

## A new subspecies of *Anolis porcatus* (Sauria: Polychrotidae) from Western Cuba

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(Rec. 1-IX-1995. Rev. 11-IX-1995. Acep. 22-II-1996)

**Abstract:** A new subspecies of *Anolis porcatus* Gray, is described from western Cuba. The main characters differentiating *Anolis porcatus aracelyae* are a light blue tint dorsum and an elongated ear opening. The distribution of the new taxon may be explained on the basis of allopatry in the Guaniguanico mountain range.

**Key words:** *Anolis porcatus*, Cuba, Polychrotidae, subspecies

Since the original description of *Anolis porcatus* (Gray 1840), this species was twice considered a subspecies of *Anolis carolinensis* Duméril and Bibron (Barbour 1937, Oliver 1948), although Gray's allocation generally has prevailed. The most complete systematic treatment was by Ruibal and Williams (1961). They described the variability observed among and between populations of *A. porcatus* across Cuba and proposed not fewer than four hypotheses to explain the possible existence of several species and subspecies. Ruibal (1964) reiterated the possibility that *A. porcatus* may represent more than one species. Schwartz and Henderson recently (1991) confirmed specific status to *A. porcatus* Powell (1992) presented a complete review of this species.

I first collected *A. porcatus* in 1978 from localities in La Habana, Ciudad de la Habana, and Pinar de Río. I noted that all adult males from this last locality had a light blue dorsum. Sustained collecting initiated during 1988 in Western Cuba, from an imaginary N-S line uniting Limonar with Rosario (north of the Easter Zapata Swamp) in Matanzas Province to Cabo de San Antonio and the Isla de Pinos included specimens from 82 localities. I also

examined 325 additional specimens from populations throughout Cuba; unfortunately, some of this have been lost.

The presence of a peculiar phenotype with a light blue color in adult males and with an elongated ear opening in both sexes became evident in samples from western Cuba. This variation in ear shape had been noted by Ruibal and Williams (1961) for Pinar de Río populations. The distribution of this phenotype includes almost the entire province of Pinar del Río, and its discovery makes necessary a new systematic arrangement:

### *Anolis porcatus* Gray, 1840

*Anolis porcatus* Gray, 1840. Catalogue of the species of reptiles collected in Cuba by W.S. MacLeay, Esq. Ann. Nat. Hist. p. 112.

**Diagnosis:** A long snouted lizard with nostrils separated from the rostral by three scales, bordered posteriorly by five scales; ventral scale at mid-body in transverse and diagonal rows; both ventral scale at mid-body in transverse and diagonal rows; both ventral and dorsal scales slightly keeled; frontal ridge higher than canthal in most males; postocular scales (between the ear opening and the posterior bor-



Fig. 1. Collecting localities.

der of the orbit) flat and enlarged; ear opening circular, or, in specimens from Pinar del Río Province, with an acute posterior margin; male color from dark brown to brilliant green or light blue in populations of Pinar del Río Province. Ventral coloration white, greenish, or yellowish; males with a mauve or pale mauve dewlap, females without dewlap or with a vestigial one in populations of eastern Cuba. Males to 84mm snout-vent length (SVL), females to 70 mm SVL.

**Distribution:** This species is common throughout Cuba and the Isla de Pinos, and is also found on several keys of the Cuban Archipelago: Cinco Leguas, Guajaba, San Felipe, Inés de Soto, Francés, and Santa María. These lizards are abundant in gardens, yards, public parks, groves, and throughout areas of human settlements. The species is rare in densely forested regions and appears to prefer disturbed areas. This preference has also been reported from Santo Domingo populations by Powell *et al.* (1990).

*Anolis porcatius porcatius* Gray

**Diagnosis:** A subspecies of *Anolis porcatius* characterized by a circular ear opening; body color from dark brown to brilliant green; ventral color white, greenish, or yellowish; males with a mauve or light mauve dewlap, females without a dewlap or with only a vestigial one in populations from eastern Cuba; males to 84 mm SVL, females to 70 mm SVL.

**Distribution:** This subspecies has a disjunct distribution from a line extending from ca. 6 km W of Vista del Mar south through Quiebrahacha and Cabanas to approximately the mouth of the San Cristobal River east to the eastern limit of the Island of Cuba; in the most western part of Guanahacabibes Península from a line extending from boca del Cuyaguaje ca. 5 km N of Cortés to the east coast of Garnacha inlet west to Cabo de San Antonio, the western limit of the Island of Cuba; is also found on several keys: Cinco Leguas, Guajaba, San Felipe, Inés de Soto, Francés, and Santa María. Populations have become established in Santo Domingo, probably since 1955 (Powell, 1990).

*Anolis porcatius aracelyae*, new subspecies

**Holotype:** An adult male, (Museo Nacional de Historia Natural, Habana, Cuba) MNHNCU-1445, collected at the town of Santa Damiana, 3.5 km NE of San Juan y Martínez, Pinar del Río Province, 20 m above sea level, by Riberto Arencibia.

**Paratypes:** Sixteen adult males, MNHNCU-1442-3, 1446-51, 1453-6, 1459, 1462-4; and 16 adult females, MNHNCU-1467-71, 1473-83; collected by Riberto Arencibia, Emilio Alfaro, Rafael Quinones, Antonio Pérez-Asso, and Octavio Pérez-Beato at the type locality on May 22, 1989.

**Diagnosis:** A subspecies of *Anolis porcatius* characterized by a long head (male head length/head width 1.87 to 2.16) and a moderately elongated ear opening resembling that of *Anolis allisoni*, phenotypic frequency from 20% in populations from eastern or western boundaries of the subspecies to 100% in popu-

lations from the central, northern, and southern parts of the range. Adult males light blue with dark vermiculations from the cephalic to the lumbar regions; tail color light green with dark vermiculations; some individuals with scattered white scales, more abundant on the hind legs and nape. Females light green with a beige or light brown middorsal stripe in most populations; ear opening elongated as in males. Males to 84 mm SVL, females 62 mm SVL.

**Description of the holotype:** An adult male, 76 mm SVL with a mutilated tail; head length 24.4 mm; head width 12.7 mm; inter-orbital distance 3.2 mm; distance between the anterior border of the orbit to the tip of snout 12.4 mm; femur length 17.2 mm; postocular scales enlarged and flat; ear opening lengthened longitudinally; frontal ridges higher than canthals; six supra-labial scales from rostral to eye; 16 loreal scales; 4 post-mental scales; 26 dorsal scale rows; 28 ventral scale rows; 11 interparietal scales; 2/3 scales between semicircles and interparietal; 5 scales between nares; and one scale row between suboculars and supralabials.

**Color in life:** Light blue color from the cephalic region to the lumbar area and with intense vermiculations; white spots on the nape; a conspicuous pale green to creamy middorsal line; scapular spot dark brown to black.

**Color in alcohol:** General color is blue-grey; postocular area deep blue; supraotic region yellowish green; middorsal region and hindlimbs cerulean blue, but limbs blotched; white spots on the nape to the scapular region; venter marbled with white; nasals, canthals, and frontals brown.

**Distribution:** This subspecies is found largely in Pinar del Río Province, from a line extending from ca. 6 km W of Vista del Mar south through Quiebrahacha and Cabanas to the mouth of the San Cristóbal River west to a line extending from ca. 5 km N of Cortés, approximately the mouth of the Cuyaguaje River, to the coastline of the Garnacha inlet.

**Variation:** Male paratypes are 63-78 mm SVL; loreal scales 16-24; supralabial scales 7-8 (to the middle of the eye), only one specimen with six. Ninety six percent have an elongated ear opening, the remainder a circular one; 35% of males have a scapular spot; most specimens (96%) show flat and enlarged post-ocular scales, in others these scales are small and granular; all possess frontal ridges higher than canthals.

Coloration in life is light blue from the cephalic to the lumbar region, with dark vermiculations; white spots on the sides of the nape, and in some individuals on the flanks. In certain populations the blue color is more intense on the head and nape, and along the flanks and the lumbar area, sometimes with a bluish green tint. In different populations females have a greenish shade on the throat and on the anterior part of the chest; body color of females is light green in all populations.

**Habitat:** Santa Damiana is a small rural town without paved streets. Houses are widely spaced with ample gardens and yards interconnected by shrubbery and small plantings. Parcels are limited by wire fences overgrown by creeping plants. The low terrain is covered with wild grasses. Specimens were collected on fences, trunks of small trees, gardens, creeping plants, and on bushes 100-200 m from the nearest houses. These lizards are rare in forested areas but abundant in all disturbed zones.

**Etymology:** The subspecies is named after my wife, Aracely.

## COMPARISON

The light blue dorsum in *Anolis porcatus aracelyae* is similar to the deep blue in *Anolis allisoni*. The ear opening of *Anolis p. aracelyae* also reminds one of *A. allisoni*, however the latter species has a more elongated ear opening with a skin fold in the upper border which is absent in *A. p. aracelyae*. Females of this subspecies have a maximum SVL of 62 mm and males of 84 mm, while females of eastern *Anolis p. porcatus* have a maximum SVL of 70 mm and males of only 81 mm. For females mean values, Student t-test  $p < 0.05$ .

More material would be necessary to investigate the possibility that the easternmost populations of *Anolis porcatus* is a distinct subspecies. The evidence offered by Ruibal and Williams (1961), regarding a "central" and a "eastern" form of *Anolis porcatus*, suggests *A. p. porcatus* may consist of two different forms. Future studies with additional material are necessary to elucidate the taxonomic situation for this group.

TABLE 1

*Maximum snout-vent length in mm of specimens of A. p. aracelyae and A. p. porcatus*

Subspecies	n	Localities	Males		Females	
			Maximum	X±s.e.	Maximum	X±s.e.
<i>A. p. aracelyae</i>	538	All distributional area	84.0	73.1±0.622	62.0	54.9±0.371
<i>A. p. porcatus</i>	108	Peninsula de Guanahaca bibes	84.0	65.2±3.000	59.0	53.3±0.633
<i>A. p. porcatus</i>	110	Isla de Pinos	76.0	67.5±1.170	55.0	52.5±1.180
<i>A. p. porcatus</i>	617	From E Cabanas-mouth of San Cristobal River to Mayari-El Cristo	84.0	67.7±0.763	61.0	53.9±0.466
<i>A. p. porcatus</i>	107	Easternmost portion of Cuba*	81.0	73.3±1.950	70.0	61.8±1.530

\* Maisi, Baracoa, Imias, Santiago de Cuba, La Cantera, Mella; n=sample size, X= arithmetic mean.

s.e.= standard error

## DISCUSSION

Gundlach's (1880) description of *Anolis porcatius* is based in *A. allisoni*. At that time, *A. allisoni* had not been described, and *A. "porcatius"* included both species. Because of the descriptions of Gundlach (1880), and Barbour and Ramsden (1919), it was plausible to recognize high variability in *A. porcatius* regarding the intensity of blue versus green coloration. Ruibal and Williams (1961) suggested the existence of geographic races and even of distinct species within both nominal *A. porcatius* and *A. allisoni*. They clearly described the variation in *A. porcatius* in terms of three populations: western, central, and eastern. The "western *porcatius*" was the first approximation of the present *A. p. aracelyae*.

Pérez-Beato and Berovides' (1982) electrophoretic studies reported a difference in the speed of migration of a protein (possibly serum albumin) observed in blood samples of *A. porcatius* from Habana and Pinar del Río provinces; those from the latter locality demonstrating a slower electrophoretic fraction. These results were corroborated by Espinosa *et al* (1985).

A possible explanation for the evolution of *Anolis porcatius aracelyae* could be based on the orographic phenomenon of the Guaniguanico mountain range. Apparently emerged since the Upper Eocene (Iturralde-Vinent 1988), these mountains may represent a geographic island where the race evolved allopatrically.

## ACKNOWLEDGEMENTS

For help in obtaining specimens I thank Rafael de la Vega, Xenia Hernandez, Ana Gloria Romanes and Esteban Gutierrez. Orlando Garrido provided important information, and Robert Powell made important corrections on the manuscript. I am grateful to Riberto Arencibia and Emilio Alfaro for their assistance.

## RESUMEN

Una nueva subespecie de *Anolis porcatius* Gray, se describe en este trabajo; se distribuye en la porción occi-

dental de Cuba. Los caracteres que la diferencian del material típico son: un tinte azul diluído que se extiende desde la región cefálica hasta la zona lumbar y, una abertura auditiva alargada. El área de distribución de esta nueva subespecie puede ser explicada por diferenciación alopatrica en la Cordillera de Guaniguanico.

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