

ANOLIS MENTA, SP. N. (SAURIA, IGUANIDAE), A NEW *TIGRINUS* GROUP ANOLE FROM THE WEST SIDE OF THE SANTA MARTA MOUNTAINS, COLOMBIA.

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Dennis Harris, collecting in the mountains above Rio Frio, Magdalena Department, Colombia, obtained four specimens of a new anole belonging to the *Anolis tigrinus* species group (Williams, 1976), a group that had previously been known only from two widely disjunct pairs of species: *Anolis solitarius* Ruthven 1916 and *Anolis tigrinus* Peters 1863 of northern South America, and *Anolis nasofrontalis* Amaral 1933 and *Anolis pseudotigrinus* Amaral 1933 of the Atlantic Forest in the Brazilian state of Espírito Santo. These new, pale green animals were collected on a ridge that bears the Spanish name for mint — Cuchilla Hierbabuena — and, since these aromatic plants grew in a small pasture just below the collection site, we call the new species by the Latin name for mint:

Anolis menta, new species (Figures 1-7)

Type: MCZ 159013, adult male (Figs. 2, 3, 4, 5, 6).

Type locality: Cuchilla Hierbabuena, 4 km southeast of San Pedro de la Sierra in the Sierra Nevada de Santa Marta Mountains, Magdalena Department, Colombia (10°53'N; 74°1'W): D. M. Harris, collector, 22 February 1980.

Paratypes: All from Magdalena: ICN 3682, adult male; MCZ 159014, adult female (Figs. 1, 6, 7); ICN 3683, adult female; all with the same data as the type. MCZ 29685: "west side of the Sierra Nevada de Santa Marta," collected by P. J. Darlington⁴, February 1929.

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- (4) Darlington collected at Rio Frio (see Fig. 10) and reported in his paper on the birds of the area that "... A good trail leads from the town (Rio Frio) into the mountains" (1931, p. 349). It is assumed that this paratype was collected near the *menta* type locality. Among his "Rio Frio" specimens was a *Pseudogonatodes furvus*, a highland gecko species also obtained by Dennis Harris near San Pedro de la Sierra.

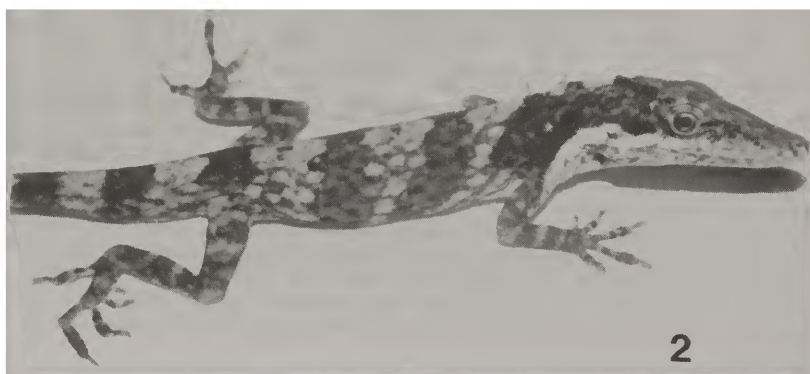
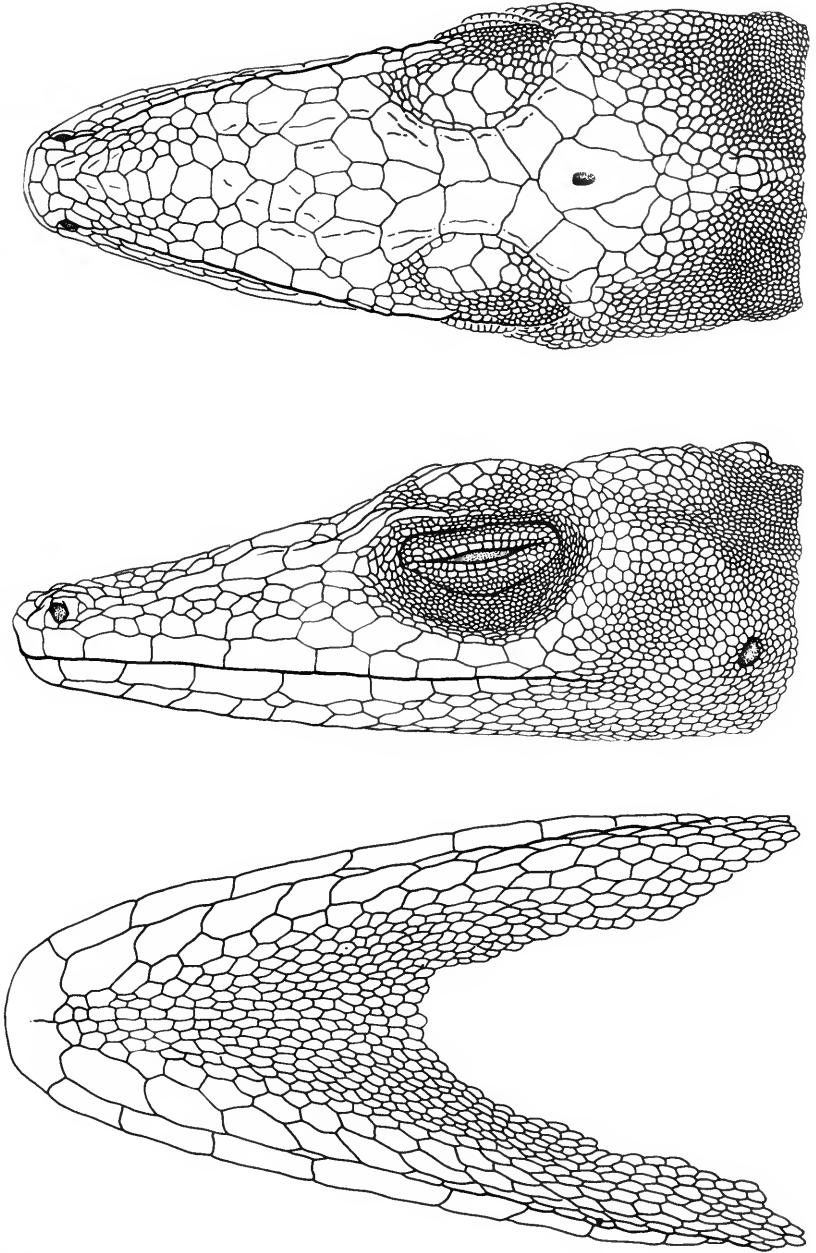


Fig. 1. *Anolis menta*, ♀ paratype, MCZ 159014; fig. 2. *Anolis menta*, holotype ♂, MCZ 159013.

Diagnosis. A small cloud forest species of the *tigrinus* group, green with more or less distinct dorsal banding, with greatly enlarged head scales; large supraorbital semicircles in broad contact with each other; a greatly enlarged interparietal scale; the large supraocular disk scales in contact with or separated from the semicircles by a single row of smaller scales; a parietal depression followed by a more or less prominent parietal projection; a long snout in both sexes, especially in the male; small, swollen, nearly uniform, granular scales on the sides and dorsum; dewlaps in both sexes; large and unpigmented, white with a yellow edge in the male; smaller and pink with several large dark black spots in the female. *A. menta* differs from *A. tigrinus* of Venezuela by having smooth (rather than pustulose) head scales and a differentiated anterior nasal scale (rather than a circumnasal separated from the rostral by a round unmodified scale) and by its dorsal pattern boldly banded (rather than not or indistinctly banded) in the male. It differs from *A. solitarius*, its nearest neighbor on the north side of the Sierra Nevada de Santa Marta, by the presence in the female of a light dewlap with large black spots (rather than an unspotted dewlap).



Figs. 3-5. *Anolis menta*, holotype ♂, MCZ 159013.

Description. Head. Head scales large to very large, slightly wrinkled. Five scales across the snout between the second canthals. Frontal depression pronounced and long with raised edges, narrower in the males, most scales within it larger than those anterior to it. Two to four scales on each side in direct contact with rostral. Anterior nasal scale on each side in direct contact with rostral. (In ICN 3682 they are separated on each side by a single scale probably derived from the anteroventral part of the anterior nasal scale.) Five or six scales between supranasals dorsally. Snout long in both sexes, especially the males, protuberant, extending slightly beyond mental. Head length (snout to end of lower jaw) 2.2x head width in males, 1.9x head width in females.

Large supraorbital semicircle scales in broad contact with each other and with the large interparietal. Semicircles in contact with or barely separated from the supraocular disk on each side, which consists of four to seven large, slightly rugose scales, remainder of supraocular scales swollen granules. One elongate, keeled supraciliary on each side about 1/4 the orbit length, followed by granules (or by another much shorter supraciliary and then by granules). Canthus rounded (angular in posterior third of paratype male), canthals large like other snout scales. Loreal rows three to five, the lowermost row usually larger.

Temporals granular, larger over temporal arch and becoming larger and flattened toward the interparietal area, which is bounded by distinct ridges. Interparietal greatly enlarged, four to six times the ear opening, pear-shaped or oval, scales lateral and posterior to it also greatly enlarged. Well developed parietal depression, followed by a small parietal knob, more pronounced in males. Ear opening small, elliptical.

Suboculars large, in contact with supralabials. Six to eight supralabials to the center of the eye.

Mental semi-divided, about twice as wide as deep. Two to four granules are in contact with the mental between the large first sublabials. Sublabial scale rows well-developed, four to five in contact with the infralabials. Gular scales swollen granules, uniformly small, becoming larger only in the most lateral rows.

Trunk. Dorsal and flank scales swollen granules, very slightly larger and flattened in vertebral region (less so in males than females), with a very slight central keel. Ventrals much larger, about four times size of dorsals, in transverse and diagonal rows, smooth, juxtaposed or subimbricate, rounded or slightly squarish. Lateral chest scales not keeled.

Dewlap. Present in both sexes. Large in male, reaching anterior abdomen, scales smooth, larger than ventrals, weak, widely spaced in rows separated by naked skin, edge scales somewhat crowded; small to moderate in females (Fig. 7), in which the scales are smaller than ventrals, smooth, juxtaposed, in closely spaced rows, more crowded at the edge.

Limbs and digits. Upper arm scales smooth flattened granules, lower arm scales larger and smooth or unicarinate. Supradigital scales multicarinate. Leg scales granular posteriorly, larger and uni- to multicarinate anteriorly. Toe pads moderately broad, 18-20 scales under phalanges ii and iii of fourth toe. All but two first phalanges and all claws missing on the male paratype, possibly due to frostbite.

Tail. Slightly compressed, moderately long, 1.7 to 1.8 times body length. Two middorsal scale rows, ventral rows only very slightly larger, verticils not evident. Scales posterior to vent smooth. Large post-anals in males, none in females. Tail base in adult males only slightly larger.

Size. *Anolis menta* is a small but rather robust species. Snout to vent length of the four known specimens are 53 mm (the type), 56 mm, 50 mm and 54 mm, respectively.

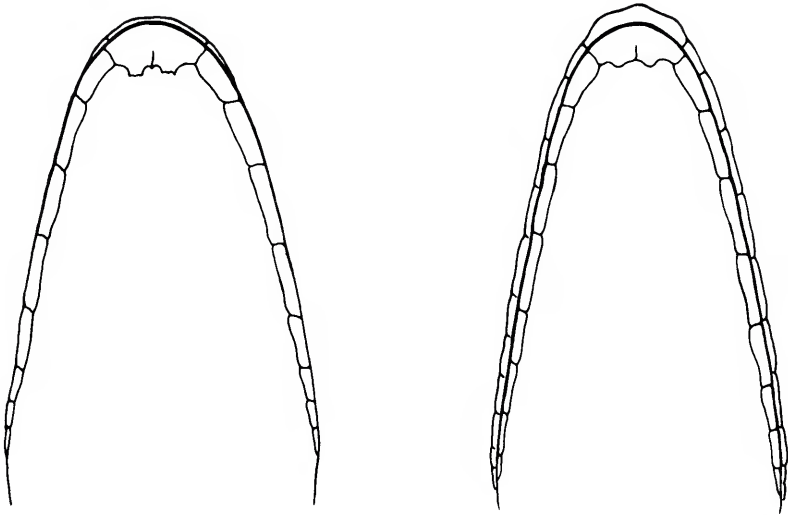


Fig. 6. Sexual difference is snout shape in *Anolis menta*: left, female, MCZ 159014; right, male, MCZ 159013.



Fig. 7. Spotted dewlap of female. *A. menta* paratype, MCZ 159014.

Color. Males: In life, pale yellowish green with broad dark sienna-brown bands: four across the back and six or seven on the tail; belly white. Dewlap bi-colored, white with a wide lemon-yellow band along the ventral and posterior edge, scales pure white. In preservative, yellow fades; the four broad oblique dorsal bands contain small dark spots across back and sides and are separated by equally broad light bands made up mostly of large pale spots. Head almost uniform brown above, slightly darker bar across head over eyes. Labials and lower areas on sides of head pale, white zone extending back on lower sides of neck above ear opening. Limbs and digits banded. Tail broadly banded.

Females: One paratype was light green and the other grayish in life, with a series of saddle-shaped sienna-brown spots along the vertebral region and diagonal rows of small round brown spots on the sides. The belly of the green specimen was nearly white, the other had a speckling of tiny dark spots encroaching from the sides. The dewlaps were pinkish (salmon in the green specimen) with 8 to 10 large black spots (Fig. 7). Tail with narrow non-prominent bands. Preserved specimens grayish brown with diagonal series of darker brown spots on the sides, slightly darker brown bar across the head over eyes. Peritoneal lining heavily pigmented.

Habitat and reproduction. All four specimens were found sleeping at night on exposed sites along the edges of a cool cloud forest (premontane/lower montane wet forest) at the crest of a ridge or 'cuchilla' (Fig. 9). Two clung on the edges of leaves 1-3 m high. The type and first paratype female were within one-half meter of each other on grass blades about 70 cm above the ground (Fig. 8). The site is located at about 2000 m elevation, and ice formed on a tent the morning after the specimens were collected.

The four specimens were in reproductive condition at the time of capture, the males with enlarged testes (4.8 x 3.3 mm approximately) and the females with one (or two, with one more advanced) oviducal eggs and one enlarged ovarian follicle. The largest egg measured 14 x 7 mm.

COMPARISONS

Anolis menta and *A. solitarius* are the only anole species known from the northern highland regions of the Sierra Nevada de Santa Marta Mountains (Fig. 10). Their similarities and differences are shown in Table 1, together with the closely related *A. tigrinus*. Scale counts are only minimally different in the three species, and considering the small sample sizes in each case, there may be no significance in apparent differences. At nearby lower elevations, three other species occur: *A. auratus*, *A. tropidogaster* (Ruthven called it *A. gaigei*) and *A. biporcatus* (Ruthven's *A. solifer*). All are larger and none have the large smooth dorsal head scales of the *tigrinus* group.

It is surprising to find a second member of the *Anolis tigrinus* species group on the west side of the Sierra Nevada de Santa Marta, but there is no doubt about its distinctness nor its affinities.

With the description of *A. menta*, there are now three species in the *tigrinus* group in northwestern South America, and they form an especially tight-knit group. As would be expected, the two southeastern Brasil species — *A. nasofrontalis* and *A. pseudotigrinus* — are less close. One feature, the parietal knob, clearly unites the three northwestern species and is especially prominent in *A. menta*. It is present in all three, although it has until now been overlooked in the previously described species. It is more evident in males than in the females.

TABLE I: Comparison of the three northwestern *tigrinus* group species.

	menta	solitarius	tigrinus
snout protuberant in male	+	-	-
head scales pustulose	-	-	+
anterior nasal differentiated	+	+	-
supraciliary short	-	-	+
interparietal pear-shaped	+	-	-
parietal knob	++	+	+
banded pattern in male	+	+	-
dewlap in female pale with black blotches or spots	+	-	+

The three form a characteristic set of allospecies. There seems to be only one character — the *absence* of black blotching (Fig. 7) in the female dewlap — to distinguish the middle member of the set, *solitarius*, from both the species that neighbor it. However, an alternation of resemblances to *menta* and to *tigrinus* results in a combination of characters that individually differentiates it from both its siblings. Although no contact zones are known, we are not in doubt about the species status of these three dwarf species.

Two non-diagnostic features deserve comment:

1) A variant condition occurs in the head scales of four female specimens of *A. solitarius* — the type UMMZ 48303 (see Ruthven, 1916, plate 1), LACM 114544-45 and KU 169832 (Fig. 11). In these examples, large squarish scales intervene between the supraorbital semicircles and separate or nearly separate them. In a species group nearly defined by broad contact between the supra-orbital semicircles, this is a very striking variant — particularly striking because it is a large and abrupt change. Differences, even between species, are usually of a lesser magnitude, graded series rather than a macrostep. In these females, the intervening squarish scales seem to have been split off from the large scales of the semicircles of more typical specimens, but this splitting off is, as in the



Fig. 8. (above) Collection site of *A. menta*; fig. 9, (below) Cuchilla Hierbabuena (= Mint Ridge) just above San Pedro de la Sierra, Magdalena, Colombia.

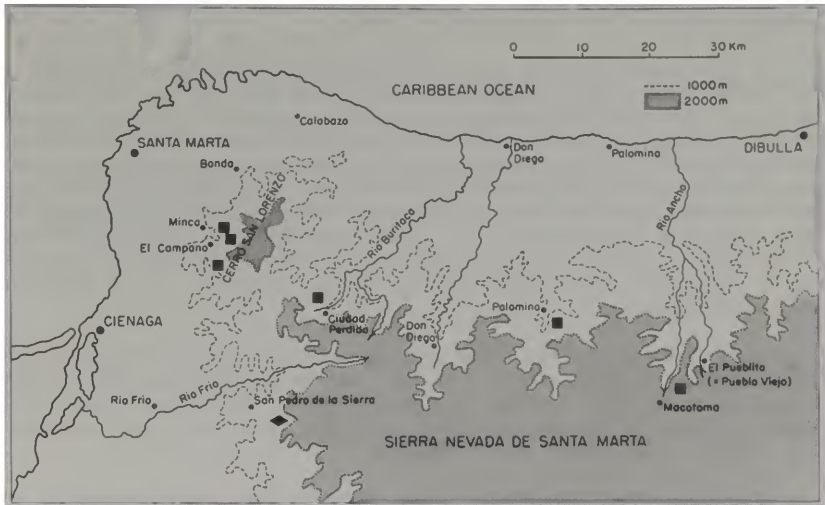


Fig. 10. Known collection localities of *Anolis menta* (diamond) and *Anolis solitarius* (squares) in the Sierra Nevada de Santa Marta, Colombia.

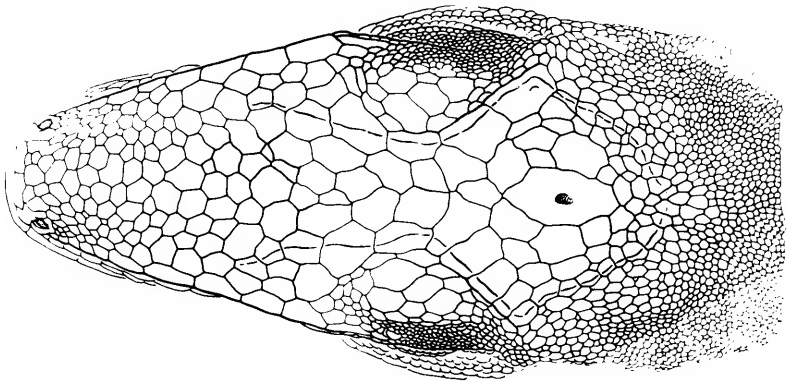


Fig. 11. Large squarish scales separate the supraorbital semicircles in occasional female *A. solitarius*, as in the type specimen (UMMZ 48303) and this one (KU 169832).

figured specimen, characteristically irregular and asymmetric. Aberrations as strongly marked as this are unusual in *Anolis*.

2) The parietal knob in these South American dwarf anoles is paralleled by similar knobs in two Hispaniolan dwarf anoles that are also very similar in habitus but currently regarded as phyletically remote: *A. insolitus* (size to 47 mm snout to vent) and *A. sheplani* (41 mm snout to vent). Both West Indian species have the cryptic coloration and the large head scales of the South American *tigrinus* subgroup (but in the West Indian species the semicircles are not in contact). Both also have the prominent external parietal knob underlain, as a skull of *A. insolitus* shows, by a sharp, abruptly rising point of bone that is the posterior medial angle of the parietal. (Presumably the *tigrinus* subgroup has a similar bony knob underlying the external structures, but no skeletons are yet available.)

Anolis insolitus also has lateral occipital and postocular external knobs that are underlain by bony swellings. *A. sheplani* lacks these, and the *tigrinus* subgroup has no trace of them. *A. insolitus* and *A. sheplani* have specialized middorsal scales, differently specialized in the two cases; the *tigrinus* subgroup has primitive unspecialized middorsal scales.

Two other West Indian species are believed to be closely related to *A. sheplani* and *A. insolitus* and resemble them in habitus: *A. occultus* of Puerto Rico (size to 47 mm snout to vent) and *A. darlingtoni* (not a dwarf, the unique male type is 72 mm snout to vent). Both lack parietal or other head knobs as well as the specialized middorsals of *sheplani* and *insolitus*, but *darlingtoni* has very large head scales like those of *sheplani*, *insolitus* or the *tigrinus* subgroup. (*A. occultus* has distinctly smaller head scales.)

It is astonishing to find similar parietal knobs — for which it is difficult to imagine a function — in two sets of dwarf anoles, widely separated geographically and not believed to be closely related. Further comparisons — internal morphology, electrophoresis, karyotypes, immunology — are obviously in order. (A very detailed comparison of the West Indian species referred to is available in Schwartz, 1974). The comparative material examined and their locations will be listed in a forthcoming paper on the *tigrinus* group by E. E. Williams.

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