

New records from Brazil and first record from the state of Rondônia of *Osteocephalus castaneicola* Moravec, Aparicio, Guerrero-Reinhard, Calderón, Jungfer & Gvoždík, 2009 (Anura: Hylidae) with an update on its geographical distribution

Diego Meneghelli ^{1*} and Omar Machado Entiauspe Neto ²

1 Programa de Pós-Graduação em Biodiversidade e Biotecnologia da Rede Bionorte – Doutorado, Universidade Federal do Amazonas. Av. Gal. Rodrigo Otávio Jordão Ramos, 3000, Coroado. CEP 69077-000. Manaus, AM, Brasil., Brasil.

2 Instituto Federal Sul Rio Grandense, Campus Visconde da Graça. Av. Engenheiro Ildefonso Simões Lopes, 2791. CEP 96025-370. Pelotas, RS, Brasil.

* Correspondent author. E-mail: meneghelli.herpeto@gmail.com

ABSTRACT: The genus *Osteocephalus* Steindachner, 1862, is currently composed of 24 species, of which 11 occur in Brazil. Here, we present the second record of the recently described tree frog, *Osteocephalus castaneicola* Moravec *et al.* (2009) to Brazil, as well as the first state record to Rondonia. We also present comments on its geographical distribution, presenting an updated geographical distribution map.

DOI: 10.15560/10.4.957

The genus *Osteocephalus* Steindachner, 1862 is currently composed of 24 species, of which six monophyletic group are formally recognized: *Osteocephalus alboguttatus* Boulenger, 1882; *O. buckleyi* Boulenger, 1882; *O. leprieurii* Duméril & Bibron, 1841; *O. planiceps* Cope, 1874; and *O. taurinus* Steindachner, 1862, of which 11 occur in Brazil (Jungfer *et al.* 2012). The genus has a wide geographical distribution, ranging from the North Coast of South America, in Venezuela and the Guyanas, to the mouth of the Amazonas River and Northeastern Brazil, in the state of Piauí, reaching Central Brazil and Bolivia, as well as the hillside at the East Andes, to Colombia (Jungfer *et al.* 2012).

Comprised within the *O. planiceps* group, is the recently described tree frog *Osteocephalus castaneicola* Moravec, Aparicio, Guerrero-Reinhard, Calderón, Jungfer & Gvoždík, 2009, which inhabits primary pluvial forests of solid ground with tall trees of 25–35 meters. Its reproduction is related to the “Castanha do Brasil” tree (*Bertholletia excelsa*), which fruits are opened by animals such as the Common Agouti (*Dasyprocta* spp.) in search of food, and happen to storage water, that is then used to develop the tadpoles of *O. castaneicola* (Moravec *et al.* 2009). The species can be distinguished from its congeners based on the lack of vocal fends, canthus rostralis distinct, angular, distinctly curved medially; loreal region concave, a narrow dark line along the mandible; iris bicolored with a dark horizontal stripe, golden above, bronze below, both parts with fine dark reticulate to radiate lines and other characters that are shown in Moravec *et al.* (2009). The species most similar to *O. castaneicola* in the state of Rondônia, Brazil is the *Osteocephalus leprieurii* (Marçal *et al.* 2011). However, *O. castaneicola* differs from *O. leprieurii* by having a narrow dark line along the mandible (Figure 1B), absent in *O. leprieurii* and by having the iris bicolored with a dark horizontal stripe, golden above, bronze

below, both parts with fine dark reticulate to radiate lines (Figure 1A and Figure 2A), iris with dark vermiculation in *O. leprieurii* (Moravec *et al.*, 2009). *Osteocephalus castaneicola* is currently registered in Bolivia to the regions of San Antonio de Filadelfia (type-locality), Província de Manuripi, Pando Department (11°18' S, 67°23' W; ca. 200 m a.s.l. (above sea level)), San Antonio del Matti, Pando Department (11°30' S, 68°53' W; ca. 270 m a.s.l.), El Tigre, La Paz Department (11°58' S, 68°00' W; ca. 122 m a.s.l.) (Aguilar-Kirigin 2012). In Peru, it is known based on records at Parque Nacional Manu, Madre de Dios (Von May *et al.* 2010a, b; IUCN 2013), and finally, to Brazil based on a record of Pantoja and Fraga (2012), at Reserva Extrativista do Rio Gregório, na Bacia do rio Juruá, Amazonas (7°38'38" S, 71°18'17" W; ca. 215 m a.s.l.).

During a field search on 4 February 2011, at 23:35 h, an individual adult (SVL = 55mm; Figure 1) was encountered active over a bush, about 1,80 meters high from the ground, at the Estação Ecológica do Cuniã (ESEC Cuniã), Porto Velho, Rondônia, Brazil (8°04'07" S, 63°29'0.28" W; ca. 81 m a.s.l.) inside the research grid of the Programa de Pesquisa em Biodiversidade (PPBio), and was collected with the permit SISBIO no. 24450-1.

Another individual, (SVL 56mm; Figure 2), was collected by the senior author, on 14 December 2013, at 21:54 h, in activity over a tree, about 1.10 meters high from the ground, near a small pond, during a experimental collect lecture in the RAPELD Potosí module, at Floresta Nacional do Jamari (FLONA do Jamari), Itapuã do Oeste, Rondônia Brazil (9°15'23.69" S, 62°54'45.43" W; ca. 94 m a.s.l.) and collected with the permit SISBIO no. 42348-1. Both specimens were deposited in the Coleção de Referência da Herpetofauna de Rondônia, being labeled as (UFRO-H 3107 and UFRO-H 1784), respectively.

This represents the second and third records of *O.*



Figure 1. *Osteocephalus castaneicola* (55 mm SVL) collected in Estação Ecológica do Cuniã, state of Rondônia, Brazil (UFRO-H 3107). (A) Iris bicolored with a dark horizontal stripe, golden above, bronze below, both parts with fine dark reticulate to radiate lines, (B) A narrow dark line along the mandible and (C) Ventral surface. Photo credits: Diego Meneghelli.

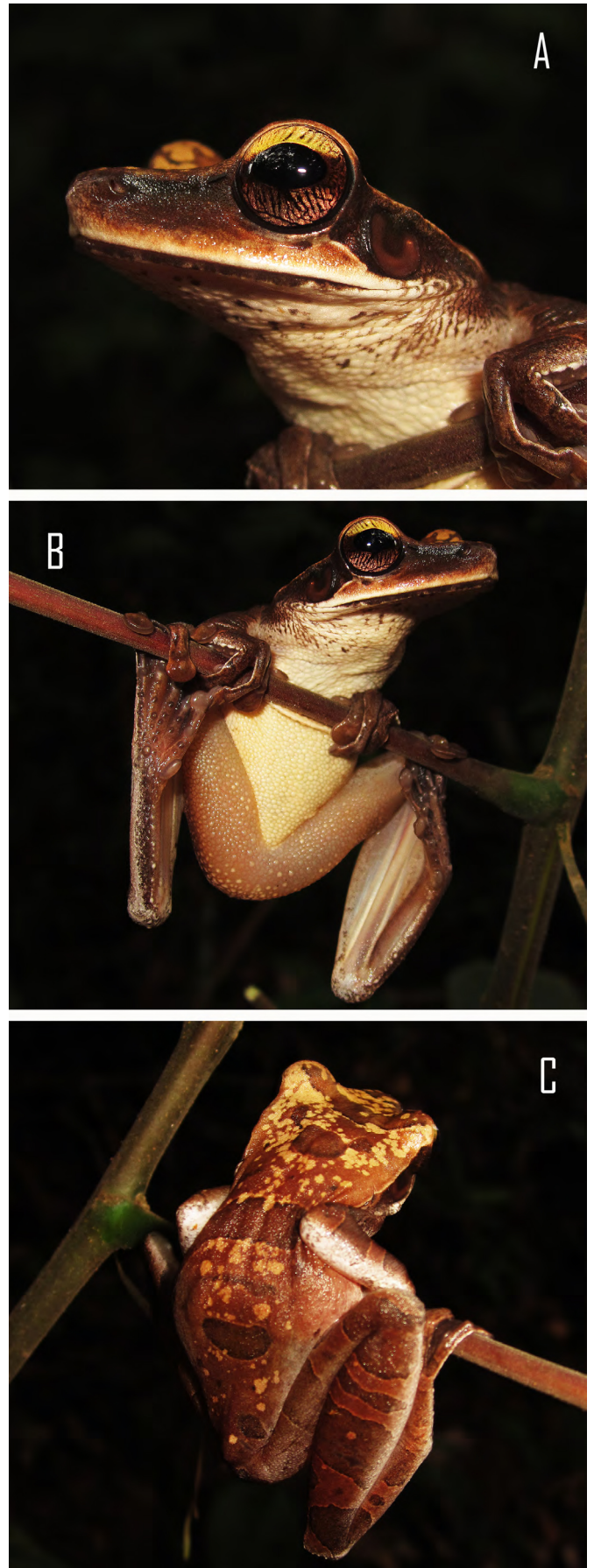


Figure 2. *Osteocephalus castaneicola* (56 mm SLV) collected in Floresta Nacional do Jamari, state of Rondônia, Brasil (UFRO-H 1784). (A) Canthus rostralis distinct, angular, distinctly curved medially with loreal region concave, (B) Ventral surface and (C) Dorsum tan, pale brown to purple brown, with scarce narrow irregular dark brown markings. Photo credits: Diego Meneghelli.

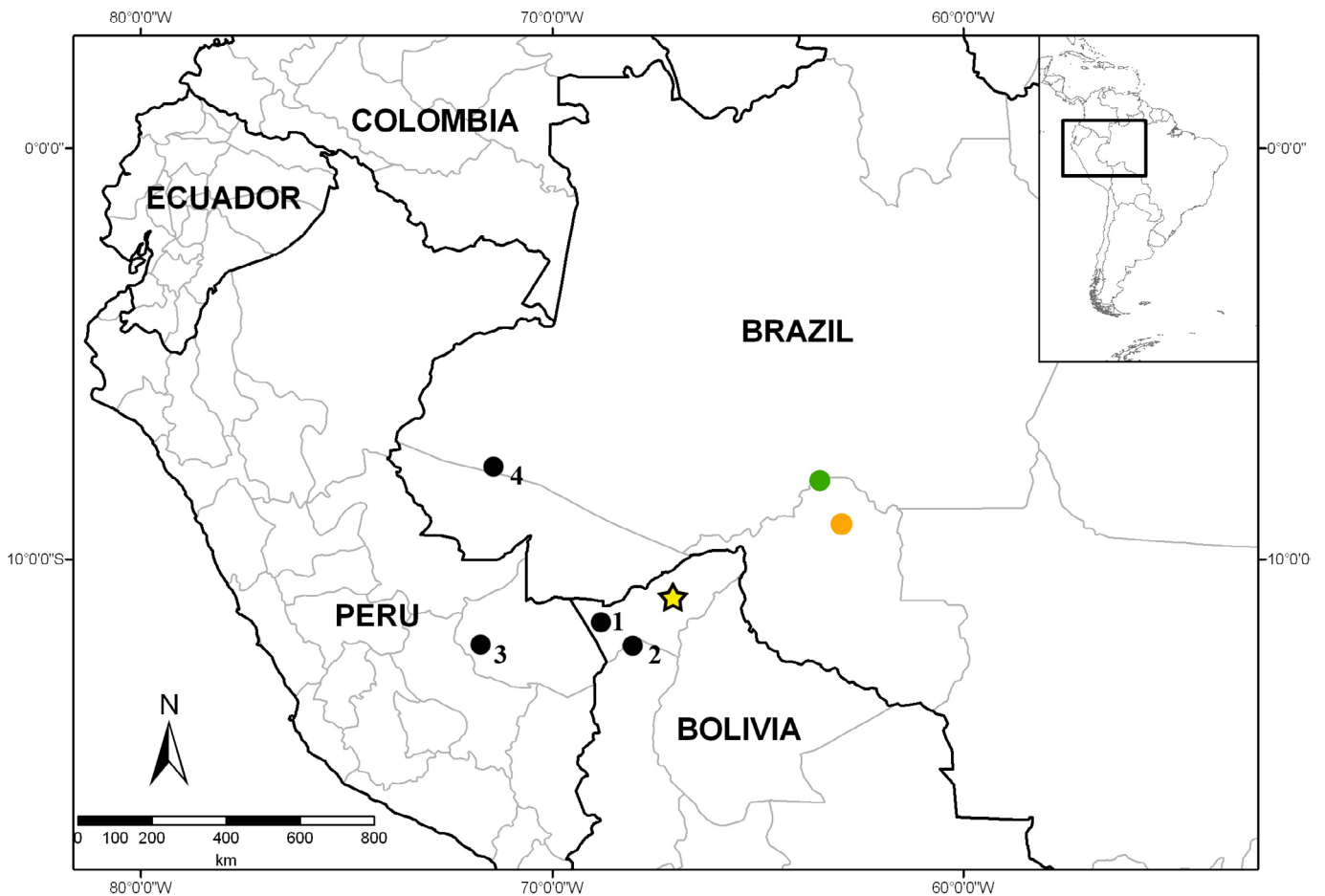


Figure 3. Geographical distribution of *Osteocephalus castaneicola*. The star represents the type locality, San Antonio de Filadelfia, Pando Department, Bolivia; black circle no. 1 represents the record of San Antonio del Matti, Pando Department, Bolivia; black circle no. 2 represents the record of El Tigre, La Paz Department, Bolivia; black circle no. 3 represents the record of Parque Nacional Manu, Madre de Dios, Peru; black circle no. 4 represents the record of RESEX Rio Gregório, Amazonas, Brazil. The green circle represents the record to the ESEC Cuniã, Porto Velho, Rondônia, Brazil and the orange circle, the record to the FLONA do Jamari, Itapuã do Oeste, Rondônia, Brazil.

castaneicola to Brazil, and the first to the state of Rondônia, being both made in areas of Amazonian Ombrofilous Open Forest. In Brazil, the species is apparently more uncommon than its other congeners, being also remarkable that it was only recorded inside conservation areas, highlighting its importance to increasing and preserving the Amazonian biodiversity.

These new records extend the geographical distribution of the species in approximately 560 km northeast from its type locality, in San Antonio de Filadelfia, Pando Department, Bolivia (Figure 3). This species might also occur in the state of Acre, Brazil, as noted by Moravec *et al.* (2009) and by personal comment of the authors.

ACKNOWLEDGMENTS: We are deeply indebted to our colleagues Andreza Shizuei Silva Rangel, Bruno Gulak Dorazio and Kainã Marafiga Negreiros for helping in the expeditions conducted at the ESEC Cuniã. The senior author thanks the grant given to him through the process PPBio/INPA/CNPq 558320/2009-0 - Edital MCT/CNPq no. 60/2009 and by the collect licence SISBIO no. 24450-1 and SISBIO no. 42348-1.

LITERATURE CITED

Aguilar-Kirigin, A.J. 2012. *Osteocephalus castaneicola* Moravec, Aparicio, Guerrero-Reinhard, Calderón, Jungfer and Gvoždík, 2009 (Anura: Hylidae). Extensión de su distribución geográfica y nuevo registro para el departamento de La Paz, Bolivia. *Cuadernos de Herpetología* 26(2): 107-109 (http://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S1852-57682012000200009&lng=es&nrm=iso).

IUCN. 2013. *Osteocephalus castaneicola*, IUCN Red List of Threatened Species. Version 2013.1. Electronic Database accessible at <http://www.iucnredlist.org/details/full/190998/0>. Captured on 31 August 2013.

Jungfer, K.-H., J. Faivovich, J.M. Padiá, S. Castroviejo-Fisher, M.L. Lyra, B.V.M. Berneck, P.P. Iglesias, P.J.R. Kok, R.D. MacCulloch, M.T. Rodrigues, V.K. Verdade, C.P. Torres Gastello, J.C. Chaparro, P.H. Valdujo, S. Reichle, J. Moravec, V. Gvoždík, G. Gagliardi-Urrutia, R. Ernst, I. de la Riva, D.B. Means, A.P. Lima, J.C. Señaris, W.C. Wheeler and C.F.B. Haddad. 2013. Systematics of spiny-backed treefrogs (Hylidae: *Osteocephalus*): an Amazonian puzzle. *Zoologica Scripta* 42(4): 351-380 (doi: 10.1111/zsc.12015).

Marçal, A.S., I.B.S.R. Gomes and J.T. Coragem. 2011. *UHE Santo Antônio, Guia das Espécies Resgatadas*. Scriba comunicação corporativa. 319 pp.

Moravec, J., J. Aparicio, M. Guerrero-Reinhard, G. Calderón, K-H. Jungfer and V. Gvoždík. 2009. A new species of *Osteocephalus* (Anura: Hylidae) from Amazonian Bolivia: first evidence of tree frog breeding in fruit capsules of the Brazil nut tree. *Zootaxa* 2215: 37-54 (<http://www.mapress.com/zootaxa/2009/f/z02215p054f.pdf>).

Pantoja, D.L. and R. de Fraga. 2012. Herpetofauna of the Reserva Extrativista do Rio Gregório, Juruá Basin, southwest Amazonia, Brazil. *Check List* 8(3): 360-374 (<http://www.checklist.org.br/getpdf?SL091-11>).

Von May, R., J.M. Jacobs, R.D. Jennings, A. Catenazzi and L.O. Rodriguez. 2010a. *Anfibios de Los Amigos, Manu y Tambopata, Perú*. Electronic Database Accessible at http://fm2.fieldmuseum.org/plantguides/guide_pdfs/236%20Anfibios%20Amigos%201.2.pdf. Captured on 31 August 2013.

Von May, R., J.M. Jacobs, R. Santa-Cruz, J. Valdivia, J. Huamán and M.A. Donnelly. 2010b. Amphibian community structure as a function of forest type in Amazonian Peru. *Journal of Tropical Ecology* 26(5): 509-519 (doi: 10.1017/S0266467410000301).

RECEIVED: March 2014

ACCEPTED: July 2104

PUBLISHED ONLINE: September 2014

EDITORIAL RESPONSIBILITY: Raúl Maneyro