

AMPHIBIA: ANURA: LEPTODACTYLIDAE

ELEUTHERODACTYLUS PINCHONI

Catalogue of American Amphibians and Reptiles.

Kaiser, H., J.T. Murdoch, R. Boistel, and M. Breuil. 2003.
Eleutherodactylus pinchoni.

***Eleutherodactylus pinchoni* Schwartz**
Pinchon's Piping Frog, Grand Café Robber Frog,
Guadeloupe Forest Eleuth, Hylode de Pinchon,
Eleuthéroductyle de Pinchon

Eleutherodactylus pinchoni Schwartz 1967:45. Type locality, "3 km W Grand Café, 600 feet (183 m), Guadeloupe, French West Indies." Holotype, Museum of Comparative Zoology, Harvard University (MCZ) 43231, an adult female, collected by A. Schwartz and R. Thomas on 31 January 1963 (examined by HK).

Eleutherodactylus (Eleutherodactylus) pinchoni: Hedges 1990: 305–370.

• **CONTENT.** The species is monotypic.

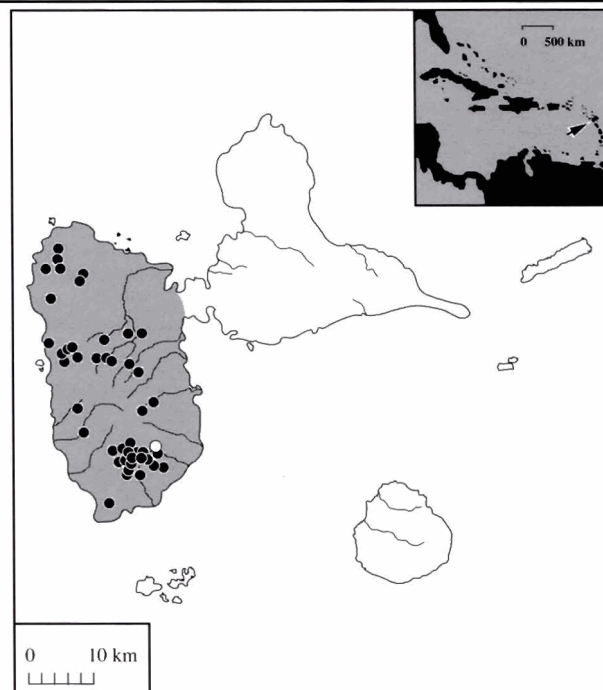
• **DEFINITION.** *Eleutherodactylus pinchoni* is a very small species (SVL of males to 16 mm, of females to 20 mm) placed in the *auriculatus* group by Schwartz (1967, 1969). It is the sister species of *E. barlagnei* according to Kaiser (1996). Dorsal coloration is in varying shades of brown with variable dorsal patterns, one or more of the following: one or two broad dorsal chevrons, a pair of dorsolateral lines, a vaguely trilineate dorsal pattern, a diagonal dark flank bar from the ends of the second chevron to the groin, and a single crural crossbar outlined by a pale line. Detailed descriptions of pattern variation were given by Schwartz (1967).

• **DIAGNOSIS.** This species of *Eleutherodactylus* can be distinguished from all other member of the genus by the following characteristics: medium length hindlimbs (tibia, $\bar{x} = 44.4 \pm 3.5\%$ SVL, both sexes combined), moderate head width (head width, $\bar{x} = 38.1 \pm 2.3\%$ SVL, both sexes combined), and venter with light shades of orange in life, often overlaid with brown, the groin and concealed surfaces bright orange-red, and lacking inguinal glands.

Eleutherodactylus pinchoni occurs syntopically with *E. martinicensis*, *E. johnstonei*, and *E. barlagnei*. Distinction between adult *E. pinchoni* and the other three species is readily made based on size, coloration, pattern, and vocalizations. Although *E. pinchoni* does not occur sympatrically with the similarly small *E. urichi*, it may be readily distinguished from that species by its metallic or brown iris (blue in *urichi*) and the coloration of the concealed portions of the hind limbs (red in *urichi*).

• **DESCRIPTIONS.** In his original description of the species, Schwartz (1967) enumerated the morphological characteristics of *E. pinchoni*, especially those important in distinguishing *E. pinchoni* from *E. martinicensis*, *E. johnstonei*, and *E. urichi*. He also discussed in depth the coloration of the holotype and the structural features of *E. pinchoni*. A basic species account of *E. pinchoni* including descriptive information as well as some natural history data appears in Schwartz and Henderson (1991), a more comprehensive one is in Breuil (2002). The species was placed into the *E. auriculatus* section, *E. martinicensis* series, and *E. martinicensis* group by Hedges (1989).

Hardy (1985) described the call of lowland *E. pinchoni* as a single note, whereas he likened the call of most montane *E. pinchoni* to the two-note call of *E. johnstonei*. Kaiser et al.



MAP. Distribution of *Eleutherodactylus pinchoni*: the circle marks the type locality and dots denote other records.



FIGURE 1. *Eleutherodactylus pinchoni* from Basse-Terre, Guadeloupe: a calling male (top) from the forest near the Bains Jaunes (elevation 900 m) and a male *E. cf. pinchoni* from the moss mat habitat near the summit of La Soufrière volcano (bottom).

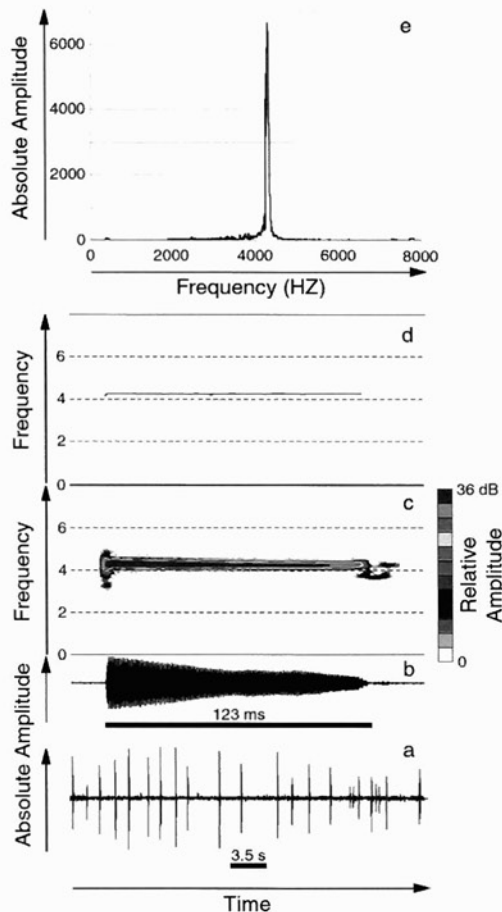


FIGURE 2. Graphic representation of the advertisement call of *Eleutherodactylus pinchoni* from the forest of Bains Jaunes, Guadeloupe (recorded on 26 July 2000, 1900 h, elev. 870 m, temperature = 19.5°C). Analog signals were digitized through a 16-bit Digigram PCcard acquisition card at a sampling frequency of 16 kHz. Recordings were analyzed with analytical software Syntana (Aubin 1994). (a) Spectrum (FFT, window size = 4096 data points, $\Delta f = 4$ Hz). The peak corresponds to the dominant frequency. (b) Instantaneous frequency derived by using the Hilbert transformation (Mbu-Nyamsi et al. 1994). (c) Sonogram (FFTs, window size = 4096 data points, $\Delta f = 120$ Hz, overlapping 97%, bandpass = 2000–5000 Hz) with a palette of 12 colors defining intensity, one color representing 3 dB, white being minimum intensity and red the maximum intensity. (d) Oscillogram. (e) Fast Fourier transformation.

(1994a) described the call as a high-pitched and uniphonic, whereas Schwartz and Henderson (1991) considered it to be a series of “ticks” followed by a rising “wheep.” Boistel (2002) described the vocalizations of the forest and Soufrière summit forms and published a sonogram of *E. pinchoni* from 900 m elevation. The call of *E. pinchoni* is distinct from the other Guadeloupean species in all parameters, in particular because it comprises only a single note. The calling sequence is a repetition of identical notes and each call has an average duration of 145 ± 9 ms (119–158 ms, $N = 25$) and is emitted at a rate of 0.48 notes/s. The duration of silences is about 2029 ± 786 ms (1011–4035 ms, $N = 24$). An oscillogram shows not one periodic patterns of variation in amplitude. With regard to spectral features, a fast Fourier transformation indicates that the signal is pure, with an average dominant frequency of 4329 ± 20.6 Hz (4282–4358 Hz, $N = 25$). The sonogram and analysis using the Hilbert transformation gives the instantaneous frequency and does not show frequency modulation (FM), which is linear.

• **ILLUSTRATIONS.** Line drawings of two *E. pinchoni* and a distribution map are in Schwartz (1967). Schwartz and Henderson (1991) and Breuil (2002) published updated maps, and the latter publication has color photographs of *E. pinchoni* and *E. cf. pinchoni*, the latter from the summit of Soufrière Volcano. Kaiser (1995) presented a color photograph and Kaiser and Henderson (1994) a black and white photograph. Boistel (2002) published a photograph of a calling male from Bains Jaunes (900 m elevation). This photo also is in Breuil (2001, 2002). Hardy (1985) displayed an electropherogram of leg muscle proteins and a photograph of a chromosome smear. Boistel (2000) completed a histological description of the larynx of *Eleutherodactylus cf. pinchoni*.

• **DISTRIBUTION.** *Eleutherodactylus pinchoni* is known only from the Basse-Terre portion of Guadeloupe. Kaiser (1997) noted that the range of *E. johnstonei* approaches the habitat of *E. pinchoni* and *E. barlagnei* and may threaten the two native species. Breuil (2002) reported that at localities where *E. pinchoni* was abundant in the 1960s, before the arrival of *E. johnstonei*, *E. pinchoni* is now rare and *E. johnstonei* is common. Breuil (2002) also reported sites where all four species of Guadeloupean *Eleutherodactylus* occur syntopically.

Reports of elevational distribution can be found in Schwartz and Thomas (1975), Schwartz and Henderson (1988), Frost (1985), Hedges and Thomas (1989), and in the specimen list of Kaiser et al. (1994b). The most recent elevational information is found in Breuil (2002), who gave an elevational range of 180–1467 m.

Kaiser and Henderson (1994) and Breuil (2002) provided good descriptions of the species’ distribution and habitat.

• **FOSSIL RECORD.** None.

• **PERTINENT LITERATURE.** Lescure (1987) listed *E. pinchoni* as part of his central Lesser Antillean endemism group. Kaiser (1995, 1996) discussed the use of external morphology, osteology, multivariate morphometrics, allozymes polymorphisms, and chromosomes as a means to further improve the resolution and accuracy of phylogenetic hypotheses regarding *E. pinchoni* and closely related species. Breuil (2002) proposed an allopatric model for the speciation of *E. barlagnei* and *E. pinchoni*. Kaiser et al. (1994b) discuss phenetic and cladistic analyses that support sister-group relationships for *E. barlagnei* and *E. pinchoni*, and for *E. euphronides* and *E. shrevei*. They also list allozyme frequencies, show phenograms and cladograms for Lesser Antillean *Eleutherodactylus*, and provide a biogeographical scenario for these species. Kaiser (1996) depicts a majority-rule consensus trees and a UPGMA phenogram of Mahalanobis distances for Lesser Antillean *Eleutherodactylus* including *E. pinchoni*.

Hardy (1984) listed information regarding the egg tooth of *E. pinchoni*. Schwartz and Henderson (1985) give a key to Lesser Antillean *Eleutherodactylus*. Lynch and Duellman (1997) listed *E. pinchoni* as possessing the “C” toe condition of *Eleutherodactylus*, meaning that its fifth toe is much longer than the third. Kaiser and Henderson (1994) presented conservation issues.

Eleutherodactylus pinchoni appeared in the faunal and systematic lists of Bénéto-Espinal (1990), Powell et al. (1996), Glaw et al. (1998), Censky and Kaiser (1999), Malhotra and Thorpe (1999), Lescure (2000), and Grouard (2001).

• **REMARKS.** The existence of *E. pinchoni* populations with distinct vocalizations in the lowland forests and near the summit of La Soufrière volcano has yet to be fully investigated. The discrepancy in the calls may indicate an as yet unrecognized species or, at least, an unusual ecotype.

• **ETYMOLOGY.** The species name is a patronym for Père Robert Pinchon of the Séminaire Collège Fort-de-France on Martinique, given in recognition for assistance provided to Albert Schwartz during fieldwork in the French Antilles. The lack of an etymology section in the original species description (Schwartz 1967) is noteworthy. The relevant information about the species epithet is in an acknowledgment in which Père Pinchon is listed. Thus, this Guadeloupean species is named for a knowledgeable broadly-trained local naturalist, whose assistance during fieldwork was valued by many international collectors visiting the French West Indies. A museum will soon be dedicated to Père Pinchon in Fort-de-France.

• **COMMENT.** *Eleutherodactylus pinchoni* is currently (May 2002) listed on several websites as a species of conservation and legislative concern. A search for *E. pinchoni* on the search engine Google.com returned 14 websites.

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