Herpetology Notes, volume 7: 717-720 (2014) (published online on 21 December 2014)

New record of *Corythomantis greeningi* Boulenger, 1896 (Amphibia, Hylidae) in the Cerrado domain, state of Tocantins, Central Brazil

Leandro Alves da Silva[1,*], Mauro Celso Hoffmann[2] and Diego José Santana[3]

Corythomantis greeningi is a hylid frog distributed along xeric and subhumid regions of northeastern Brazil, usually associated with the Caatinga domain (Jared et al., 1999). However, recent studies have shown a larger distribution for the species in the Caatinga and Cerrado (Valdujo et al., 2011; Pombal et al., 2012; Godinho et al., 2013) (Table 1; Figure 1). This casque-headed frog is a medium-sized hylid, with a pronounced ossification in the head and high intraspecific variation in skin coloration (Andrade and Abe, 1997; Jared et al., 2005). Herein, we report a new record of *Corythomantis greeningi* in the Cerrado and provide its distribution map based on published data and the new record (Figure 1).

On 20 February 2013, during an anuran survey at the district of Taquaruçu, Palmas municipality, Tocantins state, central Brazil, we collected an individual of *Corythomantis greeningi* (Figure 2) that was perched on a palm tree leaf within a gallery forest, at 21:00 h, near the Roncadeira waterfall (Figure 3; 10°17'47"S, 48°07'42"W; 635m a.s.l.) The voucher specimen is housed at the Herpetological Collection of the Universidade Federal de Mato Grosso do Sul (ZUFMS 3448; collection permits ICMBio 26157-7).

In Tocantins state, *Corythomantis greeningi* was known only from the Estação Ecológica Serra Geral do Tocantins (EESGT) (Valdujo et al., 2011), in the Jalapão region, a marginal Cerrado area with influence of the Caatinga. This new record extends the distribution of *Corythomantis greeningi* around 160 km western from the EESGT, which means approximately 400 km from the edge of the Caatinga domain (Figure 1). Although *Corythomantis greeningi* has already been registered in the Cerrado, this record shows a wider distribution into this formation, not only marginally as previously suggested (Valdujo et al., 2012). This is the most western record of *Corythomantis greeningi*.

Quaternary climatic oscillations have modeled the distribution of South American open vegetation formations (Caatinga, Cerrado and Chaco) (Werneck, 2011) and influenced the distribution of several taxonomic groups of animals within this gradient, such as birds (Silva, 1995, 1997), squamate reptiles (Werneck and Colli, 2006; Nogueira et al., 2011), mammals (Carmignotto et al., 2012) and amphibians (Valdujo et al., 2013), with current disjoint distributions and relict populations. Nuclear populations of *Corythomantis greeningi* in the Cerrado could be a relict distribution from past events. However, we emphasize the need for a better sampling effort in the northern portion of the Cerrado, which may fill this gap and reveal different geographic distribution patterns for other anuran species.

Acknowledgments. We thank Mário R. Moura for a critical reading and helpfull comments; the Universidade Federal do Tocantins for logistical support, the Instituto Chico Mendes de Conservação da Biodiversidade for collection permits, and Roncadeira team for facilitating and encouraging this study.

References

Andrade, D.V., Abe, A.S. (1997): Evaporative Water Loss and Oxygen Uptake in Two Casque-Headed Tree Frogs, *Aparasphenodon brunoi* and *Corythomantis greeningi* Anura, Hylidae). Comparative Biochemistry and Physiology **118A**: 685-689.

[1] Fundação Universidade Federal do Tocantins, Ciências Biológicas, Campus de Porto Nacional – TO. Rua 07 Quadra 15 - Jardim dos Ipês, Porto Nacional, TO, Brazil.

[2] Fundação Universidade Federal do Tocantins, Laboratório de Ecologia e Zoologia. Avenida NS 15, ALCNO 14, 109 Norte, Palmas, TO, Brazil.

[3] Universidade Federal de Mato Grosso do Sul, Centro de Ciências Biológicas e da Saúde, Cidade Universitária, CEP 79.070-900, Campo Grande, MS, Brazil.

* Corresponding author. E-mail: leandroherpeto@gmail.com

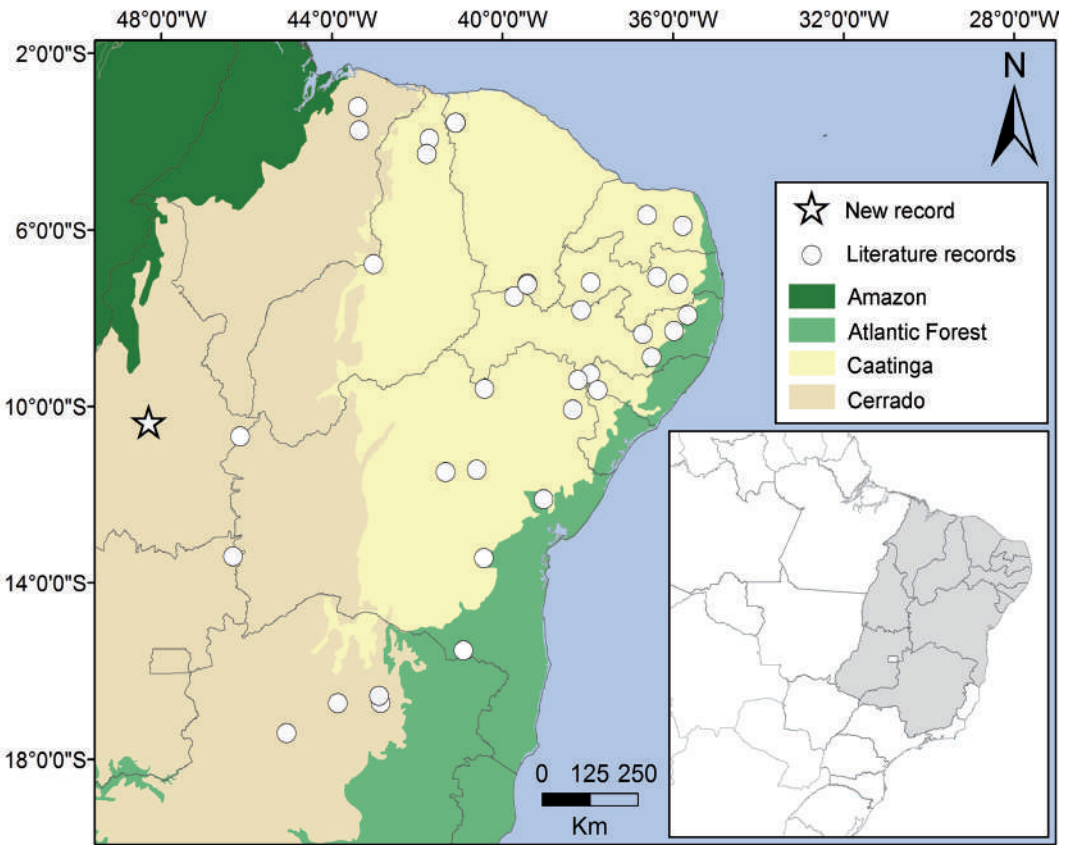

Figure 1. Distribution map of *Corythomantis greeningi* showing known localities based on the literature (open circles) and the new record in Palmas, Tocantins state, central Brazil (star).

Figure 2. An individual of *Corythomantis greeningi* (ZUFMS 3448, CRC 39.00 mm) from the Taquaruçu district, Palmas municipality, Tocantins state, central Brazil. Photo credit: Mauro Celso Hoffmann.

Figure 3. Area of the Roncadeira waterfall, Palmas, Tocantins state, where the individual of *Corythomantis greeningi* was collected. Photo credit: Mauro Celso Hoffmann.

Table 1. Localities with confirmed records of *Corythomantis greeningi* in Brazil.

Locality	State	Latitude	Longitude	Reference
Água Branca	Alagoas	-9.261944	-37.937778	Pombal et al. (2012)
Piranhas	Alagoas	-9.623333	-37.756667	Kasahara et al. (2003)
Feira de Santana	Bahia	-12.100000	-39.030000	Juncá et al. (2008)
Jeremoabo	Bahia	-10.068333	-38.346944	Pombal et al. (2012)
Morro do Chapéu	Bahia	-11.483056	-41.333056	Juncá et al. (2008)
Paulo Afonso	Bahia	-9.398056	-38.221389	Pombal et al. (2012)
Encruzilhada	Bahia	-15.530000	-40.912222	Sazima and Cardoso (1980)
Maracás	Bahia	-13.435278	-40.432222	Pombal et al. (2012)
Carnaíba do Sertão	Bahia	-9.595833	-40.419167	Pombal et al. (2012)
Miguel Calmon	Bahia	-11.429722	-40.603056	Pombal et al. (2012)
Crato	Ceará	-7.215278	-39.410278	Pombal et al. (2012)
Viçosa do Ceará	Ceará	-3.561944	-41.091944	Godinho et al. (2013)
Viçosa do Ceará	Ceará	-3.566667	-41.091389	Pombal et al. (2012)
Crato	Ceará	-7.234167	-39.409167	Godinho et al. (2013)
São Domingos	Goiás	-13.399722	-46.321667	Pombal et al. (2012)
Chapadinha	Maranhão	-3.738611	-43.360278	Sazima and Cardoso (1980)
Urbano Santos	Maranhão	-3.206389	-43.387778	Pombal et al. (2012)
Buritizeiro	Minas Gerais	-17.403611	-45.060000	Godinho et al. (2013)
Cristália	Minas Gerais	-16.715833	-42.856944	Feio and Caramaschi (1995)
Montes Claros	Minas Gerais	-16.728056	-43.857778	Godinho et al. (2013)
Grão Mogol	Minas Gerais	-16.559167	-42.889444	Godinho et al. (2013)
Campina Grande	Paraíba	-7.221944	-35.873056	Pombal et al. (2012)
Piancó	Paraíba	-7.192778	-37.928611	Pombal et al. (2012)
São João do Cariri	Paraíba	-7.366389	-36.516389	Vieira et al. (2007)
Soledade	Paraíba	-7.058056	-36.366667	Pombal et al. (2012)
Garanhuns	Pernambuco	-8.882222	-36.496389	Pombal et al. (2012)
Caruaru	Pernambuco	-8.284444	-35.969722	Pombal et al. (2012)
Exu	Pernambuco	-7.503611	-39.723611	Pombal et al. (2012)
Pesqueira	Pernambuco	-8.357778	-36.697778	Carvalho (1941)
Salgadinho	Pernambuco	-7.926667	-35.650278	Carvalho (1941)
Santa Cruz da Baixa Verde	Pernambuco	-7.813333	-38.147500	Silva et al. (2010)
Piracuruca	Piauí	-3.928056	-41.709167	Sazima and Cardoso (1980)
Piripiri	Piauí	-4.273889	-41.776667	Godinho et al. (2013)
Parque Nacional Sete Cidades	Piauí	-4.273056	-41.776667	Pombal et al. (2012)
Floriano	Piauí	-6.771667	-43.023889	Pombal et al. (2012)
Angicos	Rio Grande do Norte	-5.661667	-36.605000	Jared et al. (2005)
São Paulo do Potengi	Rio Grande do Norte	-5.899167	-35.764167	Pombal et al. (2012)
Estação Ecológica Serra Geral	Tocantins	-10.680000	-46.150556	Valdujo et al. (2011)
Taquaruçu district	Tocantins	-10.339223	-48.302834	Present work

Carmignotto A.P., Vivo, M., Langguth, A. (2012): Mammals of the Cerrado and Caatinga: distribution patterns of the tropical open biomes of Central America. In: Bones, clones, and biomes: the history and geography of recent Neotropical mammals, p. 307-350. Patterson, B.D. & Costa, E., Ed., Chicago, University of Chicago Press.

Carvalho, A.L. (1941): Notas sobre os gêneros *Corythomantis* Boulenger e *Aparasphenodon* Miranda Ribeiro. Papéis Avulsos **1**: 101-110.

Feio, R.N., Caramaschi, U. (1995): Aspectos Zoogeográficos dos Anfibios do médio Rio Jequitinhonha, Nordeste de Minas Gerais, Brasil. Revista Ceres **42**: 53-61.

Godinho, L.B., Moura, M.R., Feio, R.N. (2013): New records and geographic distribution of *Corythomantis greeningi* Boulenger, 1896 (Amphibia: Hylidae). Check List **9**: 148-150.

Jared, C., Antoniazzi1, M.M., Navas, C.A., Katchburian, E., Freymuller, E., Tambourgi, D.V., Rodrigues, M.T. (2005): Head co-ossification, phragmosis and defence in the casque-headed tree frog *Corythomantis greeningi*. Journal of Zoology **265**: 1-8.

Jared, C., Antoniazzia, M.M., Katchburianb, E., Toledo, R.C., Freymiiller, E. (1999): Some aspects of the natural history of the casque-headed tree frog *Corythomantis greening*i Boulenger (Hylidae). Annales des Sciences Naturelles **3**: 105-115.

Juncá, F.A., Carneiro, M.C.L., Rodrigues, N.N. (2008): Is a dwarf population of *Corythomantis greeningi* Boulenger, 1896 (Anura, Hylidae) a new species? Zootaxa **1686**: 48-56.

Kasahara, S., Zampeire, S.A.P., Gruber, S.L., Haddad, C.F.B. (2003): Comparative cytogenetic analysis on four tree frog species (Anura, Hylidae, Hylinae) from Brazil. Cytogenetic and Genome Research **103**: 155-162.

Nogueira, C., Ribeiro, S., Costa, G.C., Colli, G.R. (2011): Vicariance and endemism in a Neotropical savanna hotspot: distribution patterns of Cerrado squamate reptiles. Journal of Biogeography **38**: 1907-1922.

Pombal, J.P., Menezes, V.A., Fontes, A.F., Nunes, I., Rocha C.F.D., Van-Sluy, M. (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. Boletim do Museu Nacional **530**: 1-14.

Sazima, I., Cardoso, A.J. (1980): Notas sobre a distribuição de *Corythomantis greeningi* Boulenger, 1896 e *Aparasphenodon brunoi* Miranda-Ribeiro 1920 (Amphibia, Hylidae). Iheringia **55**: 3-7.

Silva, G.L., Santos, E.M., Gomes, J.P. (2010): Predação de ovos de *Corythomantis greeningi* Boulenger, 1896 (Anura, Hylidae) por *Solenopsis invicta* Buren, 1972 (Formicidae: Myrmicinae). Biotemas **23**: 153-156.

Silva, J.M.C. (1995): Biogeographic analysis of the Southn American Cerrado Avifauna. Steenstrupia **21**: 49-67.

Silva, J.M.C. (1997): Endemic bird species and conservation in the Cerrado Region, South America. Biodiversity and Conservation **6**: 435-450.

Valdujo, P. H., Silvano, D. L., Colli, G., Martins, M. (2012): Anuran species composition and distribution patterns in Brazilian Cerrado, a Neotropical hotspot. South American Journal of Herpetology **7**: 63-78.

Valdujo, P.H., Camacho, A., Recoder, R.S., Teixeira-Junior, M., Ghellere, J.M.B., Mott, T., Nunes, P.M.S., Nogueira C., Trefaut M. R. (2011): Anfíbios da Estação Ecológica Serra Geral do Tocantins, região do Jalapão, Estados do Tocantins e Bahia Biota Neotropica **11**: 251-262.

Valdujo, P.H., Carolina, A.O., Carnaval, Q., Graham, C.H. (2013): Environmental correlates of anuran beta diversity in the Brazilian Cerrado. Ecography **36**: 708-717.

Vieira, W.L.S., Arzabe, C., Santana, G.G. (2007): Composição e distribuição espaço-temporal de Anuros no Cariri Paraibano, Nordeste do Brasil. Oecologia Brasiliensis **11**: 383-396.

Werneck, F.P. (2011): The diversification of eastern South American open vegetation biomes: Historical biogeography and perspectives. Quaternary Science Reviews **30**: 1630-1648.

Werneck, F.P., Coli, G.R. (2006): The lizard assemblage from Seasonally Dry Tropical Forest enclaves in the Cerrado biome, Brazil, and its association with the Pleistocenic Arc. Journal of Biogeography **33**: 1983-1992.

Accepted by Cynthia Prado