

Second Species of *Psyllophryne* (Anura: Brachycephalidae)

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The diminutive frogs of the genus *Psyllophryne* (Anura: Brachycephalidae) were known only from one species in the Atlantic Forest of the State of Rio de Janeiro, southeastern Brazil. Herein we describe a second species of *Psyllophryne* from coastal São Paulo State, southeastern Brazil. The new species can be distinguished from *Psyllophryne didactyla* mainly by the presence of a functional fifth toe. Pointed digit tips, vocal sac extending to midbelly, inferior margin of eye and anterior margin of nostril grooved, and reduction in size of fingers and number of toes are shared derived features of both *Brachycephalus* and *Psyllophryne*.

FROGS of the family Brachycephalidae are endemic to the Atlantic Forest of southeastern Brazil (Frost, 1985) and are characterized by diminutive size and reduced sizes of fingers and numbers of toes (Duellman and Trueb, 1986). Two nominal genera are recognized, and one of these, the monotypic *Psyllophryne* Izecksohn, is known only from the State of Rio de Janeiro. During litter frog sampling at Ubatuba, on the north coast of São Paulo State, we found individuals of a second species of *Psyllophryne*, described herein.

MATERIALS AND METHODS

Individuals of the new species were collected in three localities in the municipality of Ubatuba: Picinguaba, Fazenda Capricórnio, and Corcovado. The specimens used in the species description are housed in collections referred in Leviton et al. (1985): ZUEC (Museu de História Natural da Universidade Estadual de Campinas), Campinas, SP, Brazil; MNRJ (Museu Nacional do Rio de Janeiro), Rio de Janeiro, RJ, Brazil; USNM (National Museum of Natural History), Smithsonian Institution, Washington, DC. Measurements of the individuals were made with an ocular micrometer; measurements of the head were taken from the posterior border of eye. Individuals were sexed by dissection. Comparisons with *Psyllophryne didactyla* Izecksohn were based in the original description and three topotypes (ZUEC 1132, 1133, 1135). All types were collected by the authors and M. S. Araújo, G. Machado, H. F. Medeiros, R. Nunes, C. H. de F. Vasconcelos, and R. Bredariol.

Psyllophryne hermogenesi sp. n. (Fig. 1)

Holotype.—An adult female ZUEC 9715, collected at Picinguaba (Parque Estadual da Serra do Mar), at approximately 23°26'S; 44°52'W, on 22 December 1995.

Paratypes.—Picinguaba: ZUEC 9716-21, MNRJ 18662-63 and USNM 507743-45; Fazenda Capricórnio: ZUEC 9725 and MNRJ 18625; Corcovado: ZUEC 9722-24; MNRJ 18624; USNM 507746. Paratypes collected from 21 December 1995 to 23 February 1996.

Diagnosis.—A diminutive frog related to *P. didactyla* Izecksohn. The new species can be characterized by the presence of a functional fifth toe. In *P. didactyla*, this toe is vestigial (see fig. 7 in Izecksohn, 1971). *Psyllophryne didactyla* has a large trapezoidal black spot on the belly that represents an aggregation of skin glands. In the new species, these glands are uniformly scattered throughout the ventral surface.

Description.—In dorsal view (Fig. 2A), snout rounded, head wider than long, and canthus rostralis well defined. In lateral view (Fig. 2B), nostrils closer to the tip of snout than to the eyes; tympanum indistinct, but visible; pupil horizontal and elliptic; anterior border of nostrils and inferior border of eyes grooved; tongue rounded and free behind; vomerine teeth absent; first and fourth fingers vestigial (Fig. 2C), third larger than second; first toe absent, second larger than fifth and smaller than third; third smaller than fourth (Fig. 2D); a single rounded metacarpal tubercle present; outer metatarsal tubercle rounded; subarticular tubercles undefined on hands and feet; tip of fingers and second, third, and fourth toes pointed, that of fifth round; no webs or disks on fingers or toes; skin smooth or slightly granular on upper eyelid and nostril; osteodermal plate on the body absent; males with an external vocal sac extending from the gular region to midbelly.

Measurements.—Measurements (in millimeters) of the holotype and an adult male paratype (ZUEC 9716), are respectively: total length = 10.00/8.77; head width = 3.38/3.02; head



Fig. 1. *Pseudis hermogenesi* sp. n. in life (Holotype, ZUEC 9715). Adult female from Picinguaba, Ubatuba, São Paulo, Brazil. Photo by Márcio S. Araújo.

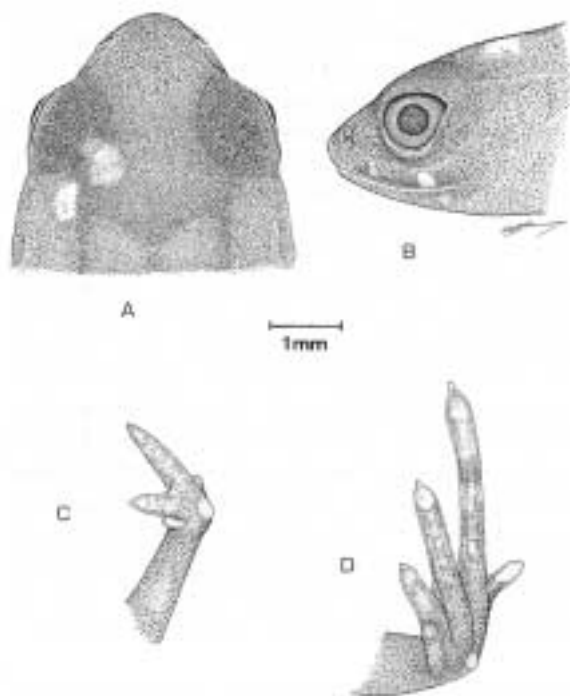


Fig. 2. *Pseudis hermogenesi* sp. n. (holotype ZUEC 9715). (A) Dorsal view of head; (B) lateral view of head; (C) palmar view; (D) plantar view.

length = 2.25/2.00, eye/nostril distance = 1.00/0.75, thigh length = 4.31/3.85; shank length = 4.46/4.15; eye diameter = 1.23/1.08; foot length = 4.00/3.23, forearm length = 2.31/2.15; hand length = 1.85/1.54. Adult males average 8.7 mm (SVL) (± 0.19 mm SD; $n = 3$) and adult females 10.5 mm (± 0.49 mm; $n = 4$). The new species is sexually dimorphic in size ($t = 5.94$; $P = 0.002$; $df = 5$). No sexual dimorphism in shape is evident. For males, the mean body proportions (%), relative to mean SVL ($n = 3$), are head width = 38, head length = 23, eye/nostril distance = 8, thigh length = 46, shank length = 47, eye diameter = 13, foot length = 38, forearm length = 25, hand length = 17.

Color.—In life, brownish yellow or pale brown on the dorsum; the dorsal surface of the thigh may show a pale pink pattern. Preserved specimens with the dorsum pale gray or dark brown; 40% of them show narrow stripes that form a black X on the dorsum. Some individuals have large symmetrically paired dark spots on the dorsum and/or sacral region; some have the dorsum of each thigh, shank, and tarsus crossed

by a dark gray stripe. A narrow, clear vertebral stripe may be present (Fig. 1), and some specimens have the lateral portion of the body darker than the dorsum; the belly, throat, and ventral surfaces of the arms and legs are pale gray with many small brown spots. Belly with glandular skin, uniformly dark with many small white spots.

Natural history.—Individuals of the new species were found in leaf litter, from sea level in sandy soil secondary forest to 700 m in primary forest. Even though males have vocal sacs, the calls were not recognized in the field. Females frequently show one side of the body bulked by the presence of one maturing oocyte.

Etymology.—The specific epithetum *hermogenesi* honors the memory of Hermógenes F. Leitão Filho for his great contribution to the knowledge of the Atlantic Forest flora.

Distribution.—The new species is known to occur in Ubatuba, north of the state of São Paulo, and adjacent Parati, south of the State of Rio de Janeiro.

DISCUSSION

Pointed digit tips, vocal sac extending to mid-belly, inferior margin of eye and anterior margin of nostril grooved, and reduction in size of fingers and number of toes are shared derived features of both *Brachycephalus* and *Psyllophryne*. Reduction in digit sizes is relatively frequent in frogs, mainly among miniaturized species (Estrada and Hedges, 1996), but true digit loss is a rare condition and restricted to toes (Duellman and Trueb, 1986). The presence of a functional fifth toe in *P. hermogenesi* sp. n. diminishes the set of differences among Brachycephalids and *Euparkerella* species, presently recognized as Leptodactylids (Lynch, 1971), reinforcing the hypothesis of their close phylogenetic relationship (Izecksohn, 1988).

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