



Three New Malodorous Rainfrogs of the Genus *Pristimantis* (Anura: Brachycephalidae) from the Wokomung Massif in west-central Guyana, South America

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Abstract

Three new species of rainfrogs of the genus *Pristimantis* are described from a large mesa (tepui), the Wokomung Massif, of the Pakaraima Mountains in west-central Guyana. *Pristimantis dendrobatoides* n. sp. is known from 1385–1411 m, *P. jester* n. sp. from 1411–1650 m, and *P. saltissimus* n. sp. from 698–1560 m elevation. The three species are syntopic at elevations around 1400 m in cloud forest. All three taxa are unusual among species of *Pristimantis* in the production of malodorous and distasteful skin secretions when handled, conditions that are atypical for the genus. Two of the new species (*P. dendrobatoides*, *P. jester*) also have bright, red skin coloration, and the third (*P. saltissimus*) is either cryptically colored or brightly colored.

Key words: Guyana, Wokomung, South America, Ayanganna, *Eleutherodactylus*, *Pristimantis*, Pakaraima, tepui, frog, systematics, Guayana Highlands

Introduction

The Guayana Highlands in northeastern South America comprise approximately 100 mesas, some rising to more than 3,000 m in elevation, that represent the remnants of an ancient and eroding landform (Berry *et al.* 1995). This poorly explored group of table mountains (called tepuis) lies on basement rocks of the Guiana (or Guayana) Shield (Huber 1995) of Venezuela, Brazil, and Guyana. Herpetological expeditions to the summits of many of the larger tepuis have been mounted by helicopter (McDiarmid and Donnelly 2005), but few biological explorations of any kind have been made along elevational transects through the rich rainforests and cloud forests that grow on the slopes of tepuis. The Wokomung Massif in Guyana is a huge tepui (11.5 X 31 km) that has multiple summits, the highest of which is called Little Ayanganna (1,650 m).

In July and August 2003, one of us (DBM) collected frogs and reptiles along an elevational transect on a newly cut botanical trail made by David Clarke (2004) up the NE flank of the Wokomung Massif. In December 2006, DBM cut a new transect up the SW flank of the Wokomung Massif to the round-top summit called Mt. Kopinang. These surveys resulted in the discovery of three new species of rainfrogs of the genus *Pristimantis* Duméril and Bibron, 1841, that were collected in cloud forest habitats between 698 and 1650 m.

An inclusive genus *Eleutherodactylus* comprises almost 500 species of brachycephalid frogs distributed throughout the warmer regions of the Neotropics including the southern United States, Central and South America, and the Caribbean (Frost 2002). All but one ovoviviparous species of this group exhibit direct development, whereby their eggs hatch directly into small frogs, thus completely bypassing the tadpole stage (Hanken *et al.* 1997). Recently, a DNA sequence analysis of a significant fraction of eleutherodactyline diversity