Two new species of *Leptorhyparus* Howden, 2003 (Scarabaeidae, Aphodiinae, Rhyparini) from South America

Łukasz Minkina

os. Polana Szaflarska 4/39, 34-400 Nowy Targ, Poland
e-mail: klekel@interia.eu

Taxonomy, new species, Coleoptera, Scarabaeidae, Aphodiinae, Rhyparini, *Leptorhyparus*, South America

Abstract. Two new species of the genus *Leptorhyparus* Howden, 2003 are described and illustrated: *Leptorhyparus brasiliensis* sp. nov. from Brazil, and *Leptorhyparus peruanus* sp. nov. from Peru. A key to species of the genus is given.

INTRODUCTION

Krikken & Huijbregts (1987) in their work about *Termitodius* Wasmann, 1894 (actually on species transferred to *Termitodiellus* Nakane, 1961) for the first time used and ranked body part names of Rhyparini Schmidt, 1910. Rhyparini as a tribe was characterized and limited for the first time by Howden & Storey (1992). Thereafter, in 2003, Howden described two new genera: *Nanotermitodius* and *Leptorhyparus*, both of them monospecific. In the present work, the author offers descriptions of two other species of the genus *Leptorhyparus*: *L. brasiliensis* sp. nov. from Brazil, and *L. peruanus* sp. nov. from Peru. The very characteristic shapes of the costae and furrows of the pronotum clearly distinguish both these species (as well as *L. gilli* Howden, 2003) from all other Rhyparini known from the New World.

MATERIAL AND METHODS

The specimens were observed with a Nikon SMZ-U stereoscopic microscope. The photos of specimens were taken with a Nikon SMZ-U stereoscopic microscope. The photos published here were taken with a Canon EOS 5D Mark III connected to a Canon MP-E 65mm macro lens. Photos were edited by the Helicon Focus 7 and Adobe Photoshop Elements 2018 programs.

The holotypes of the new species are indicated by a red, printed label added to the same pin and bearing the status of the specimen, its name, name of the author, month and year of the designation.

The holotype is a part of private collection of the author deposited in the Institute of Systematics and Evolution of Animals in Kraków.

Addenda and remarks are found in brackets, separate label lines are indicated by stick (|), separate labels are indicated by double stick (||).

Terminology of description mainly follows Krikken & Huijbregts (1987).

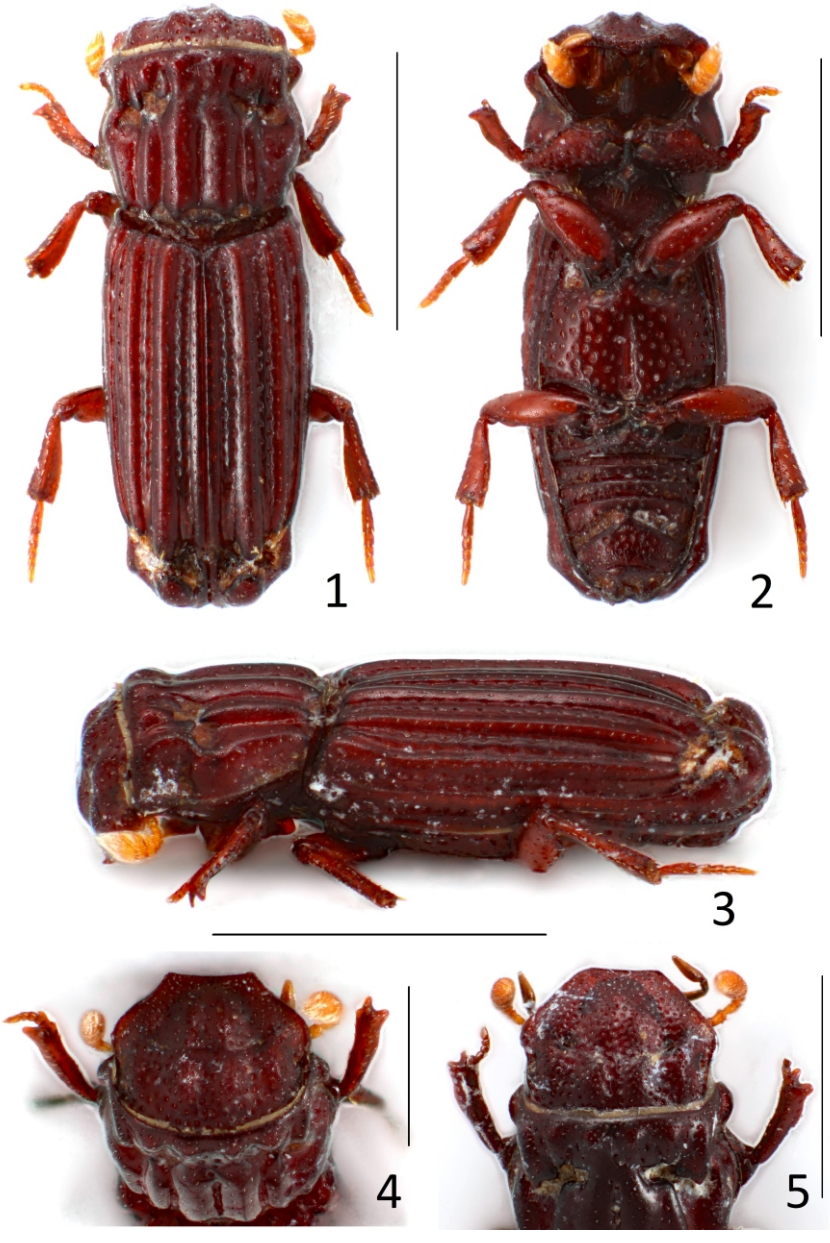
Because of the fragility and uniqueness of the material, the genitalia and epipharynges were not examined.

TAXONOMIC TREATMENT

Leptorhyparus brasiliensis sp. nov.

(Figs. 1-4)

Type material. Holotype: Brazil, Rondônia, 62 l km SW Ariquemes nr l Fzda Rancho Grande l 3-15.xii.1996, J.E. Eger l black light trap ll.



Figs. 1-5. Figs. 1-4: *Leptorhyparus brasiliensis* sp. nov., holotype; Fig. 5: *Leptorhyparus peruanus* sp. nov., holotype: 1- dorsal view; 2- ventral view; 3- lateral view; 4, 5- heads. Figs. 1-3, 5: scale line: 1.0 mm; Fig. 4: scale line: 0.5 mm.

Description of holotype. Dorsum (Fig. 1). Body length 2.3 mm, greatest width 0.75 mm. Dorsally red-brownish. Elongate, nearly parallel; moderately shiny; with distinct microreticulation; with nearly all punctures of body except those on anterior part of connected paramedian costae of pronotum and between elytral costae and intervals bearing short, thick macrosetae. Macrosetae arising from the sides of the punctures.

Head (Fig. 4). Clypeus anteriorly gently, widely sinuate, with sigmoidal angles on sides, which are not separated from widely rounded, very gently protruding genae. Clypeocentral disc distinctly convex, ringed by a shallow, peridiscal impression, with a pair of indistinct, long, parallel costae, on sides with distinct, fine punctures. Frons with four short but distinct, longitudinal costae (two frontodiscal and two frontolateral) of similar structure and punctation to the costae on clypeal convexity. Head covered by rather regularly spaced, rather dense, not coarse punctures.

Pronotum with six distinct, convex costae and seven longitudinal furrows, with two lateral lobes on each side. Anterior lobe slightly less wide than posterior, which is the widest part of pronotum on the top. Discolateral and submarginal costae interrupted in the middle of apical third; paramedian costae in apical third narrowed and connected, since in apical third, there is lack of median furrow, but that region is still levelled down; costae with fine punctures. Median furrow with few coarse punctures; connected part of paramedian costae with few irregularly spaced, coarse punctures.

Scutellum small, almost invisible from above.

Elytra widest in basal third. Each elytron with five elevated costae, and five convex intervals. Between costae and intervals there are rows of coarse, quite dense punctures distinctly indenting margins of both. Costae with two rows of fine punctures. Postdiscal and caudal bulbs reduced, in shape of small balls when viewed from above. Area between internal and external protrusion when viewed from above almost straight, very gently sinuate.

Venter (Fig. 2) moderately shiny. Meso-metaventral plate flattened in the middle, with distinct, wide and deep median impression shaped of linear groove widened posteriorly, like a match-head at the end of a match stick; with quite dense, coarse, quite regularly distributed, and irregularly sized punctation; anterolateral juxtacostal impressions quite small, quite deep. Abdominal ventrites matte; with two transverse rows of moderate punctures; laterally with a small, rounded, shallow impression; anal ventrite in anterior third laterally with quite large, rounded and shallow impression; additionally in the middle with large, elongate, transverse, convergent, quite deep impressions laterally; surface of anal ventrite with irregular punctation. Pygidium in the middle sinuate with longitudinal furrows in the middle and on each side; punctation similar to that of anal ventrite. Meso- and metafemora lacking teeth on posterior margins; all femora moderately shiny; entire surface with sparse, irregularly spaced, not coarse punctation.

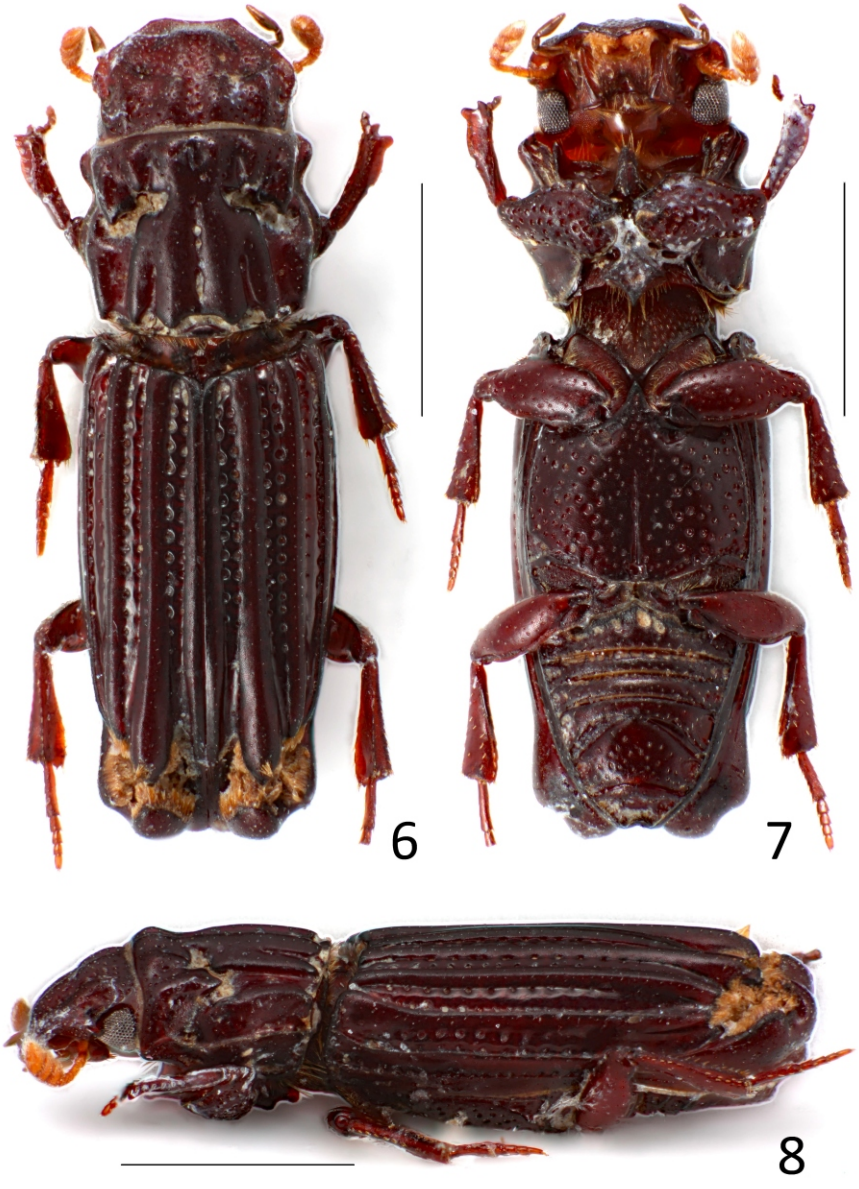
Affinity. The newly described species is more closely related to *L. gilli* Howden, 2003 than to *L. peruanus* sp. nov. The differential diagnosis with considering both species was shown in the discussion below.

Name derivation. Toponymic; an adjective derived from the name of Brazil, the country where the new species was collected.

***Leptorhyparus peruanus* sp. nov.**

(Figs. 5-8)

Type material. Holotype: Peru | Pasco Dep., Oxapampa prov. | h ~ 1550-1700 | ~ 5km E Santa Rosa | 10°00′23′′S, 75°27′36′′W | 10°00′13′′S, 75°27′40′′W | 5-11.x.2017 | leg. A. Sokolov ||.



Figs. 6-8. *Leptorhyparus peruanus* sp. nov., holotype: 6- dorsal view; 7- ventral view; 8- lateral view. Figs. 6-8: scale line: 1.0 mm.

Description of holotype. Dorsum (Fig. 6). Body length 3.4 mm, greatest width 1.0 mm. Dorsally dark red-brownish. Elongate, nearly parallel; quite shining; except intervals with distinct microreticulation; with nearly all punctures of body except that on anterior part of connected paramedian costae of pronotum and between elytral costae and intervals bearing short, thick macrosetae. Macrosetae arising from the sides of the punctures.

Head (Fig. 5). Clypeus anteriorly very gently, very widely sinuate, with nearly straight angles at sides, which are not separated from widely rounded, gently protruding genae. Clypeocentral disc not so distinctly convex, ringed by a shallow, peridiscal impression, with a pair of indistinct, long, parallel costae, on sides with distinct, fine punctures. Frons with four short but distinct, longitudinal costae (two frontodiscal and two frontolateral ones) with structure and punctation similar to the costae on clypeal convexity. Head covered by rather regularly spaced, rather dense, not coarse punctures.

Pronotum with six distinct, convex costae and seven longitudinal furrows, with two lateral lobes on each side. Anterior lobe slightly less wide than posterior one, which is the widest part of pronotumon the top. Discolateral and submarginal costae interrupted in the middle of apical third; paramedian costae in apical third narrowed and connected, since in apical third, there is lack of median furrow, but that region is still levelled down; additionally paramedian and discolateral costae connected in the middle of length, and thus, second pair of furrows shortened and visible only in basal third; costae with fine punctures. Median furrow with few coarse punctures; connected part of paramedian costae only with two scattered, coarse punctures.

Scutellum small, almost invisible from above.

Elytra widest in basal third. Each elytron with five elevated costae, and five convex intervals. Between costae and intervals there are rows of coarse, quite dense punctures which distinctly indentmargins of both. Costae with two rows of fine punctures. Postdiscal bulbs normally developed; caudal bulbs prominent, in shape of balls when viewed from above. Area between internal and external protrusion distinctly sinuate when viewed from above.

Venter (Fig. 7) moderately shiny. Meso-metaventral plate flattened in the middle, with distinct, not wide and quite deep median impression which have shape of reverse baton; with quite dense, coarse, quite irregularly distributed, and very irregular in size punctation; anterolateral juxtacostal impressions quite small, quite deep. Abdominal ventrites moderately shining; with two transverse rows of not coarse punctures; laterally with a small, rounded, shallow impression; anal ventrite in anterior third laterally with quite large, rounded and shallow impression; additionally in the middle with large, elongate, transverse, convergent, quite deep impressions laterally; surface of anal ventrite with irregular punctation. Pygidium in the middle sinuate with longitudinal furrows in the middle and on each side; punctation similar to that of anal ventrite. Meso- and metafemora lacking teeth on posterior margins; all femora moderately shiny; entire surface with sparse, irregularly spaced, not coarse punctation.

Affinity. *L. peruanus* sp. nov. is similarly related to both other species in the genus. The differential diagnosis was shown in discussion below.

Name derivation. Toponymic; an adjective derived from the name of Peru, the country where the new species was collected.

DISCUSSION

The genus *Leptorhyparus* Howden, 2003 was described as monospecific but because of

the very characteristic shape of costae and furrows of pronotum, one can be sure that the species described here belong to the genus. In my opinion, erected apical tuft or pencil of setae at the apex of inner elytral ridge mentioned by Howden is not so characteristic of *Leptorhyparus* Howden, 2003 because it can be observed in other Rhyparini. However, in this approach, one can conclude about the monophily of the genus today. *L. gilli* Howden, 2003 and *L. brasiliensis* sp. nov. appear very closely related because of their similar size of body, distinctly separated paramedian and discolateral costae, similar shape of caudal and postdiscal bulbs, and many other features like proportions of body or its punctation as general. Because of that in the key to species presented below all notable differences, even if some of them most probably are connected with size of body or other dependency variables (like size of punctation, its distribution or shape of elytral protrusion in this case) are given. *L. peruanus* sp. nov. seems to be similarly related to both of them because of modification of paramedian and discolateral costae and other features presented in key to species presented below and can be very easily distinguished from the other two species. The slightly similar shape of median impression of meso-metaventral plate, and closer area of distribution could suggest closer correlation to *L. brasiliensis* sp. nov., but in my opinion these features are too slight features to state it with certainty.

KEY TO SPECIES OF THE GENUS *LEPTORHYPARUS* HOWDEN, 2003

1. Larger. Length of body 3.4 mm. Paramedian and discolateral costae of pronotum connected in the middle of length. Postdiscal bulbs normally developed. Caudal bulbs larger, more prominent, distinctly visible from ventral view. ..... *L. peruanus* sp. nov.
-. Smaller. Length of body 2.3 - 2.6 mm. Paramedian and discolateral costae of pronotum not connected, distinctly separated. Postdiscal bulbs reduced. Caudal bulbs smaller, less prominent, never so distinctly visible from ventral view. 2
2. Sides of clypeus straight to the genae. External border of paramedian costae widely triangularly bent in the middle of length. Rows of punctures on paramedian costae of pronotum slightly more closely located. Elytral intervals flat. Area between internal and external protrusion distinctly sinuate when observed from above. Median impression of meso-metaventral plate in shape of "simple line". Punctation of body on meso-metaventral plate and connected part of paramedian costae of pronotum proportionally less coarse. ..... *L. gilli* Howden, 2003
-. Sides of clypeus distinctly sinuate before the genae. External border of paramedian costae very weakly sinuate into the middle. Rows of punctures on paramedian costae of pronotum slightly less closely located. Elytral intervals distinctly convex. Area between internal and external protrusions weakly sinuate when observed from above. Median impression of meso-metaventral plate in shape of "reverse match". Punctation of body on meso-metaventral plate and connected part of paramedian costae of pronotum proportionally coarser. ..... *L. brasiliensis* sp. nov.

ACKNOWLEDGEMENTS. I am grateful to Robert Angus for checking the English. Special thanks go to Cezary Nowak who helped me to provide holotype of *L. peruanus* sp. nov.

REFERENCES

HOWDEN H. 2003: Two new genera of New World Rhyparini. Sociobiology 42(2): 391-402.

HOWDEN H. & STOREY R. 1992: Phylogeny of the Rhyparini and the new tribe Stereomerini with descriptions of new genera and species. *Canadian Journal of Zoology* 70(9): 1810-1823.

KRIKKEN J. & HUUBREGTS J. 1987: Southeast Asian *Termitodius* a taxonomic review with descriptions of four new species. *Zoologische Mededelingen Leyden* 61(7): 97-111.

Published: 30. 11. 2020