

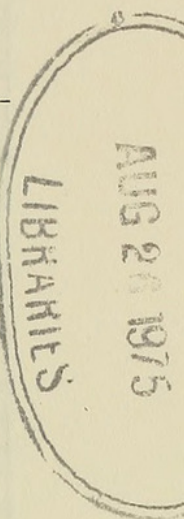
PROCEEDINGS  
OF THE  
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SPECIES OF THE GENUS *ARISTELLIGER*  
(SAURIA: GEKKONIDAE) FROM  
THE CAICOS ISLANDS

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The gekkonid lizard genus *Aristelliger* Cope has its distributional center in the West Indies. The most recent review of the genus (Hecht 1951) recognizes five species: 1) *A. georgeensis* Bocourt in Belize and the islands off the Central American coast from Isla Cozumel to Isla San Andrés; 2) *A. praesignis* Hallowell on Jamaica, the Cayman Islands, the Swan Islands, the Pedro and Morant Cays; 3) *A. cochranae* Grant on Navassa Island, Hispaniola (including Ile de la Gonave), as well as Great Inagua in the southern Bahamas; 4) *A. lar* Cope on Hispaniola, and 5) an unnamed species from the Caicos Islands. In addition to these extant forms, Hecht (1951: 8) named *A. titan*, an extinct giant species from Pleistocene or sub-Recent deposits in Jamaica (where the living form is *A. praesignis*). There has been little subsequent taxonomic work done on the genus and Hecht's arrangement has remained intact (Wermuth 1965) except for Schwartz's (1968: 261, footnote) decision to regard *barboursi* as a species distinct from *A. cochranae*. The undescribed species from the Caicos Islands has remained so.

Cochran (1934: 5) first reported *Aristelliger* (as *A. praesignis*) from Six Hill Cay off South Caicos; the record is based on three specimens collected by Paul Bartsch. Hecht (1951: 24-25) noted the existence of a new species of *Aristelliger* on the Caicos Islands but did not name it. Rabb and





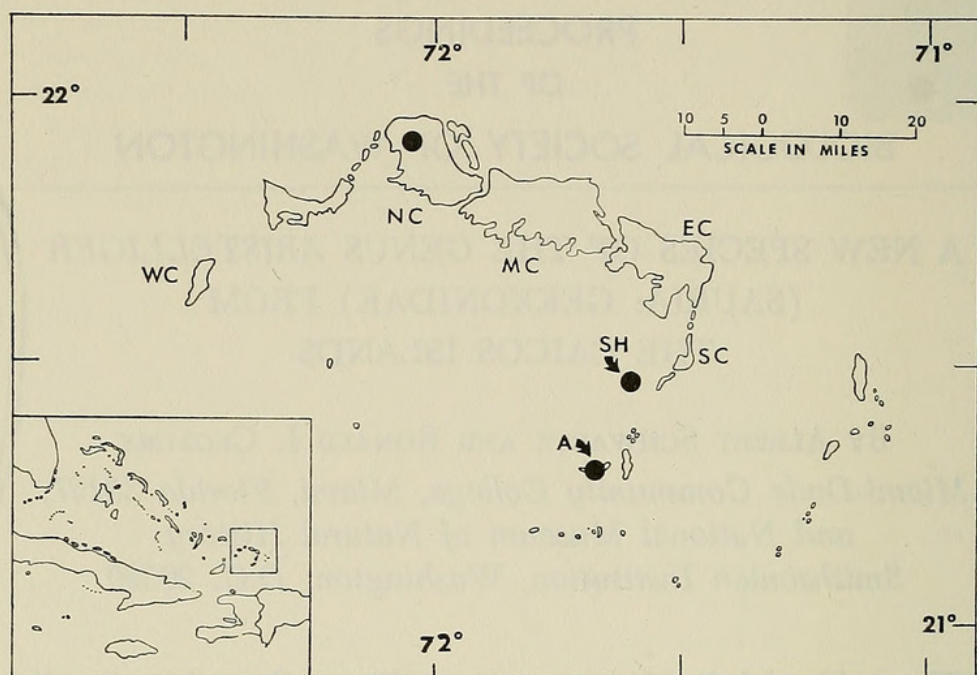


FIG. 1. Map of the Turks and Caicos Bank, showing localities for *A. hechti* (solid circles). WC = West Caicos, NC = North Caicos, MC = Middle Caicos, SC = South Caicos, SH = the Six Hill Cays, A = Little Ambergris Cay. The inset shows the position of the Caicos in the West Indies.

Hayden (1957: 30) visited the Six Hill Cays and secured 12 specimens of *Aristelliger*; they gave a brief synopsis of the vegetation of "these small, forbidding cays." Garth Underwood visited East Six Hill Cay and collected five specimens for the Museum of Comparative Zoology, and David C. Leber secured one specimen there for the senior author. Donald W. Buden collected a series of eight *Aristelliger* on Little Ambergris Cay, a small islet about 15 kilometers south of the Six Hill Cays (Fig. 1). Most recently, George Campbell discovered a population of these geckos on North Caicos but we have only been able to examine one specimen from this collection. Thus, we have available for study a series of 21 *Aristelliger* from the Six Hill Cays, eight from Little Ambergris Cay and one from North Caicos—a total of 30 specimens, far more than were available to Hecht at the time of his study.

We have taken the following measurements (in millimeters) and counts on all specimens: 1) snout-vent length, from mid-point of the rostral scale to anterior border of vent; 2) head



length, from midpoint of rostral to anterior edge of auricular opening; 3) head width, at mid-orbit; 4) fourth finger lamellae, total of both fingers; only functional lamellae were counted, from the first undivided lamella that is wider than the distal lamella, to and including the distal lamella; 5) fourth toe lamellae, total of both toes, counted as in fourth finger; 6) head scales, counted in a more or less straight line along the midline of the snout from the median internasal (or from a line connecting the center of the nostrils) to a line connecting the anterior edge of the preorbital fold; 7) loreals, counted from the enlarged postnasal (but not including it) to the preorbital granules; 8) dorsal scales, the number of paravertebral granules in a standard distance (= from rostral to posterior border of orbit); 9) postmental scales, those scales which lie medially between the enlarged lateral postmental scales; 10) supralabials, total in both upper lips; 11) infralabials, total in both lower lips.

These counts are variously useful in dealing with *Aristelliger*. Counts of head scales, for example, are quite unstable, since many large (and some small) specimens have very irregular scales; reliable counts are difficult and subjective. Loreal counts are slightly more stable, whereas dorsal scale counts are the most subjective. Many large males of all species used in the present study have very irregular dorsal granules, *i.e.* enlarged, trihedral scales scattered among normal-size granules. These individuals would have dorsal counts about half those of "normal" specimens of the same species. In addition, *Aristelliger* have delicate, tissue-like skins which are easily torn; the scales of healed wounds are an additional variable since they too are irregular or abnormal. All these factors render the head and dorsal scale counts very subjective and of doubtful utility. We have, however, used these counts in the following diagnosis since we plan to analyze the variation in a review of the genus *Aristelliger*, now in preparation. Adult size, postmental scales, and lamellae counts are most useful in defining populations.

Sexual maturity and reproductive condition were determined by gonadal inspection. Males of all species except *A. lar* are easily sexed and categorized by the size and state of



the testes. The gonads of sexually mature males are enlarged and granular. For females, all those larger than the smallest gravid female were considered adult; additionally, those females with follicles 3 mm or larger were also regarded as adults.

We agree that the Caicos Island lizards are distinctive from their congeneric neighbors and, in honor of Max K. Hecht, who first recognized these lizards as a new taxon and who laid the foundation for further studies on the genus *Aristelliger*, we propose the following name.

***Aristelliger hechti*, new species**

*Holotype*: National Museum of Natural History (USNM) 195844, an adult male, from Little Ambergris Cay, Caicos Islands, one of a series collected by Donald W. Buden, 28 March 1972. Original number Albert Schwartz Field Series (ASFS) V27397.

*Paratypes*: ASFS V27398–404, same data as holotype; USNM 81444–46, Six Hill Cay, off South Caicos, Caicos Islands, P. Bartsch, 3 August 1930; American Museum of Natural History (AMNH) 80119–24, East Six Hill Cay, Caicos Islands, G. B. Rabb and C. L. Giovannoli, 12 February 1953; ASFS 10700, East Six Hill Cay, Caicos Islands, D. C. Leber, 18 January 1961; Museum of Comparative Zoology (MCZ) 54196–200, East Six Hill Cay, Caicos Islands, G. Underwood, 3 July 1955; University of Michigan, Museum of Zoology (UMMZ) 117390 (6 specimens), East Six Hill Cay, Caicos Islands, G. B. Rabb and C. L. Giovannoli, 12 February 1953; Lewis D. Ober Private Collection (LDO) 8-7766, Village Green, near Kew, North Caicos, Caicos Islands, George Campbell, 26 February 1974.

*Definition*: A species of *Aristelliger* characterized by moderate size (males to 90 mm, females to 75 mm snout-vent length), a short and rounded snout, 1 enlarged median postmental scale and a variable dorsal pattern including individuals with a pair of dark scapular ocelli surrounded by pale color and including a pale (whitish) central spot, and/or ocellar pattern reduced or absent, head and body with a scalloped middorsal band or series of fused pale rhombs, or even completely patternless reddish tan, slightly brighter on tail.

*Description of holotype*: An adult male with a snout-vent length of 90 mm, tail broken to a stub; head length 22.8 mm, head width 18.1 mm, fourth toe lamellae 14/14 (total 28), fourth finger lamellae 14/13 (total 27); supralabials 7/6, infralabials 6/5; head scales 21, loreals 18, dorsal scales 40. Coloration and pattern (as preserved) dull gray brown, unpatterned except for a pair of dark gray and obscure scapular ocelli and a dark line from eye onto temporal region above the auricular opening.



*Variation:* The series of *A. hechti* consists of 12 adult males, 14 adult females and four subadults or juveniles (smallest snout-vent length 51 mm; MCZ 54200). Snout-vent lengths of adults are: males 64–90 ( $\bar{x}$  = 80.7), females 57–75 ( $\bar{x}$  = 66.8); head length, males 17–23 (20.4), females 15–19 (17.4); head width, males 13–18 (15.3), females 11–15 (12.8). In all specimens: fourth finger lamellae 22–28 (24.6); fourth toe lamellae 24–31 (27.2); supralabials 12–16 (13.7); infralabials 10–14 (11.6); head scales 18–24 (20.0); loreals 16–20 (18.1); dorsals 39–50 (44.0); postmental scales one.

*Color and pattern:* In life ASFS 10700, a large (70 mm S–V) female was “irregular reddish tan, slightly brighter on tail.” George B. Rabb furnished the following color notes on his specimens: “Color for most *Aristelliger* is olive, blending and alternating with various browns. A tendency towards a saddle banding on the back, more pronounced in younger ones. In 1613,” (UMMZ 117390, an adult female, 63 mm), “for instance, the lighter bands of an orange color, the darker of olive partially margined with dark brown or black. The blotches or bands more evident on tail than back in larger specimens. 1612” (UMMZ, adult female, 62 mm) “very light green in life. 1615” (AMNH 80119, adult female, 60 mm) “with a tail having alternating black and orange, then black and white bands. Yellowish underside of tail and on palms.” The dorsa in preserved specimens of both sexes are grayish brown or brownish. In the series of males, some (AMNH 80120, MCZ 54197) are patternless dorsally except for random dark vermiculate markings which probably represent the dark edges of either a dorsal scalloped pale band or a series of fused dorsal rhombs. The holotype resembles these specimens except that it shows remnants of a pair of dark scapular ocelli, although these are not now hollowed centrally. Still another male condition is shown by ASFS V27398 which is the most strongly patterned male; this lizard has a pale middorsal scalloped band composed of six paired pale rhombs, outlined with black or dark gray, the last pair of rhombs on the unregenerated portion of the tail, the most anterior pair on the postscapular region, preceded by a pair of large dark gray ocelli, each hollowed centrally with a pale spot; the middorsal pale band continues onto the neck and head and is there delimited ventrolaterally by a dark canthalpostocular line; on the upper surface of the head, the central pale area is finely stippled with dark gray, especially anteriorly, but the integrity of the pale area is not obliterated by markings. Scapular ocelli are present in some specimens which otherwise show no dorsal pattern (AMNH 80123), and a small male (ASFS V27404) is like the complexly patterned adult male described above, having both dark and hollowed scapular ocelli and a paramedian series of pale dorsal rhombs, although these latter are not outlined with black or gray. Females show the same variation in dorsal pattern as males; some are patternless (AMNH 80122), others have ocellar remnants (ASFS 10700) but no other dorsal pattern remnants,



and still others (ASFS V27403) are as complexly and completely patterned as the male described above. In those specimens with unre-generated tails, the tail is banded with about seven dark bands (the basal one or two of which are dorsally separated by rhomboidal markings) alternating with narrow pale bands, the latter becoming broader nearer the tip, which is black. Regenerated tails are longitudinally streaked with dark gray or are unicolor. In both sexes the venter is paler than the dorsum and the chin and throat are heavily stippled with brown, in rather striking contrast to the much paler belly.

*Comparisons:* Due to the extreme plasticity and variability of the few morphological characters heretofore used to separate the species in the genus *Aristelliger*, a detailed discussion of the relationships of *A. hechti* would be speculative. Since we intend to review the entire genus in the near future, comparisons and relationships are treated minimally. We hope to be able to elaborate on these in the revision.

The genus *Aristelliger* contains two distinctive species groups. *Aristelliger cochranæ* and *barbouri* (subgenus *Aristelligella* of Hecht 1951) are small to moderate size lizards (65 mm snout-vent maximum) with a unique arrangement of postmental and digital scales combined with a distinctive dorsal pattern. The lateral postmentals are large ( $\frac{1}{2}$ – $\frac{3}{4}$  as wide as the first infralabial) and in contact on the midline of the mental. Three fingers and two outer toes have a terminal sheathlike scale, called a "friction pad" (see Hecht 1952: 113 for illustration). The pattern develops from a juvenile dorsal "ladder" which fades with maturity but is usually visible.

The other *Aristelliger* have friction pads on only one finger and toe of each foot; the lateral postmentals are separated by one or more median postmentals. The dorsal pattern develops from a series of dorsal rhombs and prominent scapular ocelli, frequently fading to unicolor in adults.

*A. hechti* is a member of the latter group and therefore requires comparison only with *A. lar*, *praesignis* and *georgeensis*. There is a great deal of overlap in the scale counts of these species (Table 1) but the postmental scales are reliable characters which, used in conjunction with other data, will distinguish the species.

*A. lar* is a very large lizard; the smallest mature adults are larger than the largest *hechti*. Over much of its range, *lar* has a single postmental (like *hechti*). However, the *lar* closest geographically to the range of *hechti* (Republica Dominicana: Prov. Monte Cristi; Cayos Siete Hermanos) are smaller lizards (under 100 mm S–V) with two or three postmentals.

*A. georgeensis* is slightly larger than *hechti* and consistently has two or three postmentals. The dorsal pattern is reduced with rare vestiges of scapular ocelli; adults frequently have a dark head with scattered white flecks.

*A. praesignis* is extremely variable but some individuals are similar to *hechti*. We do not yet understand the variability in *praesignis* but



TABLE 1. Measurements (in millimeters) and counts for four species of *Aristelliger*. Lamellae and labial counts are the total of both sides. Data for *A. praesignis* are from Jamaica (type-locality) and for *A. georgeensis* from throughout its range, but principally from Isla San Andrés and Isla Providencia.

	<i>hechti</i>	<i>lar</i>	<i>praesignis</i>	<i>georgeensis</i>
N	30	28	53	38
Largest ♂	90	132	85	108
Largest ♀	75	111	65	83
Head length				
largest ♂	22.8	33.6	21.4	27.3
largest ♀	18.7	26.4	15.6	21.2
Head width				
largest ♂	18.1	22.2	13.3	16.9
largest ♀	14.6	16.7	9.5	13.1
4th finger lamellae	24.6	26.3	21.7	27.3
	(22-28)	(22-31)	(18-26)	(24-30)
4th toe lamellae	27.2	29.3	23.8	29.2
	(24-31)	(25-33)	(20-28)	(26-32)
Supralabials	13.7	13.3	14.1	13.1
	(12-16)	(12-15)	(12-16)	(12-15)
Infralabials	11.6	10.8	11.1	11.1
	(10-14)	(10-12)	(10-14)	(10-12)
Head scales	20.0	23.5	19.4	20.4
	(18-24)	(20-28)	(17-25)	(18-24)
Loreals	18.1	18.8	16.6	15.9
	(16-20)	(16-22)	(15-21)	(14-18)
Dorsals	44.0	50.0	39.4	41.8
	(39-50)	(39-60)	(32-44)	(34-49)
Median postmentals	1	usually 1, occasionally 2 or 3	0-3	2 or 3

it is generally smaller and less robust than *hechti*, with modally lower lamallae counts and variable postmental arrangement.

*Remarks:* We are unwilling at this time to postulate any zoogeographic sequence of the species included within *Aristelliger*. However, it seems likely that *A. hechti* is most closely related to *A. lar* or *praesignis*. Schwartz (1968) discussed the history of the faunas of the Bahama Islands (including the Turks and Caicos islands) and suggested that these islands south of the Crooked Island Passage harbor a relict fauna, long in residence and well differentiated from their



Cuban or Hispaniolan relatives, often so distinctive as to render their ultimate Greater Antillean relationships obscure. Gorman, Thomas and Atkins (1968) showed that *Anolis scriptus* Garman, a species that occurs in the Turks and Caicos islands and as far north as Samana Cay and Mayaguana Island in the Bahamas south of the Crooked Island Passage, is Puerto Rican in affinities, but well differentiated from its relatives.

These southeastern islands have a fauna which is predominantly Hispaniolan, with some Cuban and Puerto Rican influences. Since none of the primal southeastern fauna is Jamaican in origin (see Schwartz 1968: 265) and the recent southern invaders are also not Jamaican, we should be most inclined to consider *A. hechti* as related to *A. lar* rather than *praesignis*. It seems likely that *A. hechti* is a relict species which reached the Caicos Islands from Hispaniola and has differentiated from perhaps a pre-*lar* stock. The evidence for this relationship is scanty but analysis of recently collected *A. lar* may shed some light on the problem. In addition, we are as yet unsure that there are not other species masquerading under the names *georgeensis*, *lar* and *praesignis*. Considering our present uncertainties regarding the two possible ancestral species of *A. hechti*, it seems futile to speculate further on its relationships and phylogeny.

The islands and situations where *A. hechti* has been taken are seldom visited by collectors. Bartsch collected three *A. hechti* "by turning over rocks" on Six Hill Cay (Cochran 1934: 5). On East Six Hill Cay, David C. Leber secured a single lizard under a rock 6-inches thick, and 3 × 2 feet in diameter, with soft ground beneath it, in a stand of *Batis*. Leber also saw a single *Aristelliger* on West Six Hill Cay but did not secure it. The topotypical series was secured by Donald W. Buden in palm trash. Little Ambergris Cay is, according to his field notes, a very low sandy islet about one mi. west of Big Ambergris Cay, strewn with widely scattered *Cocos* and decaying remains of *Cocos*. The general vegetational picture is one of low sparse scrub. The specimen from North Caicos was taken in a crumbling rock fence and others were seen in the ruined buildings of Village Green, a former slave town.

#### ACKNOWLEDGMENTS

We are grateful to Charles W. Myers, Ernest E. Williams, Ronald A. Nussbaum, and Lewis D. Ober for loans of valuable material from their respective collections. George B. Rabb kindly provided his field notes on the Caicos Islands. Without the assistance of Donald W. Buden and David C. Leber in the field, the number of *A. hechti* available to us would be only 21, and we are accordingly in the debt of these men who have visited the Six Hill and Ambergris Cays on our behalf. George R. Zug and W. Ronald Heyer provided helpful criticism of the manuscript.



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