

## REPTILIA: SQUAMATA: SAURIA: POLYCHROTIDAE

## ANOLIS BAHORUCOENSIS

## Catalogue of American Amphibians and Reptiles.

Sowell, S.P., J.S. Parmerlee, Jr., and R. Powell. 1995. *Anolis bahorucoensis*.

*Anolis bahorucoensis* Noble and Hassler

*Anolis bahorucoensis* Noble and Hassler, 1933:11. Type-locality, "Valley of Polo, Barahona Province, D.R. [=Dominican Republic]." Holotype, American Museum of Natural History (AMNH) 51128, adult male, collected by W.G. Hassler on 14-19 September 1932 (not examined by authors).

*Anolis bahorucoensis*: Barbour, 1935:81. *Lapsus*.

*Anolis hendersoni baharucoensis*: Williams, 1963:6. *Lapsus* (also see Nomenclatural History).

*A[nolis]. bahorucaensis*: Frank and Ramus, 1995:160. *Lapsus*.

• **Content.** Two subspecies are recognized: *bahorucoensis* and *southerlandi* (but see Remarks).

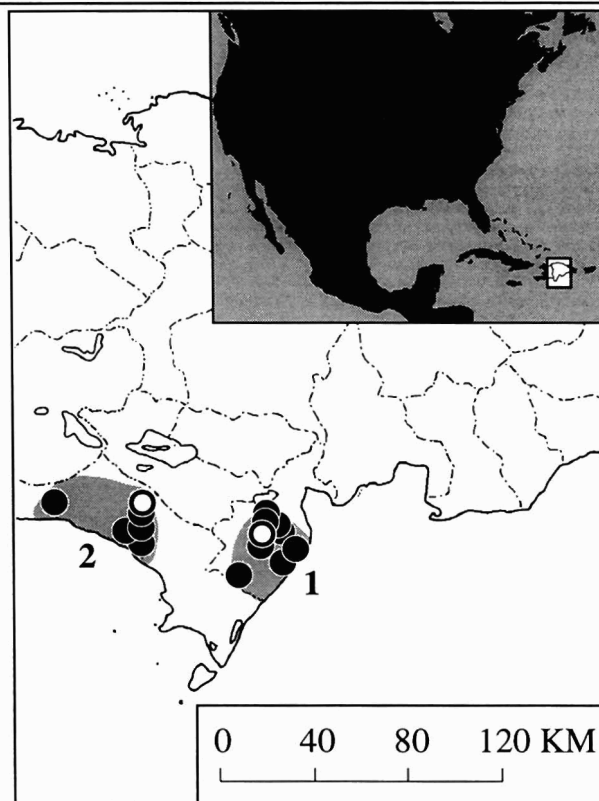
• **Definition.** *Anolis bahorucoensis* is a small, slender anole (males to 51 mm SVL, females to 44 mm) with an elongate head (alligator-like profile), an attenuate tail, 4-8 rows of loreal scales, 0-2 scales between supraorbitals, 2-5 scales between interparietal and supraorbital semicircles, 9-16 scales around interparietal, 2-4 postrostrals, 4-8 postmentals, and a band of 2-4 enlarged, keeled middorsal scales. The flank scales are 1/2-1/3 as large as the enlarged middorsals. Ventral scales are smooth, imbricate, and 2-3 times as long and 3-4 times as broad as the median dorsals. The upper surfaces of the forelimbs have keeled imbricate scales, the crus has small keeled scales, and the supradigital scales are multicarinate. The unregenerated tail has 6 vertical scale rows and is 2.5 times longer than the body.

Males are among the most spectacular of anoles, having a dorsal pattern consisting of 3-5 turquoise or grey-tan diamonds on a darker colored background. A white to yellow or tan to cream lateral line becomes thinner and somewhat fragmented as it reaches the hind leg. The dewlap is extremely small and with or without longitudinal darker lines on a pale background. The tail is brown with irregular, darkly colored annuli. A black patch immediately behind the eye is followed by a blue or tan vertical crescent. The female has a less elongate jaw and much duller coloration, consisting of a brown ground color with muted dorsal markings. The bright dorsal markings of the males languish dramatically very soon after being handled with little or no metachrosis.

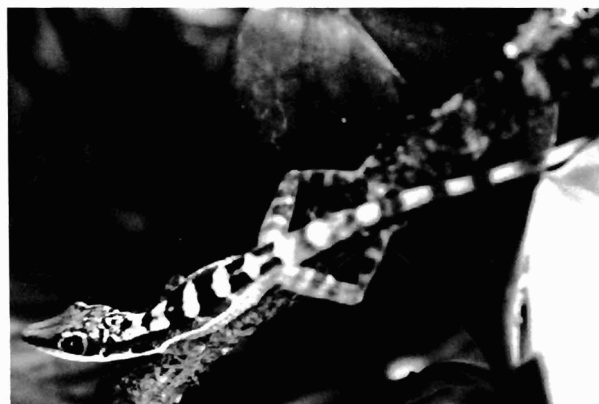
• **Diagnosis.** This species can be distinguished from most other Hispaniolan anoles by the attenuate habitus, and from grass anoles by the extremely small dewlap, relatively much shorter tail, and color pattern. *Anolis bahorucoensis* can be distinguished from other members of the *A. hendersoni* complex (*A. dolichocephalus* and *A. hendersoni*) by the dorsal diamond pattern. *Anolis hendersoni* is unicolor and patternless except for head and neck vermiculations. The lateral flank stripe of *A. dolichocephalus* is restricted to the anterior part of the body.

• **Descriptions.** In addition to the original by Noble and Hassler (1933), descriptions may be found in Cochran (1941), Williams (1963), Schwartz (1978), Fitch and Henderson (1987), and Schwartz and Henderson (1991).

• **Illustrations.** Line drawings of dorsal and lateral views of the head, lateral view of the tail, and mid-dorsal granules are in



**Map.** Range of *Anolis bahorucoensis* (modified from Schwartz and Henderson, 1991). Large circles mark type-localities, dots indicate other records.



**Figure 1.** Adult male *Anolis bahorucoensis bahorucoensis* from Barahona Province, Dominican Republic. Photograph by Kimberley S. Orrell.

Cochran (1941). Line drawings of the dorsum and side are in Williams (1963). A color photograph of a male is provided on the cover of Henderson and Schwartz (1984); a black and white version of the same photograph is used in Fitch and Henderson (1987). A water-color of a lateral view of the head and dewlap is in Schwartz and Henderson (1985). Fläschendräger (1990) included color photographs of an adult pair, an adult female, and a juvenile. Orrell (1994) provided line drawings illustrating behavioral components. A color photograph of an adult male is in Powell and Henderson (1996).

• **Distribution.** A Hispaniolan endemic, this species is found

along the north, east, and southeast slopes of the Sierra de Baoruco, as well as throughout the Massif de la Selle in extreme southeastern Haiti. The preferred habitat is moist montane forests where these lizards are associated primarily with bushes and small trees. Altitudinal distribution is from 45-1400 m. The range has been illustrated in Williams (1963), Schwartz (1978), and Schwartz and Henderson (1991).

• **Fossil Record.** None.

• **Pertinent Literature.** Etheridge (1960) and Burnell and Hedges (1990) discussed the systematic relationships of this species among anoles. Schwartz (1980) included the species in his analysis of Hispaniolan herpetogeography. Fitch (1981) provided maximum sizes of males and females. Williams (1983) and Losos (1992) examined morphology in the context of ecology and the evolution of Antillean lizard communities. The adaptive significance of a rudimentary dewlap, predation by *A. cybotes* and *A. coelestinus*, and display behavior were discussed by Fitch and Henderson (1987). Fläschendräger (1990) provided information on captive husbandry. Schwartz and Henderson (1991) provided an overview of natural history, including information on habitat, predation, and display patterns. Lenart et al. (1996) and Lenart and Sowell (1996) examined the effects of habitat alteration on the composition of an *Anolis* community, and the former included dietary data. Orrell (1994) discussed display behavior. SEA/DVS (1990) provided an index of habitats in the Dominican Republic. SEA/DVS (1992) listed general habitat and behavioral facts in tabular format. The apicomplexan parasite *Isospora reui* was described by Cisper et al. (1995) from *A. bahorucoensis*. Irschick and Losos (1996) included this species in a list of those used in morphological, ecological, and behavioral analyses.

This species has been noted in additional check-lists and keys by Barbour (1937), Schwartz et al. (1978), Henderson and Schwartz (1984), Henderson et al. (1984), Schwartz and Henderson (1985, 1988), Franz and Cordier (1986), and Powell et al. (1996).

• **Nomenclatural History.** *Anolis bahorucoensis* was described by Noble and Hassler (1933) as a distinct species, but without mention of *A. hendersoni*. Williams (1963) noted the similarity of the two species and treated *A. bahorucoensis* as a subspecies of *A. hendersoni*. Schwartz and Thomas (1975) elevated this taxon to species level without comment, and Williams (1976) listed *A. bahorucoensis* as a full species in the *A. hendersoni* superspecies of the *A. hendersoni* species group. All subsequent published accounts have followed the latter approach.

• **Remarks.** Powell (1993) included *A. bahorucoensis southerlandi* in a list of Hispaniolan subspecies which may meet criteria for recognition as species by application of the evolutionary species concept.

Frank and Ramus (1995) proposed the common name "Bahoruca anole" for this species, unfortunately in error (the correct name of the mountains in which the species is found ends in an "o" (Sierra de Baoruco or Bahoruco, the latter with a silent "h").

• **Etymology.** The name *bahorucoensis* refers to the Sierra de Baoruco, the site of the type-locality; *southerlandi* is a patronym acknowledging William B. Southerland, who assisted Albert Schwartz in collecting specimens of this subspecies.

#### 1. *Anolis bahorucoensis bahorucoensis* Noble and Hassler

*Anolis bahorucoensis* Noble and Hassler, 1933:11. See species synonymy.

*Anolis hendersoni baharucoensis*: Williams, 1963:6. See species synonymy.

*Anolis bahorucoensis bahorucoensis*: Schwartz, 1978:357. First use of combination.

• **Definition.** Males of this subspecies are defined by the following: 4-5 bright turquoise diamonds on a purplish-brown ground color; diamonds connected with the white to yellow lateral flank stripe by means of short, dark-edged lateral bars; lateral stripes fragmented noticeably upon reaching the hind legs; nuchal scrolling blue-green, green, or grey; venter green in males. A black patch immediately behind the eye is followed by a blue vertical crescent; the interparietal is pale blue to white; and the throat is bright yellow or orange or peach. The pattern in females is subdued and the venter is yellow-green.

#### 2. *Anolis bahorucoensis southerlandi* Schwartz

*Anolis bahorucoensis southerlandi* Schwartz, 1978:357. Type-locality, "24 km N Pedernales (=2 km N Cabeza de Agua), 335 m, Pedernales Province, República Dominicana." Holotype, Carnegie Museum of Natural History (CM) 60514, adult male, collected by A. Schwartz and W.B. Southerland on 20 December 1976 (not examined by authors).

• **Definition.** Males of this subspecies are defined by the following: dorsal diamonds (usually 3) are grey-tan on a deep brown ground color and abut directly with the lateral flank stripe; the lateral flank stripes fragment less noticeably than in *A. b. bahorucoensis* and are of a tan to cream color; nuchal scrolling is pale green to grey; the venter is tan. A black patch immediately behind the eye is followed by a tan vertical crescent; the interparietal is not conspicuously colored. In general, this subspecies' head and body markings, as well as ground color, are more drab and suppressed than in *A. b. bahorucoensis*. The pattern in females is even more subdued, and the venter is pale green.

#### Literature Cited

- Barbour, T. 1935. A second list of Antillean reptiles and amphibians. *Zoologica* (N.Y.) 19:77-141.
- . 1937. Third list of Antillean reptiles and amphibians. *Bull. Mus. Comp. Zool.* 82:77-166.
- Burnell, K.L. and S.B. Hedges. 1990. Relationships of West Indian *Anolis* (Sauria: Iguanidae): an approach using slow-evolving protein loci. *Carib. J. Sci.* 26:7-30.
- Cisper, G.L., C. Huntington, D.D. Smith, R. Powell, J.S. Parmerlee, Jr., and A. Lathrop. 1995. Four new coccidia (Apicomplexa: Eimeriidae) from anoles (Lacertilia: Polychrotidae) in the Dominican Republic. *J. Parasitol.* 81:252-255.
- Cochran, D.M. 1941. The herpetology of Hispaniola. *Bull. U.S. Natl. Mus.* (177):vii + 398 p.
- Etheridge, R. 1960. The relationships of the anoles (Reptilia: Sauria: Iguanidae): an interpretation based on skeletal morphology. Ph.D. Diss., Univ. Michigan, Ann Arbor.
- Fitch, H.S. 1981. Sexual size differences in reptiles. *Misc. Publ. Mus. Nat. Hist. Univ. Kansas* (70):1-72.
- and R.W. Henderson. 1987. Ecological and ethological parameters in *Anolis bahorucoensis*, a species having rudimentary development of the dewlap. *Amphib.-Rept.* 8:69-80.
- Fläschendräger, A. 1990. *Anolis bahorucoensis bahorucoensis* (Noble & Hassler, 1933) — ein bemerkenswerter Saumfinger aus der Dominikanischen Republik. *Herpetofauna* 12(64):6-10.
- Frank, N. and E. Ramus. 1995. A complete guide to scientific and common names of reptiles and amphibians of the world.

- NG Publ., Inc., Pottsville, Pennsylvania.
- Franz, R. and D. Cordier. 1986. The herpetofaunas of the proposed national parks in southern Haiti. USAID/Haiti Report. Univ. Florida, Gainesville.
- Henderson, R.W. and A. Schwartz. 1984. A guide to the identification of the amphibians and reptiles of Hispaniola. Milwaukee Pub. Mus. Spec. Publ. Biol. Geol. (4):1-70.
- , —, and S.J. Incháustegui. 1984. Guía para la indentificación de los anfibios y reptiles de la Hispaniola. Mus. Nac. Hist. Nat. Ser. Mono. (1):1-128.
- Irschick, D.J. and J.B. Losos. 1996. Morphology, ecology, and behavior of the twig anole, *Anolis angusticeps*, p. 291-301. In R. Powell and R.W. Henderson (eds.), Contributions to West Indian herpetology: a tribute to Albert Schwartz. SSAR, Ithaca, New York.
- Lenart, L.A., R. Powell, J.S. Parmerlee, Jr., A. Lathrop, and D.D. Smith. 1996. Anoline diversity in three differentially altered habitats in the Sierra de Baoruco, República Dominicana, Hispaniola. Biotropica 28:in press.
- and S.P. Sowell. 1996. Anoline diversity in three differentially altered habitats in the Sierra de Baoruco, Dominican Republic, Hispaniola, p. 442-443. In R. Powell and R.W. Henderson (eds.), Contributions to West Indian herpetology: a tribute to Albert Schwartz. SSAR, Ithaca, New York.
- Losos, J.B. 1992. The evolution of convergent structure in Caribbean *Anolis* communities. Syst. Biol. 41:403-420.
- Noble, G.K. and W.G. Hassler. 1933. Two new species of frogs, five new species and a new race of lizards from the Dominican Republic. Amer. Mus. Nov. (652):1-17.
- Orrell, K.S. 1994. Display behavior of an Hispaniolan anole, *Anolis bahorucoensis*. M.S. Thesis, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.
- Powell, R. 1993. Comments on the taxonomic arrangement of some Hispaniolan amphibians and reptiles. Herpetol. Rev. 24:135-137.
- and R.W. Henderson (eds.). 1996. Contributions to West Indian herpetology: a tribute to Albert Schwartz. SSAR, Ithaca, New York.
- , —, K. Adler, and H.A. Dundee. 1996. An annotated checklist of West Indian amphibians and reptiles, p. 51-93. In R. Powell and R.W. Henderson (eds.), Contributions to West Indian herpetology: a tribute to Albert Schwartz. SSAR, Ithaca, New York.
- Schwartz, A. 1978. The Hispaniolan *Anolis* (Reptilia, Lacertilia, Iguanidae) of the *hendersoni* complex. J. Herpetol. 12:355-370.
- . 1980. The herpetogeography of Hispaniola, West Indies. Stud. Fauna Curaçao Carib. Isl. 61:86-127.
- and R.W. Henderson. 1985. A guide to the identification of the amphibians and reptiles of the West Indies exclusive of Hispaniola. Milwaukee Pub. Mus., Milwaukee, Wisconsin.
- and —. 1988. West Indian amphibians and reptiles: a checklist. Milwaukee Pub. Mus. Contr. Biol. Geol. (74):1-264.
- and —. 1991. Amphibians and reptiles of the West Indies: descriptions, distributions, and natural history. Univ. Florida Press, Gainesville.
- and R. Thomas. 1975. A check-list of West Indian amphibians and reptiles. Carnegie Mus. Nat. Hist. Spec. Publ. (1):1-216.
- , —, and L.D. Ober. 1978. First supplement to a check-list of West Indian amphibians and reptiles. Carnegie Mus. Nat. Hist. Spec. Publ. (5):1-35.
- SEA/DVS (Secretaría de Estado de Agricultura/Departamento de Vida Silvestre). 1990. La diversidad biológica en la República Dominicana: reporte preparado por el Departamento de Vida Silvestre para el Servicio Alemán de Cooperación Social-Técnica y Fondo Mundial para la Naturaleza (WWD-US). Apendices. Sec. Estado Agric., SURENA/DVS. Sto. Domingo, República Dominicana.
- . 1992. Reconocimiento y evaluación de los recursos naturales en el Bahoruco Oriental. Sec. Estado Agric., Depto. Vida Silvestre. Sto. Domingo, República Dominicana.
- Williams, E.E. 1963. Notes on Hispaniolan herpetology 8. The forms related to *Anolis hendersoni* Cochran. Breviora (186):1-13.
- . 1976. West Indian anoles: a taxonomic and evolutionary summary 1. Introduction and a species list. Breviora (440):1-21.
- . 1983. Ecomorphs, faunas, island size, and diverse end points in island radiations of *Anolis*, p. 326-370. In R.B. Huey, E.R. Pianka, and T.W. Schoener (eds.), Lizard ecology: studies of a model organism. Harvard Univ. Press, Cambridge, Massachusetts.

---

**Scott P. Sowell**, Department of Biology, University of North Florida, Jacksonville, FL 32216. **John S. Parmerlee, Jr.**, and **Robert Powell**, Department of Natural Sciences, Avila College, Kansas City, MO 64145.

Primary editor for this account, Andrew H. Price.

Published 22 December 1995 and Copyright © 1995 by the Society for the Study of Amphibians and Reptiles.

---