

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Insecta Mundi

Center for Systematic Entomology, Gainesville,
Florida

12-7-2012

New country record for *Tetramereia convexa* (Harold, 1869) (Coleoptera: Scarabaeidae: Scarabaeinae)

Christian Ampudia Gatty

Universidad Nacional de la Amazonia Peruana, cagatty@hotmail.com

Rita Vanesa Estrella Grández

Universidad Nacional de la Amazonia Peruana, vanystar19@hotmail.com

Jorge Ari Noriega

Universidad de Los Andes, Bogotá, Colombia, jnorieg@hotmail.com

Follow this and additional works at: <https://digitalcommons.unl.edu/insectamundi>

Gatty, Christian Ampudia; Estrella Grández, Rita Vanesa; and Noriega, Jorge Ari, "New country record for *Tetramereia convexa* (Harold, 1869) (Coleoptera: Scarabaeidae: Scarabaeinae)" (2012). *Insecta Mundi*. 782.

<https://digitalcommons.unl.edu/insectamundi/782>

This Article is brought to you for free and open access by the Center for Systematic Entomology, Gainesville, Florida at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Insecta Mundi by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

INSECTA MUNDI

A Journal of World Insect Systematics

0270

New country record for *Tetramereia convexa* (Harold, 1869)
(Coleoptera: Scarabaeidae: Scarabaeinae)

Christian Ampudia Gatty, Rita Vanesa Estrella Grández
Facultad de Ciencias Biológicas
Universidad Nacional de la Amazonia Peruana, calle Pevas cdra 5 s/n
Iquitos, Perú

Jorge Ari Noriega
Laboratorio de Zoología y Ecología Acuática
Universidad de Los Andes
Bogotá, Colombia

Date of Issue: December 7, 2012

Christian Ampudia Gatty, Rita Vanesa Estrella Grández, and Jorge Ari Noriega
New country record for *Tetramereia convexa* (Harold, 1869) (Coleoptera:
Scarabaeidae: Scarabaeinae)
Insecta Mundi 0270: 1-4

ZooBank Registered: urn:lsid:zoobank.org:pub:FB81E245-4C50-40C3-A864-4B97F23E3175

Published in 2012 by

Center for Systematic Entomology, Inc.
P. O. Box 141874
Gainesville, FL 32614-1874 USA
<http://www.centerforsystematicentomology.org/>

Insecta Mundi is a journal primarily devoted to insect systematics, but articles can be published on any non-marine arthropod. Topics considered for publication include systematics, taxonomy, nomenclature, checklists, faunal works, and natural history. **Insecta Mundi** will not consider works in the applied sciences (i.e. medical entomology, pest control research, etc.), and no longer publishes book reviews or editorials. **Insecta Mundi** publishes original research or discoveries in an inexpensive and timely manner, distributing them free via open access on the internet on the date of publication.

Insecta Mundi is referenced or abstracted by several sources including the Zoological Record, CAB Abstracts, etc. **Insecta Mundi** is published irregularly throughout the year, with completed manuscripts assigned an individual number. Manuscripts must be peer reviewed prior to submission, after which they are reviewed by the editorial board to ensure quality. One author of each submitted manuscript must be a current member of the Center for Systematic Entomology. Manuscript preparation guidelines are available at the CSE website.

Managing editor: Paul E. Skelley, e-mail: insectamundi@gmail.com

Production editor: Michael C. Thomas, Brian Armitage, Ian Stocks

Editorial board: J. H. Frank, M. J. Paulsen

Subject editors: G.B. Edwards, J. Eger, A. Rasmussen, F. Shockley, G. Steck, Ian Stocks, A. Van Pelt, J. Zaspel

Spanish editors: Julieta Brambila, Angélico Asenjo

Printed copies (ISSN 0749-6737) annually deposited in libraries:

CSIRO, Canberra, ACT, Australia
Museu de Zoologia, São Paulo, Brazil
Agriculture and Agrifood Canada, Ottawa, ON, Canada
The Natural History Museum, London, Great Britain
Muzeum i Instytut Zoologiczny PAN, Warsaw, Poland
National Taiwan University, Taipei, Taiwan
California Academy of Sciences, San Francisco, CA, USA
Florida Department of Agriculture and Consumer Services, Gainesville, FL, USA
Field Museum of Natural History, Chicago, IL, USA
National Museum of Natural History, Smithsonian Institution, Washington, DC, USA
Zoological Institute of Russian Academy of Sciences, Saint-Petersburg, Russia

Electronic copies (On-Line ISSN 1942-1354, CDROM ISSN 1942-1362) in PDF format:

Printed CD or DVD mailed to all members at end of year. Archived digitally by Portico.
Florida Virtual Campus: <http://purl.fcla.edu/fcla/insectamundi>
University of Nebraska-Lincoln, Digital Commons: <http://digitalcommons.unl.edu/insectamundi/>
Goethe-Universität, Frankfurt am Main: <http://edocs.ub.uni-frankfurt.de/volltexte/2010/14363/>

Author instructions available on the Insecta Mundi page at:

<http://www.centerforsystematicentomology.org/insectamundi/>

Copyright held by the author(s). This is an open access article distributed under the terms of the Creative Commons, Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited. <http://creativecommons.org/licenses/by-nc/3.0/>

New country record for *Tetramereia convexa* (Harold, 1869) (Coleoptera: Scarabaeidae: Scarabaeinae)

Christian Ampudia Gatty, Rita Vanesa Estrella Grández
Facultad de Ciencias Biológicas
Universidad Nacional de la Amazonia Peruana, calle Pevas cdra 5 s/n
Iquitos, Perú
cagatty@hotmail.com, vanystar19@hotmail.com

Jorge Ari Noriega
Laboratorio de Zoología y Ecología Acuática
Universidad de Los Andes
Bogotá, Colombia
jnorieg@hotmail.com

Abstract. *Tetramereia convexa* (Harold, 1869) (Coleoptera: Scarabaeidae: Scarabaeinae) is reported for the first time from Loreto in Peru, being the western most record of the species in South America.

Key words. New record, Scarabaeinae, Peru.

Resumen. *Tetramereia convexa* (Harold, 1869) (Coleoptera: Scarabaeidae: Scarabaeinae) es reportado por primera vez para Loreto en Perú, siendo el registro más occidental de la especie para Sur America.

Palabras claves. Nuevo registro, Scarabaeinae, Perú.

Introduction

The dung beetles of the subfamily Scarabaeinae contains about 6000 species and 234 genera world-wide (Scarabnet 2009). Much of this fauna is distributed in the tropics with 1300 species and about 70 genera (Halffter 1991). Many dung beetles live on the fecal material of other animals and benefit the environment by recycling nutrients, moving and burying seeds of various plants, and serving as biological control agents of gastrointestinal nematodes and fly larvae that use this dung as a resource (Nichols et al. 2008). As these insects require dung from vertebrates, habitat alterations that result in vertebrate population changes may also affect the local diversity (Nichols et al. 2009, Quintero and Halffter 2009). In addition, dung-burying species provide a suite of critical ecosystem functions and services, yet they face multiple conservation threats, particularly from landscape conversion (Slade et al. 2011). Dung beetle assemblages responded to a variety of anthropogenic disturbances in tropical forests and support their utility as focal taxa (Nichols et al. 2007).

Scarabaeinae are also used as focal taxa in biological characterizations, rapid ecological assessments, and biodiversity monitoring to estimate alpha and beta diversity (Halffter and Favila 1993, Favila and Halffter 1997, McGeogh et al. 2002). This kind of research has generated databases to facilitate analysis and interpretation of biodiversity (Villarreal et al. 2004). However, in some specific genera the available information is scarce especially in the tribe Phanaeini where some particular taxa such as *Dendropaemon* Perty, *Gromphas* Brullé, *Homalotarsus* Janssens, *Megatharsis* Waterhouse, *Oruscatus* Bates and *Tetramereia* Klages are not well known in their habits or in their geographical distribution (Edmonds 1972).

This is the case of the dung beetle *Tetramereia convexa* (Harold, 1869) that is widely distributed in central-southern Brazil (“cerrado”), also known from the Distrito Federal and from the states of Minas Gerais, Pará, and São Paulo (Noriega et al. 2008). Arnaud (2002) reported the species, from Brazil (Pará), Venezuela (Suapure, State of Bolivar), and French Guiana, but he provided no precise data or number of specimens studied. Klages (1907) initially discover the species in the Cuara River valley in

Venezuela. The report of *T. convexa* in Colombia suggests a wider distribution pattern more located in the Orinoquía zone than in the Amazon (Noriega et al. 2008).

This species has been collected in nests of the ant genus *Atta* Fabricius (Vaz-de-Mello et al. 1998), and adults of *T. convexa* have been maintained in captivity with ant detritus. However, very little is known about the natural history of *T. convexa* and other related genera of the Phanaeini tribe (*Dendropaemon* Perty, *Homalotarsus* Janssens, and *Megatharsis* Waterhouse,). It is possible, as some authors have proposed (Vaz-de-Mello et al. 1998; Philips et al. 2004), that these genera form a monophyletic myrmecophilous group and that their supposed rarity is a result of narrow ecological specialization and sampling bias.

Discussion

During a sampling project in four kinds of understudied forests in the Loreto region of Peru, an individual (1 female) of *T. convexa* (Fig. 1) was collected using a pitfall trap baited with human feces. This is the first record of this species in Peru (Fig. 2). Collection data: PERU. Iquitos: 28 km Iquitos-Nauta road, San Juan Bautista district, Maynas province, Loreto region, Allpahuayo Mishana National Reserve (S 3°58'21.80" - W 73°25'29.12"), 148 m, Dec. 2010; to southwest of Iquitos city, between Nanay River to northwest and Iquitos-Nauta Road to south. The specimen is deposited in the Ampudia and Estrella reference collection.

The Allpahuayo Mishana National Reserve has areas with white sand forests commonly known as “varillales”. These forests are fragile habitats rich in endemic and rare species of birds (e.g. *Polioptila clementsi* Whitney and Alvarez, *Zimmerius villarejoi* Alvarez and Whitney, and *Percnostola arenarum* Isler et al.). The biodiversity of these forests are just beginning to be investigated (Alvarez 2006). The habitat where the specimen of *T. convexa* was collected corresponds to a high, wet, white-sand forest “varillal” (García et al. 2003).

The existing and new geographical records (Fig. 2) suggest that the genus *T. convexa* does not have a relictual distribution, being found in some specific regions but in a wide range in South America (five countries: Colombia, Venezuela, French Guiana, Brazil and Peru). In addition, it is important to point out that the records in Colombia, Venezuela, Peru and the majority of the records in Brazil are not in tropical rain forests; most of them are peripheral to the Amazonian region in particular ecosystems like white-sand forest, savanna or “cerrado” (Noriega et al. 2008). With an increase in the sampling efforts in these regions, and specially searching in ant nests (*Atta* spp.) as some authors suggest (Vaz-de-Mello et al. 1998) it is possible that it can be recorded in other countries like Bolivia, Guyana, Suriname and also Paraguay.

It is necessary to carefully compare specimens from these widely disjunctive regions to determine if the populations represent distinct lineages (thus, possibly distinct species or subspecies). Likewise, it is necessary to continue studying the natural history of these little-known genera with special habits, as well as to continue survey work in South America where new records may be expected.



Figure 1. Dorsal view of *Tetramereia convexa* (Harold, 1869).

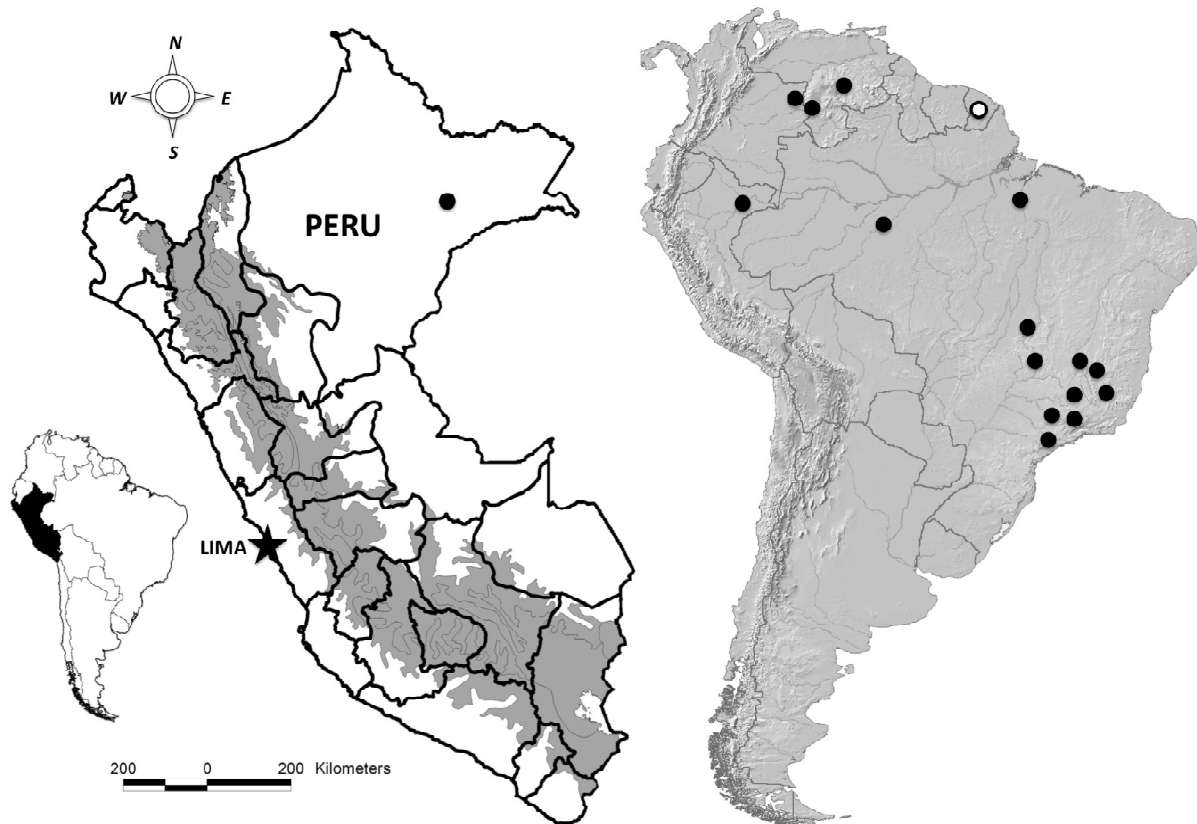


Figure 2. Map of location of the collected area in Allpahuayo-Mishana National Reserve, San Juan Bautista, Loreto, Peru. All known confirmed localities are indicated by black circles, the unconfirmed locality of Guyana is marked by a white circle.

Acknowledgments

We thank our parents for funding this project, to Carlos Rivera and Mario Yomona headquarters from Servicio de Areas Naturales Protegidas por el Estado (SERNANP) who helped us with the collecting permit and the rangers of Allpahuayo Mishana National Reserve; also to Federico Ocampo (Instituto Argentino de Investigaciones de Zonas Aridas), Paul Skelley (Florida State Collection of Arthropods) and the reviewers Mary Liz Jameson (University of Nebraska State Museum) and Andrew B. T. Smith (Canadian Museum of Nature) for improvements they made to this article.

Literature Cited

- Alvarez, J. 2006.** Imágenes del Paraíso. La Reserva Nacional Allpahuayo Mishana. Instituto de Investigaciones de la Amazonía Peruana; Iquitos, Perú. 9-10 p.
- Arnaud, P. 2002.** Phanaeini. *Dendropaemon*, *Tetramereia*, *Homalotarsus*, *Megatharsis*, *Diabroctis*, *Coprophanaeus*, *Oxysternon*, *Phanaeus*, *Sulcophanaeus*. *Les Coleopteres du Monde* 28: 1-151.
- Edmonds, W. D. 1972.** Comparative skeletal morphology, systematics and evolution of the Phanaeine dung beetles (Coleoptera: Scarabaeidae). *The University of Kansas Science Bulletin* 49(11): 731-874.
- Favila, M., and G. Halfpfer. 1997.** The use of indicator groups for measuring biodiversity as related to community structure and function. *Acta Zoológica Mexicana* (n.s.) 72: 1-25.
- García V. R., Ahuite R. M., and Olórtegui Z.M. 2003.** Clasificación de bosques sobre arena blanca de la Zona Reservada Allpahuayo-Mishana. *Folia Amazónica* 14(1): 17-34

- Halffter, G. 1991.** Historical and ecological factors determining the geographical distribution of beetles (Coleoptera: Scarabaeidae: Scarabaeinae). *Folia Entomológica Mexicana* 82: 195-238.
- Halffter, G. and M. E. Favila. 1993.** The Scarabaeinae (Insecta: Coleoptera), an animal group for analyzing, inventorying and monitoring biodiversity in tropical rainforest and modified landscapes. *Biology International* 27: 15-21.
- Klages, E. A. 1907.** A wonderful new beetle of the group *Copris*. *Proceedings of the Entomological Society of Washington* 8: 141-142.
- McGeoch, M. E., B. J. Van Rensburg, and A. Botes. 2002.** The verification and application of bioindicators: a case study of dung beetles in a savanna ecosystem. *Journal of Applied Ecology* 39: 661-672.
- Nichols, E., T. Larsen, S. Spector, A. L. Davis, F. Escobar, M. Favila, K. Vulinec, and The Scarabaeinae Research Network. 2007.** Global dung beetle response to tropical forest modification and fragmentation: A quantitative literature review and meta-analysis. *Biological Conservation* 137: 1-19.
- Nichols, E., S. Spector, J. Louzada, T. Larsen, S. Amezcuita, M. E. Favila, and The Scarabaeinae Research Network. 2008.** Ecological functions and ecosystem services provided by Scarabaeinae dung beetles. *Biological Conservation* 141: 1461-1474.
- Nichols, E., T. A. Gardner, C. A. Peres, S. Spector, and The Scarabaeinae Research Network. 2009.** Co-declining mammals and dung beetles: an impending ecological cascade. *Oikos* 118(4): 481-487.
- Noriega, J. A., J. M. Rengifo, and F. Z. Vaz-de-Mello. 2008.** Brief note: First report of the genus *Tetramereia* Klages, 1907 (Coleoptera: Scarabaeidae: Phanaeini) in Colombia - Notes to its distribution. *Biota Colombiana* 9(1): 133-135.
- Philips, T. K., W. D. Edmonds, and C.H. Scholtz. 2004.** A phylogenetic analysis of the New World tribe Phanaeini (Coleoptera: Scarabaeidae: Scarabaeinae): Hypotheses on relationships and origins. *Insect Systematics and Evolution* 35(1): 43-63.
- Quintero, I., and G. Halffter. 2009.** Temporal changes in a community of dung beetles (Insecta: Coleoptera: Scarabaeinae) resulting from the modification and fragmentation of tropical rain forest. *Acta Zoológica Mexicana (n.s.)* 25(3): 625-649.
- ScarabNet. 2009.** ScarabNet (Scarabaeinae Research Network) Global Taxon Database. Version 1.5. www.scarabnet.org. 2009.
- Slade, E. M., D. J. Mann, and O. T. Lewis. 2011.** Biodiversity and ecosystem function of tropical forest dung beetles under contrasting logging regimes. *Biological Conservation* 144: 166-174.
- Vaz-de-Mello, F. Z., J. N. C. Louzada, and J. H. Schoereder. 1998.** New data and comments on Scarabaeidae (Coleoptera: Scarabaeoidea) associated with Attini (Hymenoptera: Formicidae). *The Coleopterists Bulletin* 52(3): 209-216.
- Villarreal, H., M. Álvarez, S. Córdoba, F. Escobar, G. Fagua, F. Gast, H. Mendoza, M. Ospina, and A. M. Umaña. 2004.** Manual de métodos para el desarrollo de inventarios de biodiversidad. Programa inventarios de Biodiversidad. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt; Bogotá, Colombia. 236 p.

Received October 7, 2012; Accepted November 26, 2012.