

# BOLETIM DO MUSEU NACIONAL

NOVA SÉRIE  
RIO DE JANEIRO - BRASIL

ISSN 0080-312X

ZOOLOGIA

Nº 530

06 DE ABRIL DE 2012

A SECOND SPECIES OF THE CASQUE-HEADED FROG GENUS  
*CORYTHOMANTIS* (ANURA: HYLIDAE) FROM NORTHEASTERN BRAZIL, THE  
DISTRIBUTION OF *C. GREENINGI*, AND COMMENTS ON THE GENUS<sup>1</sup>

(With 5 figures)

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**ABSTRACT:** A second species of casque-headed frog of the genus *Corythomantis* is described from northeastern Brazil. This new species is characterized by its canthus rostralis without ridge, head longer than broad, absence of granules on eyelid, discs of fingers and toes small-sized, dorsal color pattern with longitudinal stripes, dorsal skin smooth, presence of neopalatines, and nasals that conceal the alary processes of premaxillaries. The distribution of *C. greeningi* is reviewed based on collection and literature records. The only putative synapomorphy recognized for the genus *Corythomantis* are the nasals that conceal the alary processes of premaxillaries.

**Key words:** Hylinae. Lophiohylini. *Corythomantis galeata*. New species. Caatinga.

**RESUMO:** Uma segunda espécie de perereca-de-capacete do gênero *Corythomantis* (Anura: Hylidae) do Nordeste do Brasil, a distribuição de *C. greeningi* e comentários sobre o gênero.

Uma segunda espécie do gênero *Corythomantis* é descrita do nordeste do Brasil, sendo caracterizada pelo seu canto rostral sem crista, cabeça mais longa que larga, ausência de grânulos sobre a pálpebra, discos dos dedos e artelhos pequenos, padrão de coloração dorsal com faixas longitudinais, pele do dorso lisa, presença de neopalatinos, nasal prolongado, ocultando o processo alar da pré-maxila. A distribuição geográfica de *C. greeningi* é revisada baseada em dados de coleções e literatura. A única sinapomorfia putativa para o gênero são os nasais, ocultando o processo alar da pré-maxila.

**Palavras-chave:** Hylinae. Lophiohylini. *Corythomantis galeata*. Espécie nova. Caatinga.

<sup>1</sup> Submitted on March 9, 2012. Accepted on March 23, 2012.

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## INTRODUCTION

Some tree frogs (Hylidae) in the tribe Lophiohyliini (*sensu* FAIVOVICH *et al.*, 2005) have a co-ossified skull and are usually referred to as casque-headed frogs. In South America there are several species of tree frogs with well-developed, co-ossified skulls: *Aparasphenodon arapapa* Pimenta, Napoli & Haddad, 2009, *A. bokermanni* Pombal, 1993, *A. brunoi* Miranda-Ribeiro, 1920, *A. venezolanus* (Mertens, 1950), *Argenteohyla siemersi* (Mertens, 1937), *Corythomantis greeningi* Boulenger, 1896, *Trachycephalus atlas* Bokermann, 1966a, *T. jordani* Stejneger & Test, 1891, *T. mambaiensis* Cintra, Silva, Silva, Garcia & Zaher, 2009, and *T. nigromaculatus* Tschudi, 1938.

BOULENGER (1896) erected the genus *Corythomantis* to accommodate a new species, *C. greeningi*. Subsequent authors (A. LUTZ, 1925; MIRANDA-RIBEIRO, 1920, 1937) described new species of *Corythomantis*; however, all were included in the synonymies of *C. greeningi* or *Aparasphenodon brunoi* (see CARVALHO, 1941). Thus, *C. greeningi* is the only recognized species for this genus (FROST, 2011). Its morphological autapomorphies are the absence of palatines and nasals that conceal the alary processes of premaxillaries (TRUEB, 1970a; FAIVOVICH *et al.*, 2005). *Corythomantis greeningi* is endemic in xeric and subhumid regions of northeastern Brazil (FROST, 2011); its distribution ranges from the State of Maranhão in northeastern Brazil to south of the State of Bahia and middle Jequitinhonha River in the State of Minas Gerais in southeastern Brazil (SAZIMA & CARDOSO, 1980; FEIO & CARAMASCHI, 1995). Natural history, vocalization, and tadpole description of *C. greeningi* were provided by JARED *et al.* (1999, 2005) and JUNCA *et al.* (2008).

In this paper we describe a second species of casque-headed frog of the genus *Corythomantis* from the State of Bahia, northeastern Brazil. We also review the geographic distribution of *C. greeningi* and comment on the definition of *Corythomantis*.

## MATERIAL AND METHODS

The specimens were fixed in 10% formalin and preserved in ethanol 70%. The geographic coordinates of the type-series were taken with the GPS Garmin III. The geographic coordinates of the localities of museum specimens and the literature of *Corythomantis greeningi* were derived from Google Earth (accessed on 11 October 2011) based on the WGS84 datum. The specimens examined and localities from the literature are listed in the Appendix.

The studied specimens are in the Adolpho Lutz Collection housed at Museu Nacional, Rio de Janeiro, Brazil (AL-MN), American Museum of Natural History, New York, USA (AMNH), Célio F. B. Haddad Collection, housed in Departamento de Zoologia, Universidade Estadual Paulista, Rio Claro, Brazil (CFBH), Museo de Zoología de la Pontificia Universidad Católica del Ecuador, Quito, Ecuador (QCAZ), Museu Nacional, Rio de Janeiro, Brazil (MNRJ), Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil (MZUSP), Museu de Zoologia da Universidade Estadual de Feira de Santana, Feira de Santana, Brazil (MZUEFS), Museu de Zoologia, Universidade Federal da Bahia, Salvador, Brazil (UFBA), Muséum National d'Histoire Naturelle, Paris, France (MNHN), National Museum of Natural History, Washington DC, USA (USNM), Natural History Museum, University of Kansas, Lawrence, USA (KU), Museu de Zoologia "Prof. Adão José Cardoso", Universidade Estadual de Campinas, Campinas, Brazil (ZUEC), and Universidad Nacional de Colombia, Instituto de Ciencias Naturales, Bogotá, Colombia (ICN).

Abbreviations used are as follow: SVL (snout-vent length), HL (head length), HW (head width), ED (eye diameter), IOD (interorbital distance), IND (internarial distance), END (eye-nostril distance), TD (tympanum diameter), THL (thigh length), TBL (tibia length), and FL (foot length). All measurements are in millimeters and were taken with a caliper with 0.05 mm of precision following CEI (1980) and DUELLMAN (2001). Osteology was studied in cleared and stained specimens, which were prepared following the modified techniques of TAYLOR & VAN DYKE (1985). Skull osteological terminology is that of TRUEB (1970a, 1973, 1993). Webbing formula notation follows that of SAVAGE & HEYER (1967), as modified by MYERS & DUELLMAN (1982). Illustrations of the holotype were made using a Zeiss stereomicroscope with a drawing tube.

*Corythomantis galeata* sp.nov.  
(Figs. 1-3)

Holotype – MNRJ 27173, adult female, collected at the right side of the road (BA 426; 11°29'87.7"S, 41°07'67.3"W; 1000 m above sea level), linking the Municipality of Morro do Chapéu to the Municipality of Jacobina, approximately 12 km northeastern from the Municipality of Morro do Chapéu, State of Bahia, Brazil, on 21 December 2000, by Angélica F. Fontes, Vanderlaine A. Menezes, Carlos F.D. Rocha, and Monique Van Sluys. Paratypes – MNRJ 27174-27175, unsexed and female, collected with the holotype. The specimen MNRJ 27175 was cleared and stained.

Diagnosis – A small-sized casque-headed frog belonging to *Corythomantis*, as revealed by the nasals that conceal the alary processes of premaxillaries, and characterized by its canthus rostralis without ridge, presence of neopalatines, head longer than broad, absence of granules on eyelid, small-sized discs of fingers and toes, dorsal color pattern with longitudinal stripes, and dorsal skin smooth.

Comparison with other species – *Corythomantis galeata* differs from *Aparasphenodon arapapa*, *A. bokermanni*, *A. brunoi*, and *A. venezolanus* by its canthus rostralis with few developed ridge (with ridge in species of *Aparasphenodon*; TRUEB, 1970a; POMBAL, 1993; PIMENTA *et al.*, 2009), discs of fingers and toes small-sized (moderate size to large in species of *Aparasphenodon*; PAOLILLO & CERDA, 1981; POMBAL, 1993; pers. obs.), dorsal color pattern with longitudinal stripes (species of *Aparasphenodon* uniform or mottled (see figures in MIRANDA-RIBEIRO, 1926; PAOLILLO & CERDA, 1981; POMBAL, 1993; PIMENTA *et al.*, 2009), and by the absence of prenasal bone (present in *Aparasphenodon*; TRUEB, 1970a). The new species differs from *Argenteohyla siemersi* by its head longer than wide, small size (in *A. siemersi* adult size near 70 mm SVL; TRUEB, 1970b; CEI, 1980), loreal region more concave, and hidden surfaces of legs without orange blotches (with orange blotches in *A. siemersi*; see color figures in CEI, 1980; LAVILLA & CEI, 2001). The new species can be distinguished from *Trachycephalus atlas*, *T. jordani*, *T. mambaiensis*, and *T. nigromaculatus* by the absence of a longitudinal crest in the parasphenoid (present in *Trachycephalus*; TRUEB, 1970a), head longer than broad (as long as broad; TRUEB, 1970a; CINTRA *et al.*, 2009; except in *T. jordani*), snout rounded in dorsal view (truncate in *T. atlas* and *T. nigromaculatus*, TRUEB, 1970a), small body size (species of *Trachycephalus* up to 76 mm SVL; COCHRAN, 1955; BOKERMANN, 1966a; CINTRA *et al.*, 2009), finger and toe discs small (large in all *Trachycephalus*), *canthus rostralis* with few developed ridge (*canthus rostralis* with

ridge in all *Trachycephalus*), dorsal color with longitudinal stripes and legs not barred (dorsum mottled and legs barred in species of *Trachycephalus*; see figures in MIRANDA-RIBEIRO, 1926; COCHRAN, 1955; BOKERMANN, 1966a; CINTRA *et al.*, 2009). Furthermore, *C. galeata* is distinguished from the species of *Aparasphenodon*, *Argenteohyla*, and *Trachycephalus* by the presence of protruding bony spines in the frontoparietals, maxillae, nasals, and squamosals. *Corythomantis galeata* is distinguished from *Corythomantis greeningi* by the small discs of fingers and toes, skin of the dorsum and eyelid smooth (granulate in *C. greeningi*; CARVALHO, 1941), head with the posterior border without developed ridge (developed in *C. greeningi*), absence of keratinized spicules on fingers and toes (present in *C. greeningi*), dorsal color pattern with longitudinal stripes (uniform brown or blotched in *C. greeningi*; see figures in BOULENGER, 1896), *canthus rostralis* near between nostrils (separated between nostrils; see figure in CARVALHO, 1941), and neopalatines present (absent in *C. greeningi*).



Fig.1- Dorsal view of the holotype (MNRJ 27173; female) of *Corythomantis galeata* sp. nov.

Description of the holotype – Body moderately robust; head longer than broad, depressed, with the posterior border slightly notched in the middle; snout long, rounded in dorsal view and approximately protruding in lateral view; nostrils directed dorsolaterally; *canthus rostralis* with few developed ridges, slightly curved; the two *canthus rostralis* near in the tip of snout between nostrils; loreal region concave; eye medium sized; tympanum large, rounded; tympanic annuli distinct; small and distinct supratympanic fold; frontoparietal posterior ridges poorly developed; spinose processes on dorsal bones of head, under snout, and lateral of head, rare on loreal region and between the *canthus rostralis*, and absent on the eyelid; tongue large; premaxillae and maxillae dentate; vomerine tooth row straight, medial and posterior to choanae; choanae nearly elliptical and slightly oblique. Forearm robust; arm slender; fingers medium sized, moderately robust; each finger bearing a single, nearly rounded subarticular tubercle; distal subarticular tubercle bigger than proximal; thenar tubercle small, nearly oval; inner palmar tubercle slightly developed, elliptical; few small supranumerary tubercles; fingers without webbing; finger discs small-sized, nearly rounded; thumb



Fig.2- Dorsal and lateral views of the head of *Corythomantis galeata* sp.nov. (MNRJ 27173, holotype, female). Scale = 5mm.

disc smaller than of the other digits; diameter of finger discs smaller than the diameter of tympanum; relative length of fingers  $I < II < IV < III$ . Legs moderately slender; toes of medium size, moderately robust; single, rounded subarticular tubercle on each toe; foot with medium sized, nearly elliptical inner tubercle; outer tubercle absent; toe discs small, rounded; disc of first toe smaller than those of the other digits; webbing formula  $I^{3/4} - 2^{1/2}II^{1/2} - 2^{1/2}III^{3/4} - 2^{1/2}IV3 - 1^{1/2}V$ ; relative length of toes  $I < II < III \cong V < IV$ . Upper surfaces of body and limbs smooth, belly and under surfaces of the proximal part of thigh granulate. Pectoral fold present. Cloacal opening in a horizontal line.

Measurements of the holotype – SVL 53.6, HL 18.3, HW 16.5, TD 3.2, ED 4.7, IOD 5.7, END 5.9, IND 3.2, THL 23.7, TBL 25.0, FL 20.1.

Color in preservative of the holotype – Head blackish; dorsum and lateral region with longitudinal stripes of irregular margins. A light brown stripe along midline of dorsum, from head to near vent, is sided by dark brown stripes, slightly mottled with small brown dots. A light brown dorsolateral stripe runs from upper eyelid to inguinal region; and one brown lateral stripe, mottled with small light spots, runs from the eye to the inguinal region. Limbs brown mottled with



light brown small spots. Gular region and chest cream; belly brownish cream; under surfaces of arm, hand, leg, and foot, light brown.

Color in life – Head dark-brown with two cream stripes from snout to eyes. The middle dorsal stripes and the dorsolateral stripes of the body, cream to bronze color. The two parallel dorsal stripes dark-brown mottled with cream dots.

Variation – The three known specimens show little variation. The general color may be more or less lighter; the black blotches of the urostyle region are more evident in the paratypes. The loreal region is a bit wider in one specimen. The measure of the two paratypes are (unsexed and female, respectively): SVL 46.9, 56.0; HL 16.1, 18.1; HW 13.5, 16.5; TD 2.8, 3.9; ED 3.9, 4.8; IOD 4.9, 6.3; END 5.2, 5.9; IND 3.1, 3.3; THL 17.5, 22.9; TBL 20.7, 24.9; FL 18.5, 21.2.

Cranial osteology (Fig.4) – Skull longer than wide. Premaxillaries almost straight and lying posterior to anterior end of the nasals and maxillaries; nasals are extensive and cover the alary process of the premaxillary; lateral corner of the *pars dentalis* of the premaxillary slightly covered by the maxillary ventromedially; *pars palatina* short, with each premaxillary bearing a small, conspicuous palatine process; alary process of the premaxillary enlarged, widely separated, slightly concave anteriorly, anterodorsally

oriented, in contact with the superior prenasal cartilage dorsally, and about one-half times as long as the depth of the *pars dentalis* of the premaxillary.

Vomers widely separated from each other, with anterior margin almost straight and angled from the posterior end; vomer bears anterolateral and posterolateral processes that form the anterior, medial, and posterior margins of the internal nares. Dentigerous process of vomer curved in a transverse plane; 10 and 11 teeth in left and right process, respectively. Posteriorly, vomer articulates with sphenethmoid.

Neopalatine robust, lies posterior to the internal naris. Broad distal end lodged in connective tissue, and the proximal end pointed, lying ventral to the sphenethmoid, and posterior to the posterior end of vomer. Neopalatine separated from the sphenethmoid by a thin layer of dense connective tissue. Palatine bears a series of odontoids along a ventral crest.

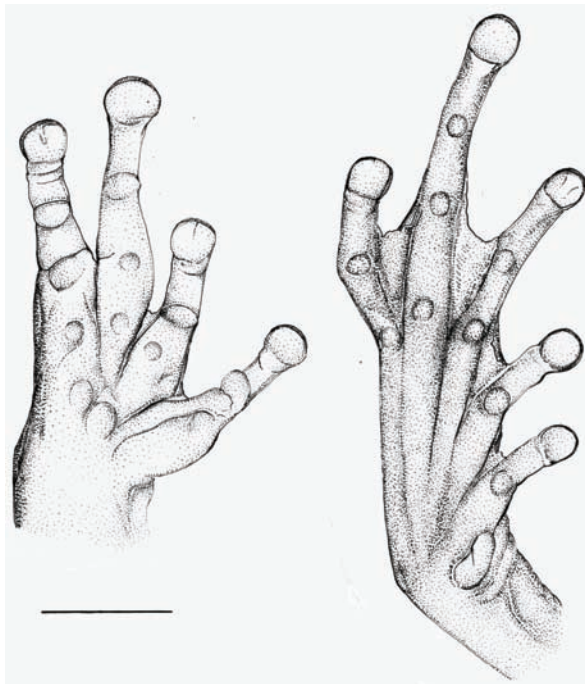


Fig.3- Ventral view of the hand and foot of *Corythomantis galeata* sp.nov. (MNRJ 27173, holotype, female). Scale = 5mm.

Nasals large. Anteriorly, nasal terminates in poorly developed spinose protuberances at the tip of snout, anteromedial to the maxillaries and premaxillaries. Nasals converge medially from their anterior termini posterior to the anterior tip of dermal sphenethmoid. Ventrolateral margin of the nasal articulates with *pars facialis* of maxillary in the anterior and posterior end. Posteromedially, nasal forms the anterior margin of the orbit. Posterior margin of the nasal articulates narrowly with the frontoparietal, and the posteromedial margin with the dermal sphenethmoid. Nasal bears a poorly developed canthal ridge. Ridge extends from the anterodorsal corner of the orbit to the tip of the snout, more developed anteriorly. Medial surface of the nasal marked by reticulate network of low bony spines and ridges. Orbital margin of the nasal terminates in a slight, upturned flange bearing small spines.

Maxillary moderately robust. Anterior to the orbit, the maxillary bears a shallow flange of spinose processes that decrease greatly in size ventral and posterior to the orbit. Dorsal surface of maxillary marked by a reticulate network of low bony ridges. *Pars palatine* poorly developed. Dorsal to the *pars palatine* and anterior to the orbit, the maxillary bears a well-developed *pars facialis*. Posteriorly, *pars facialis* terminates at the anterior margin of the orbit.

Frontoparietals converge medially throughout their lengths. Anterolaterally, frontoparietal articulates with the nasal; anteromedially, frontoparietal articulates with the posterior margin of dermal sphenethmoid. Anterolaterally, frontoparietal extends over the orbit as a narrow shelf. Posterior margin terminates in an upturned spinose crest. Ventral to the crest, frontoparietal attached to the exoccipital; laterally, it bridges the prootic from the exoccipital to the otic ramus of squamosal. Entire dorsal surface of frontoparietal involved in integumentary-cranial co-ossification. The outer margins and dorsal surfaces of frontoparietal are marked by series of small spines.

Dermal sphenethmoid triangular-shaped, centrally located at the anterior level of orbit, lying anteromedial to the nasals and posteromedial to the frontoparietals. It is completely involved in integumentary-cranial co-ossification, and the dorsal surface of the bone marked by small spines in the middle region. Cartilage appears at the distal tip of the anterolateral edge of the sphenethmoid at the level of articulation of frontoparietal and nasal. Cartilage expands distally to form a broad supraorbital shelf.

In dorsal view, squamosal arched and extends posteriorly from the posterior edge of the orbit to the level of frontoparietal crest. Dorsolateral margin of the squamosal bears a series of small spines and it is involved in integumentary cranial co-ossification. Zygomatic ramus of squamosal moderately robust. It forms part of the posterior margin of orbit and terminates nearly on the dorsal surface of the maxillary, but the tip of the anterior ramus of squamosal without articulation with maxillary. Otic ramus of the squamosal shorter than the zygomatic ramus, terminating at the posterolateral corner of the frontoparietal. Otic ramus of the squamosal not articulated medially with the frontoparietal. Ventral ramus of the squamosal extends posteroventrally from the beginning of posterior third of squamosal; posteroventrally, the terminus lying dorsal to the quadratojugal.

Pterygoid well developed. Anterior end of the anterior ramus lying at posterior middle of the orbitonasal foramen. Anterior ramus diverges angled from the maxillary. Posterior ramus articulates with the quadratojugal and ventral ramus of the squamosal; medial ramus strong. Quadratojugal small and poorly developed. Anterior end lying midway in the level of prootic foramen. Anteriorly, quadratojugal as a small rod of bone lying medial to the maxillary.

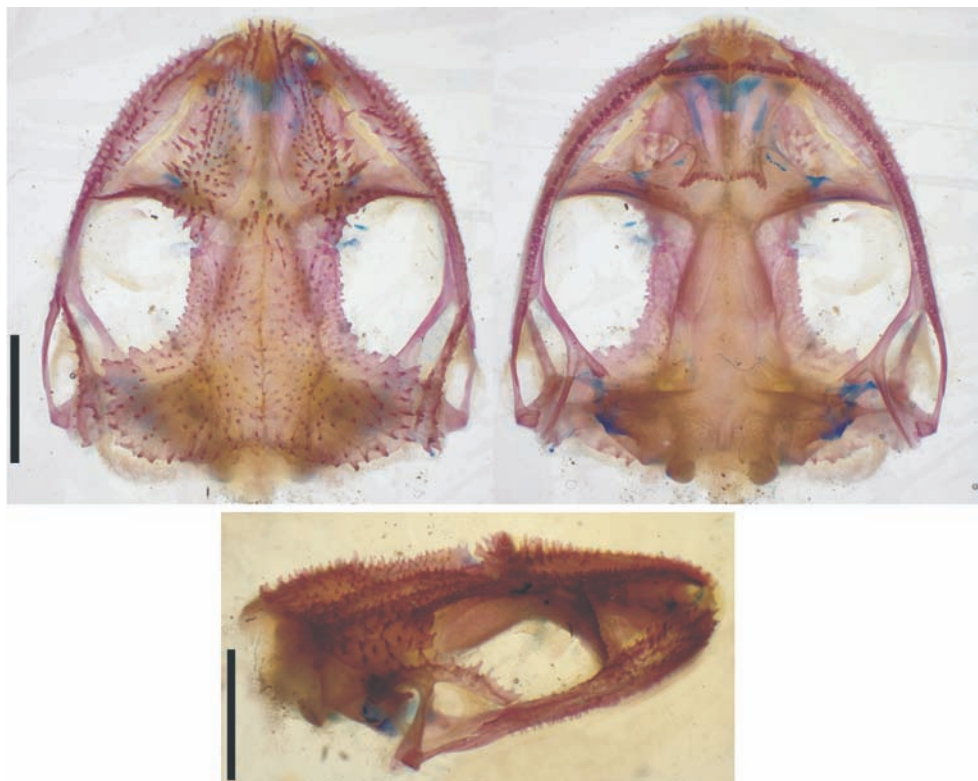


Fig.4- Skull of *Corythomantis galeata* sp.nov. (MNRJ 27175, paratype, female). Scale = 5mm

**Etymology** – The specific name, a substantive Latin word, is an allusion to the head co-ossified; its meaning is covered with a helmet.

**Distribution** – *Corythomantis galeata* is known only from its type-locality in Morro do Chapeú, State of Bahia. The other species of the genus, *C. greeningi*, is known from northeastern, central, and southeastern Brazil (Fig. 5), from the State of Maranhão to the State of Minas Gerais in the Caatinga biome (*sensu* AB`SÁBER, 1977) and transition area to the Atlantic Rain Forest or Cerrado biomes, including a locality in the State of Goiás, in the ecotone between Cerrado and Caatinga biomes (see VAZ-SILVA *et al.*, in press).

#### REMARKS

Before the discovery of *Corythomantis galeata*, the genus *Corythomantis* was monotypic. FAIVOVICH *et al.* (2005), following TRUEB (1970a), considered as morphological autapomorphies for *C. greeningi* the absence of neopalatines and nasals that conceal the alary process of premaxillaries. The new species shares the same character state for the nasal, but presents the neopalatine bones. Therefore, we considered the new



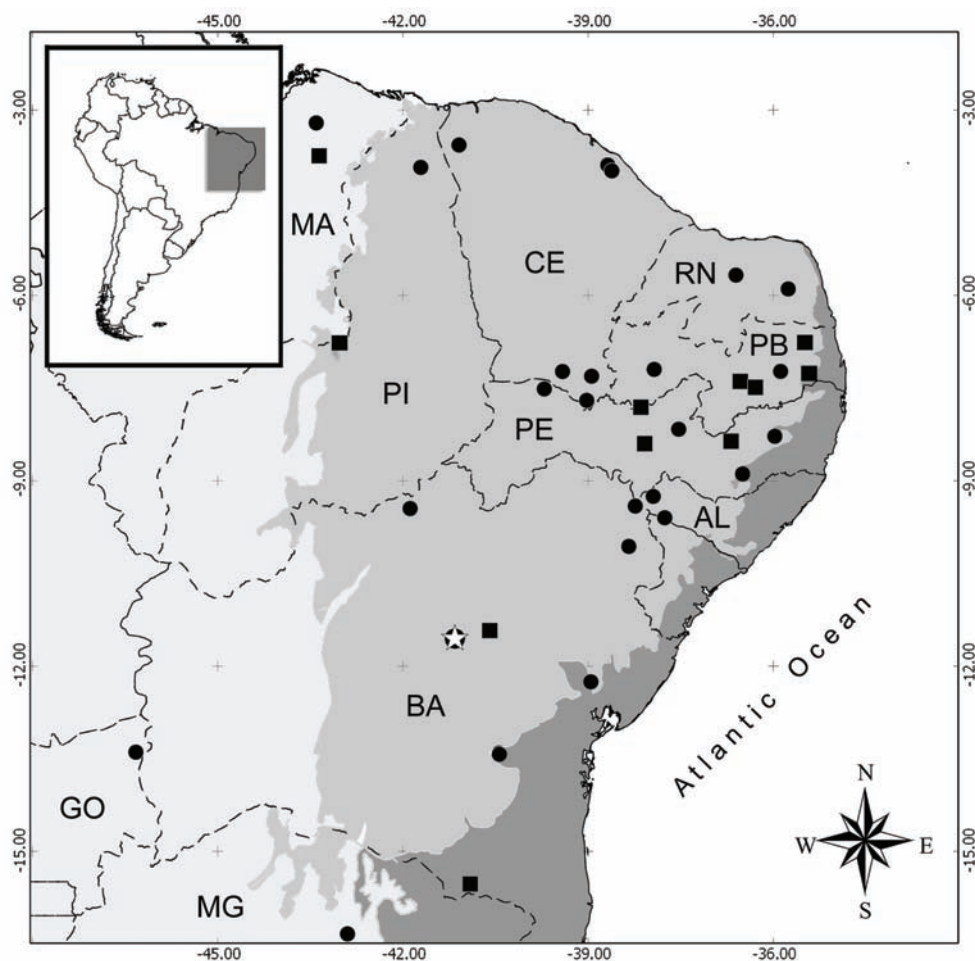


Fig.5- Map of the geographic distribution of *Corythomantis galeata* (star: type-locality) and *C. greeningi* (circles: examined specimens; squares: literature records). Specimens examined and literature records are listed in Appendix.

species as belonging to *Corythomantis*, but the only recognized putative synapomorphy for the genus is the nasals that conceal the alary process of premaxillaries.

The type-locality of *C. greeningi* was designated as “from Brazil (exact locality unknown)” (BOULENGER, 1896); after, CONDIT (1964) corrected to Brazil, Espírito Santo. However, the genus *Corythomantis* is not known in the State of Espírito Santo in southeastern Brazil (this work); thus, the type specimen is probably from northeastern Brazil, as suggested by BOKERMANN (1966b).

The dorsal skin is smooth in *C. galeata*, but the specimens analyzed are females or

unsexed. Females of *C. greeningi* show little granules and no warts with whitish apex. So, this feature should be reevaluated when other specimens of *C. galeata* were found.

The two females (MNRJ 27173 and 27175) are ovulated; one with small ovules in oviduct and the other with ovules of moderate size. The three specimens were found inside a terrestrial tank bromeliad (*Hohenbergia vertita*). The skin of *Corythomantis greeningi* possesses a calcified layer that may be involved in the maintenance of hydric equilibrium (JARED *et al.*, 1995). The rate of evaporative water loss through the body skin does not differ considerably from that of the co-ossified head surface in *C. greeningi*, suggesting that the co-ossified head is not related to the low rates of evaporative water loss observed for this species (ANDRADE & ABE, 1997). However, *C. galeata* was found inside terrestrial bromeliads, whereas *C. greeningi* is mainly found in rock crevices (ANDRADE & ABE, 1997). Thus, as observed in another bromeliad dwelling species, *Aparasphenodon bruno*i (ANDRADE & ABE, 1997), it is possible that head co-ossification, in association with phragmotic habit, is an important component of the water conservation mechanism of *C. galeata*.

Morro do Chapéu is located at Chapada Diamantina, at the northern portion of the Espinhaço mountain range. The Espinhaço mountain chain ranges parallel to the eastern Brazilian coast, from 20°35'S to 11°11'W. In general, this mountain chain is characterized by quartzite and arenitic outcrops (GIULIETTI *et al.*, 1987). The topographical horizon is highly jagged and irregular due to the emergence of the "Chapadas". The climate in the area is dry to sub-humid and semiarid. Mean rainfall is 739 mm; the wet season lasts from November to March. Mean annual temperature is about 20°C.

In the type-locality, soils are in general shallow and sandy, with outcrops almost everywhere. The plant cover is diversified and consists of a mosaic of 'caatinga', 'cerrado' and 'campos rupestres' (rupicolous vegetation), where plants of the families Bromeliaceae, Cactaceae, Melastomataceae, and Eriocaulaceae are abundant.

#### ACKNOWLEDGMENTS

To D.R. Frost, C.F.B. Haddad, W.R. Heyer, F.A. Juncá, J.D. Lynch, M.F. Napoli, A. Ohler, S. Ron, L.F. Toledo, L. Trueb, H. Zaher, and C. Mello, for the permission to examine specimens under their care; Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ) for financial support; P.R. Nascimento made the line drawings; F.R. Costa by English review; two anonymous reviewers made helpful comments; C. Canedo provided laboratorial assistance; collection permit was granted by Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis – IBAMA (permit # 096/99 – DIFAS).

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## APPENDIX

## ADDITIONAL SPECIMENS EXAMINED

*Anotheca spinosa*: MEXICO, VERACRUZ, MNRJ 2796, 4074, 12501, 15379.

*Aparasphenodon bokermanni*: BRAZIL, STATE OF SÃO PAULO, Iguape, Juréia ZUEC 6604 (holotype), Ilha do Cardoso ZUEC 11571; Itanhaém MZUSP 56409.

*Aparasphenodon brunoi*: BRAZIL, STATE OF ESPÍRITO SANTO, Conceição da Barra MNRJ 3485, 4114, 14514-14516, 15391-15397, Guarapari, Nova Guarapari MNRJ 25645, Linhares, MNRJ 22720, 30482-30483, Sooretama MNRJ 2657; STATE OF MINAS GERAIS, Parque Estadual do Rio Doce MNRJ 15680, 20873 (juv.); STATE OF RIO DE JANEIRO, Mangaratiba, Marambaia MNRJ 20014-20015 (juv.), 26890, Maricá, Restinga de Maricá MNRJ 15687, 15688, 15689, 15690, 15691-15692 (juv.), 15693, 15694, 15695, 15696, 15697, 15698, 15703, 15704, 15705-15711, 15712-15713, 15714, 15715-15716, 15717, 15726-15727 (juv.), 15749-15754 (juv.), 16728-16736, 29289-29292; Niterói AL-MN 650 (holotype of *Corythomantis adspersa*), Rio de Janeiro, MNRJ 0247 (holotype), MNRJ 0248, Barra da Tijuca MNRJ 26891, 26892-26893 (juv.), Praia de Grumari MNRJ 15681-15682, Recreio dos Bandeirantes MNRJ 0641, 1900, 2863, 3091, 5730-5731, 10272-10280, 12579-12582.

*Aparasphenodon venezolanus*: COLOMBIA: GUAINÍA: Caño Caimán ICN 40216-40219, Puerto Inírida ICN 40990-40995, 40996-41020.

*Argenteohyla siemersi*: ARGENTINA: AL-MN 5192; BUENOS AIRES, Isla del Delta del Paraná MNRJ 76753, MZUSP 114614, MZUSP 114615 (juv); Isla Talavera MZUSP 114616-114617.

*Corythomantis greenengi* BRAZIL: STATE OF ALAGOAS: Água Branca MNRJ 9791; Piranhas CFBH 2968-2969, UFBA 001-005, 026, 028-029, 034, 044, 059, 061-062. STATE OF BAHIA: Carnaíba MZUSP 75704, 94685-94687; Encruzilhada (SAZIMA & CARDOSO, 1980); Feira de Santana MZUEFS 0185, 0187; Jeremoabo MZUSP 76381; Maracás MNRJ 94689-94693; Miguel Calmon (XAVIER & NAPOLI, 2011); Morro do Chapéu MZUSP 68957, MZUEFS 1807, 1821; Paulo Afonso MNRJ 3532-3533, MNRJ 36156, MZUSP 94860. STATE OF CEARÁ: Crato MNRJ 15686; Jati MNRJ 55894 (juv); Milagres MNRJ 55336; Serra de Aratanha MNRJ 55553-55559 (juv). Serra de Maranguape MNRJ 55337; Viçosa do Ceará MNRJ 55763-55764. STATE OF GOIÁS: São Domingos MNRJ 51480. State of Maranhão: Chapadinha (SAZIMA & CARDOSO, 1981); Urbano Santos MNRJ 76786. STATE OF MINAS GERAIS: BR-334, km 995 Cristália MNRJ 15866-15868. STATE OF PARAÍBA: Boa Vista (VIEIRA *et al.*, 2007); Cabaceiras (CASCON, 1987); Campina Grande e Soledade MNRJ 37090; Parque Nacional Serra de Itabaiana (CARVALHO *et al.*, 2005); Piancó MZUSP 94880-94892 (juv); São João do Cariri (VIEIRA *et al.*, 2007). STATE OF PERNAMBUCO: Caruaru MNRJ 38627-38629; Exu MZUSP 51767, 52002, 53849, 60366, 94883, 94683; Pesqueira (CARVALHO,



1941); Rio Jaboatão, Garanhuns MNRJ 30642; Salgadinho MNRJ 0246 (holotype of *C. schubarti*); Santa Cruz da Baixa Verde (SILVA *et al.*, 2010); Tapera (CARVALHO, 1941). STATE OF PIAUÍ: Estrada para o Parque Sete Cidades MNRJ 18269; Floriano (AMPHIBIAWEB, 2011). STATE OF RIO GRANDE DO NORTE: Distrito de Angicos MNRJ 76754-76756 (skulls), MZUSP 71954-71955; São Paulo do Potengi MNRJ 76781-76785.

*Nyctimantis rugiceps*: PERU: LORETO: Estiron MZUSP 32869.

*Pterohyla fodiens*: MEXICO, SONORA, Bumari MNRJ 2842.

*Trachycephalus atlas*: BRASIL: STATE OF BAHIA: Maracás AMNH 76223-76225, KU 116939, 124669, MNRJ 4028, 14208-14209, MZUSP 74304 (holotype), 74169-74170, 74305, 74618, 74621-74648, 74649-74669, 74670-74676, 74677-74716, 74621-74648, 74717-74731, 74735-74736, 74740-74746, 74747-74773, 74774-74795, 74796-74803, 74804-74824, 74825-74832, 74883-74855, 74856-74862, 74863-74884, 74886-74892, USNM 164102-164103 (paratypes), MZUSP 119815; Planalto Baiano MZUSP 57098-57118; Sitio do Mato MZUSP 80972-80975. STATE OF CEARÁ: Bálamo MNRJ 55562; Jati MNRJ 55777. STATE OF PERNAMBUCO: Afrânio MNRJ 3010; Cerqueira MNRJ 55461. STATE OF SERGIPE: Cristianópolis MNRJ 55184.

*Trachycephalus jordani*: COLOMBIA: NARIÑO USNM 152754. ECUADOR: GUAYAS MNRJ 73366-73367, USNM 12274 (holotype), USNM 164312-164319, 164303-164304, QCAZ 23460, 23471, 37339, 37341 23414, 39328-39329; El Oro MZUSP 121843-125845; Pichincha AMNH 114836, MZUSP 55775-55776, 56344-56353, 121846, USNM 204296, 283363-283366, 283367-283375, 283376-283387, 283388-283390, 285289, 285299, 285290-285298, 285300-285306, 285307, 285412, 285413, 285715, 285716, 285793. PERU: PIURA USNM 153798.

*Trachycephalus mambaiensis*: BRAZIL: STATE OF MINAS GERAIS, AHE Queimado MNRJ 35565. STATE OF GOIÁS: Mambai MZUSP 135715 (holotype), 135713, 135714, 135716-135717 (paratypes).

*Trachycephalus nigromaculatus*: BRAZIL: STATE OF BAHIA: Caetité MNRJ 25021, Barreiras MNRJ 1177-1178, Mascote MNRJ 40249. STATE OF ESPÍRITO SANTO: Baixo Guandú MNRJ 15660; Bananal MNRJ 243; Fundação MNRJ 61211; Guarapari MNRJ 19401; Linhares MNRJ 30484; Presidente Kennedy MNRJ 62326. STATE OF MINAS GERAIS: João Pinheiro MNRJ 38856, 38859; Manga MNRJ 39279; Jaíba MNRJ 39252-39253; Várzea da Prata MNRJ 15662. STATE OF RIO DE JANEIRO: Barra de São João MNRJ 32263; Barro Branco MNRJ 1525; Búzios MNRJ 27073; 49888; Cabo Frio MNRJ 36146, 47518; Del Castilho MNRJ 1843; Duque de Caxias MNRJ 2046, 30641; Iguaba Grande MNRJ 55715; Niterói MNRJ 31349; Pedra de Guaratiba MNRJ 55185, 55188; Petrópolis MNRJ 1341-1343; Ponta Grossa MNRJ 2031, 2543, 2546, 2609, 10528, 11584-11588, 11594, 12138; Realengo MNRJ 3742, 3908, Rio das Ostras MNRJ 38205; Rio de Janeiro AMNH 17412, 78244, MNRJ 241, 245, 1843, 2111, 2536, 3092, 3742, 74838, MNRJ 241, 242, 245, 2111, 2536, 2603, 3092, 4237-4232 (tadpoles and juv.); São João da Barra MNRJ 2328; São João de Meriti MNRJ 2469; Estrada Real MNHNP 4608-4609 (syntypes).

*Tripriion petasatus*: GUATEMALA, PETÉN, San Francisco MNRJ 18671; MEXICO, YUCATAN MNRJ 2791, 12497.

*Tripriion spatulatus*: MEXICO, OAXACA MNRJ 2798; SINALOA MNRJ 4082, 15389.



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Normalização – Leandra de Oliveira

Diagramação e arte-final – Lia Ribeiro

Produção – Antonio Carlos Moreira

Indexação – Biological Abstracts, ISI – Thomson Scientific, Ulrich's International Periodicals Directory, Zoological Record, NISC Colorado, Periodica, C.A.B. International

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Impresso na Milograph Gráfica e Editora  
Rio de Janeiro, RJ