

**A new species of the genus *Rhyparus*
(Coleoptera: Scarabaeidae: Aphodiinae: Rhyparini)
from the Oriental Region having an accessory costa on each elytron**

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Abstract. A new species, *Rhyparus accessoricostatus* sp. nov. from Malaysia (Sabah) is described and illustrated, which exerts a unique feature: the presence of an accessory costa on each elytron. Its position among still known species of the genus *Rhyparus* Westwood, 1845 is briefly discussed. An updated checklist of Austral-Asian *Rhyparus* species is added.

INTRODUCTION

The authors of the work presented here received a number of specimens from Sabah, which belong to a species of the genus *Rhyparus* Westwood, 1845 exerting a peculiar character: the presence of an accessory elytral costa between the third and fourth costae. Thus, in contrast to any other species of the genus known to the authors, which have five costae (counting a flat sutural costa and four elevated costae on each elytron), the new species is equipped with six costae on each elytron. In descriptions of elytral structures, we tried to be consistent with Cartwright & Woodruff (1969) and Cartwright & Chalumeau (1969), particularly in numbering the elytral costae, without any prejudice to terminology formerly proposed by Reyes-Castillo & Martínez (1979), refined and supplemented by Krikken & Huijbregts (1987) and subsequently employed by different authors.

The last key to species by Balthasar (1964) includes 15 species occurring in the Oriental Region. For species described as well as for synonyms proposed since then see the Checklist of Austral-Asian *Rhyparus* species below. Pittino (2006) published a key to genera of Asian Rhyparinae.

MATERIAL AND METHODS

The specimens as specified in the section Results below were examined. They are equipped with white labels presenting locality data, pale green labels specifying numbers related to a

photo-documentation system by the first author and red labels indicating the identification and type status.

The following abbreviations stand for collections, in which the specimens studied here are kept:

DKCP David Král collection (deposited in the National Museum, Praha), Czech Republic;

LM private collection of Ladislav Mencl, Týnec nad Labem, Czech Republic;

MR private collection of Miloslav Rakovič, Dobřichovice, Czech Republic.

The MBS-10 and SZP 1120-T stereoscopic microscopes were employed in the observations. The photos published here were taken with the help of the Meopta laboratory microscope and CMOS 5 digital camera with the Helicon Focus programme.

The aedeagus was treated by boiling with a 10% sodium hydroxide solution.

Rhyparini exert certain special features of the elytral structure compared to some other groups of Aphodiidae. They include costae and flat intervals, a preapical depressed area covered with yellowish white material (between ends of apically dilated elytral costae 2-4 and inwardly bent terminal part of costa 5 tipped with the same material) and an apical bulbous area (produced just by the inwardly bent terminal part of the 5th costa, which is extending to and fused with the sutural costa). Most terms used below in the sections Results and Discussion were adopted from Cartwright & Woodruff (1969) and Cartwright & Chalumeau (1978); the elytral structures are also explained in our previous work comprising descriptions of three new *Rhyparus* species from Ecuador (Mencl & Rakovič 2013) and depicted here in Fig. 14.

RESULTS

Rhyparus accessoricostatus sp. nov.

Figs 1-14

Type locality. Borneo, Sabah, Crocker Mt., Gunung Emas, 500-1900 m a. s. l.

Type material. Holotype male bearing the following printed labels: 1) white: BORNEO - Sabah 1995, Crocker Mt. 500 - 1900 m, Gunung Emas 6-21.v., Jiří Stolarczyk lgt.; 2) pale green: Dok. L. Mencl 1572; 3) red: HOLOTYPE (♂), *Rhyparus accessoricostatus* sp. n., L. Mencl, M. Rakovič & D. Král det. 2012. (LM). Allotype female bearing the following printed labels: 1) white: same data as with holotype; 2) pale green: Dok. L. Mencl 1574, 3) red: ALLOTYPE (♀) *Rhyparus accessoricostatus* sp. n., L. Mencl, M. Rakovič & D. Král det. 2012. (LM). Paratypes - 2 ♂♂, 2 ♀♀ - bearing the following printed labels: 1) white: same data as with holotype; 2) pale green: Dok. L. Mencl 1573, 1575; 3) red: PARATYPE (♂ or ♀, respectively) *Rhyparus accessoricostatus* sp. n., L. Mencl, M. Rakovič & D. Král det. 2012. (MR). Paratypes - 1 ♂, 1 ♀ - bearing the following printed labels: 1) white: MALAYSIA 6-10. ii.1999, Kalimantan, Kota Kinabalu, Gunung Emas, Nat. Park - Raflesia, Lgt. Mráček; 2) pale green: Dok. L. Mencl 1576, 1577; 3) red: PARATYPE (♂ or ♀, respectively) *Rhyparus accessoricostatus* sp. n., L. Mencl, M. Rakovič & D. Král det. 2012. (LM). Paratype - 1 ♀ - bearing the following printed labels: 1) white: MALAYSIA - W, Perak, 30 km SE of IPOH, 1200 m, Cameron Highland, Ringlet, 18-22. i.1999, P. Čechovský leg.; 2) pale green: Dok. L. Mencl 1578; 3) red: PARATYPE (♀) *Rhyparus accessoricostatus* sp. n., L. Mencl, M. Rakovič & D. Král det. 2012 (LM). Paratypes - 5 ♂♂, 6 ♀♀ - bearing the following printed labels: 1) white: MALAYSIA - Sabah prov., Banjaran Croker Mts., 16 km SW Gunung Alab, 4-9.v.1996 alt. 790 - 850 m, M. Štrba & R. Hergovits leg.; 2) pale green: Dok. L. Mencl 1579 - 1589; 3) red: PARATYPE (♂ or ♀, respectively) *Rhyparus accessoricostatus* sp. n., L. Mencl, M. Rakovič & D. Král det. 2012. (DKCP).

Description. Relatively large (6.2-7.8 mm), elongate, quite matte (only tops of ridges and costae slightly shining), somewhere with minute appressed macrosetae as described below, but otherwise glabrous, brown, mostly covered with grey coating (Figs 1 and 2).

Head as observed from above (Figs 1 and 2) with anterior clypeal emargination, with upturned tooth each side of it, considerable lateral emargination and next (lateral) rather widely rounded angle separated by small emargination from very large, strongly protruding round gena (head measured between lateral margins of genae nearly as wide as pronotum); clypeus margin has actually two (upper and lower) edges: the upper edge is sharp and distinct, but the lower one is obsolete and not observable from above; there is no furrow between the two edges. Clypeal disc ringed with a deep groove; the convexity with a pair of short ridges. Frons with four short, blunt, posteriorly vanishing longitudinal ridges; ridges of median pair situated each side of head midline, similarly as two short ridges on clypeal convexity, and separated one from another by a narrow, deep furrow; distances between neighbouring median and lateral ridges much larger than that between two median ones. Head vertex with small punctures separated by about puncture diameter and with minute, appressed macrosetae.

Pronotum with eight not sharp but considerably convex ridges and seven longitudinal furrows (Figs 1 and 2). Ridges of the first (median) pair continuous and convergent at anterior 1/3, constricted between deep transverse fossae present on each side in the second and third furrows and interrupting ridges of the second pair. Ridges of the third and fourth (lateral) pairs continuous. Pronotum surface partially covered with grey coating, opaque; elevated parts (tops of ridges) feebly shining and equipped with minute, appressed, hardly perceptible macrosetae. There is also a minor but distinct depression in the second furrow at middle and another one in the third furrow at posterior 1/3 (not interrupting ridges). Anterior half of the first (median) furrow with distinct medium-sized punctures (larger in diameter but shallower than those on head vertex); remaining furrows at most with individual indistinct punctures.

Elytra elongate, mostly covered with grey coating, tops of costae feebly shining. Each elytron with 5 usual costae counting the sutural one (costa 1), numbered from 1 to 5, plus accessory costa, 6 flat intervals (5 usual ones plus one interval produced due to subdivision of interval 3 by accessory costa), preapical depressed area and apical bulbous area as explained in Material and Methods and depicted in Fig. 14. The costae are arranged as follows:

- costa 1 (sutural costa) of essentially constant height and width from elytral base to elytral apex;
- costa 2, extending from elytral base to preapical depressed area, considerably elevated apically and widened toward costa 1;
- costae 3 and 4, not quite fused together, but approaching one another at preapical depressed area, their apices being closely adjacent to inside margin of inwardly bent part of costa 5;
- costa 5, posteriorly bent toward and fused with costa 1, the bent part being bulbous, thus producing the apical bulbous area;
- the accessory costa (marked "a" in Fig. 14) situated between costae 3 and 4, terminating posteriorly before the preapical depressed area covered with yellowish white material, independently of neighbouring costae, without any elevation, dilation or curvature at its end.

Costae with minute, appressed, obliquely backward directed macrosetae. Apices of costae 2-4

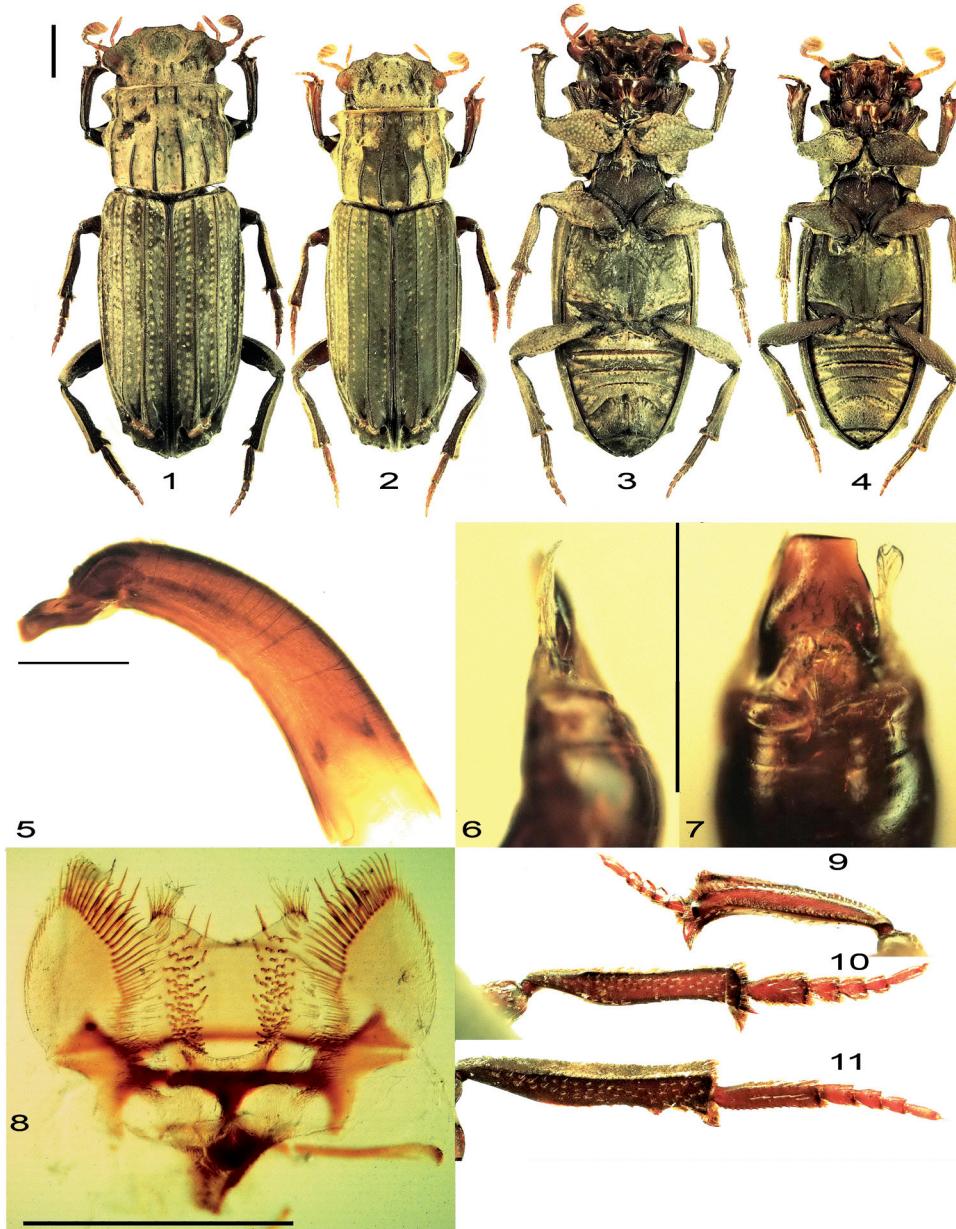
and also small spots on inside margin of the inwardly bent part of costa 5 against costae 2 and 4 tipped with yellowish white material. The preapical depressed area covered with yellowish white material is relatively small due to small distances between apical ends of costae 2 to 4 and inside margin of inwardly bent part of costa 5, but characterized by unusually deep, borehole-like pit behind dilated end of costa 2. Punctures on flat elytral intervals medium-sized (neither coarse nor deep), arranged in two rows in each interval. Distances between neighbouring punctures not quite uniform, but usually larger than puncture diameter.

Apical bulbous area with a large (central) and two smaller (lateral) tubercles at its upper margin each side of midline; surface between upper and lower margins of apical bulbous area with two large and about 7-8 smaller pit-like punctures each side of midline and with sparse, pale, appressed macrosetae similar to those on elytral costae.

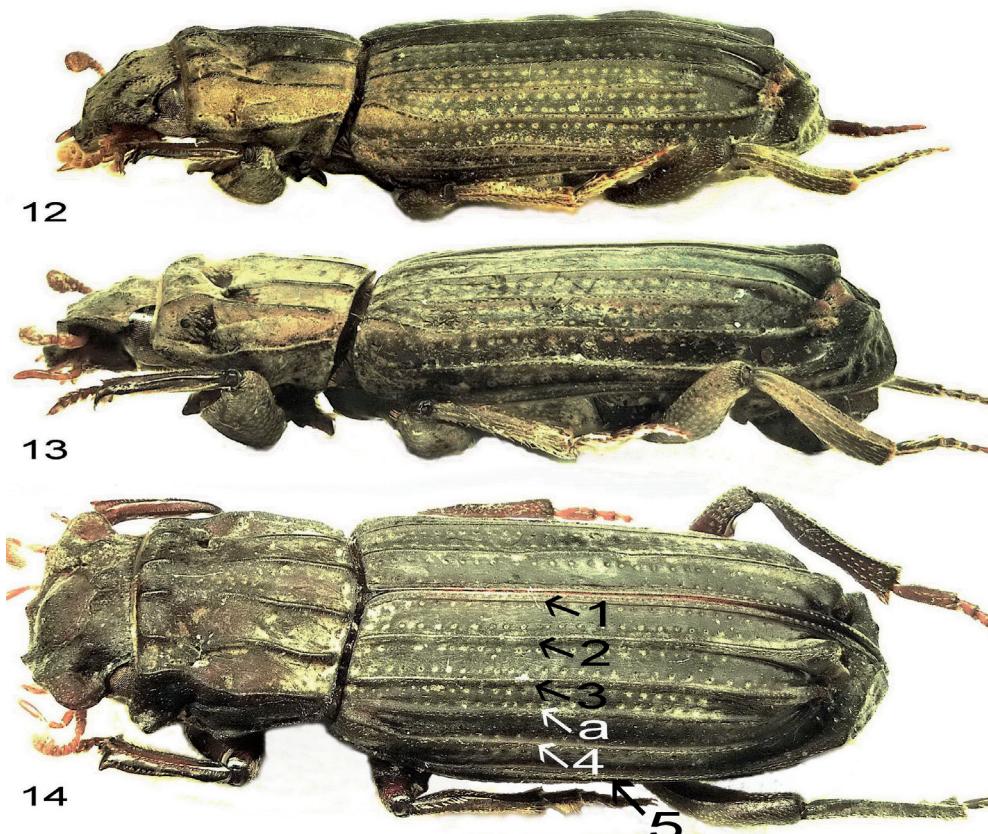
Pygidium with triangular elevated area at base (triangle vertex directed backward) continuing by a ridge to pygidium apex, areas each side of the triangle and ridge being strongly depressed.

Protibia (Fig 9) slim at base; in male with nearly straight inner margin up to large inner apical tooth, which is strongly bent inward, only slightly dilated apically, with moderately arcuate and then emarginate inner margin before a smaller outer tooth; in female robust in apical part, outer apical tooth comparable to that of male, inner apical tooth much smaller compared to male. Mesotibia (Fig. 10) narrow at base, stepwise widened from base to about 1/3 length and then only slightly widened to apex, with short, pale, decumbent setae on inner surface and rows of longer, pale, semierect setae on edges; apex of male with a backward directed inferior spine and inward bent tooth, apex of female with both the spine and tooth directed backward; apical margin densely fringed with short spinules of nearly equal lengths; mesotarsi setaceous, basal mesotarsite about as long as tarsites 2-4 combined. Metatibia (Fig 11) similar to mesotibia in shape, its setation less considerable compared to mesotibia; inferior edge with a considerable tooth at about 1/5 tibia length from apex in male (missing in female); inferior apical tooth directed inward in male, backward in female; metatarsi setaceous, basal metatarsite slightly shorter than tarsites 2-5 combined.

Ventral side (Figs 3 and 4) matte, brown, with grey coating like dorsal side. Prosternum with long, soft, acute, pale macrosetae on its posterior margin, with a rather blunt anterior process, having a distinct oval, anteriorly as well as posteriorly constricted median furrow, and hastate posterior process. Mesosternum with quite minute setigerous punctures (distinct under high magnification only). Metasternum with a distinct midline furrow, which is complete and open posteriorly, but constricted and reduced in length anteriorly; median impression shallow, but its lateral limits are indicated by two dashed, slightly elevated, anteriorly convergent lines; metasternal plate glabrous, metasternum surface otherwise with medium-sized setigerous punctures. Ventrates 1-5 mostly with rather indistinct setigerous punctures, laterally with short oblique rows of medium-sized but shallow punctures. Sixth ventrite anteriorly with a deep, sparsely coarsely punctate excavation, laterally with a triangular impression on each side, medially with quite distinct medium-sized setigerous punctures. Profemur wide, with a deep groove anteriorly, its surface with medium-sized punctures throughout. Mesofemur slightly narrower than profemur, with about 7-10 tough, fairly long, sharp, pale macrosetae along apical half of anterior edge; posterior margin bilobed, with a deep groove, its surface punctate throughout, punctures being, however, smaller compared to those on profemur



Figs 1-11. *Rhyparus accessoricostatus* sp. nov.: 1- habitus, dorsal view, male (holotype); 2- habitus, dorsal view, female (allotype); 3- habitus, ventral view, male (holotype); 4- habitus, ventral view, female (allotype); 5- aedeagus, lateral view, male (holotype); 6- paramere, lateral view, male (holotype); 7- parameres, dorsal view, male (paratype); 8- epipharynx, male (paratype); 9- right protibia and protarsus, male (paratype); 10- right mesotibia and mesotarsus, male (paratype); 11- right metatibia and metatarsus, male (paratype). Scale lines: 1 mm for Figs 1-4, 0.5 mm for Figs 5-8.



Figs 12-14. *Rhyparus accessoricostatus* sp. nov.: 12- habitus, lateral view, female (allotype); 13- habitus, lateral view, male (holotype); 14- habitus, dorsolateral view, male (paratype).

surface. Metafemur long, narrow, its posterior margin moderately bilobed, surface punctuation similar to that on mesofemur surface.

Aedeagus as in Figs 5-7.

Epipharynx as in Fig. 8.

Sexual dimorphism. Differences in the apical part of the protibia: the male protibia longer and slim throughout, the inner apical tooth very large and strongly bent inward; the apical part of the female protibia rather robust, the inner apical tooth normal, comparable to the outer one. Differences in directions of the inferior apical tooth of the mesotibia: directed inward in the male, backward in the female. The presence or absence of a tooth on inferior edge of metatibia close to the metatibia apex in the male or female, respectively. Differences in directions of the apical tooth of the metatibia: directed inward in the male, backward in the female.

Variability. In the type material, the variability in size is as follows: 7.3-7.8 mm in males, 6.2-7.8 mm in females. There are also slight differences in the apical termination of rows of punctures in flat elytral intervals, but in each interval, the outside row of punctures is always longer than the inside one.

Differential diagnosis. The *Rhyparus accessoricostatus* sp. nov. cannot be confused with any other species of the genus due to its quite unique feature: the presence of an accessory elytral costa between costae 3 and 4 on each elytron. In addition, other large Asian species of the genus have coarser punctures in flat discal elytral intervals and/or in furrows between longitudinal pronotal ridges

Distribution. Malaysia (Sabah).

Name derivation. Based on the presence of an accessory elytral costa.

CHECKLIST OF AUSTRAL-ASIAN *RHYPARUS* SPECIES

***Rhyparus* Westwood, 1845:** 93, type species *Rhyparus desjardinsii* Westwood, 1845*)

= *Antrisia* Pascoe, 1866: 447. Type species. *Antrisia saundersii* Pascoe, 1866: 448. Synonymised by Fairmaire (1896: 84).

***Rhyparus accessoricostatus* sp. nov.** Type locality. "Borneo, Sabah, Crocker Mt. 500-1900 m, Gunung Emas".

Distribution. Malaysia: Sabah.

***Rhyparus adebratti* Bordat, 1996:** 84, fig. 1. Type locality. "Malaysia, Sabah, Sipitang, Mendolong". Distribution. Malaysia: Sabah.

***Rhyparus anneae* Stebnicka, 1998:** 845, fig. 62. Type locality. "Papua New Guinea, Central province, Brown R.". Distribution. Papua New Guinea: Central Province, Morobe; Indonesia: West Papua (Stebnicka 1998).

***Rhyparus approximans* Fairmaire, 1893b:** 145. Type locality. "Bornéo occ., Sambas". Distribution. Indonesia: West Kalimantan (Fairmaire 1893); "Bornéo" (Bordat 1996).

***Rhyparus azumai azumai* Nakane, 1956:** 122, fig. 4. Type locality. "Ryujin, Kii, Honshu". Distribution. Japan: Honshu, Kyushu, Shikoku, Ryukyus (Ochi 2001, Kawai et al. 2005).

***Rhyparus azumai loebli* Paulian 1983:** 618; fig. 1; Ochi 2001: 7, downgrading to subspecies) Type locality. "Taiwan: Fenchihu, 1400 m". Distribution. Taiwan (Ochi 2001).

***Rhyparus besucheti* Paulian, 1983:** 618. Type locality. "Malaisie, Johor: env. de Dohol, Kota Tinggi". Distribution. Malaysia: Johor.

***Rhyparus birmanicus* Fairmaire, 1897:** 210. Type locality. "Birmanie". Distribution. Myanmar.

***Rhyparus breviceps* Paulian, 1984:** 472, fig. 1. Type locality. "Papua New Guinea, Morobe, umg. Kaiapit". Distribution. Papua New Guinea: Morobe (Paulian 1984); Central Province, Eastern Highlands, Western Highlands, Eastern New Britain; Indonesia: West Papua (Stebnicka 1998).

***Rhyparus burckhardti* Paulian, 1989:** 301, fig. 3. Type locality. "Sabah: Tambunan". Distribution. Malaysia: Sabah (Paulian 1989); "Bornéo" (Bordat 1996).

***Rhyparus chinensis* Balthasar, 1953:** 230. Type locality. "China, Prov. Fukien: Kuautun". Distribution. China: Fujian.

***Rhyparus danielsoni* Bordat, 1996:** 86, fig. 2. Type locality. “Malaysia, Sabah, Sipitang, Mendolong”.
Distribution. Brunei; Malaysia: Sabah (Bordat 1996).

***Rhyparus dentatus* Fairmaire, 1896:** 83. Type locality. “Bornéo”. Distribution. “Bornéo”.

***Rhyparus denticollis* Fairmaire, 1893b:** 144. Type locality. “Java orient.: Mont Ardjoeno [= Mt. Arjuno]”.
Distribution. Indonesia: East Java (Fairmaire 1893b); “Bornéo” (Bordat 1996).

***Rhyparus edieae* Stebnicka, 1998:** 848, figs 9, 10, 64. Type locality. “Papua New Guinea, Morobe Province, Wau, Eddie Ck, 2000 m”. Distribution. Papua New Guinea: Madang, Morobe; Indonesia: West Papua (Stebnicka 1998).

***Rhyparus gracilis* Arrow, 1905:** 538. Type locality. “Louisiade Archipelago, Sud-Est Island”. Distribution. Papua New Guinea: Milne Bay (Arrow 1905), Central Province, Eastern Highlands, Gulf, Madang, Morobe, Oro, Western Highlands, Western Province, Sepik; Indonesia: West Papua (Stebnicka 1998).

***Rhyparus helophoroides* Fairmaire, 1893b:** 145. Type locality. “Bornéo occ.: Sambas; Java: Simpar et Kemanglen, rés. Tegal”. Distribution. Australia (introduced): New South Wales (Stebnicka 2009, Stebnicka & Howden 1996), Queensland (Lea 1923). Indonesia: Central Java, West Kalimantan (Fairmaire 1893b), West Papua (Stebnicka 1998); Japan: Honshu, Kyushu, Shikoku, Ryukyu (Ochi 2001, Kawai et al. 2005); Malaysia: Sabah (Ochi 2001); Papua New Guinea: Central Province, Eastern Highlands, Morobe (Paulian 1984, Stebnicka 1998); The Philippines: Luzon (Paulian 1981), Negros Island (Ochi 2001); Vanuatu (Paulian, 1981); Taiwan (Ochi 2001); “Bornéo” (Bordat 1996).

= *Rhyparus helephoroides* [incorrect subsequent spelling]: Schmidt (1910: 91).

= *Rhyparus amamianus* Nakane, 1956: 123. Type locality. “Sumiyo, Amami-Oshima”. Synonymised by Ishida & Fujioka (1988: 27).

= *Rhyparus australiae* Lea, 1923: 19. Type locality. “Queensland: Cairns district”. Synonymised by Stebnicka & Howden (1996: 116).

= *Rhyparus orousseti* Paulian, 1981: 111, fig. 1c. Type locality. “îles Philippines, Luzon, Mountain Prov., Baguio, 1 500 m”. Synonymised by Stebnicka (1998: 845).

= *Rhyparus risbeci* Paulian, 1934: 220. Type locality. “Nouvelles-Hébrides”. Synonymised by Stebnicka (1998: 845).

***Rhyparus henryi* Stebnicka, 1998:** 842, fig. 3. Type locality. “Papua New Guinea, Central Province, Kokoda Trail, 26 mi E of Port Moresby, 1500 ft. Distribution. Papua New Guinea: Central Province.

***Rhyparus ironensis* Stebnicka et Howden, 1996:** 118, figs 59, 60, 105. Type locality. “Australia, Queensland, Iron”. Distribution. Australia: Queensland.

***Rhyparus kinabalu* Paulian, 1989:** 300, fig. 2. Type locality. “Sabah: Mt. Kinabalu, 1150 m route Ranau-Kota Kinabalu”. Distribution. Malaysia: Sabah.

***Rhyparus kitanoi kitanoi* Miyake, 1982:** 65, figs 1, 3, 4. Type locality. “Cape Sata, Ohsumi, Kyushu.”.
Distribution. Japan: Kyushu, Ryukyu (Ochi 2001, Kawai et al. 2012).

***Rhyparus kitanoi taiwanus* Ochi, 2001:** 3, figs 3, 4, 13-15, 32. Type locality. “Wushe, Nantow P., C. Taiwan”.
Distribution. Taiwan.

***Rhyparus klapperichorum* Paulian, 1983:** 620, fig. 2. Type locality. “Taiwan: Fenchihu”. Distribution. Taiwan (Ochi 2001).

***Rhyparus magnus* A. Schmidt, 1911:** 134. Type locality. “Banjoewangi [= Banyuwangi] (Java)”. Distribution. Indonesia: East Java; “Bornéo” (Bordat 1996).

***Rhyparus micros* Bordat, 1996:** 88, fig. 3. Type locality. "Malaysia, Sabah, Sipitang, Mendolong". Distribution. Malaysia: Sabah.

***Rhyparus minor* Paulian, 1989:** 298, fig. 1. Type locality: "Sabah, E Mt. Kinabalu, 1180 m route Ranau-Kota, Kinabalu". Distribution. Malaysia: Sabah.

***Rhyparus mokaiensis* Stebnicka, 1998:** 851, figs 12, 13. Type locality. "Papua New Guinea, West Sepik Province, Torricelli Mtns, Mokai Village, 750 m". Distribution. Papua New Guinea: West Sepik.

***Rhyparus multipunctatus* Paulian, 1984:** 472. Type locality. "Papua New Guinea, EH Prov. umg. Kainantu, Onerunira". Distribution. Papua New Guinea: Eastern Highlands (Paulian 1984), Central Province, Madang, Morobe, Oro; Indonesia: West Papua (Stebnicka 1998).

***Rhyparus nepalensis* Balthasar, 1971:** 19, fig. 3. Type locality. "Nepal, Chisapani, Garhi, 1600 m". Distribution. Nepal.

***Rhyparus nilgirensis* Arrow, 1909:** 94. Type locality. "Nilgiri Hills, 3500 feet alt." Distribution. India: Tamil Nadu.

***Rhyparus obsoletus* Fairmaire, 1893b:** 145. Type locality. "Sumatra occ.: Tambang Salida". Distribution. Indonesia: Sumatra: Riau.

***Rhyparus octovirgatus* Schmidt, 1916:** 101. Type locality. "Viti Inseln". Distribution. Fiji Islands.

***Rhyparus peninsularis* Arrow, 1905:** 537. Type locality. "Malay peninsula Penang, Perak" Distribution.; Malaysia: Penang, Perak (Arrow, 1905); Sabah (Paulian 1989); [?] Taiwan (Balthasar, 1964).

***Rhyparus philippensis* Arrow, 1905:** 538. Type locality. "Philippine Islands". Distribution. The Philippines.

***Rhyparus pseudominor* Bordat, 1996:** 90, fig. 4. Type locality. "Malaysia, Sabah, Sipitang, Mendolong". Distribution. Malaysia: Sabah.

***Rhyparus rugatus* Arrow, 1935:** 159. Type locality. "New Hebrides, Ounua, Malekula". Distribution. Vanuatu.

***Rhyparus saundersii* (Pascoe, 1866:** 448, pl. XVIII, fig. 5) (*Antrisia*). Type locality. "Sarawak". Distribution. Malaysia: Sarawak.

***Rhyparus schachti* Balthasar, 1971:** 21, fig. 4. "Nepal, Chisapani, Garhi, 1600 m". Distribution. Nepal.

***Rhyparus sepikensis* Stebnicka, 1998:** 844, fig. 7. Type locality. "Papua New Guinea, West Sepik Province, Torricelli Mountains, Mokai Village, 750 m". Distribution. Papua New Guinea: West Sepik.

***Rhyparus sinewitensis* Stebnicka, 1998:** 852, fig. 14. Type locality. "Papua New Guinea, East New Britain Province, Gazelle Pen., Mt. Sinewit, 900 m". Distribution. Papua New Guinea: East New Britain.

***Rhyparus striatus* Arrow, 1935:** 158. Type locality. "Eastern New Guinea: Kokoda, 1206 ft.". Distribution. Papua New Guinea: Central Province, Eastern Highlands, Madang, Morobe, West Sepik, East New Britain; Indonesia: West Papua (Stebnicka 1998).

***Rhyparus sumatrensis* Fairmaire, 1893a:** 17. Type locality. "Sumatra". Distribution. Indonesia: "Sumatra".

***Rhyparus verrucosus* A. Schmidt, 1916:** 101. "Type locality. "Padang". Distribution. Indonesia: "Sumatra".

Rhyparus xanti (Frivaldszky, 1883: 138) (*Antrisia*). Type locality. “Borneo: m. Matang [= Gunung Matang]”. Distribution. Malaysia: Sarawak (Frivaldszky 1883); Sabah (“N. Borneo, Sandakan”), “Bornéo” (Bordat 1996).

= *Rhyparus xanthi* [incorrect subsequent spelling]: Schmidt (1910: 92).

*) for details see Dellacasa (1997) and Bouchard et al (2011).

DISCUSSION

There are no doubts about remarkable difference of the species described here from any other known species of the genus (see the Differential diagnosis above). On the other hand, the authors are not definitely convinced that the *Rhyparus* species from the Western Hemisphere are really congeneric with Asian species. However, this consideration calls for a thorough revision of Asian species, which is quite beyond the scope of the work presented here.

In terms of terminology concerning the usual elytral structure (not including the accessory costa, which is just a unique feature of the species described here), the following terms were preferred here (as quoted in Material and Methods), essentially in agreement with Cartwright & Woodruff (1969), which can be summarized and interpreted as follows:

- Each elytron has 5 costae: a flat sutural costa and 4 elevated costae (counting sutural, the costae are numbered from 1 (the sutural costa) to 5 (the most lateral one)) and 5 flat (mostly considerably punctate) intervals (also numbered from 1 to 5 in the same sequence of arrangement).

- Costae 2 to 4 are shortened posteriorly, their ends being tipped with yellowish white material. Costa 5 is abruptly bent toward the 1st (sutural) costa behind the ends of costae 2 to 4 and covered with the same material (on its inside margin). Thus, there is a deeply depressed preapical area delimited by ends of costae 2 to 4 anteriorly and by the inside margin of the inwardly bent terminal part of costa 5 posteriorly.

- Behind the depressed preapical area, there is a transversal apical bulbous area, essentially produced by the inwardly bent bulbous terminal part of the costa 5, which is extending to and fused with costa 1.

We tried to avoid the name trichome for the structure in the depressed preapical elytral area due to the fact that trichome is a special professional term concerning quite different groups of organisms: “trichomes are fine outgrowths or appendages on plants and/or algae” (cf. e. g., Fahn 1990). It is difficult to say that the structures considered here are “fine outgrowths or appendages”, and the special term concerning “plants and/or algae” should not be applied to insects.

The origin, composition and particularly the function of the yellowish white material covering the depressed preapical area have not yet been definitely specified, but are likely to be associated with the termitophilous way of life of particular species of the tribe Ryparini. In a previous work (Mencl & Rakovič 2012), we employed the term “glandular material” in accordance with Cartwright & Woodruff (1969), but in the present work, we decided not to use the adjective “glandular”, since it is difficult to expect the presence of glands on the elytra.

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