University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Papers in Entomology | Museum, University of Nebraska State

3-1-2001

EREMOPHYGUS BICOLOR (GUTIÉRREZ) (COLEOPTERA: SCARABAEIDAE: RUTELINAE: RUTELINI): A NEW TRIBAL AND GENERIC PLACEMENT FOR THE BOLIVIAN SCARAB *PLATYCOELIA BICOLOR* (GUTIÉRREZ) (ANOPLOGNATHINI)

Andrew Smith
University of Nebraska State Museum, asmith@unlserve.unl.edu

Mary Liz Jameson
University of Nebraska State Museum, mjameson1@unl.edu

Follow this and additional works at: http://digitalcommons.unl.edu/entomologypapers

Part of the Entomology Commons

Smith, Andrew and Jameson, Mary Liz, "*EREMOPHYGUS BICOLOR* (GUTIÉRREZ) (COLEOPTERA: SCARABAEIDAE: RUTELINAE: RUTELINI): A NEW TRIBAL AND GENERIC PLACEMENT FOR THE BOLIVIAN SCARAB *PLATYCOELIA BICOLOR* (GUTIÉRREZ) (ANOPLOGNATHINI)" (2001). *Papers in Entomology.* Paper 20.
http://digitalcommons.unl.edu/entomologypapers/20

This Article is brought to you for free and open access by the Museum, University of Nebraska State at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Papers in Entomology by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

The Coleopterists Bulletin, 55(1):103–106. 2001.

EREMOPHYGUS BICOLOR (GUTIÉRREZ) (COLEOPTERA: SCARABAEIDAE: RUTELINAE: RUTELINI): A NEW TRIBAL AND GENERIC PLACEMENT FOR THE BOLIVIAN SCARAB *PLATYCOELIA BICOLOR* (GUTIÉRREZ) (ANOPLOGNATHINI)

ANDREW B. T. SMITH AND MARY LIZ JAMESON
Systematics Research Collections
W436 Nebraska Hall
University of Nebraska
Lincoln, NE 68588–0514, U.S.A.
asmith@unlserve.unl.edu; mjameson1@unl.edu

Abstract

Platycoelia bicolor (Gutiérrez) (Scarabaeidae: Rutelinae) is transferred from the tribe Anoplognathini, subtribe Platycoeliina, to the tribe Rutelini. *Platycoelia bicolor* is placed in the genus *Eremophygus* Ohaus and the taxonomic history of the species is discussed. The transfer creates a **new combination,** *Eremophygus bicolor* (Gutiérrez) and places the generic name *Heterocallichloris* Gutiérrez as a junior synonym of *Eremophygus* (**new synonymy**). Morphological characters that warrant the transfer are discussed.

Resumen

Se transfiere *Platycoelia bicolor* (Gutiérrez) (Scarabaeidae: Rutelinae) de la tribu Anoplognathini, subtribe Platycoeliina, a la tribu Rutelini. Se transfiere *Platycoelia bicolor* al género *Eremophygus* Ohaus y se discute su historia taxonómica. La transferencia crea una nueva combinación, *Eremophygus bicolor* (Gutiérrez) y ubica al nombre genérico *Heterocallichloris* Gutiérrez como un sinónimo junior de *Eremophygus.* Se discuten los caracteres morfológicos que justifican la transferencia.

Platycoelia bicolor (Gutiérrez) (Scarabaeidae: Rutelinae) is a rare Bolivian scarab 11–14 mm in length. The head and pronotum are dark brown with greenish reflections and with dense, long, tawny setae. The elytra are reddish-brown. *Platycoelia bicolor* is known to occur on the Bolivian Altiplano above 4,000 m in elevation. The taxonomic placement of this taxon is dubious. When Gutiérrez (1951) described *P. bicolor,* he decided that it was sufficiently unique to place it in a new genus, *Heterocallichloris* Gutiérrez. Machatschke (1965) discussed the characters used by Gutiérrez to define *Heterocallichloris,* but he believed that these characters did not justify generic standing and transferred *P. bicolor* to the genus *Platycoelia* Dejean (1833). As an extension of the revision of the genus *Platycoelia* by one of us (ABTS), we recently studied specimens of *P. bicolor* and discovered that the taxon is placed in the incorrect tribe and incorrect genus in the subfamily Rutelinae. In this paper, we rectify this classification problem.

Gutiérrez (1951) described the genus *Heterocallichloris* and the species *H. bicolor* for a single male specimen that was collected from ''Alto La Paz'', Bolivia. He placed the new genus and species in the tribe Anoplognathini, subtribe Platycoeliina, without explicitly stating his reason for this placement. Gutiérrez differentiated *Heterocallichloris* from *Callichloris* Burmeister (1844) based on the labrum (''apex truncate'' in *Heterocallichloris* versus ''apex terminating in a fine point'' in *Callichloris*) and the claws (''external claws on

middle and posterior tarsi fine and entire'' in *Heterocallichloris* versus ''external claws of the middle and posterior tarsi with a strong tooth in the middle or split at the apex'' in *Callichloris*).

Machatschke (1965) was the next to modify the taxonomy of the subtribe Platycoeliina when he synonymized all genera into the genus *Platycoelia*: *Callichloris*, *Heterocallichloris*, *Leucopelea* Bates (1888), and *Callichloris* [*Epicallichloris*] Gutiérrez (1951). He believed that the genera and subgenera within the subtribe were created without character basis. Ohaus (1904), in his revision of the Neotropical Anoplognathini, pointed out that characters such as the mesosternal process and color vary greatly within the genus *Platycoelia.* According to Machatschke, these were the basic characters that Gutiérrez (1951) and Bates (1891) used for creating genera and subgenera. The new combination *Platycoelia bicolor* was implemented by Machatschke (1965).

We recently borrowed the holotype of *P. bicolor* from the Universidad de Concepción, Museo de Zoologia (Concepción, Chile) and discovered five additional specimens in the Henry and Anne Howden Collection (Nepean, Ontario, Canada) that were collected at ''El Alto, Bolivia'' (a suburb of La Paz). The scarcity of *P. bicolor* in collections (there are only six known specimens) is probably due to two factors: 1) the high elevation Andean habitats of this species are severely under-collected and 2) the adult stage of this species is probably only abundant for a short time each year. Upon examination of characters of the mouthparts, claws, legs, and antennae, we determined that the taxon is not a member of the tribe Anoplognathini where it is currently classified. Instead, characters of the taxon indicate that it is a member of the tribe Rutelini. Tribes in the subfamily Rutelinae are separated based on a few evolutionarily conservative characters including the form of the labrum, mentum, elytral margin, and tarsomeres. Two major lineages are recognized in the Rutelinae: the orthochilous rutelines and the homalochilous rutelines. The tribe Rutelini belongs to the homalochilous rutelines, a group that shares a horizontally produced labrum in relation to the clypeus. The tribe Anoplognathini belongs to the orthochilous rutelines, a group that shares a vertically produced labrum in relation to the clypeus. Unlike species in the subtribe Platycoeliina (which possess a vertically produced labrum that is indicative of the orthochilous rutelines), *P. bicolor* possesses a horizontally produced labrum (indicative of the homalochilous rutelines). We determined that the taxon is a member of the tribe Rutelini based on the following characters: form of the labrum (horizontally produced with respect to the clypeus), form of the apex of the mentum (truncate, without a medial projection), form of the apex of the labrum (truncate, without a medial projection), margin of the elytra (simple, without a membranous border), and form of the foretarsomeres in males (simple, not greatly enlarged and dorsoventrally flattened). Many subtribes in the tribe Rutelini were shown to be paraphyletic including the subtribes Pelidnotina, Rutelina, Antichirina, Fruhstorferiina, and Parastasiina (Jameson 1998). Because of this, we believe that subtribal placement of the taxon would be artificial and misinformative. Ongoing phylogenetic analyses of genera in the Rutelini by one of us (MLJ) will address the placement of *P. bicolor.*

Based on examination of characters including the form of the antennae, claws, mesometasternal process, mandibles, mentum, maxilla, labrum, apex of the fifth mesotarsomere, and claws, we determined that the taxon is most closely related to some species in the genus *Eremophygus* Ohaus (1910) (tribe Rutelini). The genus *Eremophygus* is a heterogeneous group that includes six species, all of which are rare in collections. Based on our examination of

specimens of *Eremophygus*, the genus is probably paraphyletic; some members of the genus may belong to the genera *Lasiocala* Blanchard (1851) or *Oogenius* Solier (1851). We believe that *P. bicolor* shares the most characters with *Eremophygus philippi* Ohaus (the type species of the genus) and *Eremophygus leo* Gutiérrez. Characters that *P. bicolor* shares with *E. philippi* and *E. leo* include: male with protarsal claw thickened and greatly recurved; meso- and metatarsal claws simple, one claw slightly thicker than the other; inner apex of the fifth mesotarsus with a narrow, longitudinal slit; apex of the mandibles rounded; apex of the labrum produced beyond the apex of the clypeus; mesosternal process lacking.

We believe that Gutiérrez did not place *P. bicolor* in the genus *Eremophygus* because of its superficial resemblance to some species of *Platycoelia*. *Platycoelia alticola* (Gutiérrez) and *P. haenkei* (Gutiérrez) bear a superficial similarity to *P. bicolor* based on similarity in size, dorsal color (head and pronotum dark brown with greenish reflections and elytra reddish-brown), and dorsal vestiture (setose head and pronotum). Although Gutiérrez described two species in the genus *Eremophygus* (Gutiérrez 1951, 1952), discussed the genus (Gutiérrez 1949, 1950, 1951, 1952) and provided the most recent key to species in the genus (Gutiérrez 1952), he still remained oblivious to the characters that *Eremophygus* shared with *P. bicolor*. In addition, Gutiérrez (1951) compared *P. bicolor* to *Eremophygus lasiocalinus* Ohaus and noted the similarity in color in both species, but apparently he did not compare characters such as the mouthparts. Apparently, Machatschke's (1965) transfer of *P. bicolor* to the genus *Platycoelia* was not based on examination of any specimens of *P. bicolor*.

As a result of these comparisons, we are transferring *P. bicolor* to *Eremophygus*, thereby creating the **new combination**: *Eremophygus bicolor* (Gutiérrez). Therefore, the generic name *Heterocallichloris* is also transferred and placed as a junior synonym of the genus *Eremophygus*. The following is a list of usage of the names *Heterocallichloris* and *Eremophygus bicolor* in the literature.

Genus *Heterocallichloris* Gutiérrez

Heterocallichloris Gutiérrez 1951:112–114 [key to genera of Platycoeliina, original description]; Machatschke 1965:55 [placed in synonymy with *Platycoelia*]; Machatschke 1972:301 [catalog listing as synonym of *Platycoelia*]; Smith and Jameson, this publication [transferred to Rutelinae: Rutelini, placed in synonymy with *Eremophygus*].

Eremophygus bicolor (Gutiérrez)

Heterocallichloris bicolor Gutiérrez 1951:112, 114 [original description]; Gutiérrez 1952:226 [comparison with *Callichloris haenkei*].

Platycoelia bicolor, Machatschke 1965:60 [new combination, catalog listing]; Machatschke 1972:304 [catalog listing].

Eremophygus bicolor, Smith and Jameson, this publication [new combination].

Acknowledgments

We thank Henry and Anne Howden (Nepean, Ontario, Canada) and Viviane Jerez (Universidad de Concepción, Museo de Zoologia, Concepción, Chile) for making material available to us for study. Many thanks to Elizabeth Arias

(University of California, Davis) for indispensable help in securing loans of specimens from Chile, to Federico Ocampo (University of Nebraska) for help with the Spanish translation of the abstract, and to Brett Ratcliffe (University of Nebraska) for reviewing our manuscript. This project was supported by an NSF/PEET grant (DEB-9712447) to B. C. Ratcliffe and M. L. Jameson.

Literature Cited

Bates, H. W. 1888. Insecta. Coleoptera. Pectinicornia and Lamellicornia. Biologia Centrali Americana 2(2):161–336.

Bates, H. W. 1891. Coleoptera. *In:* Supplementary Appendix to Travels Amongst the Great Andes of the Equator (E. Whymper, editor). John Murray, London. 147 pp.

Blanchard, C. É. 1851 (1850). Muséum d'Histoire Naturelle de Paris. Catalogue de la collection entomologique. Classe des insectes. Ordre des coléoptères, vol. 2. Gide et Baudry, Paris. Pp. 129–240.

Burmeister, H. 1844. Handbuch der Entomologie, vol. 4, part 1. T. C. F. Enslin, Berlin. 586 pp.

Dejean, P. F. M. A. 1833. Catalogue des coléoptères de la collection de M. le Comte Dejean, vol. 2. Méquignon-Marvis Père et Fils, Paris. Pp. 97–176.

Gutiérrez, R. 1949. Notas sobre Scarabaeidae neotrópicos. Anales de la Sociedad Científica Argentina 148:9–35.

Gutiérrez, R. 1950. Notas sobre Scarabaeidae Chilenos (Coleoptera Lamellicornia). Arthropoda 1(2/4):267–278.

Gutiérrez, R. 1951. Notas sobre Scarabaeidae neotrópicos II. Anales de la Sociedad Científica Argentina 151:105–125.

Gutiérrez, R. 1952. Notas sobre Scarabaeidae neotrópicos (III). Revista Chilena de Entomologia 1952:207–227.

Jameson, M. L. 1998 (1997). Phylogenetic analysis of the subtribe Rutelina and revision of the *Rutela* generic groups (Coleoptera: Scarabaeidae: Rutelinae: Rutelini). Bulletin of the University of Nebraska State Museum 14:1–184.

Machatschke, J. W. 1965. Coleoptera Lamellicornia. Fam. Scarabaeidae, Subfam. Rutelinae, Section Rutelinae Orthochilidae. Genera Insectorum 199^{C}:1–145.

Machatschke, J. W. 1972. Scarabaeoidea: Melolonthidae, Rutelinae. Coleopterum Catalogus Supplementa 66(1):1–361.

Ohaus, F. 1904. Revision der amerikanischen Anoplognathiden (Coleoptera Lamellicornia). Stettiner entomologische Zeitung 65:254–341.

Ohaus, F. 1910. Nachträge und Berichtigungen zu meiner Revision der Brachysterniden (Coleopt. lamellicornia). Stettiner entomologische Zeitung 71:3–26.

Solier, A. J. J. 1851. Orden III. Coleopteros. *In:* Historia Fisica y Politica de Chile. Zoología, vol. 5 (C. Gay, editor). C. Gay, Paris. 285 pp.

(Received 13 December 1999; accepted 24 February 2000)