1981) that this specimen is *A. taeniatum*. However, it is clearly not the holotype of *A. redimitum*, which remains lost.

The specimen ledgers in the USNM contain additional information bearing on this nomenclatural problem. The specimen preceding the "rediscovered" holotype, USNM 29768, also is an *A. taeniatum* (from Guamá, Cuba) entered in the catalog on

the same date (31 January 1902). Both are identified in the catalog as "*taeniatum*" (in pencil), but for 29769, this has been crossed out and replaced with "*redimitum*". Other notes on that page indicate that Cope's estate was being processed at that time. The collector for 29768 is given as "B. S. Bowdish", and for 29769 it is listed as "C. Wright". Although we shall probably never know the exact details of the confusion, we believe that USNM 29769 was assumed to be the holotype of *A. redimitum* because it was collected by Charles Wright (listed by Cope and on the original USNM catalog entry for 5347 as the collector of *redimitum*) and because the specimen has some deep indentations indicating that it carried a previous specimen tag (no longer present). We were unable to locate the original holotype of *A. redimitum* at either the Smithsonian Institution or the Academy of Natural Sciences of Philadelphia, the two institutions housing most of Cope's type material.

As for the Bocourt specimen of *A. redimitum*, a careful comparison of his description (Bocourt, 1883) with Cope's description also indicates significant differences. For example, (1) the dorsal ground color of Bocourt's specimen was described as yellow, mixed with gray (not brownish-gray), (2) the labials are a yellowish-white (not punctulated with deep brown), and (3) there is no mention of a pair of pale occipital spots. At the time Bocourt described his specimen, *A. taeniatum* and *A. vittatum* were the only other Cuban *Arrhyton* known, and it clearly differed from those. The presence of a single prefrontal scale, now known to be a poor diagnostic character, probably led Bocourt to identify his specimen as *A. redimitum*. Presently there are three species of long-tailed Cuban *Arrhyton*: *A. dolichura*, *A. tanyplectum* Schwartz and Garrido, 1981, and a new species described below. Although Grant et al. (1959) placed the Bocourt specimen in the synonymy of *A. dolichura*, the number of ventrals (141) is higher than the range (127-132) reported by Schwartz and Garrido (1981) for the 12 known specimens of *A. dolichura*. However, it is nearly identical in ventrals and

subcaudals to the single female *A. tanyplectum* reported by Schwartz and Garrido. Based on Bocourt's description, his specimen most likely was *A. tanyplectum*, not *A. redimitum* (Bocourt, 1883) or *A. dolichura* (Grant et al., 1959), although the correct identification is not relevant to the nomenclature of *Arrhyton*.

One final comment concerning the Grant et al. (1959) paper is necessary. Those authors reported on an examination of the holotype of *A. bivittatum* Cope, 1863, a Cuban species which has been considered a synonym of *A. vittatum* since Stejneger (1917). They were interested in seeing whether that specimen actually lacked the middorsal stripe, as described by Cope (1863), because the middorsal stripe was "present in every specimen of the genus ever seen" by them. The curator who examined the specimen is quoted as replying "USNM 5784 is very old . . . , but it still shows traces of a fairly wide dorsal stripe about three scales wide . . .". We were surprised that a species could be given a name (*bivittatum*) based on such a distinctive pattern feature (presence of only two dorsolateral stripes and no middorsal stripe), and illustrated without the middorsal stripe independently in two later works (Stejneger, 1917; Barbour and Ramsden, 1919), all seemingly in error. Therefore we examined the holotype of *A. bivittatum* (USNM 5784). After nearly 130 yr, it still has the distinctive pattern noted by Cope. There is a very faint indication of a narrow (one scale wide) middorsal band just behind the neck region, but considering the present boldness of the two dorsolateral bands, the middorsal band likely was never very well-developed, and it is not discernible in the midbody region as correctly illustrated by Stejneger (1917) and Barbour and Ramsden (1919). The holotype of *Arrhyton bivittatum* truly is a two-lined snake, but the ventral and subcaudal counts (112 and 56, respectively) place it within the range of *A. vittatum*. We know of one other two-lined *Arrhyton* (Instituto de Ecología y Sistemática, Academia de Ciencias de Cuba, La Habana) and have seen specimens of *A. vittatum* (e.g., ANSP 15909) with faint middorsal bands. We

concur with previous authors in treating *A. bivittatum* as a synonym of *A. vittatum* until additional differences, other than pattern, can be demonstrated.

Although we have established that the name *A. redimitum* does not belong with *A. taeniatum*, its proper association may never be known with certainty, unless the lost holotype is eventually discovered (unlikely). This is because the description given by Cope (1863) is insufficient to clearly distinguish between the newly collected material from Guantánamo Province (Monte Libano and El Yunque de Baracoa) and *A. landoi* Schwartz, 1965. The important diagnostic characters separating these species, ventral and subcaudal counts and size of loreal scale, were not given by Cope. Most of the characters listed in the description of *A. redimitum* are variable in the two species, and both taxa occur near Monte Verde, where Charles Wright possibly collected the holotype. However, it is worth noting that the weight of the evidence suggests that *A. landoi* is a synonym of *A. redimitum*: (1) the single prefrontal of *redimitum* is a variant that occurs most frequently in *landoi* (of all *Arrhyton*), (2) the description of the cephalic cap as "liver-brown" agrees more with *landoi*, (3) and other details of the pattern and coloration of *redimitum*, such as an immaculate venter, dorsal scales "punctulated with brown", a narrow lateral line on the middle of the fourth scale row, and a "light" frontal and temporal band, all are suggestive of *A. landoi* and not the new species. Because we cannot be certain of this, and without the holotype of *A. redimitum*, we believe that the most appropriate course of action is to continue recognition of *A. landoi*, and propose a new name for the species from Monte Libano and El Yunque de Baracoa.

*Arrhyton supernum* sp. nov.

Fig. 1

*Holotype*.—MNHNCU 2704, an adult female from the SW slope of El Yunque de Baracoa, Guantánamo Prov., Cuba, 136 m, collected by Richard Thomas on 29 July 1989. Original number 190230 (USNM field series).

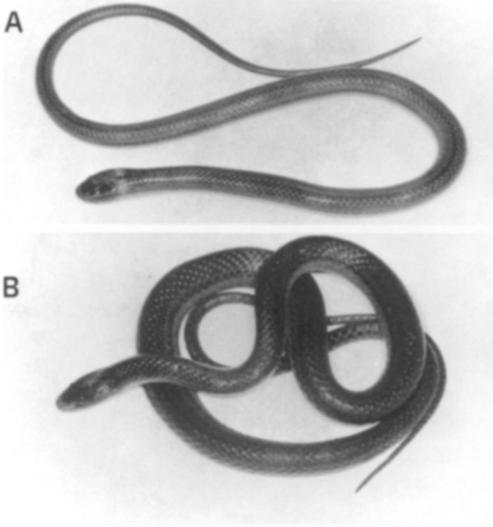


FIG. 1.—*Arrhyton supernum*: (A) Juvenile (USNM 306535), from Monte Líbano, Guantánamo Prov., Cuba; (B) Adult female (MNHNCU 2704, holotype), from El Yunque de Baracoa, Guantánamo Prov., Cuba.

*Paratype*.—USNM 306535, a juvenile male from Monte Líbano (approximately 10 km SSE La Tagua), Guantánamo Prov., Cuba, 650 m, collected by Emilio Alfaro on 26 June 1990. Original number 191153 (USNM field series).

*Diagnosis*.—A moderate-sized species of *Arrhyton* distinguished from all others by its very dark coloration, dorsally and ventrally, with two occipital spots. Additionally, it can be distinguished from non-Cuban *Arrhyton* by its 17 (versus 19) dorsal scale rows at midbody. Among Cuban species (all with 17 rows) it can be separated from *A. taeniatum* (Fig. 2A) by its fewer ventrals (124–128 versus 168–189) and the presence of a loreal scale (these counts and others are taken largely from Schwartz and Garrido, 1981: their Table 1). From all other Cuban species, it can be distinguished by its very small loreal,  $\frac{1}{2}$ – $\frac{1}{3}$  size of the preocular ( $\frac{3}{4}$ –2 times preocular in other species). *Arrhyton vittatum* (Fig. 2B) has fewer ventrals (107–123 versus 124–128) and subcaudals (58–81 versus 107–108); *A. sp. nov.* (see below) and *A. tanyplectum* have more ventrals (>138) and subcaudals (>121). Although ventral

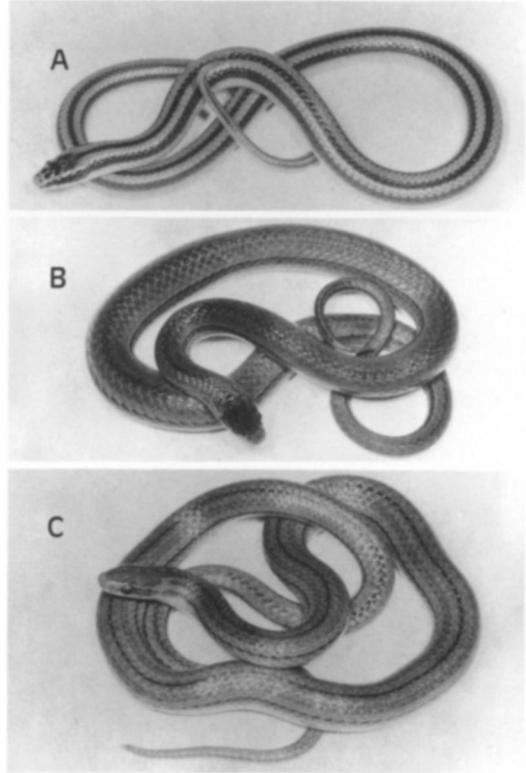


FIG. 2.—(A) *Arrhyton taeniatum*, U.S. Naval Station, Guantánamo Bay, Cuba; (B) *A. vittatum*, Soroa, Pinar del Río Prov., Cuba; (C) *A. landoi*, U.S. Naval Station, Guantánamo Bay, Cuba.

(123–132) and subcaudal (101–127) counts of *A. dolichura* overlap with those of *A. supernum*, the larger loreal, in contact with supralabials one and two (two only in *A. supernum*), and a different dorsal pattern (Fig. 3B) will easily distinguish those two species. *Arrhyton ainictum* Schwartz and Garrido, 1981 is a larger species (363 mm versus 255 mm snout–vent length, SVL), has more ventrals (137), a larger loreal, and has a lighter and very different dorsal pattern consisting of a sharply defined cephalic cap (absent in adult *A. supernum*), five stripes (not three), and an immaculate venter (not heavily pigmented), and it lacks the distinctive occipital spots of *A. supernum*.

The most pertinent comparison is with *A. landoi* (Fig. 2C), which also occurs in Guantánamo Province and which may be

sympatric with *A. supernum*. The subcaudal counts of female *A. landoi* (69–96) are lower than that of the single female *A. supernum* (107), but those of the males overlap slightly (78–111 in *landoi*, 108 in *supernum*). Both specimens of *A. supernum* have eight infralabials (nine on one side in paratype) whereas 29 of 32 *A. landoi* have >8 (modally nine). Temporals two and three (anterior) of *A. landoi* are rectangular, elongate, and have an even outer margin whereas those of *A. supernum* are irregularly shaped, less elongate, and have an uneven outer margin. In coloration, *A. landoi* has a white venter, a distinct light temporal band, a reddish brown cephalic cap (usually), and the lateral line often occupies the middle of the fourth scale row; *A. supernum* has a heavily pigmented venter, an obscure temporal band, a dark brown head, and the lateral stripe is wider and occupies the upper half of the third and most of the fourth scale rows.

*Description*.—A moderate-sized species (255 mm SVL, 171 mm tail, 9.5 g live mass); ratio of tail/total length  $\times 100 = 40.1$ ; 128/124 (holotype/paratype) ventrals, 107/108 subcaudals; head distinct from neck, but not broad, rostral low, not pointed; seven supralabials, eight/eight: nine (left:right) infralabials; one loreal; one preocular, two postoculars; three large (anterior) + two small (posterior) temporals; supralabial two touching loreal, 2–3 touching preocular, 3–4 touching eye, 5–6 touching first large temporal; two prefrontals; 17-17-17 dorsal scale rows.

In alcohol, adult (holotype) dorsal ground color very dark brown with three barely discernible black stripes, middorsal occupying median scale row and  $\frac{1}{2}$  of adjoining rows, lateral stripes occupy upper half of third and most of fourth scale rows; entire venter, chin, and sides of body up to third scale row grayish (cream with brown flecks on close inspection), lighter gray anteriorly but becoming gradually darker towards the tail tip where ventral surface is almost uniformly dark; head dark brown like rest of dorsum, except for anterior portion (rostral and internasals) and

most of supralabials, which are cream with brown flecks like ventral surface; two light brown occipital spots, giving appearance of a ring around neck, broken by middorsal stripe. The juvenile also is dark, but with stripes more noticeable, similar in width and position to the adult; the first three scale rows are flecked with brown, but the venter is not as dark as in the adult, the brown flecking begins just anterior to the vent, and then abruptly increases on the underside of the tail towards the tip; as in the adult, the tail is distinctly more pigmented than the rest of the venter, with a sharp transition occurring at the vent; head with dark brown cap, but not as sharply defined as in other species; dark brown lateral head stripes; areas between cap and head stripes, supralabials, and infralabials heavily flecked with brown; distinct cream occipital spots a prominent feature of dorsal pattern, giving the appearance of a dorsal white neck band, broken by the middorsal stripe.

In life, the dorsum of the adult appeared nearly black, similar to *Antillophis andrea*; ventral surface and chin appeared greenish-gray, lightly flecked with brown; occipital spots were light brown. In the juvenile, the dorsum was dark brown, with black (or very dark brown) stripes; ventral surface was light gray, medium gray under tail; head markings brownish-peach and not well-defined; eye color medium brown; occipital spots peach.

*Distribution*.—Known only from the type-locality (El Yunque de Baracoa) and Monte Líbano, both in Guantánamo Prov., Cuba (Fig. 4 below). Monte Líbano presently is only a place name (there is no village); it is located near the top of the south-facing slope of the Guaso Plateau (Meseta del Guaso), NNE of Guantánamo (approximately 10 km SSE La Tagua). Altitudinal distribution from 136–650 m.

*Etymology*.—Latin, *supernus*, meaning celestial; in allusion to the dark (as in the celestial sky) coloration of this species.

*Natural history*.—Both specimens were collected under rocks during the day. The holotype was found in a small cacao grove along the trail leading up to the top of El

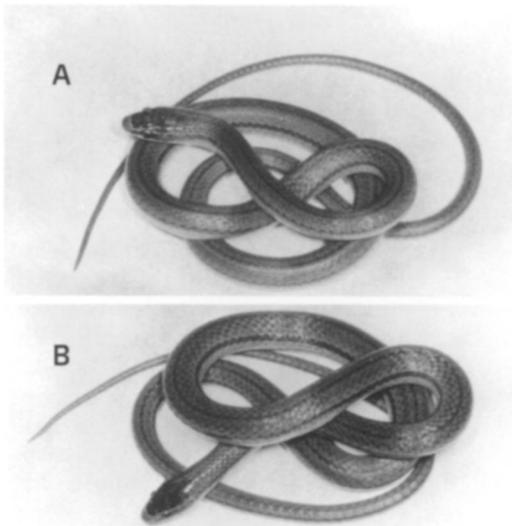


FIG. 3.—(A) *Arrhyton procerum* (MNHNCU 3285, holotype), 11.4 km ESE Playa Girón, Matanzas Prov., Cuba; (B) *A. dolichura* (USNM 306534), Ciudad de La Habana, Jardín Botánico Nacional.

Yunque de Baracoa. The paratype was found in an open pasture just above a well-forested ravine near Monte Libano.

*Arrhyton procerum* sp. nov.

Fig. 3A

**Holotype.**—MNHNCU 3285, an adult male from 11.4 km ESE Playa Girón, Matanzas Prov., Cuba, 0 m, collected by Emilio Alfaro on 12 July 1990. Original number 191526 (USNM field series).

**Diagnosis.**—A slender, long-tailed species of *Arrhyton* distinguished from all other species in the genus by its very high subcaudal count (140). Additionally, it can be distinguished from non-Cuban species by its midbody scale rows (17 versus 19). Among Cuban species, all with 17 rows, it can be separated from *A. taeniatum* by fewer ventrals (142 versus 168–189), the presence of a loreal scale, and a very different pattern (Fig. 3A). *Arrhyton vittatum* and *A. supernum* have fewer ventrals (107–123 and 124–128, respectively) and are stouter and darker snakes with a different pattern (Figs. 1, 2). *Arrhyton ainicum* and *A. landoi* also are larger (males to 363 and 238 mm SVL, respectively, ver-

sus 207 mm in *A. procerum*) and heavier-bodied, and have considerably fewer subcaudals (108 and 71–111, respectively).

The two other species endemic to western Cuba (besides *A. procerum*) require the closest comparison. Both *A. dolichura* and *A. tanyplectum* are larger (males to 233 and 306 mm SVL, respectively) and stouter than *A. procerum*, although it is unknown whether the shorter SVL of the holotype and only known specimen of *A. procerum* is typical of adults. *Arrhyton dolichura* also has fewer ventrals (123–132 versus 142), fewer subcaudals (101–127 versus 140), a wider, more distinct head, broader parietal scales, loreal contact with supralabials one and two [two (left) and 2–3 (right) in *procerum*], and it is a darker snake with a more distinct pattern—including a wider band on the side of the head (Fig. 3B). *Arrhyton dolichura* apparently is restricted to La Habana and its immediate vicinity, about 180 km from the type-locality of *A. procerum*. *Arrhyton tanyplectum* is found further to the west in the Sierra del los Organos (Pinar del Río Prov.), about 300 km from *A. procerum*. It has a similar number of ventrals (138–149) and only a slightly smaller number of subcaudals (121–136) than *A. procerum*. However, it is a darker snake with a distinctive “braided” appearance, resulting from light-edged dorsal scales (Schwartz and Henderson, 1985: their Fig. 83). In *A. procerum*, the dorsal scales are light gray with flecks of dark brown. The stripes in *A. tanyplectum* are much more distinct, made up of solid dark brown pigment, compared with flecks of brown comprising the stripes in *A. procerum*. The head patterns of these two species are very different: *A. tanyplectum* has a nearly uniform dark head whereas *A. procerum* has the typical *Arrhyton* cephalic “cap”. Although faint indication of this cap and lateral stripes are visible in *A. tanyplectum*, the lateral head stripes are wider and continuous, not narrow and broken as in *A. procerum*. Also, *A. procerum* has a more narrow head and protrusive rostral than *A. tanyplectum*.

**Description.**—A small (207 mm SVL, 164 mm tail; 6.5 g live mass), slender, long-

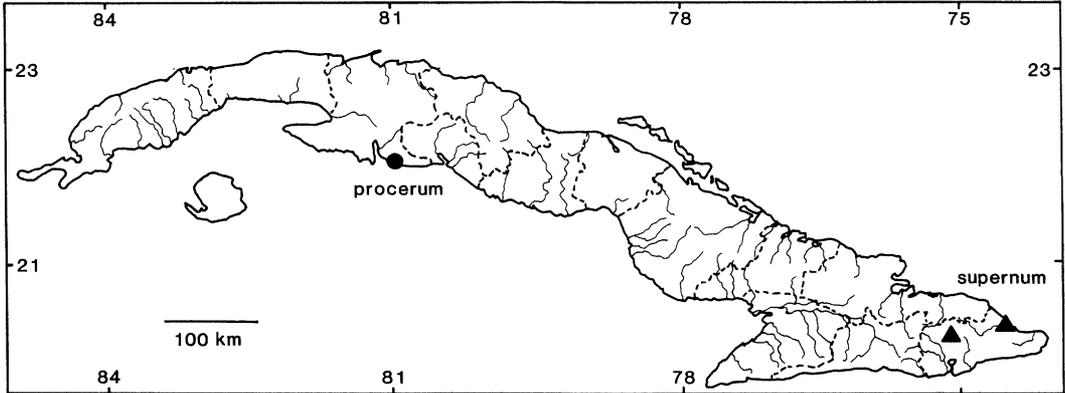


FIG. 4.—Localities of *A. procerum* and *A. supernum* in Cuba.

tailed snake; ratio of tail/total length  $\times 100 = 44.2$ ; 142 ventrals, 140+ subcaudals (tail tip missing); head relatively narrow; seven supralabials, eight infralabials; one loreal; one preocular, two postoculars; three large (anterior) + two small (posterior) temporals; supralabials two (left) and 2–3 (right) touching loreal, 3–4 touching eye, and 5–6 touching first large temporal; two prefrontals; 17–17–17 dorsal scale rows.

In alcohol, dorsal ground color grayish-tan with three medium brown stripes; dorsal scales uniformly covered with small brown flecks, dorsal stripes made up of larger brown flecks (not continuous pigment); lower half of third scale row and below, including venter, immaculate, except for some flecks of brown on proximal edges of infralabials 1–4 forming two narrow lines on chin; head with reddish-brown cap covering posterior  $\frac{2}{3}$  of prefrontals, entire frontal,  $\frac{1}{2}$  of supraoculars, and most of parietals; posterior  $\frac{1}{3}$  of postnasals and anterior  $\frac{2}{3}$  of loreal with rectangular brown spot; lateral brown head stripe beginning on preocular, continuing through eye, junction of the two postoculars, and passing back through middle of first large temporal to join lateral body stripe. In life, dorsal ground color was medium brown, with dark brown stripes and cephalic cap; snout was light tan; eyes were dark brown; ventral surface was pale (unpigmented); sides of body below dorsolateral stripes with a yellowish-green tinge; chin markings pinkish.

*Distribution*.—Known only from the type-locality (Fig. 4).

*Etymology*.—Latin, *procerus*, meaning long and slender; in reference to the distinctive habitus of this species.

*Natural history*.—The holotype was found under a rock in semi-xeric seagrape (and thatch palm) woods near the beach. There were many coral-limestone rocks in the surrounding area, with some in piles. The snake initially escaped into the porous limestone rock that it was under, and had to be prodded out with a stick.

#### DISCUSSION

The classification of West Indian xenodontine snakes will almost certainly be revised when future studies provide a clearer picture of their phylogenetic relationships. However, the current understanding of relationships (Maglio, 1970; Schwartz and Garrido, 1981) places the Hispaniolan snake *Darlingtonia haetiana* Cochran, 1935 within the radiation of *Arrhyton*. In fact, it is the sole representative of this group of species on Hispaniola, separating *A. exiguum* (Cope, 1863) of the Puerto Rico Bank (to the east) from the Cuban and Jamaican species (to the west). Maglio (1970) considered *D. haetiana* to be the sister species of *A. exiguum*, but he did not adjust the taxonomy to reflect this relationship. Although the maintenance of this monotypic genus for *haetiana* does not reflect the current understanding of evolutionary relationships, we maintain this

arrangement pending the results of ongoing molecular studies by the senior author.

Schwartz and Garrido (1981) erected four species groups to encompass the 10 species of *Arrhyton* recognized at that time. The non-Cuban species, all with 19-19-17 dorsal scale rows, were placed in the *callilaemum* group: *A. callilaemum* (Gosse, 1851), *A. exiguum*, *A. funereum* (Cope, 1863), and *A. polylepis* (Buden, 1966). The Cuban species, all with 17-17-17 scale rows, were placed in three groups. The distinctive burrowing species *A. taeniatum*, with an enlarged rostral and lacking a loreal, was assigned to its own group. The three relatively short-tailed species, with low ventral and subcaudal counts, were placed in the *vittatum* group: *A. ainictum*, *A. landoi*, and *A. vittatum*. To this group can be added *A. supernum*. The remaining species, all with long tails and high ventral and subcaudal counts, were placed in the *dolichura* group: *A. dolichura* and *A. tanyplectum*. To this group can be added *A. procerum*. The genus *Arrhyton* now comprises 12 species of West Indian snakes, eight of which are endemic to Cuba.

The above taxonomic arrangement draws some support from distribution, such as the scale row difference separating the Cuban and non-Cuban species. Also, the three species groups in Cuba form sympatric species "complexes". The single member of the *taeniatum* group is island-wide in distribution, but species within the other two groups are allopatric with members of their own group, and sympatric with the other species groups. For example, the three sympatric species in western Cuba (Sierra de los Organos) include the burrowing species (*taeniatum*), a short-tailed species (*vittatum*), and a long-tailed species (*tanyplectum*). A similar situation exists around La Habana, except that the long-tailed species is *A. dolichura*. Presumably, *A. procerum* also is sympatric with *A. taeniatum* and *A. vittatum* in the region of the Zapata Swamp. The situation in central and eastern Cuba is not as clear, because the "short-tailed" species tend to have longer tails, raising the possibility that *A. ainictum*, *A. supernum*, or both are

eastern representatives of the *dolichura* group, or that a long-tailed species remains to be discovered in eastern Cuba. Considering the rarity of *Arrhyton* in most areas, either of these possibilities is likely.

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## APPENDIX

## Specimens Examined

- Arrhyton ainictum*.—Cuba: Camagüey Prov., Cueva del 18, Francisco, IZAC 4256 (holotype).
- Arrhyton dolichura*.—Cuba: Ciudad de La Habana, Marianao, IZAC 5633; Jardín Botánico Nacional, Stop No. 8 (Mogotes), USNM 306534.
- Arrhyton landoi*.—Cuba: Guantánamo Prov., 3.5 km E. Tortuguilla, 10 m, USNM 306536.
- Arrhyton taeniatum*.—Cuba: Camagüey, Archipiélago de Sabana, Cayo Coco, MNHMCU 501; Isla Juventud, Cayo Petrero, IZAC 4790; Holguin, Ote, IZAC 5578; "Cuba" (no specific locality), USNM 12421 (holotype of *A. fulvum* Cope, 1863); "Eastern Cuba", USNM 29769 (holotype of *A. redimitum*).
- Arrhyton tanyplectum*.—Cuba: Pinar del Río Prov., Cueva de los Indios, San Vicente, AMNH 77779; 4.0 km NW San Vicente, USNM 306538; Pan de Azúcar, 8 km E. Matahambre, AMNH 81135.
- Arrhyton vittatum*.—Cuba: no specific locality, ANSP 3318, 3341, USNM 5784 (holotype of *A. bivittatum*); Sancti Spíritus Prov., Sancti Spíritus, ANSP 15909; Habana Prov., La Habana, USNM 93929; Pinar del Río, Cueva de San Miguel, 90 m, USNM 306537.

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