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On new and rare Leleupidiini from the Oriental and Australian Regions

(Coleoptera, Carabidae, Zuphiinae)

By **Martin BAEHR**

Abstract

Three new species of the genus *Colasidia* BASILEWSKY are described: *Colasidia lustrans* sp. n., *C. globiceps* sp. n., both from Sumatra, and *C. kokodae* sp. n. from Papua New Guinea. The ♂ genitalia of *Colasidia monteithi* BAEHR from North Queensland are for the first time described, and a second specimen of *Colasidia taylori* BAEHR from Sarawak is communicated. A renewed key to all species of genus *Colasidia* is presented. The discovery of two new species in Sumatra fills the distributional gap of this genus between the Malay Peninsula and Borneo and further increases the number of species occurring in the Oriental Region.

Introduction

Through courtesy of Mr. A. RIEDEL (München) I received a sample of Oriental Carabidae collected in Sumatra which includes inter alia two species of Leleupidiini. At the same time I received from Mr. T. WEIR (Canberra) some specimens of Leleupidiini from Sarawak, New Guinea, and North Queensland for identification. As both samples include new species and/or the hitherto unknown sex, they are communicated together.

My prediction about the increasing number of species in the Oriental and Australian Regions by means of more scrutinized collecting methods like Berlese extraction or sieving of leaf litter, has come true sooner than expected. Indeed, almost all specimens from both samples have been collected by use of Berlese or Winkler extraction. So, step by step the gaps in the distribution of Leleupidiini in the Oriental Region, mentioned in BAEHR (1990), are being filled, and it becomes increasingly evident that Leleupidiini are not significantly rarer in terms of species in the Asian-Australian area than in Africa.

Altogether, 16 species of Leleupidiini are now known from the Oriental Region (BASILEWSKI 1954, LANDIN 1955, DARLINGTON 1968, MATEU 1981, PERRAULT 1982, CASALE 1985, BAEHR 1988, 1990, the present paper), additional 3 species from New Guinea (DARLINGTON 1971, the present paper), and a single species from northern Queensland, Australia (BAEHR 1987, the present paper).

Measurements

Measurements were made under a stereo microscope using an ocular micrometer. Length has been measured from tip of labrum to apex of elytra, hence, measurements may slightly differ from those of other authors. Length of head has been measured from anterior border of clypeus to anterior border of "neck".

Characters

Best characters for differentiation of species is the structure of the ♂ aedeagus which, however, is not yet known of all species. Useful characters are also provided by shape of head, pronotum, and elytra, to a lesser degree by size

of eyes, appendages of the head, puncturation of upper surface, and pilosity. In most other respects, the species are rather similar.

Deposition of types

The holotypes of the new species are either located in the Australian National Insect Collection, Canberra (ANIC), or they are presented to the Zoologische Staatssammlung München (ZSM), but are deposited as permanent loan in the collection of author (ZSM-CBM).

Definition of genera

Conventionally, in the Oriental and Australian regions three leleupidiine genera occur: *Paraleleupidia* Basilewsky, known from southern India only; *Gunvorita* Landin, known from north India, Sikkim, and Nepal; and *Colasidia* Basilewsky, known so far from Singapore, Sarawak, Sabah (both northern Borneo), New Guinea, northern Australia, and Sumatra (present paper). Whereas *Paraleleupidia* is well differentiated from the other Oriental-Australian genera, though perhaps not from certain African genera, *Gunvorita* and *Colasidia* are not, even not with respect to the generic diagnoses. Although authors continue to assign their new species to those genera, it is generally done without discussion. As mentioned earlier (Baehr 1988), the generic concept of the whole tribus is rather weak and should be critically discussed in future. At present I cannot find a striking difference between *Gunvorita* and *Colasidia*, with exception of the elongate, sinuate, variously upturned apex of ♂ aedeagus in *Gunvorita* (figured in Mateu 1981, Casale 1985), compared with the less striking aedeagi of *Colasidia*. Because the variability of aedeagi within the genus *Colasidia* is great, and, additionally, the ♂ genitalia of several species are still unkown, this character might be misleading. I strongly suspect that a future revisor will synonymize both names, when more material is at hand. So I associate the new species decribed herein only tentatively to *Colasidia,* the more, as one species is somewhat aberrant and looks externally fairly similar to certain *Gunvorita*.

Genus *Colasidia* Basilewsky

Basilewski, 1954, p. 215, fig. 1.
Darlington 1971, p. 322, figs 82, 83.
Mateu 1981, p. 722, fig. 6.
Perrault 1982, p. 77, figs 1, 2.
Baehr 1987, p. 137, figs 1, 2.
Baehr 1988, p. 117, figs 1–12.
Baehr 1990, p. 11, figs 1–12.

Type species: *Colasidia malayica* Basilewski, 1954.

Due to a number of characters (e. g. convex body shape; short, moniliform antennae; coarse, regular puncturation of elytral striae; absence of microreticulation) the three new species are tentatively included in the Indo-Australian genus *Colasidia*.

Key to species of genus *Colasidia* Basilewsky

As once more three new species are being described, a renewed key to all described species, including those from New Guinea and Australia, is presented. Apart from *C. malayica* Basilewski and *C. gerardi* Perrault which I know from description only, I have seen the types of all species.

1 Head parallel or even wider across eyes then across orbits, or head evenly rounded, markedly egg-shaped. Always posterior part of head strongly rounded 2

– Head decidedly wider at posterior border or across orbits than across eyes. Posterior part of head less rounded, rather square 7

2 Head laterally evenly rounded, markedly egg-shaped (Fig. 8). Puncturation of pronotum and elytra shallow, diffuse, punctures partly combined to transversal lines. Surface rather dull. ♂ aedeagus short, compact, with short, projecting apex (Fig. 4). Sumatra ..... *globiceps* sp. n.

– Head laterally not evenly rounded, rather straight, not egg-shaped. Puncturation of pronotum and elytra deep, distinct, without transversal lines. Surface glossy. ♂ aedeagus different 3

3 Pronotum narrow, c. 0.8 × as wide as long, prebasal sinuosity elongate. ♂ aedeagus rather straight on lower surface, apex slightly curved up. Sarawak ..... *angusticollis* Baehr

– Pronotum wider, at least 0.9 × as wide as long, prebasal sinuosity shorter and more accentuate. ♂ aedeagus slightly turned down, or unknown 4

4 Head shorter, eyes large, as long as or longer than orbits to beginning of posterior curvature. Elytra decidedly widest in posterior third 5

– Head longer, eyes smaller, c. 3/5 × as long as orbits to beginning of posterior curvature, or shorter. Elytra widest about in middle 6

5 Eyes smaller, head less obliquely rounded posteriorly. Pronotum c. as wide as long, subbasal sinuosity shorter. Elytra wider, ratio length/width c. 1.33, puncturation very regular, intervals distinctly raised. ♂ aedeagus unknown. Sarawak ..... *macrops* Baehr

– Eyes larger, head posteriorly remarkably rounded (Fig. 6). Pronotum longer than wide, c. 0.9 × as wide as long, subbasal sinuosity longer. Elytra longer, ratio length/width c. 1.44, puncturation irregular, only odd intervals raised in anterior half. ♂ aedeagus unknown. Papua New Guinea ..... *kokodae* sp. n.

6 Eyes larger, c. 3/5 × as long as orbits to beginning of posterior curvature. Pronotum almost as wide as long. ♂aedeagus with apex slightly turned down. Sarawak ..... *riedeli* Baehr

– Eyes smaller, c. 1/3 × as long as orbits to beginning of posterior curvature. Pronotum slightly narrower, c. 0.9 × as wide as long. ♂ aedeagus unknown. New Guinea ..... *papua* Darlington

7 Eyes small, at most 1/3 of length of orbit to beginning of posterior curvature 8

– Eyes larger, c. half as long orbit to beginning of posterior curvature 13

8 Head decidedly trapezoidal, as wide as pronotum. Posterior angles of head only feebly rounded off. Elytral puncturation rather weak. Singapore ..... *malayica* Basilewsky

– Head less trapezoidal, usually narrower than pronotum. Posterior angles of head somewhat rounded off. Elytral puncturation coarse 9

9 Pronotum strongly cordiform, base only half as wide as widest part. Shoulders markedly produced. Large species (5.5 mm from description). Sabah ..... *gerardi* Perrault

– Pronotum less cordiform, base at least 2/3 × as wide as widest part. Shoulders less strongly produced. Smaller species (less than 5.2 mm to apex of abdomen) 10

10 Elytra short and wide, c. 2 × as wide as pronotum. Head shorter, ratio length/width less than 1.5 11

– Elytra elongate, narrow, 1.75 × as wide as pronotum. Head longer, ratio length/width over 2. ♂ aedeagus depressed, very elongate, with elongate, acute apex (Fig. 1). North Queensland, Australia ..... *monteithi* Baehr

11 Pronotum longer, c. 0.9 × as wide as long. Upper surface extremely glossy. Intervals of elytra distinctly raised. ♂ aedeagus unknown. Sumatra ..... *lustrans* sp. n.

– Pronotum shorter, c. as long as wide. Upper surface less glossy. Intervals of elytra less distinctly raised 12

12 Larger species, c. 4.4 mm long. Puncturation of upper surface less coarse, more irregular. ♂ aedeagus unknown. Papua New Guinea ..... *madang* Darlington

– Smaller species, c. 3.7 mm long. Puncturation of upper surface coarser, regular. ♂ aedeagus short, compact, apex very short and obtuse. Sarawak ..... *pumila* Baehr

13 Larger and wider species, c. 4.8 mm long. Pronotum wide, c. as wide as long. Head short and wide, feebly widened to posterior border. ♂ aedeagus hooked at apex. Sarawak *taylori* Baehr

– Smaller and narrower species, c. 4 mm long. Pronotum narrower, c. 0.9 × as wide as long. Head longer, narrower, remarkably widened to posterior border. ♂ aedeagus gently upturned at apex. Sarawak ..... *brevicornis* Baehr

Colasidia taylori Baehr

Colasidia taylori Baehr, 1988, p. 117, figs 2, 11.

This species was described from near Kuching, Sarawak, from a single ♂ collected by Berlese sampling. The sample from ANIC includes another ♂ from the same locality and collector: 1 ♂, Sarawak, Semengoh For. Reserve, 11 mi. SW. Kuching, 1.–4. VI. 1968, leafmould berleseate, RWT 68.262, rainforest (ANIC).

Colasidia monteithi Baehr
Fig. 1

Colasidia monteithi Baehr, 1987, p. 137, figs 1, 2.

This species was described from a single ♀, collected by Berlese extraction of leaf litter in rain forest of the Cape Tribulation area in North Queensland. The ANIC sample includes another specimen from the same area which is the hitherto unknown ♂: 1 ♂, Cape Tribulation, N. Qld., 200 m, 14 July 1982, S. & J. Peck SBP77, rainforest leaf litter (ANIC).

Description of ♂ genitalia

Sternum VII with a single seta on either side. Genital ring narrow, with markedly convex base. Aedeagus narrow and elongate, straight, with elongate, acute, slightly curved apex. Internal sac in basal third with conspicuous, strongly sclerotized, coiled part. Parameres as in figs 1 b, c. Aedeagus very elongate compared with the other known aedeagi of genus *Colasidia*.

Colasidia kokodae sp. n.
Figs 2, 6

Holotype: ♀, Papua, 8 km of Kokoda, 800 m, 1. VI. 72, R. W. Taylor, *Colasidia papua* Darlington, det. T. A. Weir 1989 (ANIC).

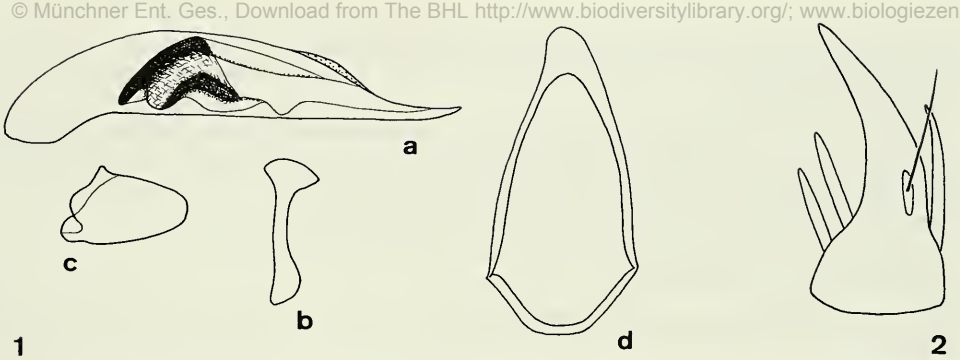

Fig. 1. *Colasidia monteithi* BAEHR, ♂ genitalia. a. Genital ring. b. Aedeagus, lateral view. c. Right paramere. d. Left paramere.
Fig. 2. *Colasidia kokodae* sp. n. ♀ stylomere 2.

Diagnosis

Medium sized, brown species with posteriorly strongly rounded head, very large, slightly projecting eyes, fairly cordate prothorax, and fairly depressed, moderately wide elytra having markedly irregular puncturation and feebly raised odd intervals.

Description

Measurements: Length: 4.5 mm; width of elytra: 1.6 mm; ratio length/width of head: 1.42; ratio width/length of pronotum: 0.89; ratio widest part/base of pronotum: 1.75; ratio width of head/width of pronotum: 0.86; ratio length/width of elytra: 1.44; ratio width of elytra/width of pronotum: 1.82.

Colour: Brown. Labrum, antennae, palpi, and legs slightly lighter, except for basal segments of antennae.

Head: Moderately elongate, distinctly narrowed posteriorly, widest across eyes, orbits posteriorly elongately rounded off. Upper surface depressed. Eyes very large, laterally feebly projecting, longer than orbit to beginning of curvature, c. 2/5 of length of complete orbit. Clypeus anteriorly feebly concave. Labrum anteriorly slightly excised. Mandibles short. Mentum with unidentate, at apex slightly excised tooth. Labium truncate. Maxillary palpus elongate, basal segment slightly widened. Terminal segment of labial palpus very large, almost twice as long as wide. Antenna rather short, barely surpassing anterior third of pronotum. Median segments as long as wide, 3rd segment as long as 1st, almost twice as long as 2nd segment. Surface with sparse, coarse punctures, almost without microreticulation, glossy. Pilosity rather sparse, hirsute, anteriorly inclined.

Pronotum: Moderately cordiform, slightly longer than wide, upper surface moderately raised in middle. Sides anteriorly convex, with elongate sinuosity in front of posterior angles, widest almost at anterior third. Apex moderately wide, straight, anterior angles not projecting. Base narrow, sides moderately sinuate in front of the projecting posterior angles. Base laterally excised. Lateral margin with distinct border line and rather wide marginal sulcus. Median line fine. Prebasal grooves rather shallow. Lateral setae distinct, anterior seta situated slightly in front of widest part of pronotum. Surface with moderately dense, coarse punctures, almost without microreticulation, rather glossy. Pilosity fairly sparse, elongate, hirsute.

Elytra: Moderately elongate, slightly widened behind middle, upper surface fairly depressed. Shoulders rather wide, evenly rounded off. Apex fairly wide, transversely convex. Striae marked by irregular rows of very coarse punctures, odd intervals in anterior half slightly raised. Fixed setae of 3rd stria difficult to see, apparently 3 setae present. Series of marginal pores very difficult to detect, series apparently consisting of 6 basal, 3 postmedian, and 5 apical pores. When present, setae elongate. Surface without microreticulation, rather glossy. Pilosity moderately dense, hirsute, inclined posteriorly.

Abdomen: Densely punctate and with rather short pilosity.

Legs: Rather elongate, fairly densely setose. Vestiture of ♂ anterior tarsus unknown.

♂ genitalia: Unknown.

♀ genitalia: Sternum VII with a single seta at either side. Stylomere 2 narrow and elongate with very elongate, acute apex. Base widened, with 2 elongate ventral ensiform setae, one dorsal ensiform seta rather close to base, and a nematiform seta also rather close to base.

Distribution: Papua New Guinea. Known only from type locality.

Habits: Collected in medium heigh, perhaps from leaf litter in rain forest.

Etymology. From type locality.

Note: Immediately distinguished from both other known New Guinean species by the remarkably large eyes.

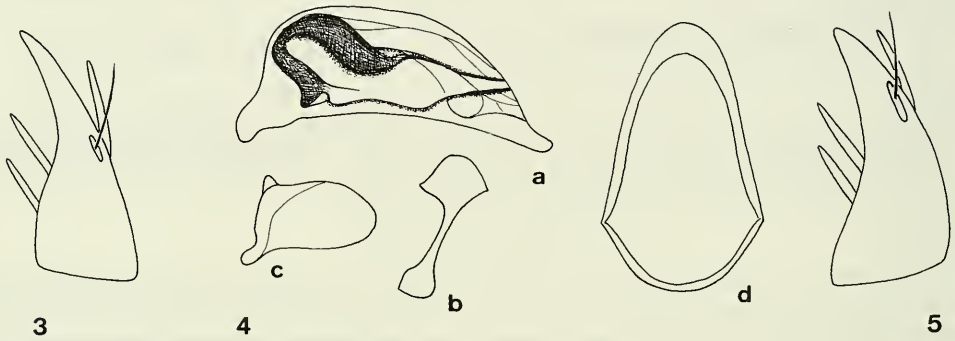

Fig. 3. *Colasidia lustrans* sp. n. ♀ stylomere 2.

Figs 4.–5. *Colasidia globiceps* sp. n. ♂ and ♀ genitalia. 4a. ♂ genital ring. 4b. Aedeagus, lateral view. 4c. Right paramere. 4d. Left paramere. 5. ♀ stylomere 2.

Colasidia lustrans sp. n.

Figs 3, 7

Holotype: ♀, W-SUMATRA, Bukittinggi, Gn. Merapi 1900–2100 m, leg A. Riedel, 18. XI. 1990 (ZSM-CBM).

Diagnosis

Medium sized, blackish, convex species with posteriorly distinctly widened head, small eyes, narrow pronotum, and highly glossy surface. Further distinguished by sparse pilosity throughout, narrow lateral channel of pronotum, absence of median sulcus on pronotum, and regulary convex intervals on elytra.

Description

Measurements: Length: 4.9 mm; width of elytra: 1.7 mm; ratio length/width of head: 1.42; ratio width/length of pronotum: 0.88; ratio widest part/base of pronotum: 1.6; ratio width of head/width of pronotum: 0.94; ratio length/width of elytra: 1.46; ratio width of elytra/width of pronotum: 2.

Colour: Almost black. Labrum, palpi, antennae, and legs dark yellowish.

Head: Moderately elongate, distinctly widened posteriorly, orbits posteriorly shortly rounded off, head widest far behind eyes. Upper surface fairly convex. Eyes small, laterally not projecting, less than 1/2 of length of orbits to beginning of curvature, c. 1/4 of length of complete orbits. Clypeus anteriorly almost straight. Labrum anteriorly slightly excised. Mandibles short. Mentum with unidentate, at apex feebly excised tooth. Labium truncate. Maxillary palpus moderately narrow, basal segment rath-

er thickened. Terminal segment of labial palpus very large. Antenna rather short, attaining anterior third of pronotum. Median segments as wide as long, 3rd segment c. 3/5 × as long as 1st, not much longer than 2nd segment. Surface with very few, coarse punctures, without microreticulation, highly glossy. Pilosity very sparse, moderately elongate, anteriorly inclined.

Pronotum: Moderately cordiform, slightly longer than wide, barely wider than head, widest in anterior third. Upper surface evenly convex to lateral margin. Sides convex in anterior half, fairly sinuate in front of posterior angles. Apex rather narrow, almost straight, anterior angles barely projecting. Base narrow, posterior angles moderately projecting. Base laterally excised. Lateral margin with distinct border line, but with very narrow lateral channel. Median line fine, not sulcate. Prebasal grooves moderately deep. Marginal setae distinct, anterior seta situated at anterior third of pronotum. Surface with moderately dense, coarse punctures, without microreticulation, highly glossy. Pilosity moderately sparse, rather short, inclined anteriorly.

Elytra: Moderately wide, laterally evenly curved, widest about in middle, upper surface rather convex. Shoulders wide, rounded off. Apex fairly wide, transversely convex, slightly incurved to middle. Striae marked by regular rows of coarse punctures, intervals regularly convex. Fixed setae of 3rd stria difficult to see, apparently with 3 setae. Series of marginal pores difficult to detect, apparently consisting of 6 basal, 3 postmedian, and 5 apical pores. Surface without microreticulation, highly glossy. Pilosity regular, rather sparse, fairly short, inclined posteriorly.

Abdomen: Densely punctate and with rather short pilosity.

Legs: Elongate. Pilosity markedly sparse. Vestiture of ♂ anterior tarsus unknown.

♂ genitalia: Unknown.

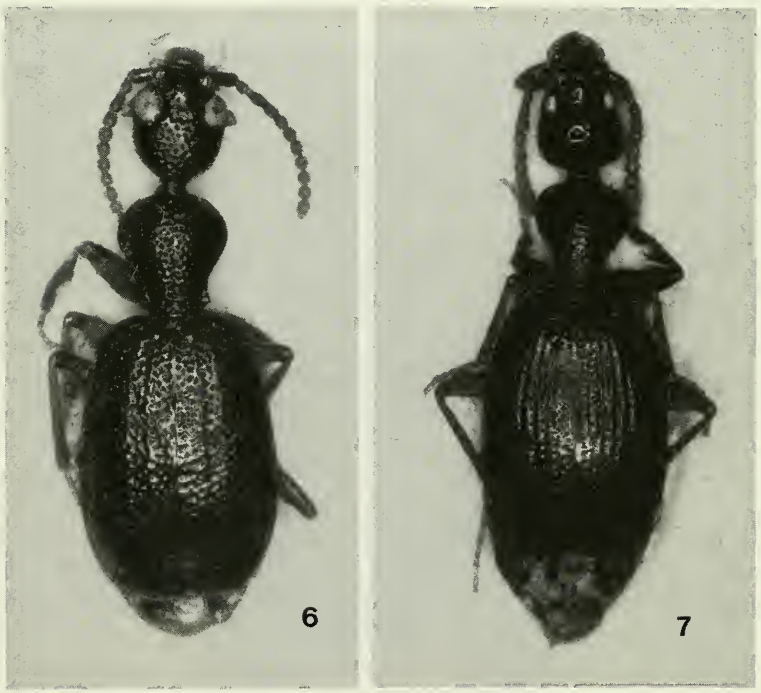

Fig. 6. *Colasidia kokodae* sp. n. ♀ holotype. Length: 4.5 mm.
Fig. 7. *Colasidia lustrans* sp. n. ♀ holotype. Length: 4.9 mm.

♀ genitalia: Sternum VII with a single seta on either side. Stylomere 2 narrow, elongate, with acute apex, with two elongate ventral ensiform setae, one elongate dorsal ensiform seta, and a nematiform seta originating rather close to base.

Distribution: Sumatra. Known only from type locality, the volcano Gunung Merapi.

Etymology. From the highly glossy surface.

Habits: Holotype collected by sieving of forest litter under burnt logs on volcanic ash.

Colasidia globiceps sp. n.

Figs 4, 5, 8

Types: Holotype: ♂, W-SUMATRA, Bukittinggi, Gn. Merapi, 1900–2100 m, leg. A. Riedel, 18.XI.1990 (ZSM). – Paratypes: 7 ♀♀, same data (CBM, ZSM).

Diagnosis

Rather small, wide, markedly convex, brownish species with small, inconspicuous eyes, remarkably convex, egg-shaped head, diffuse puncturation on pronotum and elytra, and rather dense, irregular pilosity. Further distinguished by short, compact ♂ aedeagus with short apex and conspicuously sclerotized piece within internal sac.

Description

Measurements: Length: 3.9–4.2 mm; width of elytra: 1.4–1.5 mm; ratio length/width of head: 1.50–1.55; ratio width/lenght of pronotum: 0.90–0.91; ratio widest part/base of pronotum: 1.55–1.59; ratio width of head/width of pronotum: 0.90–0.93; ratio length/width of elytra: 1.41–1.46; ratio width of elytra/width of pronotum: 2.03–2.10.

Fig. 8. *Colasidia globiceps* sp. n. ♂ holotype. Length: 4.0 mm.

Colour: Piceous brown, head slightly darker, pronotum feebly lighter. Labrum, palpi, antennae, and legs dark yellowish.

Head: Moderately elongate, evenly convex, markedly egg-shaped, orbits convex throughout, head widest in posterior third. Upper surface strongly and evenly convex. Eyes small, laterally not projecting, c. 1/5 of length of complete orbit. Clypeus anteriorly almost straight. Labrum anteriorly barely excised. Mandibles short. Mentum with unidentate, at apex feebly excised tooth. Labium truncate. Maxillary palpus rather short and large, basal segment barely thickened. Terminal segment of labial palpus large, though comparatively short. Antenna moderately elongate, surpassing anterior half of pronotum. Median segments as long as wide, 3rd segment slightly shorter than 1st, 1.5 × as long as 2nd segment. Surface with rather fine, fairly sparse punctures, without microreticulation, glossy. Pilosity rather sparse, moderately elongate, anteriorly inclined.

Pronotum: Moderately cordiform, distinctly longer than wide, slightly wider than head, upper surface strongly convex. Sides moderately convex in anterior 2/3, moderately sinuate to posterior angles. Pronotum widest at anterior third. Apex rather narrow, feebly concave, anterior angles barely projecting. Base rather narrow, posterior angles slightly projecting, acute. Base laterally excised. Lateral margin with distinct border line, but lateral sulcus extremely narrow. Median line rather distinct, though not sulcate, apart from near base. Prebasal grooves moderately deep. Marginal setae distinct, anterior seta situated shortly in front of widest part of pronotum. Surface with moderately coarse, shallow, markedly diffuse puncturation which is partly combined to transverse rows, therefore surface fairly dull. Pilosity rather dense, short, anteriorly inclined.

Elytra: Moderately wide, laterally evenly curved, widest behind middle, upper surface rather convex. Shoulders moderately wide, rounded off. Apex rather wide, transversely convex, slightly incurved to middle. Striae not regularly marked, because of rather irregular puncturation. Fixed setae of 3rd stria difficult to detect, apparently 3 setae present. Marginal pores very difficult to see, apparently consisting of 6 basal, 3 postmedian, and 5 apical pores. When present, setae moderately elongate. Puncturation shallow, moderately coarse, irregular, punctures partly combined to transverse rows, hence surface rather dull. Pilosity dense, rather short, posteriorly inclined.

Abdomen: Densely punctate and densely covered with short pilosity.

Legs: Moderately elongate, rather densely pilose. ♂ anterior tarsus not expanded, with feeble vestiture on three basal segments.

♂ genitalia: Sternum VII with a single seta on either side. Genital ring rather wide, ovalish, apex completely rounded off, base deep, semicircular. Aedeagus short, high, compact, with short, though distinct apex. Lower surface evenly curved. Internal sac basally with rather strongly slcerotized, coiled plate, apically less sclerotized, rather complicately coiled. Parameres as in figs 4b, c, right paramere comparatively large.

♀ genitalia: Sternum VII with a single seta on either side. Stylomere 2 rather elongate with fairly acute apex, with 2 elongate ventral ensiform setae, one elongate dorsal ensiform seta, and a nematiform seta situated rather close to apex.

Distribution: Sumatra. Known only from type locality, the volcano Gunung Merapi.

Etymology: From the markedly globular shape of head.

Habits: Holotype collected by sieving of forest litter under burnt logs on volcanic ash.

The collecting circumstances of the last two species are rather surprising, because a young volcano does not seem to offer a stabile environment for leaf litter inhabiting beetles having apparently little migrating abilities. Perhaps this capacity is indeed better, than it is conventionally supposed.

Relationships

As ♂ genitalia are only known from half of the described species of *Colasidia*, very little can be said on the relationships within this genus. Actually, the ♂ aedeagi show all grades from elongate shape with very elongate apex to short, compact shape almost without a projecting apex. Unfortunately, only two ♂♂ are known from species outside of Borneo, so it is impossible at present to draw any conclusions concerning relationships within the genus.

It seems also premature to consider biogeographical questions, although Leleupidiini should be very important for biogeographical evidence, due to their inability for flight and their apparently very local distribution. Although any statement on distribution patterns must await better knowledge of the actual number and range of species, it is remarkable that no *Paraleleupidia* has ever been found outside of India and no *Colasidia* farther west than Singapore, whereas *Gunvorita* is so far restricted to the southern border of the Himalayas. It remains to be seen, whether this picture of distribution will change with increasing knowledge on Oriental Leleupidiini.

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