

## Proposal of a new genus for *Rhyparus octovirgatus* Schmidt, 1916 from Fiji

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**Abstract.** A new genus *Antecessorirhyparus* gen. nov. is described and illustrated. A new combination: *Antecessorirhyparus octovirgatus* (Schmidt, 1916) comb. nov. is proposed. The correlation with other Rhyparini Westwood, 1845 and evolution of elytral structures in Rhyparini is discussed.

### INTRODUCTION

During my study of the tribe Rhyparini Schmidt, 1910 I tried to borrow the holotype of *Rhyparus octovirgatus* Schmidt, 1916 which should be deposited in Swedish Museum of Natural History according to the publication of Marco Dellacasa (1987). Unfortunately, the loan of specimens from that institution was impossible for me as an independent researcher. However, thanks to Gunvi Lindberg I had a chance to examine photographs of the holotype. Because of some unusual features it was possible to state with certainty that species the examined is not a *Rhyparus*. Based on the key to tribe Rhyparini given by Pittino, 2006 we can go to the point with *Leptorhyparus* Howden, 2003 and *Lioglyptoxenus* Pittino, 2003 but *Antecessorirhyparus* gen. nov. is quite distinctly different from the two genera.

### MATERIAL AND METHODS

The holotype is deposited in the Swedish Museum of Natural History and bears original labels and a label with a unique number of the specimen: NHRS-GULI000070205.

Photography of the holotype of mentioned species was done by Gunvi Lindberg (©2019 Naturhistoriska riksmuseet). In the publication there are original photographs without any modifications (only serial numbers are added). These have been made available by the Swedish Museum of Natural History under Creative Commons Attribution 4.0 International Public License, CC-BY 4.0.

Descriptions and other activities were written only on the basis of the provided photographs. Terminology of description mainly follows Krikken & Huijbregts (1987).

### DESCRIPTION OF THE NEW GENUS

***Antecessorirhyparus* gen. nov.**  
(Figs. 1-7)

**Type species.** *Rhyparus octovirgatus* Schmidt, 1916, by original designation.

**Type material.** Holotype: Fiji: Viti Levu.



Figs. 1-3. *Antecessorirhyparus octovirgatus* [Schmidt, 1910] gen. nov., comb. nov., holotype: 1- dorsal view, 2- ventral view, 3- lateral view. Fig. 1: scale line: 1.0 mm. All photos by Gunvi Lindberg (©2019 Naturhistoriska riksmuseet).

**Redescription.** Dorsum (Fig. 1). Body length 5.0 mm. Elongate-oval, flattened, dark brownish, shiny, apparently almost glabrous, though partly clothed with very small yellowish hairs on head and all longitudinal costae on pronotum and elytra.

Head (Fig. 6). shiny, transversely sub-hexagonal, clypeus trapezoidal in outline, anteriorly truncate, on sides upturned as obtuse, distinct tooth, and later sinuous on either sides; genae distinctly more excavate than eyes; clypeocentral disc very distinctly convex with two distinct, short and wide costae; peridiscal impression not visible; head basally with four frontodiscal costae. Head covered by very irregularly spaced, quite dense, very variable in size (from fine to moderately coarse) punctures; only those located nearby base bear short, yellowish setae.

Pronotum shiny, widest in the middle, with eight distinct costae and seven longitudinal furrows, with weakly produced anterior and intermediate lateral lobes on sides. Costae of fourth pair very short, recognizable only in the middle. Costae of median, third and fourth pairs not interrupted, very gently convergent, distinctly convergent in the middle of apical third; ridges of second pair distinctly interrupted in basal part of median third. Costae on each side with very small punctures bearing very small setae. Longitudinal furrows in anterior part without any additional ridges. Furrows of second and third pairs with few large punctures located almost entirely in apical half, others furrows without punctures.

Elytra shiny, each elytron with nine elevated costae and nine striae. Costae on each side with a row of very small punctures bearing very short setae. Odd numbered costae higher than the even numbered ones; seventh costae relatively lowest. Between the eighth and seventh costae, near the elytral base there is a very short elevated area with three rows of very small punctures bearing short macrosetae. Striae with very sparse, barely noticeable, very shallow, medium sized punctures, which scarcely indent the margins of costae (only in first and second striae some punctures very gently indent the margins of intervals). Preapical glandular area relatively small. Postdiscal bulbs normally developed. Caudal bulbs large, but quite weakly developed, laterally truncate, with any modifications of structure.

Venter (Fig. 2) weakly shiny. Meso-metaventral plate flattened in the middle, with distinct, wide, quite deep longitudinal median impression; punctation of meso-metaventral plate dense, quite regularly spaced, rather irregular in size; all punctures bearing short setae. Abdominal ventrites in apical part with one transverse row of very large punctures; and with few transverse rows of very small punctures bearing short setae. Last but one abdominal ventrite additionally with quite large, not deep impressions on sides. Last abdominal ventrite weakly prolonged in the middle, with rather shallow furrows on sides, anteriorly with transverse row of very large and dense punctures; basally with rather dense, irregularly spaced, small to medium sized punctures; all punctures except very large ones in anterior part of last ventrite bearing rather medium sized setae. Pygidium with two quite large furrows. Mesofemora with two quite distinct teeth on basal border. All femora weakly shiny, with regular, very distinct, rather small, very dense punctation; all punctures bearing very short setae.

**Differential diagnosis.** Because of the very weakly bilobed sides of the pronotum, the newly described genus can be compared only to *Leptorhyparus* Howden, 2003. However, because of the nine elevated costae on each elytron (eight distinctly visible, ninth relatively lower but still convex) it can be easily distinguished not only from that genus, but also from all known Rhyparini. Based on the key given by Pittino (2006) we go to point 3, and next we can easily notice that *Antecessorirhyparus* gen. nov. is much larger than *Leptorhyparus* Howden, 2003, and additionally easily distinguishable from *Lioglyptoxenus* Pittino, 2006 because of the weakly but clearly bilobed sides of pronotum.



Figs. 4-7. *Antecessorirhyparus octovirgatus* (Schmidt, 1910) gen. nov., comb. nov., holotype: 4- postdiscal and caudal bulbs in dorsal view, 5- caudal bulbs, view from behind; 6- head; 7- labels added to holotype. All photos by Gunvi Lindberg (©2019 Naturhistoriska riksmuseet).

**Name derivation.** The name comes from the merging of words: *antecessoris* (ancestor in Latin) and *Rhyparus*, because newly described genus is most similar to genus *Rhyparus* and has some features which are probably plesiomorphic characters in Rhypariini.

**Discussion.** The characteristic shape of head (presence of clypeoventral and frontodiscal lobes, shape of margins of head, shape of genae), presence of two median lobes on sides of pronotum, distinct costae on pronotum, with discolateral pair of costae distinctly interrupted, presence of postdiscal and caudal bulbs, with postdiscal and caudal trichome, characteristic preprosternal and postprosternal apophysis make the position of *Antecessorirhyparus* gen. nov. in Rhypariini indisputable. Because of characteristic shape of head, pronotum, presence of caudal bulbs at apex of elytra, and elongate body at first glance newly described genus looks like *Rhyparus*. However, very weakly developed lateral lobes of pronotum, and very characteristic shape of elytral costae make it easily distinguishable from that genus, and from all other known Rhypariini. The following fact is of interest the shape of elytral costae have intermediate character between Rhypariini and all other Aphodiinae, anal sternite is relatively smaller than in members of genus *Rhyparus* (however all structures like punctation and furrows are similar and similarly developed), caudal bulbs are weakly developed, and additionally it looks like a simple modification of

the ninth costae - just thickening and exalcation of it, anterior metasternal projection because of vicinity of clearly marked, quite large anterolateral juxtacostal impressions which are located near the margin looks like a dagger and it is quite distinctly separate from rest part of meso-metaventral plate, median impression of meso-metaventral plate is not so wide as in other Rhyparini. All these features are most likely to be plesiomorphic, relict characters. The very characteristic shape of the elytral costae may be assumed to be the original construction plan of the elytra of Rhypariini, and have some implications for the nomenclature of elytral features. In that model: we have primarily ten intervals and ten striae (as in most Aphodiini, Eupariini etc.); most probably one of intervals (eighth) has been shortened and now it is noticeable as very short elevated area with three rows of very small punctures bearing very short setae (similar structure of very short rows can be easily observed in other genera of Rhyparini, but it is always deplanate); primal tenth interval (now ninth) was strongly elevated, and modified, especially apically (variably bold, elevated, toothed), and because of it evolved caudal bulb; apical modifications of third and fifth intervals contributed to the uprising large postdiscal and much smaller discolateral caudal bulbs; punctures in elytral stria was large, but here they are very hardly noticeable (very shallow, and only in first and second "striae" still clearly noticeable; and also easily noticeable odd intervals are much higher than even ones - probably in most of Rhyparini they become higher and evolved into structures which we name now "costae"; the even intervals most probably become flat, and evolved into structures named by us "furrows". An additional argument for the proposed hypothesis of the evolution of costae and furrows is that in a lot of species of Rhyparini we can observe today two rows of large punctures.

Also noteworthy: pronotal costae are relatively wide and not so high as in other Rhypariini, which probably is also a primal feature; eight elytral costae are relatively very low, and most probably because of it was omitted in original description - next, because of it species with nine elytral costae was named "octovirgatus".

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