

## Four new species of Leleupidiini from the Oriental Region

(Coleoptera, Carabidae, Zuphiinae).

By Martin BAEHR

### Abstract

One new species of the genus *Paraleleupidia* BASILEWSKY and three new species of the genus *Colasidia* BASILEWSKY are described: *Paraleleupidia linearis*, sp. n., *Colasidia riedeli*, sp. n., *C. macrops*, sp. n., and *C. pumilia*, sp. n. A key to all known species of *Colasidia* is presented. The discovery of four new species at two localities only is evidence of a presumably large number of Leleupidiine species actually occurring in the Oriental Region.

### Introduction

Through courtesy of Mr. A. RIEDEL (München) I received a sample of Oriental Carabidae collected in southern India and in Sarawak, North Borneo, respectively, which includes inter alia four specimens of Leleupidiini representing four undescribed species. Moreover, a single locality in Sarawak yielded three different species of *Colasidia*. As a result, even more surprisingly, six species of *Colasidia* are now known from only two localities in Sarawak (see also BAEHR 1988). So, my prediction about the increasing number of species to be discovered in southern Asia by means of scrutinized collecting methods as Berlese extraction or sieving of leaf litter is being verified sooner than I would imagine. Indeed, the four new species described herein have been sampled by sieving and by use of Winkler extraction. As we still know Oriental Leleupidiini from very few localities, any estimations on the actual number of species and on their distributions are impossible. However, we do know certainly only a very small portion of the species, because large areas were hitherto completely uncollected with respect to Leleupidiini, e. g. central India, Burma, Thailand, Vietnam, southern China, large island such as Sumatra, the whole Indonesian part of Borneo, Java, West Irian and others.

Altogether, 14 species of Leleupidiini are known from the Oriental Region (BASILEWSKY 1954, LANDIN 1955, DARLINGTON 1968, MATEU 1981, PERRAULT 1982, CASALE 1985, BAEHR 1988), additional two species from New Guinea (DARLINGTON 1971), and a single species from northern Australia (BAEHR 1987).

### Measurements

Measurements were made under 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 character for differentiation of species is the structure of a ♂ aedeagus which, however, is available in few species only. Useful characters are also provided by shape of head, pronotum, and elytra, to a lesser degree also by size of eyes, appendages of the head, puncturation of upper surface, and pilosity. In other respects, the species are rather similar.

## Deposition of types

The holotypes of the new species are presented to the Zoologische Staatssammlung, München (ZSM), but they are deposited as permanent loan in the collection of author (CBM).

## Genus *Paraleleupidia* BASILEWSKI

BASILEWSKI, 1951, p. 23, fig. 2.

BASILEWSKI, 1953, p. 271, figs 10–12.

MATEU, 1981, p. 717, figs 2–3.

Type species: *Leleupidia cribrata* BASILEWSKI, 1951.

The new species most probably belongs to genus *Paraleleupidia*, mainly on behalf of large size, elongate shape, structure of antennae, moderately coarse puncturation, weak striation, and dense microreticulation. However, as stated earlier (MATEU 1981, BAEHR 1988), the generic concept within the tribe Leleupidiini is rather weak and has to be critically revised in future on the basis of more comprehensive material.

## *Paraleleupidia linearis*, sp. n.

(Figs 1, 5, 9)

Holotype: ♀, S-India, Tamil Nadu, Ootacamund, 11 km → Mysore, 21.8.1989, leg. A. RIEDEL (ZSM-CBM).

## Diagnosis

Large, very narrow and elongate species with small, depressed eyes, weak elytral striation, strong microreticulation, moderately short antennae with 3rd segment slightly shorter than 1st. Distinguished from both other known Oriental species of that genus by still narrower and more elongate head and prothorax, from *P. (Megaleleupidia) besucheti* MATEU also by short 3rd antennal segment, from *P. loebli* MATEU by larger size, almost parallel orbits, and even stronger microreticulation of surface, especially of elytra.

## Description

Measurements: Length: 6.5 mm; width of elytra: 2 mm; ratio length/width of head: 1.9; ratio width/length of pronotum: 0.67; ratio widest part/base of pronotum: 1.43; ratio width of head/width of pronotum: 0.86; ratio length/width of elytra: 1.67.

Colour: Piceous, head and pronotum feebly lighter. Labrum, palpi, antennae, and legs yellowish.

Head: Elongate and narrow, almost parallel, posteriorly strongly and elongately rounded off. Anterior part in front of eyes elongate. Dorsal surface little convex. Eyes small, depressed, about 1/4 of length of orbits to beginning of posterior curvature. Clypeus anteriorly slightly convex. Labrum anteriorly fairly excised. Mandibles short. Mentum with strong unidentate tooth. Labium truncate. Maxillary palpus rather large, basal segment very wide, terminal segment comparatively thick, short, obtuse

at apex. Terminal segment of labial palpus large, wide. Antennae moderately short, slightly surpassing middle of pronotum. Median segments almost as long as wide, 1st segment but slightly longer than 3rd, 3rd segment not much longer than 2nd. Surface with moderately coarse, rather superficial puncturation, but frons almost impunctate. Microreticulation weak, pilosity fairly dense, inclined anteriorly.

Prothorax: Narrow, elongate, upper surface slightly convex. Apex feebly excised, anterior angles not projecting. Pronotum widest in anterior third, at position of anterior marginal seta, sides gently incurved to apex, with elongate, feeble sinuosity in posterior half. Posterior angles not at all projecting, rounded off. Base narrow, straight. Lateral margins with distinct border line and extremely shallow marginal sulcus. Median line anteriorly weak, in posterior third sulcate. Prebasal grooves shallow. Both, anterior and posterior marginal setae present. Surface with distinct microreticulation and with dense, moderately coarse, rugose, fairly superficial puncturation. Pilosity rather dense, erect.

Elytra: Elongate, fairly depressed, slightly widened to apex, widest in posterior fifth. Apex transverse. Shoulders rounded off, though fairly projecting. Striation very weak. Series of marginal pores consisting of 8 humeral pores, 2 pores in posterior third, and 6 apical pores. Microreticulation dense and strong, puncturation dense, moderate, rugose, fairly superficial, hence surface dull, rather rugose. Pilosity dense, inclined posteriorly.

Lower surface: Densely punctate and pilose. Terminal segment of ♀ apparently bisetose.

Legs: Rather elongate. Vestiture of ♂ anterior tarsus unknown.

♂ genitalia: Unknown.

♀ genitalia: Apex of stylomere 2 short, with nematiform seta and a strong, tooth-like ventro-lateral ensiform seta.

Distribution: South India. Known only from type locality.

Habits: Collected by sieving of leaf litter.

### Genus *Colasidia* BASILEWSKY

BASILEWSKY, 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.

Type species: *Colasidia malayica* BASILEWSKY, 1954.

On behalf of certain characters (e. g. convex body shape; short, moniliform antennae; coarse, regular puncturation of elytral striae; lack of microreticulation) the three new species belong to the Indo-australian genus *Colasidia* which is fairly distinct from most other Leleupidiine genera. However, see the note under *Paraleleupidia*.

### Key to species of genus *Colasidia* BASILEWSKY

As so many species have been described very recently, a new key to all 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 than across orbits. 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, more square. . . . . 5
- 2. Pronotum narrow, c.  $0.8 \times$  as wide as long, prebasal sinuosity elongate. 1st segment of antennae c.  $1.5 \times$  as long as 3rd, 3rd segment perceptibly longer than 4th. ♂ aedeagus rather straight on lower surface, apex slightly curved up. Sarawak . . . . . *angusticollis* BAEHR
- Pronotum wider, at least  $0.9 \times$  as wide as long, prebasal sinuosity shorter and more accentuate. 1st segment of antennae short, not much longer than 3rd, 3rd segment only slightly longer than 4th. ♂ aedeagus slightly turned down, or unknown . . . . . 3
- 3. Head short, eyes large, about as long as orbits to beginning of posterior curvature. Head less than  $1.35 \times$  as long as wide. Elytra decidedly widest in posterior third (Fig. 3). Sarawak . . . . . *macrops* sp. n.
- Head longer, eyes smaller, about  $\frac{3}{5} \times$  as long as orbits to beginning of posterior curvature, or shorter. Head more than  $1.45 \times$  as long as wide. Elytra more or less widest in middle (Fig. 2) 4
- 4. Eyes larger, c.  $\frac{3}{5} \times$  as long as orbits to beginning of posterior curvature. Pronotum almost as wide as long (Fig. 2). ♂ aedeagus with apex slightly turned down (Fig. 10). Sarawak . . . . . *riedeli*, sp. n.
- Eyes smaller, c.  $\frac{1}{3} \times$  as long as orbits to beginning of posterior curvature. Pronotum slightly narrower, c.  $0.9 \times$  as wide as long. ♂ aedeagus unknown. New Guinea. . . *papua* DARLINGTON
- 5. Eyes small, at most  $\frac{1}{3}$  of length of orbits . . . . . 6
- Eyes larger, c. half as long as orbits . . . . . 10
- 6. Head decidedly trapezoidal, as wide as pronotum. Posterior angles of head only feebly rounded off. Elytral punctature rather weak. Singapore. . . . . *malayica* BASILEWSKY
- Head less trapezoidal, usually narrower than pronotum. Posterior angles of head somewhat rounded off. Elytral puncturation coarse . . . . . 7
- 7. Pronotum strongly cordiform, base only half as wide as widest part. Shoulders strongly produced. Large species (5.5 mm from description). Sabah . . . . . *gerardi* PERRAULT
- Pronotum less cordiform, base at least  $\frac{2}{3} \times$  as wide as widest part. Shoulders less strongly produced. Smaller species (less than 5.2 mm to apex of abdomen) . . . . . 8
- 8. Elytra short and wide, c.  $2 \times$  as wide as pronotum. Pronotum short, c. as wide as long, strongly sinuate posteriorly. Head shorter, ratio length/width less than 1.5. . . . . 9
- Elytra elongate, narrow,  $1.75 \times$  as wide as pronotum. Pronotum decidedly longer than wide (ratio more than 1.15), less strongly sinuate posteriorly. Head longer, ratio length/width over 2. North Queensland, Australia . . . . . *montheithi* BAEHR
- 9. ♂ aedeagus unknown. New Guinea . . . . . *madang* DARLINGTON
- ♂ aedeagus short, compact, apex very short and obtuse (Fig. 12). Sarawak. . . . *pumila*, sp. n.
- 10. Larger and wider species (c. 4.8 mm long to apex of elytra). Pronotum wide (ratio width/length c. 1). Head wide and short, feebly widened to posterior border. Antennae longer, 3rd segment decidedly longer than 4th. ♂ aedeagus hooked at apex. Sarawak. . . . *taylori* BAEHR
- Smaller and narrower species (c. 4 mm long). Pronotum narrower (ratio width/length c. 0.9). Head longer, narrower, remarkably widened to posterior border. Antennae short, 3rd segment barely longer than 4th. ♂ aedeagus gently upturned at apex. Sarawak. . . . . *brevicornis* BAEHR

*Colasidia riedeli*, sp. n.

(Figs 2, 6, 10)

Holotype: ♂, Sarawak, Belaga Dist., Long Linau, 5 km s., 18.–19. III. 1990, A. RIEDEL (ZSM-CBM).

Diagnosis:

Moderately large, reddish-piceous species with rather elongate, parallel, posteriorly strongly rounded head, cordate prothorax, and fairly depressed, moderately widened elytra. Further distinguished by medium-sized eyes and projecting, attenuate, almost straight apex of ♂ aedeagus.

Description

Measurements: Length: 4.6 mm; width of elytra: 1.72 mm; ratio length/width of head: 1.45; ratio width/length of pronotum: 0.98; ratio widest part/base of pronotum: 1.48; ratio width of head/width of pronotum: 0.72; ratio length/width of elytra: 1.42.

Colour: Piceous, head and pronotum reddish-piceous. Labrum, palpi, antennae, and legs dark yellowish.

Head: Moderately elongate, parallel, posteriorly even slightly attenuate, orbits posteriorly strongly and elongately rounded off. Upper surface slightly convex (more depressed than following species!). Eyes laterally slightly projecting, rather large, c.  $\frac{1}{3}$  of length of complete orbits, c.  $\frac{3}{5}$  × as long as orbit to beginning of curvature. Clypeus anteriorly straight. Labrum anteriorly slightly excised. Mandibles short. Mentum with unidentate tooth. Labium truncate. Maxillary palpus very narrow, elongate, basal segment barely thickened, terminal segment narrow, rather acute. Terminal segment of labial palpus very large. Antennae rather short, barely attaining 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, highly glossy. Pilosity sparse, rather elongate, anteriorly inclined.

Prothorax: Strongly cordiform, about as long as wide, upper surface rather depressed. Sides very convex in anterior two thirds, strongly incurved to anterior angles, widest slightly in front of middle. Apex narrow, feebly concave, anterior angles moderately acute, not projecting. Base rather wide, sides strongly sinuate in front of the projecting posterior angles which are marked by a tiny denticle. Base laterally excised. Lateral margin with distinct border line and with shallow and narrow marginal sulcus. Marginal pores not visible within coarse puncturation, marginal setae apparently absent. Median line fine, inconspicuous. Prebasal grooves moderately deep. In middle of surface with wide depression reaching from lateral border to near median line. Surface with moderately dense, very coarse puncturation, without microreticulation, slightly uneven, very glossy. Pilosity rather sparse, short, erect.

Elytra: Moderately wide, laterally evenly curved, widest shortly behind middle, upper surface moderately convex. Shoulders wide, rounded off. Apex rather narrow, transverse, feebly convex. Striae marked by rows of coarse punctures, intervals fairly convex. 3rd stria apparently without fixed setae. Series of marginal pores very difficult to detect, apparently consisting of 6 basal, 3 postmedian, and 7 apical pores. Surface without microreticulation, very glossy. Pilosity regular, rather sparse, fairly short, inclined posteriorly.

Abdomen: Densely punctate and with rather short pilosity. ♂ terminal sternite apparently 2-se-tose.

Legs: Rather elongate. ♂ anterior tarsi not expanded, with feeble vestiture on three basal segments.

♂ genitalia: Aedeagus elongate, lower surface feebly concave, apex attenuate, straight, tip rounded off. Internal sac strongly folded and with a horizontal, sclerotized tooth near apex. For parameres see fig. 10.

♀ genitalia: Unknown.

Distribution: Sarawak. Known only from type locality.

Habits: Collected by sieving of leaf litter.

*Colasidia macrops*, sp. n.

(Figs 3, 7, 11)

Holotypus: ♀, Sarawak, Belaga, 16. III. 1990, leg. A. RIEDEL (ZSM-CBM).

Diagnosis

Moderately large, piceous species with short, parallel, posteriorly strongly rounded head, cordate prothorax, and short, posteriorly considerably widened elytra. Further distinguished by very large eyes, very sparse puncturation of head, and rather depressed centre of upper surface of elytra.

Description

Measurements: Length: 4.4 mm; width of elytra: 1.78 mm; ratio length/width of head: 1.33; ratio width/length of pronotum: 0.98; ratio widest part/base of pronotum: 1.50; ratio width of head/width of pronotum: 0.81; ratio length/width of elytra: 1.33.

Colour: Piceous, head and pronotum very feebly lighter. Margin and suture of elytra indistinctly lighter. Labrum, palpi, antennae, and legs yellowish.

Head: Short, fairly wide, parallel, posteriorly strongly and widely rounded off. Upper surface rather convex, especially between eyes. Eyes laterally faintly projecting, very large, more than half as long as orbits, about as long as orbits to beginning of curvature. Clypeus anteriorly faintly concave. Labrum slightly excised. Mentum with unidentate tooth. Labium truncate. Maxillary palpus rather narrow and elongate, basal segment not much widened, terminal segment narrow, feebly obtuse. Labial palpus very large, transverse. Antennae rather short, slightly surpassing middle of pronotum. Median segment feebly wider than long, 3rd segment slightly shorter than 1st, almost twice as long as 2nd segment. Surface with very sparse, though coarse puncturation, almost without microreticulation, highly glossy. Pilosity very sparse, rather short, inclined anteriorly.

Prothorax: Strongly cordiform, about as long as wide, upper surface rather depressed. Sides very convex in anterior  $\frac{2}{3}$ , strongly incurved to apex (but less so than *C. riedeli*), posteriorly deeply sinuate, sides widest in anterior third. Apex fairly narrow, concave, anterior angles acute, slightly produced. Posterior angles acute, slightly projecting laterally, without a definite denticle. Base rather wide, laterally excised. Lateral margin with distinct border line and narrow marginal sulcus. Marginal pores not discernible within strong puncturation, marginal setae apparently absent. Median line distinct, though rather shallow. Prebasal grooves rather shallow, lateral depression in middle of surface shallow, indistinct. Surface with rather sparse, very coarse puncturation, without microreticulation, highly glossy. Pilosity sparse, fairly short, erect.

Elytra: Rather short and wide, upper surface moderately convex, remarkably widened towards apex, widest in posterior fifth. Apex wide, transversely convex. Striae marked by rows of regular, very coarse punctures, intervals rather convex. 3rd stria apparently without fixed setae. Marginal pores difficult to detect, apparently consisting of 7 basal, 3 postmedian, and 6 apical pores. Surface without microreticulation, very glossy. Pilosity sparse, regular, rather short, inclined posteriorly.

Abdomen: Densely punctate and with rather short pilosity. Terminal sternite apparently 2-setose.

Legs: Rather elongate. Vestiture of ♂ anterior tarsus unknown.

♂ genitalia: Unknown.

♀ genitalia: Apex of stylomere 2 rather elongate, slightly obtuse, apparently without nematiform seta, but with 2 very elongate, narrow ventro-lateral ensiform setae close to base of stylomere.

Distribution: Sarawak. Known only from type locality.

Habits: Collected by seaving of leaf litter.

*Colasidia pumila*, sp. n.

(Figs 4, 8, 12)

Holotype: ♂, Sarawak, Belaga, 16. III. 1990, leg. A. RIEDEL (ZSM-CMB).

Diagnosis

Small, rather wide, convex, piceous-brown species with posteriorly clearly widened head, strongly cordate prothorax, and rather short, ovate elytra. Further distinguished by strongly denticulate posterior angles of prothorax and by short, compact, wide ♂ aedeagus with extremely short, wide, obtuse apex and two strongly sclerotized plates in middle of internal sac.

Description

Measurements: Length: 3.7 mm; width of elytra: 1.46 mm; ratio length/width of head: 1.17; ratio width/length of pronotum: 1.07; ratio widest part/base of pronotum: 1.71; ratio width of head/width of pronotum: 0.90; ratio length/width of elytra: 1.30.

Colour: Uniformly piceous-brown. Labrum, mandibles, palpi, antennae, and legs dirty yellowish.

Head: Rather short and wide, clearly widened to posterior border, here shortly rounded off. Upper surface rather convex. Eyes small, laterally not projecting,  $\frac{1}{3} \times$  as long as orbits. Clypeus anteriorly almost straight. Labrum slightly excised. Mentum with unidentate tooth. Labium truncate. Maxillary palpus rather narrow and elongate, basal segment narrow, terminal segment narrow, slightly obtuse at apex. Labial palpus very large, transverse. Antennae short, just attaining middle of pronotum, median segments slightly wider than long, 3rd segment less than  $\frac{2}{3}$  of length of 1st, not much longer than 2nd segment. Surface with sparse, though very coarse puncturation, without microreticulation, highly glossy. Pilosity sparse, inclined anteriorly.

Prothorax: Very strongly cordiform, distinctly wider than long, anteriorly very wide, apex even wider than base, prothorax widest in anterior fifth. Upper surface rather convex. Apex slightly concave, anterior angles fairly acute, barely projecting. Sides in posterior  $\frac{2}{5}$  very deeply sinuate, posterior angles acute, projecting. Base narrow, laterally excised. Lateral margin with distinct border line and very narrow marginal channel. Anterior marginal seta present, situated at widest part of border. Median line distinct, slightly impressed. Prebasal grooves narrow, rather shallow. Dorsal surface evenly convex, with rather sparse, very coarse puncturation, without microreticulation, highly glossy. Pilosity sparse, rather short, erect.

Elytra: Short and wide, slightly widened behind middle, widest in posterior  $\frac{3}{5}$ , upper surface convex. Shoulders rather wide, evenly rounded off. Apex fairly wide, transversely convex. Striae marked by regular rows of very coarse punctures, intervals slightly convex. 3rd stria perhaps with three fixed setae. Series of marginal pores difficult to differentiate, apparently consisting of 7 basal, 3 postmedian, and 5 apical pores. Surface without microreticulation, very glossy. Pilosity sparse, rather short, much inclined posteriorly.

Abdomen: Densely punctate and with rather short pilosity. ♂ terminal sternite apparently 2-setose.

Legs: Rather elongate. ♂ anterior tarsus barely expanded, with feeble vestiture on three basal segments.

♂ genitalia: Aedeagus very short and wide, compact. Apex extremely short, wide, strongly obtuse, not surpassing apex of internal sac. Internal sac in middle with two sclerotized plates. For parameres see fig. 12.

♀ genitalia: Unknown.

Distribution: Sarawak. Known only from type locality.

Habits. Collected by sieving of leaf litter.

## Relationships

As ♂ genitalia of only half of the described species of *Colasidia* are known, still very little can be said on the relationships within this genus. However, there seem to exist two types of ♂ aedeagus, one elongate typus having an elongate, projecting apex, as seen in *C. angusticollis* BAEHR, *C. taylori* BAEHR, *C. brevicornis* BAEHR, and *C. riedeli*, sp. n., and another short and compact type having a short, blunt apex, as apparently in *C. gerardi* PERRAULT and in *C. pumilia*, sp. n. Unfortunately, no males are known of any species outside of Borneo, so it is at present impossible to draw any conclusions of relationships.

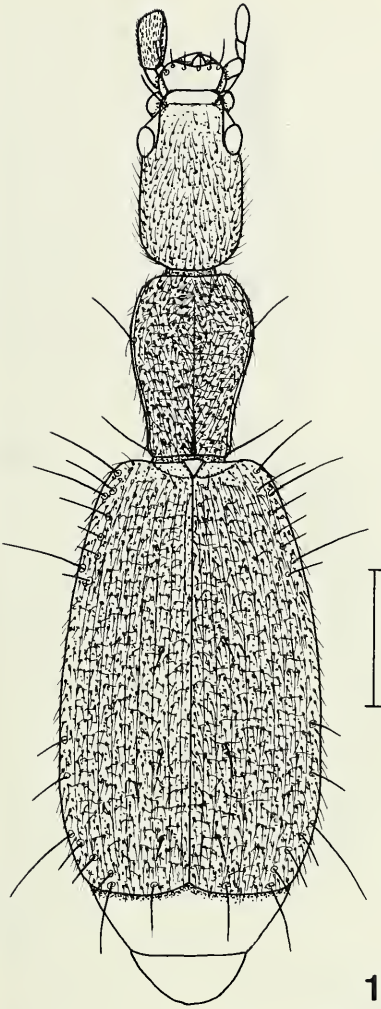
The same applies to biogeographical questions, although Leleupidiini should be very important for biogeographical evidence, due to their inability for flight and their apparent very local distribution. Although any statement on distribution must await much better knowledge of the actual number and range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

## Literature

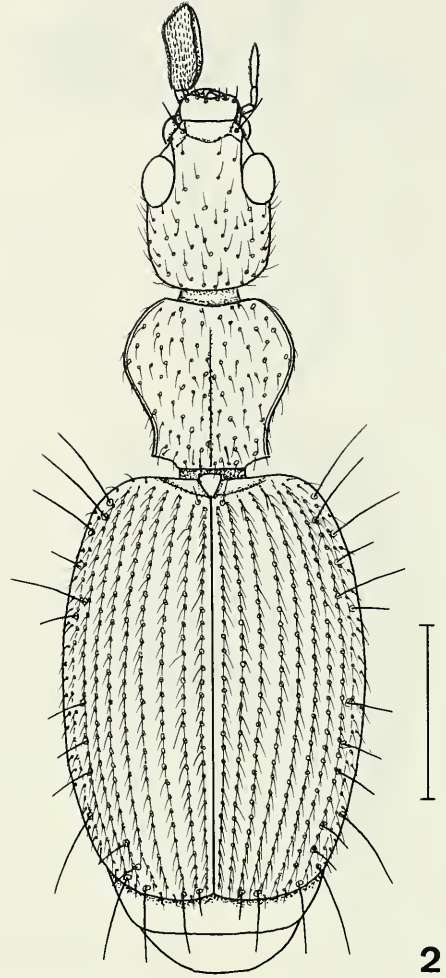
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Fig. 1. *Paraleupidia linearis*, sp. n. ♀ holotype. Scale: 1 mm.

Fig. 2. *Colasidia riedeli*, sp. n. ♂ holotype. Scale: 1 mm.

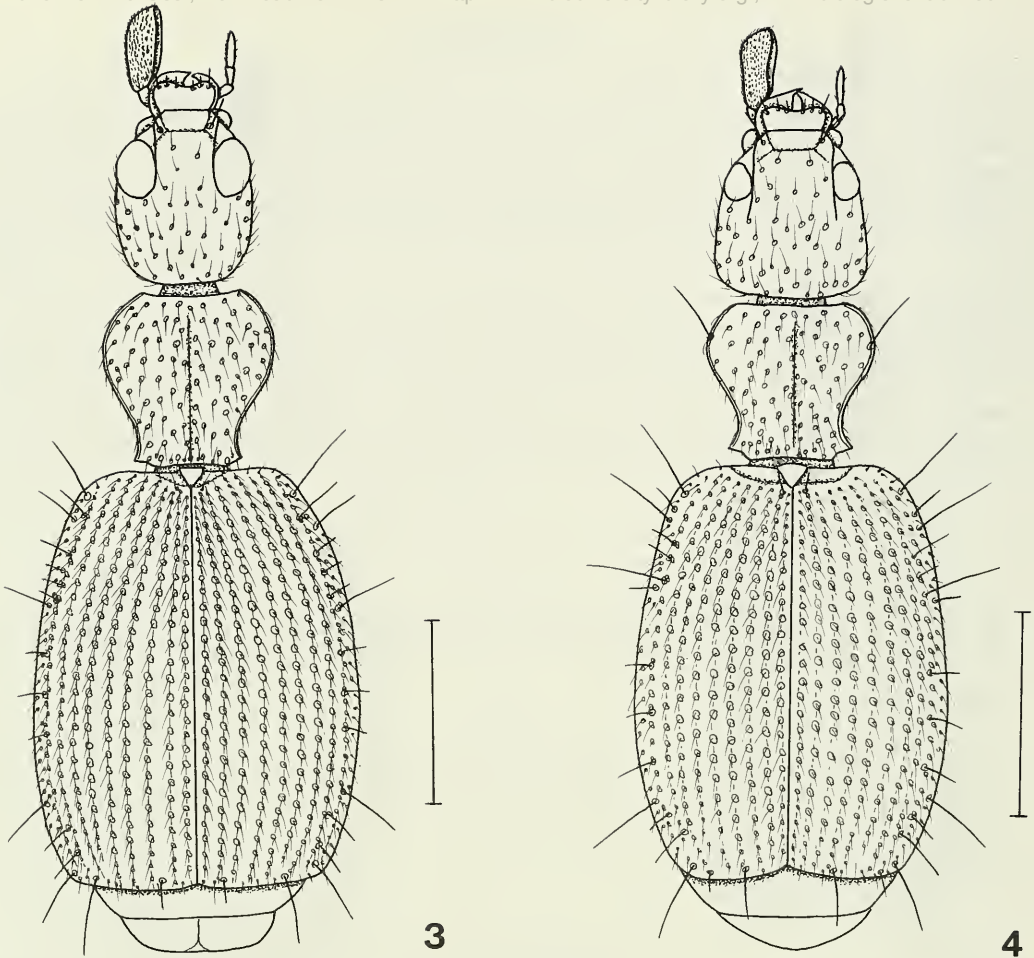
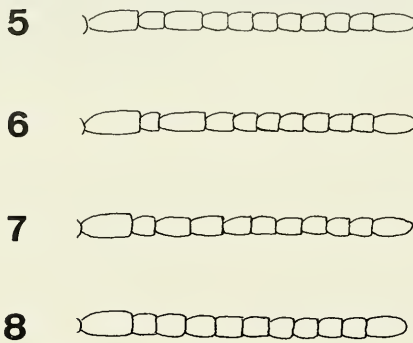


Fig. 3. *Colasidia macrops*, sp. n. ♀ holotype. Scale: 1mm.

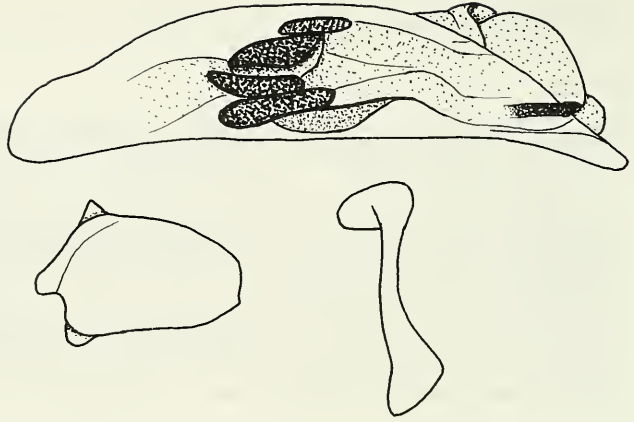
Fig. 4. *Colasidia pumila*, sp. n. ♂ holotype. Scale: 1mm.



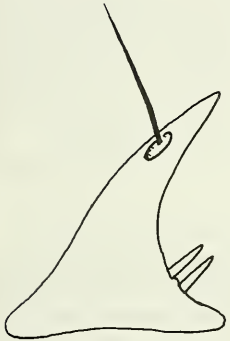
Figs 5.–8. Antennae. 5. *Paraleleupidia linearis*, sp. n. 6. *Colasidia riedeli*, sp. n. 7. *Colasidia macrops*, sp. n. 8. *Colasidia pumila*, sp. n. Not to scale.



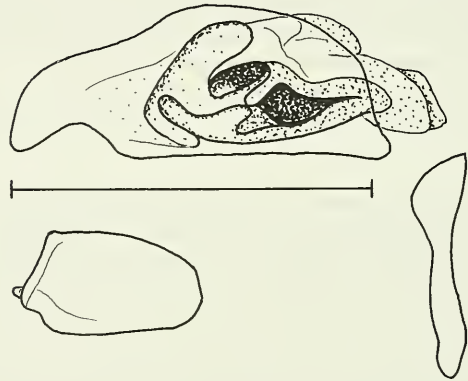
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10



11



12

Figs 9.–12. ♂ and ♀ genitalia. 9. *Paralelepia linearis*, sp. n.: ♀ stylomere 2. 10. *Colasidia riedeli*, sp. n.: ♂ aedeagus. 11. *Colasidia macrops*, sp. n.: ♀ stylomere 2. 12. *Colasidia pumila*, sp. n.: ♂ aedeagus. Scale in figs 10 and 12: 0.5 mm.

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