

REVISION OF SOME HYBOSORINE GENERA FROM THE INDO-MALAYAN SUBREGION: *MICROPHAEOCHROOPS*, *MICROPHAEOLODES*, *MIMOCOELODES*, *PANTOLASIVS* AND *PHAEOCHRIDIUS* (COLEOPTERA: SCARABAEIDAE: HYBOSORINAE)

by

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Key words: Coleoptera; Scarabaeidae; Hybosorinae; *Microphaeochroops*; *Microphaeolodes*; *Mimocoelodes*; *Pantolasius*; *Phaeochridius*; key; distribution; Indo-Malayan subregion.

A taxonomic revision of the Hybosorine genera *Microphaeochroops* Pic, *Microphaeolodes* Kuijten, *Mimocoelodes* Pic, *Pantolasius* Lansberge and *Phaeochridius* Lansberge is given. *Microphaeochroops nigrosetosus*, *Microphaeochroops varius*, *Microphaeolodes mulumontis* and *Pantolasius bandaharae* are proposed as new species, and *Microphaeolodes* as a new genus. Lectotypes are designated for *Microphaeochroops peninsularis* Arrow, *Phaeochridius derasus* (Harold) and *Phaeochridius haroldi* Fairmaire. *Phaeochridius haroldi* Fairmaire is synonymized with *Phaeochridius derasus* (Harold); *Phaeochridius benderitteri* Pic and *Phaeochridius cinereicollis* Arrow are synonymized with *Phaeochridius uniformis* Arrow.

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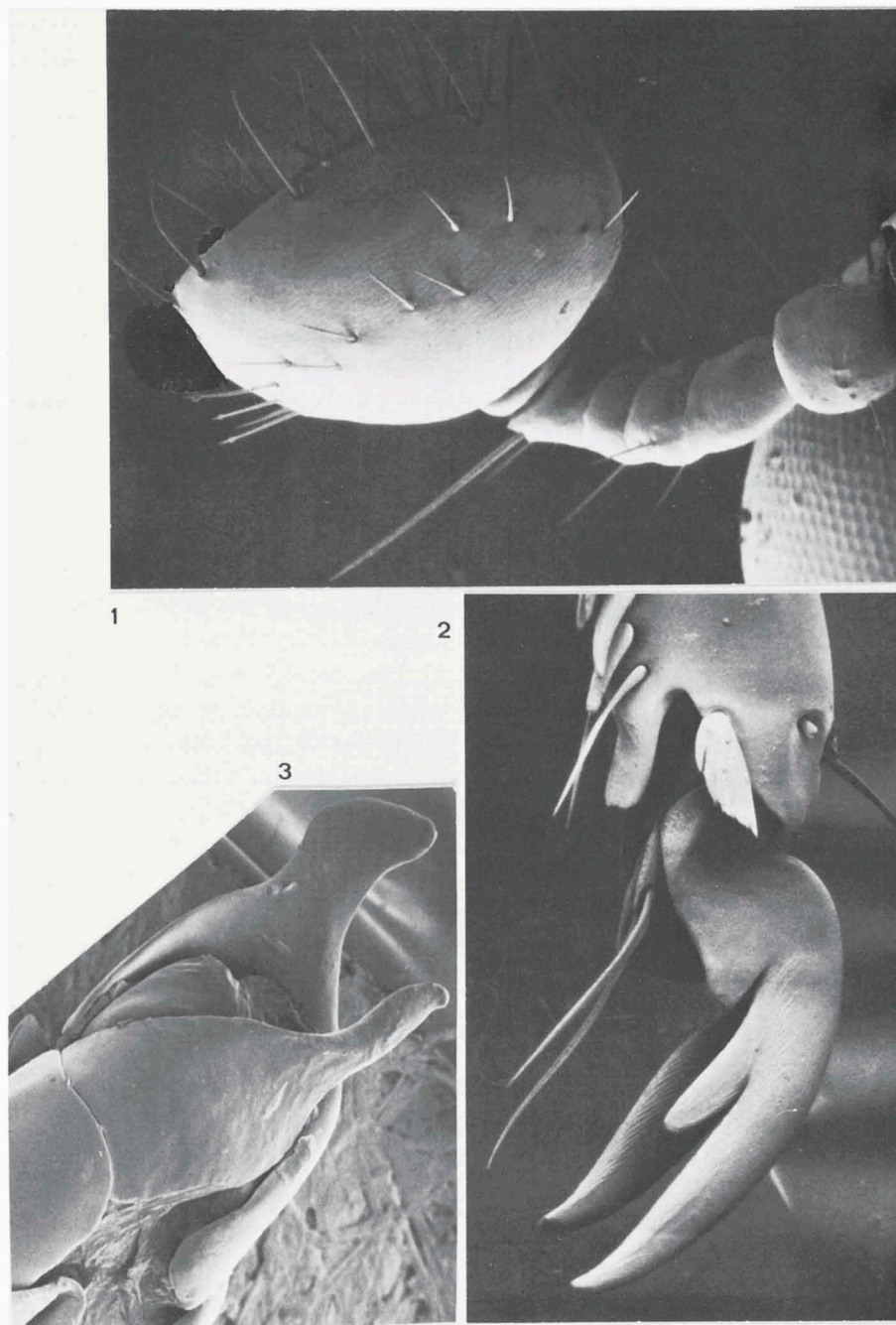
INTRODUCTION

After my studies of *Phaeochrous*, *Phaeochroops*, *Celaenochrous* and *Hybosorus* from Asia (Kuijten, 1978, 1981, 1983, 1984), some genera restricted to the Indo-Malayan subregion will be treated here. Some of the species are extremely poorly represented in the collections, only a single or a few specimens being known. Nevertheless, with some intensive, long-term research and collecting projects in progress or being planned for the near future (Wallace Project of the Royal Entomological Society of London, Sulawesi; Royal Geographical Society Expedition to Gunung Mulu National

Park, Borneo), a revision of the material available at this moment, albeit partly preliminary, may be useful as a working base.

KEY TO THE HYBOSORINE GENERA OF BURMA, THAILAND , "INDO-CHINA", MALAYSIA, AND INDONESIA EXCLUSIVE OF NEW GUINEA AND SATELLITE ISLANDS

1. Terminal segments (mostly three) of antennae, together forming the "club", each with a single, more or less long, lamelliform extension on anterior side, or first segment of club cupuliform . . . (Scarabaeoidea) 2
 - Terminal segments not showing this construction other Coleoptera
2. First segment of the three-segmented antennal club cupuliform, more or less enclosing the two following segments (fig. 1); labrum distinctly protruding beyond clypeus, well visible from above 3
 - Not this combination of characters non-Hybosorines
3. Antenna with eleven segments some non-tropical Geotrupidae
 - Antennae with ten segments (Scarabaeidae: Hybosorinae) 4
4. Underside of first three tarsal segments, apart from the normal, fine, acute setae, with, often somewhat fan-like, tufts of depressed, somewhat fusiform to claviform, yellowish setae; labro-clypeal suture hardly or not visible 5
 - Underside of tarsal segments with only the normal setosity; labro-clypeal suture evident, or hardly or not visible 6
5. Underside of fore tibia with a downward tooth near articulation of tarsus; first segment of fore tarsus with a ventro-apical, dentiform protrusion; c. 5-6 mm; Vietnam, peninsular Malaysia, Borneo
 - *Microphaeochroops* (p. 7)
 - Fore tibia and fore tarsus without these characters; c. 3.6-3.8 mm; Sumatra *Pantolasius* (p. 22)
6. Pronotum and elytra virtually without setae, apart from the marginal fringes and, in some cases, scarce and extremely short discal setae, only visible under favourable illumination and magnification. Only the males of *Phaeochrous dissimilis* have the anterior part of elytra glabrous and the posterior part setose 7
 - Pronotum, or elytra, or both, with variably numerous and densely placed setae; length of setae from somewhat less than one to many diameters of punctures 8
7. External claw of fore tarsus of male with a deep incision (fig. 2), in female all claws simple, evenly curved and shorter than in male; margin of labrum not serrulate; lateral parts of pronotum in male strongly flattened, hardly



Figs. 1-2. *Phaeochrous emarginatus* Castelnau. 1, antenna with cupuliform first segment of club; 2, external claw of fore tarsus of male. Fig. 3. - *Phaeochridius deraus* (Harold), parameres in lateral view. All c. 100 \times .

- or not so in female; mostly more or less dark reddish brown; N. W. India to S. Japan and N. Australia, and Afrotropics
- Phaeochrous* (see Kuijten, 1978, 1981a, 1981b, 1984)
- All claws of male and female virtually identical, simple, evenly curved; margin of labrum serrulate; lateral areas of pronotum not flattened; mostly nearly black; tropics and warm temperate parts of Africa and Eurasia, southern U.S.A. *Hybosorus* (see Kuijten, 1983)
8. Eye-canthus without dense tuft of long setae; labro-clypeal suture hardly visible; external margin of fore tibia with two large teeth, the third, proximal one much smaller or equal to the adjacent accessory denticles, six or seven of which are present in basal part of lateral margin; c. 4-6 mm 9
- Eye-canthus with a tuft of variably long and dense setae; labro-clypeal suture evident; proximal lateral tooth in fore tibia much larger than the adjacent accessory denticles, of which mostly more than nine are present; c. 7.5 to 17.5 mm 10
9. Eyes not visible from above; apex of mandibles somewhat curved upward; labrum with subrectilinear lateral margins, and a median, erect, weak denticle on apex; 5.7 mm (only one specimen known); N. Vietnam *Mimocoelodes minutus* (p. 27)
- Eyes visible from above; apex of mandibles strongly curved upward; labrum with somewhat sinuate lateral margins, apical part with a fine, sharp, longitudinal carina; 4 mm (only specimen known); N. Borneo *Microphaeolodes mulumontis* (p. 30)
10. The scarce setae on elytra restricted to marginal and apical areas, most setae shorter than diameter of punctures; no conspicuous differences between setigerous and non-setigerous punctures; pronotal disc virtually without setae; c. 7.5-9.5 mm; Sumatra and Borneo
- *Phaeochridius* (p. 31)
- Most of the numerous setae on elytral disc longer, mostly considerably, than diameter of punctures; except in a few species, the setae arising from much smaller punctures than the predominant, non-setigerous ones; pronotal disc setose; c. 8.5-17 mm; India to Taiwan, Palawan and Java *Phaeochroops* (see Kuijten, 1981c)

DESCRIPTIONS, NOTES, SYNONYMIES¹⁾**Microphaeochroops Pic**

Microphaeochroops Pic, 1930: 12

Type-species. – *Microphaeochroops hirsutus* Pic, by monotypy.

Diagnosis. – Length c. 5-6 mm. Suture between labrum and clypeus very fine, or hardly or not distinguishable. Anterior margin of labrum with a more or less developed, median, upward denticle. Apex of mandible acute, often with a subapical, sharp denticle. Lateral margins of pronotum serrate. Dorsal surface of head, pronotum and elytra with numerous setae of variable size, but always much longer than diameter of punctures. Underside of first three tarsal segments of all legs with tufts of flattened, yellowish, somewhat claviform or fusiform setae, apart from the normal, slender, acute, darker ones. External margin of fore tibia with only two large teeth, the third, proximal, one subequal to the adjacent accessory denticles. Ventral surface of apex of fore tibia, near tarsal articulation, with a downward tooth. First segment of fore tarsus with an inward and downward dentiform protrusion.

Note. – Pic (1930) spelled *Microphaechroops*, but as he stressed its small size in relation to *Phaeochroops*, I assume he meant *Microphaeochroops*. Furthermore, Pic misspelled the name in an other way on his type label, but intercalated here the missing o from the description. I think *Microphaechroops* is an “inadvertent error”, in the sense of article 32 of the Code of Zoological Nomenclature, and the spelling by subsequent authors (Arrow, 1942; Paulian, 1945) has to be maintained.

Pic stated that the genus had the aspect of *Phaeochroops* and *Phaeochridius*, but actually nearly all character states are different in *Microphaeochroops*.

KEY TO THE SPECIES

1. Setosity unicolorous, brownish to yellowish; dorsal surface unicolorous, reddish brown, but margins somewhat lighter by transparency 2
- Setosity unicolorous, brownish to yellowish, or bicolorous, brownish and

¹⁾ In all descriptions the length is given as sum of lengths of head (= distance from anterior margin of labrum to a line connecting the eyes at their shortest distance), pronotum and elytra (= shortest distance between apex of scutellum and apex of elytra).

- black; dorsal surface bicolorous or tricolorous 3
2. Eye-canthus hardly developed; scutellum densely and coarsely punctate; length 4.5-6 mm; N. Vietnam: Chapa *Microphaeochroops hirsutus*
 – Eye-canthus well developed; scutellum with some punctures; length c. 5 mm; Malaysia: Perak *Microphaeochroops peninsularis*
3. Setosity partly dark brown on pronotum, brown on yellow part of elytra, blackish on black part of elytra; dorsal surface yellowish, but posterior part of elytra blackish; length 5.9 mm; Sarawak
 *Microphaeochroops nigrosetosus*
 – Black setosity absent 4
4. Setosity brownish; pronotum brownish, scutellum and a circumscutellar patch somewhat lighter brown, rest of elytra blackish brown; length 4.9 mm; Sarawak *Microphaeochroops laetus*
 – Setosity various shades of yellowish brown; pronotum rather dark reddish brown, elytra yellowish brown, with a large, dark reddish brown, posterolateral patch; length 5 mm; Sarawak *Microphaeochroops varius*

Microphaeochroops hirsutus Pic, 1930

(figs. 4-5, 8-13)

Microphaeochroops hirsutus Pic, 1930: 12 (description, type-locality Tonkin); Arrow, 1942: 925 (comparison of *Microphaeochroops hirsutus* with Arrow's two new species); Paulian, 1945: 38 (redescription of genus and species, generic key, figure).

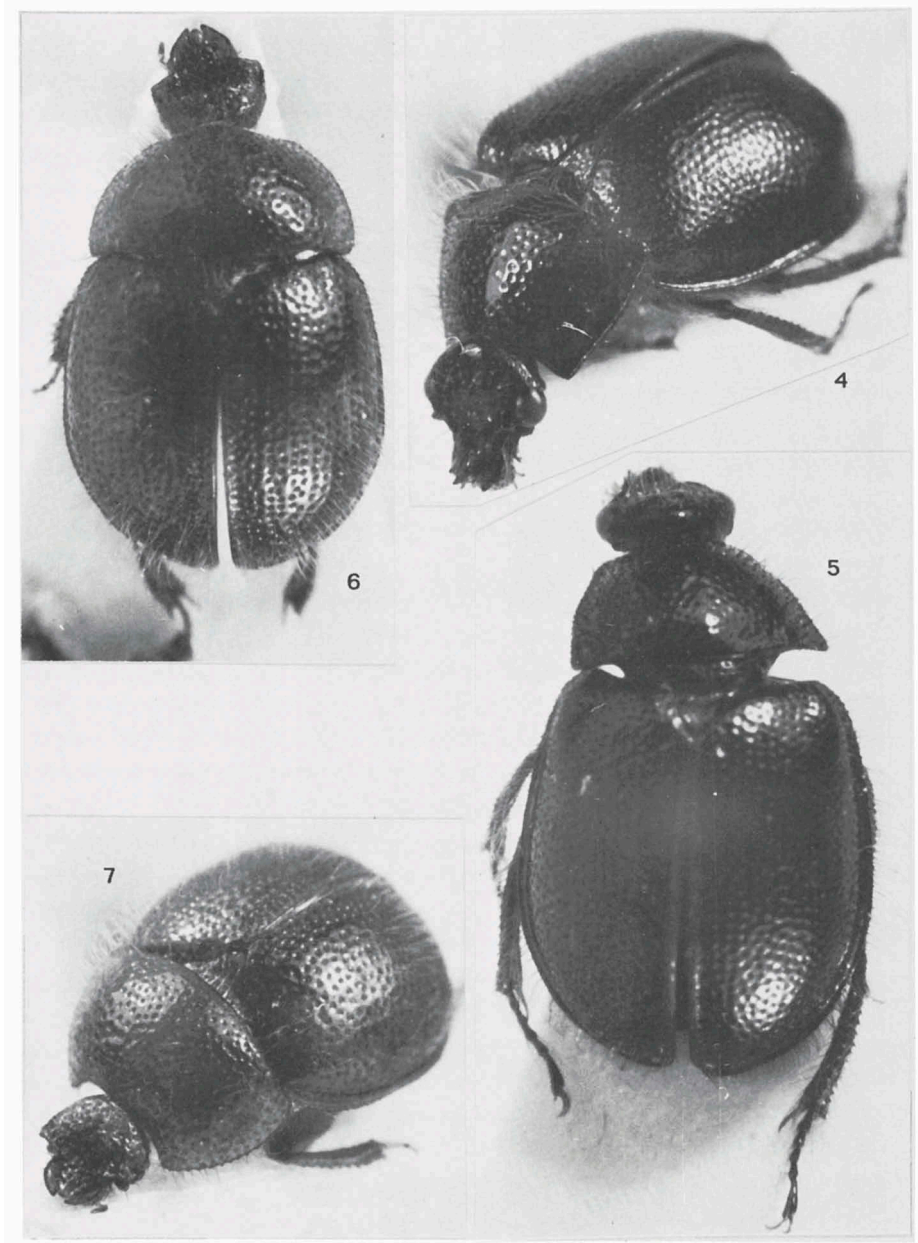
Type-material. – I studied the holotype (Paris), a ♀ with labels “Chapa”, Pic’s hand; “type”, white, Pic’s hand; “Type”, red, print; “*Microphaeochrops hirsutus* Pic” [sic], Pic’s hand; “Museum Paris, Coll. M. Pic”, blue, print; the specimen bears a small microscopic slide with a tarsus, made by me. Chapa is in N. Vietnam (Tonkin).

Material examined. – Apart from the holotype I saw three specimens (Leiden, Paris) with labels “Chapa”; “n. gen. peut-être près *Phaeochrous*”; “*Microphaeochrops hirsutus* n.g. n.sp.”, all in Pic’s hand; “Museum Paris, Coll. M. Pic”, blue, print. The specimens were originally on a single pin, the Leiden specimen now with a transcription of Pic’s texts. One specimen is a ♀, in one the abdomen is missing, and in one the abdomen is badly damaged. Pic’s description gives only a single length, and the three specimens do not bear any indication of being included in the description. I consider them without nomenclatural status, though they might be syntypes.

Redescription of ♀ holotype. – Colour: Reddish brown, slightly lighter along margins by transparency.

Length: $1.2 + 1.5 + 3.3 = 6.0$ mm.

Head: Anterior margin of labrum with a weak erect denticle. Labrum somewhat trapezoid; suture between labrum and clypeus not visible. Lateral margins of clypeal part of head capsule somewhat concave and strongly diverging. The eyes are somewhat incised by the lateral margin, but an eye-



Figs. 4-5. *Microphaeochroops hirsutus* Pic, holotype, c. 4.5 mm. Figs. 6-7. *Mimocoelodes minutus* Pic, holotype, c. 3.5 mm. Photographs by J. Krikken.

canthus is hardly developed. Surface shining, with rather widely spaced, ocellate, coarse punctures; a zone of much finer and much denser punctures between posterior parts of eyes. The large punctures each with an erect seta, often somewhat curved in anterior direction. Length of setae variable, but always considerable.

Mouth parts: Apex of mandible acutely bidentate, external surface with some punctures, bearing long setae. Maxilla with a thick tuft of flattened, apically rounded setae, protruding from beyond the labrum, and concealing part of apex of mandible. These setae plumose, but the plumosity only visible under high magnification (microscopical slide). This type of maxillar hairtufts is found in several other Hybosorine genera as well, but in most cases they are much less developed and do not protrude conspicuously beyond the head capsule.

Pronotum: Anterior margin, seen from antero-dorsally, concave. Lateral margins weakly curved in middle, subrectilinear before and behind middle, and diverging towards posterior margin, which is hardly bisinuate. Antero-lateral and postero-lateral angles subrectangular. Lateral margins serrulate, the incisions with a long, somewhat curved, laterally directed seta. Posterior margin bordered by a series of fine, setigerous punctures. Surface shining, with rather deep and close, round, ocellate punctures; along lateral and posterior margins the punctation considerably finer than on disc. A trace of a median, longitudinal, impunctate zone is present. Most punctures with an erect, apically slightly curved seta; length of setae often nearly ten diameters of punctures.

Scutellum: Triangular, densely and coarsely punctate.

Elytra: Lateral margins weakly convex and diverging in anterior two-thirds, strongly curved and converging over rest of length. Margins bordered by a weak ridge, whose external surface is serrulate and bears a fringe of laterally directed, apically slightly curved setae, arising from the incisions. Setae of fringe long, partly one-third of width of elytron. Marginal ridge internally bordered by a slightly concave depression, slightly widening towards elytral apex. Surface shining, with rather deep, annular, variably large punctures; punctures locally more or less evidently ranged, especially in basal half of elytra, in 18 or 19 longitudinal series. Many punctures, mainly in basal and apical areas of elytron, with a long, erect seta with its apex curved backwards.

Legs: Lateral margin of fore tibia with a large, acute apical tooth, median tooth somewhat smaller, the basal one hardly different from the adjacent accessory denticles, of which 15 to 16 are present. Middle and hind tibiae with some longitudinal ridges, the inner one crenulate, two external ones with approximately 20 well developed spinules; from the incisions arise long setae,

of which the apical ones surpass the apex of third tarsal segment. All claws simple, evenly curved. In all tarsi the first three segments with – apart from the normal, long, slender setae – a tuft of seven or eight flattened, apically round, somewhat claviform, plumose setae, reaching middle of next segment. (Between the described setosity a few very slender, long, segmented, hair-like structures with a strongly elongate and widened terminal segment are present. I could not establish their nature, whether belonging to the insect or being of external, e.g. fungal, origin). Apex of fore tibia and of first segment of fore tarsus with dentiform, downward protrusion on ventral surface.

Abdominal sternites: Sparsely punctate; the punctures annular and bearing fine setae.

Pygidium: Densely punctate; each puncture with a long seta, often as long as half the length of pygidium.

Variation: Setosity may be present on whole elytral surface, or less developed (rubbed off?). Apart from weak variations in punctuation, setosity a.s.o., the specimens hardly differ. Length from 4.5 to 6 mm.

***Microphaeochroops peninsularis* Arrow, 1942**

(figs. 14-18)

Microphaeochroops peninsularis Arrow, 1942: 925 (description; type-locality Jor Camp, Perak, Malaysia; compared with *Microphaeochroops hirsutus*).

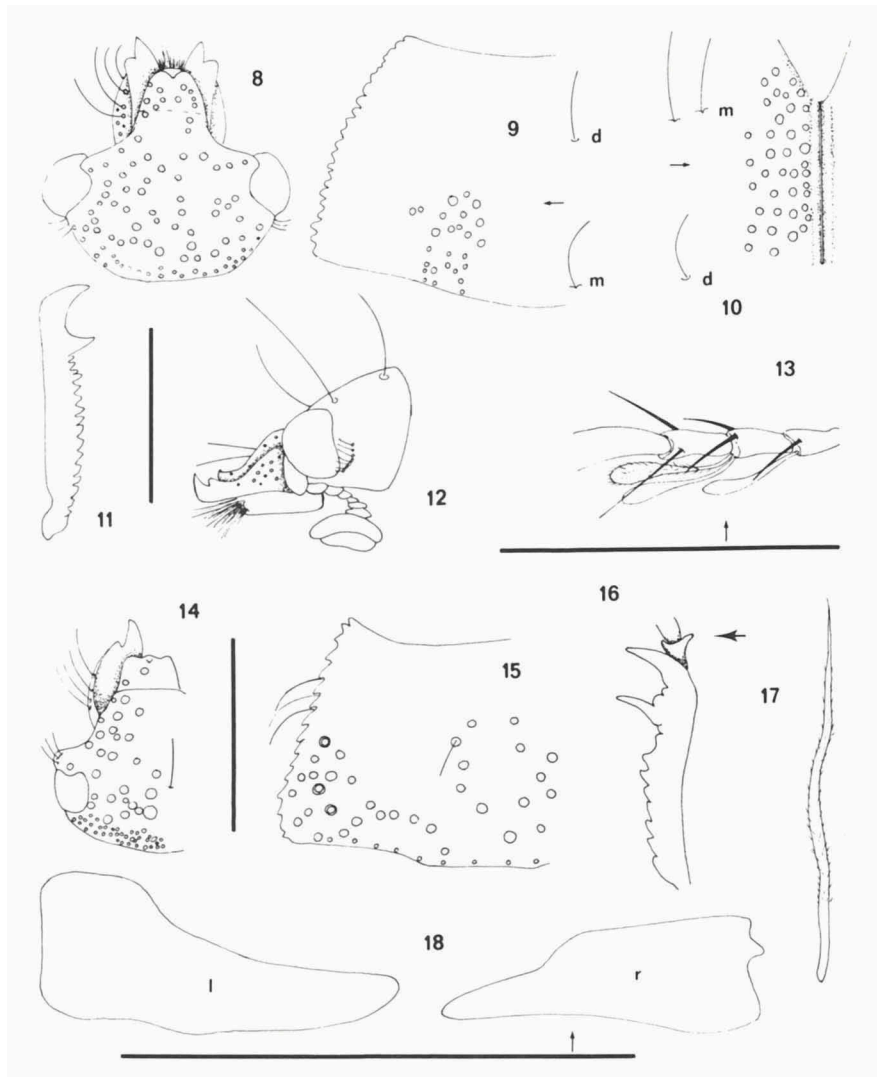
Type-material. – The lectotype ♂ (London), here designated, is labelled “Syntype”, print, blue ring; “Type”, print, red ring; “Malay Penins. B. M. 1931-386”, print; “Malay Penin., Perak F.M.S., Jor Camp 2000’ Aug. 25th 1922, E. Seimund”, hand and print combined; “*Microphaeochroops peninsularis* Arrow type”, Arrow’s hand; Bacchus’ syntype label; small microscopic slide with genital apparatus. One paralectotype, here designated, a ♂ with same labels, but “Type” absent, Arrow’s label reading co-type and the B.M. label 1929-421. The third paralectotype, here designated, with round, blue-ringed label “paralectotype”, erroneously suggesting its designation by Bacchus (1978) (it should be “syntype”, like in the other specimens); same Jor Camp label, with on its underside “Presented [crossed out] by Mr. E. Seimund Sel. Mus.”, hand and print combined; “B.M. 1929-421”; Bacchus’ name and syntype label. All three with my red, typewritten lectotype and paralectotype labels.

Material examined. – Apart from the aforementioned type-specimens I saw three specimens (London) with only same B.M. 1929-421 label, and Jor Camp label but Aug. 28th.

Redescription of ♂ lectotype. – Colour: Reddish brown, marginal parts somewhat lighter by transparency, underside a shade lighter; setosity brownish yellow.

Length: $0.7 + 1.3 + 3.3 = 5.3$ mm.

Head: Labrum subtrapezoid, anterior margin slightly emarginate, and triangularly elevate in middle; lateral margins rectilinear, uninterruptedly con-



Figs. 8-13. *Microphaeochroops hirsutus* Pic, holotype. 8, head; 9, pronotum with discal (d) and marginal (m) setae; 10, elytral punctation, with setae of anterior part of marginal fringe (m) and of disc (d); 11, fore tibia; 12, lateral view of head; 13, tarsal segments 2-5 of middle leg. Figs. 14-18. *Microphaeochroops peninsularis* Arrow, lectotype. 14, head; 15, pronotum; 16, fore tibia; 17, plumose seta of middle tarsus, c. 0.2 mm; 18, left (l) and right (r) parameres in lateral view. Setae at real relative lengths; punctures at real relative diameters and density. Scale lines represent c. 1 mm.

tinued into clypeal margins. Suture between labrum and clypeus virtually rectilinear, but difficult to see. Surface shining, with some annular, setigerous punctures. Clypeus with slightly concave lateral margins, forming a well developed eye-canthus, which bears a tuft of erect setae. Surface shining, with widely spaced, annular punctures of variable diameter, each with a long, erect seta. Between the posterior parts of eyes an area with much finer, dense, simple, non-setigerous punctures, mixed with a few somewhat larger, annular, setigerous ones.

Mouth parts: Mandibles with a sharp apical and a somewhat less sharp antepical tooth. Maxilla with a dense tuft of whitish, flattened setae, protruding from beyond head capsule, but in bad condition.

Pronotum: Anterior margin concave, lateral margins nearly rectilinear, posterior margin weakly bisinuate, its median part rectilinear. Antero-lateral angles sharp, postero-lateral ones rounded. Lateral margins serrate and somewhat elevate, with long, erect setae arising from the incisions and the bases of the denticles. Surface shining, with annular, variably large punctures. Centre of disc nearly impunctate, laterally the punctures widely separate, but locally along lateral margin much closer. Most punctures with a long, erect seta; some relatively very small punctures, along posterior margin, with shorter setae.

Scutellum: Triangular; surface shining, with some setigerous punctures.

Elytra: Lateral margins in anterior half subrectilinear and somewhat divergent, in posterior half strongly curved and convergent. Margins with a sharp ridge, bordered internally by a shallow groove, which widens slightly towards elytral apex; externally the margins are serrate. Long setae, more or less laterally directed, arise from the incisions, and more erect ones from the bases of the denticles of the serration. Setae very long near humerus, gradually shorter towards apex of elytron, where they are about one-fourth of the length at humerus. Surface shining, with variably close, round, annular punctures. The punctures vary slightly in diameter, are locally subseriate, and each one bears a long, erect seta.

Legs: External margin of fore tibia with long, slender, acute, somewhat downward curved apical and median teeth; the basal one hardly differing from the approximately six, partly very weak, accessory denticles. Ventral side of tibia with a downward tooth near articulation of tarsus. First tarsal segment with an interno-ventral, apical, tooth-like protrusion. Underside of first three tarsal segments with some flattened, somewhat widened, slender, apically acute, densely plumose, curved setae on apex of segment, apart from the normal, fine, somewhat longer, tarsal setae. Middle and hind tibiae nearly straight, without transverse ridges, but with some setigerous, serrate, longitudinal ones. The weakly flattened setae on apex of ventral side of first three

tarsal segments in middle and hind legs less curved and slightly longer than in fore tarsus, and the first tarsal segments here without apical dentiform protrusion. All claws simple, evenly and strongly curved.

Abdominal sternites: Shining, with extremely fine punctures, mostly concentrated in lateral and posterior areas. Most punctures with a fine, long, yellowish seta.

Pygidium: Subtriangular. Shining, with very small setigerous punctures, length of setae strongly variable. Margins with a fringe of fine setae, very dense and long in apical part.

Genital apparatus: Left paramere with a long and slender apical processus. Dorsal and ventral margins of right paramere slightly convergent in approximately basal two-thirds; dorsal margin rather abruptly curved downward at two-thirds of length, consequently the apical part much slenderer.

Variation: Some slight variation occurs in characters of punctures and setosity. The eye-canthus may have an acute apex. Six to seven flat, plumose setae on underside of first three tarsal segments (in lectotype difficult to count). Suture between labrum and clypeus in some specimens only visible under high magnification and favourable illumination.

***Microphaeochroops laetus* Arrow, 1942**

(figs. 19-23)

Microphaeochroops laetus Arrow, 1942: 926 (description; type-locality Mount Dulit, Sarawak, Borneo; compared with *Microphaeochroops peninsularis* Arrow).

Type-material. – The holotype (London; Bacchus, 1978), the only specimen known, is labelled "Primitive forest"; "Sarawak, Mt Dulit 4.000 ft. Moss forest 26.x.1932"; "Oxford Univ. Exp., B M Hobby & A. W. Moore, BM 1933-254"; "holotype", white, red ring; all print; "*Microphaeochroops laetus* Arrow type", Arrow's hand; Bacchus' type and name label, hand en print combined.

Redescription of holotype. – Colour: Head and pronotum reddish brown, scutellum and a triangular, not sharply delimited, circumscutellar patch yellowish brown; rest of elytra blackish brown; legs yellowish brown; setosity brownish.

Length: $0.7 + 1.2 + 3.0 = 4.9$ mm.

Head: Anterior margin of the subtrapezoid labrum weakly emarginate, medially angularly elevate, apex of elevation somewhat curved backward. Surface shining, with some fine, shallow punctures. Suture between labrum and clypeus difficult to see. Lateral margins of clypeus strongly divergent. Eye-canthus weak, rounded. Clypeo-frontal disc with a shallow transverse

depression. Surface shining, with round, variably large punctures. The small punctures, mainly situated on clypeus and vertex, simple; the large ones, before and between the eyes, ocellate and often with a long, erect seta.

Mouth parts: Apex of mandible acute and curved upward; a less acute, antepical, upward tooth is present. Lateral surface of mandible with a few fine, round, setigerous punctures. Maxilla with a dense tuft of long, flattened, yellowish setae, protruding far beyond lateral margin of head.

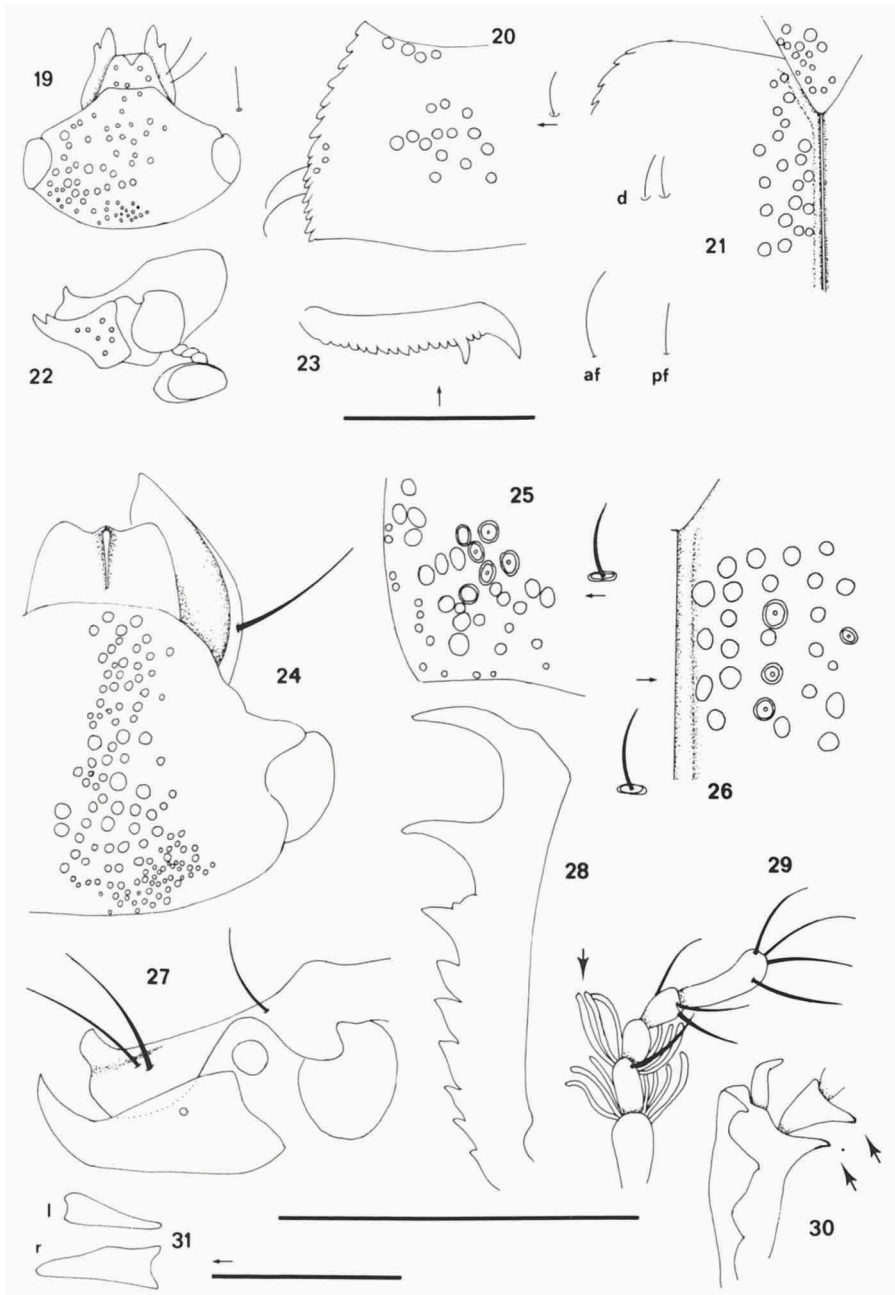
Pronotum: Anterior margin concave. Antero-lateral angles acute. Lateral margins weakly curved, considerably divergent towards the subrectangular postero-lateral angles, serrate, with long setae in the incisions. Posterior margin very weakly bisinuate. Surface shining, with rather widely spaced, round, variably large punctures. The larger punctures ocellate, mostly with a long, some with a short, erect seta; the smaller punctures, mostly situated along lateral margins, simple, without setae. Punctures still more spaced in posterior half of median disc.

Scutellum: Triangular, apex somewhat acute; surface shining, with some very close, large and deep punctures basally, much smaller, less dense, shallow ones apically.

Elytra: Lateral margins strongly curved over most of length, slightly divergent anteriorly, strongly convergent posteriorly. Margins bordered by a fine ridge, its external surface weakly serrulate, with long, laterad setae in the incisions. Dorsal surface of the ridge punctate, with long, erect setae implanted approximately above the bases of the denticles of the serration. A narrow, concave zone separates the ridge from the regularly curved elytral disc. Surface shining, with rather dense, annular, locally more or less longitudinally seriate punctures of considerably varying diameters, the largest ones on disc. Most punctures with a variably long, straight or slightly curved seta.

Legs: Lateral margin of fore tibia with only the apical and median large teeth, the basal one equal to the adjacent accessory denticles, of which about 17 are present. Middle and hind tibiae weakly curved. Fore and middle tarsi missing; the first three segments of hind tarsi with some long, flattened, fusiform, minutely plumose setae on ventral side, reaching apex of next segment; remaining tarsal setae much longer, narrower, more or less circular in cross-section, not plumose. The secondary hairs on the plumose setae only visible under high magnification.

Abdomen and parameres: Because of the small size of the single specimen I did not take it from its card.



Figs. 19-23. *Microphaeochroops laetus* Arrow, holotype. 19, head, with discal seta; 20, pronotum, with discal seta; 21, elytral punctation near scutellum, discal setae (d), setae of anterior (af) and posterior (pf) part of marginal fringe; 22, lateral view of head; 23, fore tibia. Figs. 24-31.

***Microphaeochroops nigrosetosus* spec. nov.**
(fig. 24-31, plate 1)

Type-material. – The ♂ holotype (London), the only specimen known, bears labels “Sarawak: Gunung Mulu Nat. Park, R.G.S. Exped. 1977-78. J. D. Holloway et. al. B.M. 1978-206”; “at light”; “site 20. Mar. – Apr. W. Melinau Gorge, 150 m. 422577 FEG 3. Kerangas MV – understorey”; all print; my name and red, typewritten holotype labels.

Description of ♂ holotype. – Colour: Head, pronotum, scutellum, anterior part of elytra, ventral surface and legs yellow. First segment of antennal club and posterior part of elytra blackish. Yellow and black areas of elytra not sharply separated; punctures in the yellow area with a dark centre. Setosity yellowish, but partly dark brown on pronotum, brownish on yellow part of elytra, and blackish on black part of elytra.

Length: $0.9 + 1.3 + 3.7 = 5.9$ mm.

Head: Anterior margin of labrum slightly concave, angularly elevate in middle; the sharp apex of this elevation weakly curved backward, and prolonged as a fine, sharp ridge towards labro-clypeal suture. Lateral margins somewhat divergent. Traces of the rectilinear labro-clypeal suture only visible under strong magnification and favorable illumination. Surface shining, with about ten shallow, circular punctures, each with a long, forward curved seta. Lateral margins of clypeo-frons divergent, sinuate, somewhat elevate above articulation of antennae. Eye-canthus subangular. Two weak, round tubercles between eyes. Surface of clypeo-frons shining, with shallow, annular punctures of considerably varying diameter. Distances between punctures from one to several diameters. Vertex, between eyes, with much finer, simple punctures. Many of the larger annular punctures with a straight, erect seta.

Mouth parts: Apex of mandible acute, strongly curved upward; no trace of an ante-apical tooth; external surface of mandible with some shallow punctures, each with a very long seta. Maxilla with a dense tuft of long, flattened, plumose, somewhat claviform setae, protruding far beyond head capsule.

Pronotum: Anterior margin weakly bisinuate; lateral margins slightly curved, divergent anteriorly, subparallel posteriorly; posterior margin with three hardly pronounced emarginations. Antero-lateral angles acute, postero-lateral ones obtuse, strongly rounded. Lateral margin bordered by a narrow,

Microphaeochroops nigrosetosus spec. nov., holotype. 24, head; 25, punctation at postero-lateral angle of pronotum, discal seta; 26, elytral punctation near scutellum, discal seta; 27, lateral view of head; 28, fore tibia; 29, right fore tarsus, with plumose seta (arrow); 30, apex of fore tibia and first tarsal segment in lateral view, with denticles (arrows); 31, left (l) and right (r) parameres. Setae at real relative lengths; punctures in fully drawn areas at real relative diameters and density. Scale lines represent c. 1 mm.

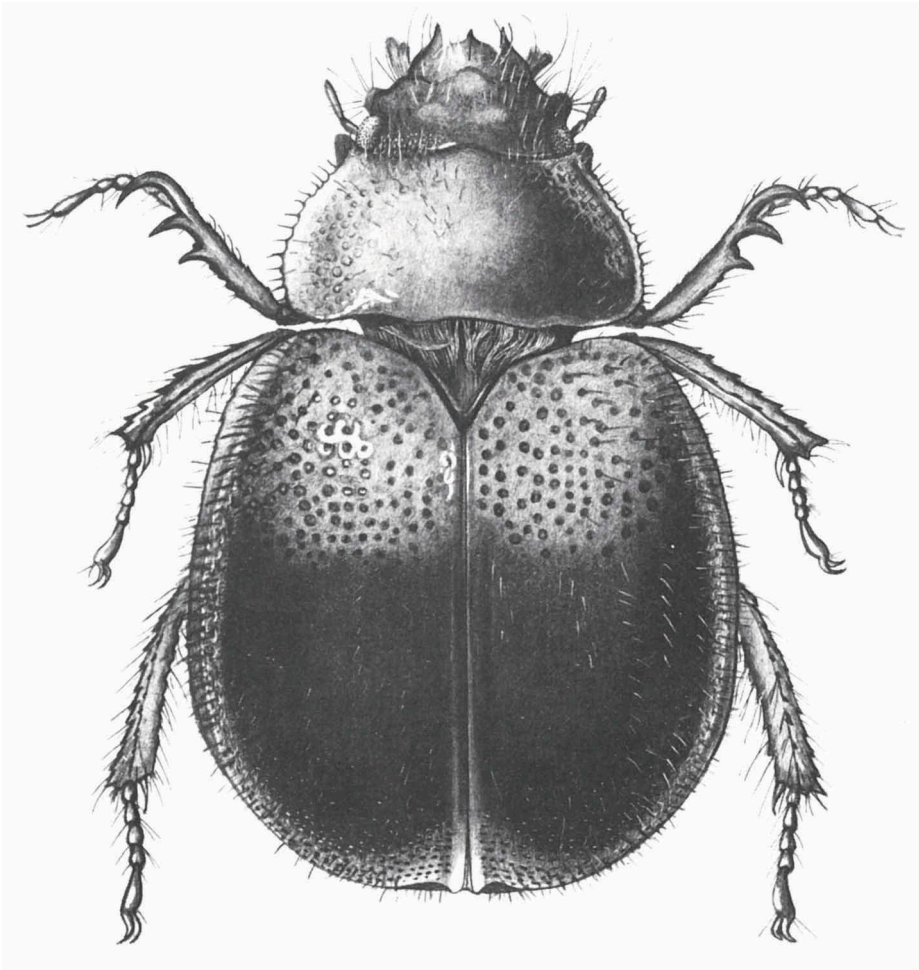


Plate 1. *Microphaeochroops nigrosetosus* spec. nov., holotype, c. 6 mm.

flat zone, smoothly changing into the rather flatly convex disc. Disc shining, with shallow, annular punctures of varying diameter. Distances between punctures strongly varying, but in general punctures widely spaced, and absent in a large median area of posterior part of pronotum. Most of the larger punctures, and the incisions of the lateral serration, with an erect, weakly curved seta.

Scutellum: Triangular; surface shallowly concave, shining, with some setigerous punctures.

Elytra: Lateral margins somewhat curved and divergent anteriorly, strongly curved and convergent posteriorly. Margins bordered by a narrow, sharp

ridge, whose external surface is serrulate; erect setae arise from the incisions and from the denticles of the serration. Setae anteriorly somewhat longer than discal ones, gradually shorter towards apex of elytron, where they are equal to or slightly shorter than most of the discal ones. The ridge is internally bordered by a narrow, flat, locally somewhat concave zone, smoothly changing into the steep slope of the convex, but centrally somewhat flattened, elytral disc. Surface shining, with shallow, annular, locally more or less seriate punctures of varying diameter; distances between punctures mostly more than their diameters. Many punctures, especially the larger ones, with an erect seta; the setae locally longitudinally seriate.

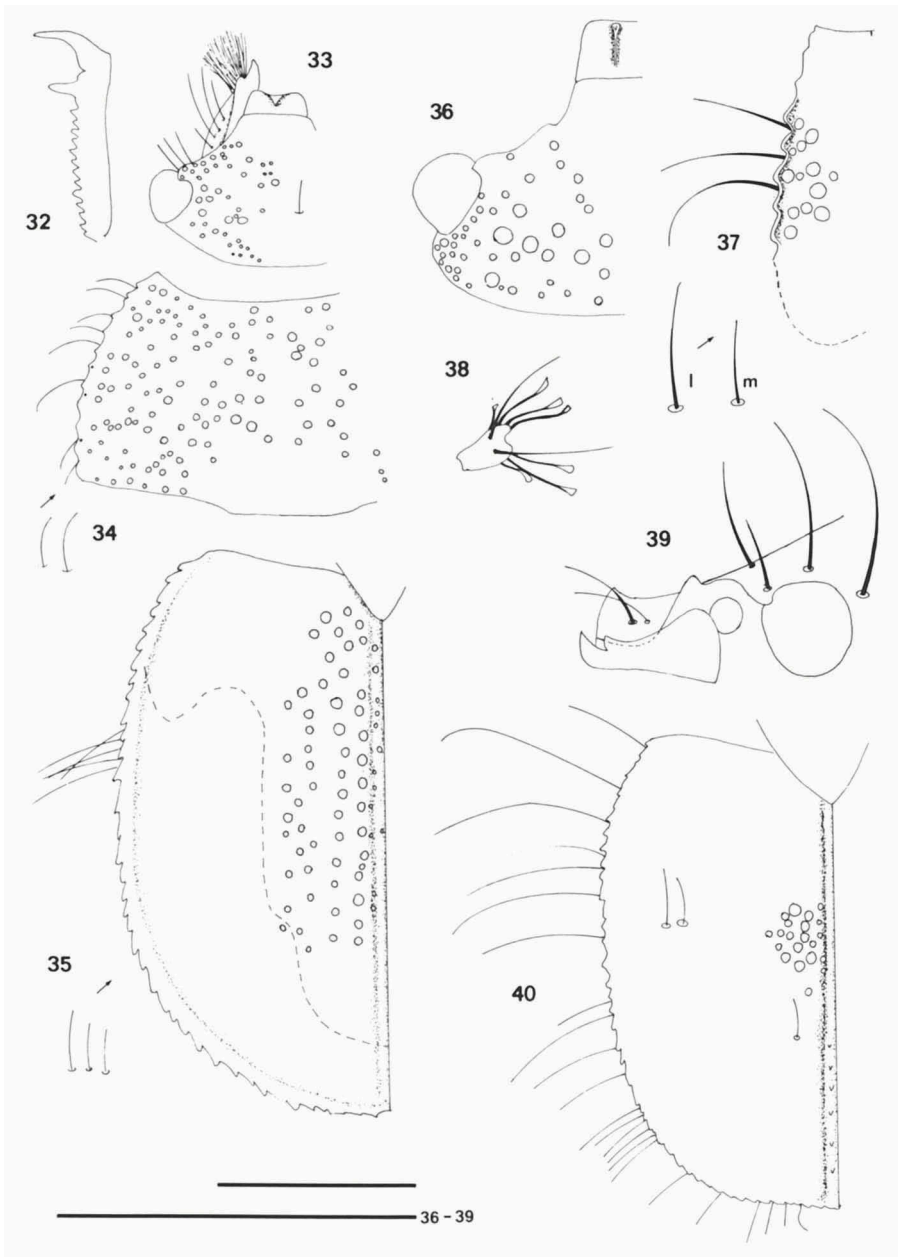
Legs: Fore tibia with three large lateral teeth, the apical one curved downward at its apex. Six acute accessory denticles along external margin of fore tibia. Apex of fore tibia with a ventral, sharp, downward denticle, and first segment of tarsus with an apical, interno-ventral, rather acute denticle. Middle and hind tibiae subrectilinear. Their dorsal surfaces flat, without transverse ridges, but with a few setigerous punctures; dorsal surface bordered on both sides by a fine, serrate ridge, the serration notably stronger in middle tibia. Long, erect setae arise from the incisions of the serration. Claws of all legs simple, regularly curved. Apices of first three tarsal segments of all legs ventrally with a more or less flabelliform tuft of long, flattened, broad, densely plumose setae, the secondary setae only visible under strong magnification.

Abdominal sternites: Shining, laterally somewhat less. Lateral parts with rather sparse, small, shallow, round punctures, each with a curved, erect seta, much longer and finer than the elytral setosity. Middle of sternites with a single, transverse series of still smaller punctures, each with a very short seta.

Genital apparatus: Both parameres elongate, triangular. Apex of left one subacute, of right one round and slightly thickened.

Note. – In several respects this species does not fit completely in *Microphaeochroops* (no ante-apical tooth in mandible; protibia with three large lateral teeth; longer than the other species), *Mimocoelodes* (labrum acuminate; eyes visible from above) or *Microphaeolodes* (colour, length, habitus). However, as it is most similar to the species of *Microphaeochroops*, I include it tentatively in that genus, rather than create still another new genus.

Etymology. – *Nigrosetosus* = with black setae; because of the black setae, so rare in Old World Hybosorinae, on the elytra.



Figs. 32-35. *Microphaeochroops varius* spec. nov., holotype. 32, fore tibia; 33, head, with discal seta; 34, pronotum with discal setae; 35, elytron with punctation of median part, some setae of fringe and discal setae; broken line separates darker and lighter part of surface. Figs. 36-40. *Pantolasius bandaharae* spec. nov., holotype. 36, head; 37, middle of lateral margin of pronotum, with setae of lateral (1) and median (m) part of disc; 38, second segment of right fore tarsus with

***Microphaeochroops varius* spec. nov.**
(figs. 32-35)

Type-material. – The ♂ holotype (London), the only specimen known, is labelled “Sarawak: 4th Division Gn Mulu NP”; “nr Camp 5 Limestone plot”; “pitfall trap”; “N.M. Collins, B. M. 1978 – 11”; “iv. 78”; all print, but last one handwritten; my name and red, typewritten holotype labels.

Description of ♂ holotype. – Colour: Labrum and anterior part of clypeus light brownish, rest of head dark reddish brown. Pronotum still somewhat darker reddish brown, but margins somewhat lighter by transparency. Elytra yellowish brown, with a large, not sharply delimited, postero-lateral patch on each elytron dark reddish brown. Mouth parts, legs, underside and setosity yellowish or yellowish brown, in various shades.

Length: $0.7 + 1.3 + 3.0 = 5$ mm.

Head: Anterior margin of labrum rather deeply emarginate, with an upward, somewhat recurved, median denticle; lateral margins somewhat divergent. Surface shining, with some setigerous punctures. Labro-clypeal suture rectilinear, but only visible under strong magnification and favorable illumination. Lateral margins of clypeo-frons concave and strongly divergent, somewhat sharply elevate before the evident, but rounded eye-canthus. Two weak tubercles at some distance from inner margins of eyes, and a weak, ill-defined depression in front of each tubercle. Surface shining, with widely and irregularly spaced, annular punctures of variable diameter, most with a long, erect seta. The punctures are especially widely spaced at the tubercles, depressions and central clypeo-frons. Vertex, between posterior margins of eyes, with a narrow, transverse zone of much finer, non-setigerous punctures.

Mouth parts: Apex of mandible acute, ante-apical tooth somewhat less acute; external surface with seven to eight long setae. Maxillae and anterior margin of labium with large tufts of flattened, apically curved, densely plumose, apically somewhat widened setae, far protruding from beyond head capsule.

Pronotum: Anterior margin, seen from dorsally, concave, but weakly protruding in middle. Lateral margins divergent, anteriorly weakly convex, somewhat more so in about posterior two-thirds. Posterior margin weakly bisinuate. Lateral margins bordered by a narrow, low carina; external surface of carina weakly serrulate, dorsal surface with a few punctures; serrulation and punctures with long, erect setae. Surface very shining, with widely spaced, annular, strongly variably large punctures; most of the larger punctures with

spatulate and normal setae; 39, lateral view of head; 40, elytron, with central punctation, some discal setae and part of marginal setae. Setae at real relative lengths; punctures in fully drawn areas at real relative diameters and density. Scale lines represent c. 1 mm.

an erect seta, in general somewhat shorter than setae of marginal fringe. Posterior one-third of disc medially without punctures.

Scutellum: Triangular; shining, with a few shallow punctures.

Elytra: Anterior half of lateral margin weakly curved and somewhat divergent; posterior half more strongly curved and convergent. Lateral margin bordered by an extremely fine, externally serrulate carina. Serrulation with a fringe of setae, anteriorly more than twice as long as the discal setae, gradually shorter towards apex of elytron, where they are shorter than the discal ones. These setae mainly arising from the incisions and from the external surface of carina. Internally the carina is bordered by a flat to slightly concave zone, rather smoothly passing into the strongly convex elytral disc. Surface very shining, with rather equidistant, annular punctures of varying size. Punctures evidently seriate in several places, especially in central disc. Nearly all punctures with an erect seta of about the same length as the pronotal ones.

Legs: Fore tibia with a slender apical lateral tooth, whose apex is curved downward. The median tooth is considerably shorter, and the basal one is hardly different from the approximately 14 accessory denticles. Ventral surface with a sharp downward tooth near implantation of tarsus. First tarsal segment with an apical, interno-ventral, dentiform protrusion. Middle and hind tibiae slender, nearly straight, with some serrate, longitudinal carinae. Surfaces between the carinae and incisions of the serration with long setae. In all tarsi ventral surface of first three segments with a somewhat fan-like tuft of about eight, flattened, acuminate, shortly and densely plumose setae. All claws simple, strongly and evenly curved.

Abdominal sternites: Surface shining, with widely spaced, shallow, annular punctures, medially mostly ranged in a transverse series. Each puncture with a long, reclining to suberect seta, often longer than length of sternite.

Pygidium: Approximately semicircular; shining, with fine, setigerous punctures.

Genital apparatus: Unfortunately the genital apparatus got accidentally lost during preparation.

Etymology. — *Varius* = *laetus* (Latin) = gay of colour, because of the presumed close relationship between *Microphaeochroops laetus* and *Microphaeochroops varius*.

Pantolasius Lansberge

Pantolasius Lansberge, 1887: 202.

Type-species. — *Pantolasius vethi* Lansberge, by monotypy.

Diagnosis. — Length 3.6-3.8 mm. Apex of mandible acute, rather abruptly

curved upward; ante-apical denticle present or not. Labro-clypeal suture hardly visible. Anterior margin of labrum with an erect denticle, at the anterior end of a weak, longitudinal carina. Maxillae with large tufts of flattened setae, protruding far beyond margins of head capsule. A rather sharply angular protrusion above articulation of antenna. Dorsal surface, and margins of pronotum and elytra, with long to very long setae, laterally often longer than half the width of an elytron. Lateral margin of pronotum serrulate. Apices of fore tibia and first segment of fore tarsus without sharp, downward protrusions. Only two large teeth on external lateral margin of fore tibia. First three segments of all tarsi with tufts of flattened, somewhat clavate or spatulate setae, apart from the normal long and slender ones. All tarsal claws simple, evenly curved.

KEY TO THE SPECIES

1. Apex of mandible angularly and abruptly curved upward, with a single apical tooth; postero-lateral angles of pronotum subrectangular *Pantolasius vethi*
- Apex of mandible more smoothly curved upward, with an apical and an ante-apical tooth; postero-lateral angles of pronotum strongly rounded *Pantolasius bandaharae*

***Pantolasius vethi* Lansberge, 1887**

Pantolasius vethi Lansberge, 1887: 202 (description; type-locality Alahan pandjang, Central Sumatra); Arrow, 1912: 38 (catalogue); Schmidt, 1913: 20, 29 (catalogue, generic key, re-description of genus); Arrow, 1942: 928 (relationship with *Phaeochroops* discussed).

Type-material. – The holotype (Leiden), the only specimen known, is labelled “Al.ng. 10.77”, hand; “Sum. Exp. Alahan pandjang 10/77”, hand, round, 77 = 1877; “Cat, No 1”, museum label; “genus?”, hand; “type”, hand, blue; “type”, hand, white, very small; “*Pantolasius vethi* Lansbg”, hand, white.

Redescription of the holotype. – Colour: Dark reddish brown, margins of elytra somewhat darker, legs somewhat lighter.

Length: $0.5 + 0.9 + 2.2 = 3.6$ mm.

Head: Anterior margin of labrum subrectilinear, lateral margins weakly divergent; median part with a weak longitudinal carina, ending with an erect denticle at anterior margin of labrum. Labro-clypeal suture only visible under favorable illumination and strong magnification. Lateral margins of clypeofrons somewhat concave, divergent. An angularly sinuate carina dorsally from

the antennal articulation, prolonged on the short eye-canthus. Surface shining, with shallow, round, variably large, unevenly spaced punctures, the widest interspaces between the eyes. Most punctures with a long, erect seta.

Mouth parts: Apical one-third of mandible angularly and rather abruptly curved upward; apex with only one, approximately perpendicular, terminal tooth. Maxillary hairtufts hardly visible, due to position and dirt cover of mouth parts.

Pronotum: Anterior margin emarginate; lateral margins divergent, weakly curved in posterior two-thirds; posterior margins slightly sinuate on both sides. Antero-lateral angles acute, postero-lateral ones subrectangular. Lateral margins serrate; most of the incisions with long, sideward and somewhat backward setae. Surface shining, with shallow, round, variably large punctures, with interspaces from approximately 0.5 to four diameters. Most punctures with an erect seta, long medially, slightly shorter laterally, but all shorter and finer than marginal ones.

Scutellum: Triangular, apex subacute. Disc shining, slightly concave, with a few shallow, round, setigerous punctures.

Elytra: Lateral margins weakly curved and somewhat divergent in anterior half, more strongly curved and convergent posteriorly. Lateral margins serrate, bordered by a narrow, shallow groove. Sutural margins bordered by a fine, weak carina, without apical denticle. Surface shining, with locally seriate, round, variably large, setigerous punctures, with interspaces from approximately one to two diameters. Setae on median part of elytron curved backward, considerably shorter than the erect setae on lateral declivity. Setae on lateral margin directed sideward, many as long as half the width of elytron; the setae of posterior one-third gradually shortening. Humeral and apical umbones hardly developed.

Legs: External lateral margin of fore tibia with only the apical and median lateral teeth developed, both perpendicular to length axis of tibia; 16 accessory denticles. No downward tooth near articulation of tarsus, and no internodal dentiform protrusion on apex of first tarsal segment. Middle and hind tibiae virtually rectilinear, more or less parallel-sided, their cross-section more or less quadrate, and with four longitudinal series of variably developed, more or less acute denticles. No transverse ridges. Most setae long, the apical ones in hind tibia reaching apex of tarsus. Anterior part of ventral surface of first three tarsal segments of all legs with dense tufts of thin, flattened, non-plumose setae, varying from narrowly clavate to more or less strongly spatulate, with somewhat round to truncate apex. Apart from these tufts, the normal, very long setosity is present.

Abdominal sternites: Surface shining, with scattered fine setae, arising from

ill-defined, circular punctures.

Pygidium: Hidden under the elytra.

Genital apparatus: As the unique specimen is more than a century old and seems rather fragile, I did not dissect it.

***Pantolasius bandaharae* spec. nov.**

(figs. 36-40)

Type-material. – The holotype (Leiden), the only specimen known, bears labels “Museum Leiden, N. Sumatra: Bivouac Two Mt Bandahara 3° 44' N.-97° 43' E., 5-10.vii.1972 J. Krikken, nr 24 ca 1430 m” (Krikken’s trip was financed by WOTRO, the Netherlands Organization for the Advancement of Tropical Research); “submontane multistratal evergreen forest at light”; my name and red, typewritten type labels.

Description of holotype. – Colour: Reddish brown, pronotum and margins of elytra somewhat darker, labrum, anterior part of clypeus and ventral surface lighter.

Length: $0.5 + 0.9 + 2.4 = 3.8$ mm.

Head: Labrum as in *Pantolasius vethi*. An angular, erect protrusion above articulation of antenna, prolonged as a weak carina toward the weak eye-canthus. Punctuation and setosity of clypeo-frons as in *Pantolasius vethi*.

Mouth parts: Apical one-third of mandible less strongly and more smoothly curved upward than in *Pantolasius vethi*. Apex with a rather sharp, perpendicular, erect tooth; a more obtuse, erect, ante-apical tooth is present. Large and dense tufts of yellowish, flattened, weakly spatulate setae, implanted on the maxillae near articulation of the palpus, protrude beyond the head capsule.

Pronotum: Anterior margin somewhat concave (but less so than in *Pantolasius vethi*). Lateral margins divergent, weakly curved, serrate, with long, sideward setae in most of the c. 13 incisions. Posterior margin weakly bisinuate. Antero-lateral angles subrectangular, postero-lateral ones strongly rounded. Surface shining, with slightly variably large, round punctures; their distances from approximately 0.5 to two diameters (somewhat smaller and denser than in *Pantolasius vethi*). Most punctures with an erect, slightly curved seta; all setae long, but the discal ones somewhat finer and shorter than the lateral ones.

Elytra: Lateral margins weakly convex and divergent in anterior half, gradually more strongly convex and convergent posteriorly, and bordered by a shallow, narrow groove. Sutural margins bordered by a weak carina, bearing a single series of minute denticles in posterior half, but no apical denticle. Disc

with a vestigial costa. Surface shining, with shallow, round, irregularly distributed punctures, with interspaces from less than 0.5 to one diameter. Humeral and apical umbones hardly developed. Setae on the slightly serrate lateral margin directed sideward; very long anteriorly – some nearly as long as width of elytron –, gradually shorter in posterior part. Setae between suture and discal costa strongly curved backward, those between costa and lateral margin gradually more erect and longer.

Legs: External lateral margin of fore tibia with only the apical and median large teeth, both approximately perpendicular to length axis of tibia, and with c. 16 accessory denticles. Ventral side without downward tooth near articulation of tarsus; first tarsal segment without interno-ventral, apical, sharp protrusion. Middle and hind legs virtually as in *Pantolasius vethi*.

Abdominal sternites: As described for *Pantolasius vethi*.

Genital apparatus: Because of the small size and dubious condition of the specimen (three legs are missing) I did not dissect it.

Etymology. – *Bandaharae* = latinized genitive of Bandahara, the type-locality.

Notes. – Only the two type-specimens of *Pantolasius vethi* and *Pantolasius bandaharae* are known. A decision about the exact level of the differences, sexual, subspecific or specific, has to be postponed until more material will be collected.

Alahan pandjang is about 600 kms from Mount Bandahara, both localities at considerable altitude in the mountain system ranging from the northern to the southern end of Sumatra.

Mimocoelodes Pic

Mimocoelodes Pic, 1930: 12

Type-species. – *Mimocoelodes minutus* Pic, by monotypy.

Diagnosis: Length 5.7 mm. Anterior margin of labrum convex, with a weak, median, dentiform, erect protrusion. Suture between labrum and clypeus hardly visible. Eyes invisible from above. Mandible simple, slightly curved upward. Lateral margins of pronotum serrulate. Dorsal surface of head, pronotum and elytra with setigerous punctures; length of setae up to c. eight diameters of punctures. All tarsal segments with only the normal setosity. Claws simple. Ventral side of apex of fore tibia and of first segment of fore tarsus without dentiform protrusion.

Mimocoelodes minutus Pic, 1930
(figs. 6-7, 41-43)

Mimocoelodes minutus Pic, 1930: 12 (description; type-locality Chapa, Tonkin); Paulian, 1945: 38 (redescription; generic key; figure; discussion of relation to primitive American Hybosorine genera).

Type-material. – The ♀ holotype (Paris), the only specimen known, bears labels “Chapa Tonkin”, Pic’s hand; “Type”, red, print; “Type”, Pic’s hand; “*Mimocoelodes minutus* Pic”, Pic’s hand.

Redescription of ♀ holotype. – Colour: Yellowish brown.

Length: $1.0 + 1.5 + 3.2 = 5.7$ mm.

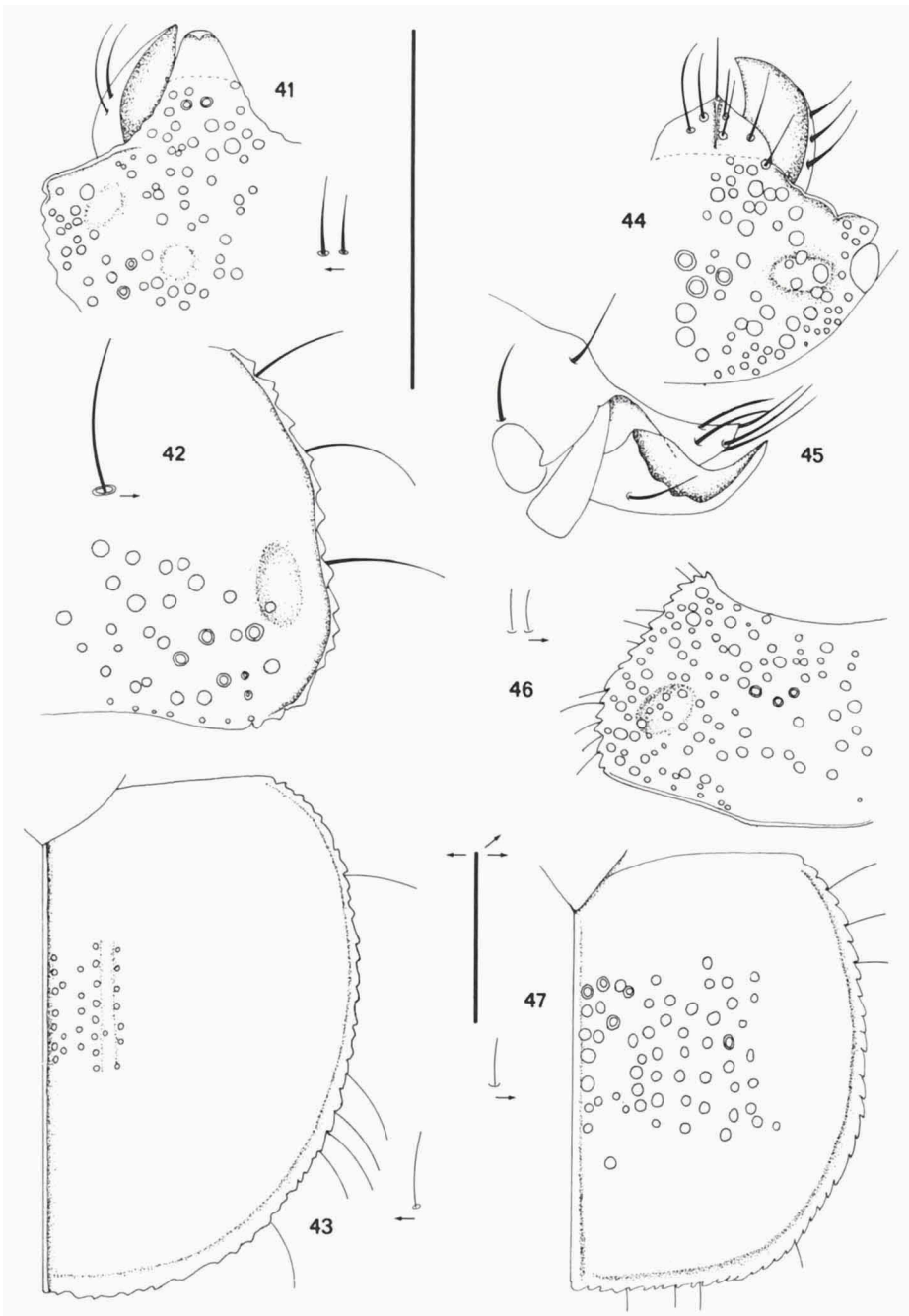
Head: Anterior margin of labrum curved, with a weak, median, dentiform, upward protrusion. Lateral margins divergent, subrectilinear. Surface impunctate. Suture between labrum and clypeus hardly visible, weakly curved. Lateral margins of head capsule strongly concave and divergent anteriorly, and with an angular elevation before middle, convex and convergent posteriorly. Eyes not visible from above, completely hidden by lateral margins of head. Lateral margins somewhat serrate, with long setae in the incisions. Surface of head shining, with variably large, often annulate, rather deep punctures. Distances between punctures very variable; locally small, nearly impunctate areas are present. Most punctures with an erect seta, often seven or eight times as long as diameter of puncture. A weak, short, oblong elevation near lateral angles of head, and two low, subcircular, submedian tubercles on vertex.

Mouth parts: Mandible with subacute apex, without ante-apical denticle, slightly curved upward. Lateral surface convex, with round, setigerous punctures, separated from the concave dorsal surface by a fine, sharp carina.

Pronotum: Anterior margin somewhat concave; lateral margins nearly evenly rounded, divergent anteriorly, convergent posteriorly; posterior margin slightly bisinuate. Antero-lateral and postero-lateral angles rounded. Lateral margins with an extremely fine carina, serrulate on its exterior surface, with a long, sideward seta arising from most incisions. Posterior margin bordered by a fine groove in middle, represented laterally by a series of minute punctures. Surface shining, with variably large, rather deep, annulate, irregularly distributed punctures. Most punctures with an erect seta, often five to seven times as long as diameter of puncture. Lateral area with a shallow, postmedian depression.

Scutellum: Triangular; surface shining, with a few large, basal punctures.

Elytra: Lateral margins regularly curved, somewhat divergent anteriorly, strongly convergent in posterior half, serrulate, with a fringe of long setae. An



Figs. 41-43. *Mimocoelodes minutus* Pic, holotype. 41, head with discal setae; 42, lateral margin and postero-lateral punctation of pronotum, and discal seta; 43, elytron with part of discal

impunctate, hairless, very narrow, shallow groove, slightly widening towards elytral apex, runs along margin. Surface shining, with slightly variably large, round punctures. Punctures locally in more or less rectilinear longitudinal series, between which traces of impunctate, weakly convex costae are discernible. Distances between punctures generally from one to four diameters, the widest distances laterally. Most punctures with a long, erect, often apically somewhat curved seta.

Legs: Fore tibia with large apical and median lateral teeth, the proximal one much smaller; six accessory denticles, gradually smaller towards base of tibia. Middle and hind tibiae without transverse ridges, but with several longitudinal, sharp, serrate carinae, with long setae arising from the incisions. Tarsal segments with normal setosity. All claws simple, regularly curved.

Abdominal sternites: Surface shining, with poorly defined, transverse series of fine, shallow, setigerous punctures.

Pygidium: Semicircular, with dense, shallow, setigerous punctures.

Microphaeolodes gen. nov.

Type-species. — *Microphaeolodes mulumontis* spec. nov.

Diagnosis. — Length 4 mm. Labrum subtriangular, apical part strongly curved upward, with a median, longitudinal carina. Labro-clypeal suture hardly visible. Apex of mandible strongly and rather abruptly curved upward. Lateral margin of pronotum serrate. Setae on pronotum and elytra c. three to four times as long as diameters of punctures. Basal lateral tooth in fore tibia about equal to accessory denticles. Ventral side of fore tibia with a very small denticle near implantation of tarsus. All tarsi without tufts of flattened, widened, light-coloured setae. All claws simple, evenly curved. Pronotum and elytra strongly convex.

Note. — The only specimen on which this genus is based is somewhat similar to the species in the two foregoing genera, but several character states, e.g. in labrum, clypeus, mandibles, legs, habitus, justify the creation of the new genus.

Etymology. — The name, a combination of *Microphaeochroops* and *Mimocoelodes*, refers to the supposed relationship of the three genera. Its gender is masculine.

sculpture, discal seta and some setae of fringe. Figs. 44-47. *Microphaeolodes mulumontis* spec. nov., holotype. 44, head; 45, lateral view of head; 46, pronotum with some setae of anterior disc; 47, elytron with punctuation of central disc, some setae of marginal fringe, and discal seta. Setae at real relative lengths; punctures at real relative diameters and density. Scale lines represent c. 1 mm.

Microphaeolodes mulumontis spec. nov.

(figs. 44-47)

Type material. – The holotype (London), the only specimen known, is labelled “Sarawak: 4th Division Gn Mulu NP” (= Gunung Mulu National Park); “mixed dipterocarp forest litter”; “Camp 5, limestone plot”; “P. M. Hammond & J. E. Marshall, v.-viii. 1978 B. M. 1978 – 49”; all print, white; “Trogidae 2 *Microphaeochroops*”, hand, yellow; my name and red, typewritten type labels.

Description of holotype. – Colour: Rather light reddish brown, a shade darker at base of elytra; setosity yellowish.

Length: $0.5 + 1.2 + 2.3 = 4.0$ mm.

Head: Labrum subtriangular; the narrow, apical part strongly curved upward, and with a narrow, sharp, median, longitudinal carina; lateral margins strongly divergent. Suture between labrum and clypeo-frons hardly visible. Surface of labrum shining, with a few shallow, annular punctures, each with a long seta. Lateral margins of clypeo-frons strongly divergent, sharply and finely carinate, somewhat undulate, and slightly elevate above articulation of antenna. Shortly before eye the margin abruptly, subangularly bent inward, thus forming a well developed eye-canthus, excising a small part of eye. Surface shining, mostly densely punctate, but with impunctate areas. Punctures shallow, mostly annulate, their diameters strongly variable; a narrow zone of very small punctures along posterior margin of head. Many of the larger punctures with an erect seta, often c. three to four times as long as diameter of puncture. A weak, transverse elevation near inner margin of eye.

Mouth parts: Mandibles more or less sickle-shaped, apex simply acuminate and strongly, somewhat abruptly, curved upward; dorsal surface smooth, concave, externally bordered by a sharp, somewhat undulate, narrow carina; lateral surface with a few setigerous punctures. The dense tufts of flattened, broad, plumose setae, protruding beyond head capsule, observed in some allied genera, are absent.

Pronotum: Anterior margin emarginate; lateral margins weakly curved and strongly divergent anteriorly, somewhat more curved and subparallel posteriorly; posterior margin rectilinear before scutellum, slightly emarginate laterally. Antero-lateral angles rather acute, postero-lateral ones rounded. Lateral margins serrate, with rather long setae arising from the incisions. Surface strongly convex, with a weak, post-median depression near lateral margin; shining, with widely spaced, annulate, shallow punctures of varying diameters. Punctures closest along lateral margins; large areas in posterior part of median disc impunctate. Several punctures along anterior and posterior margins, and a few on disc, with an erect seta, c. three or four times as long as diameter of puncture.

Scutellum: Triangular, apex rounded. Surface shining, with a few shallow, annular punctures.

Elytra: Lateral margins curved and somewhat divergent anteriorly, subrectilinear and parallel in middle, strongly curved and convergent posteriorly. Lateral margins rather strongly serrate, especially in posterior part, with long, sideward setae arising from some of the incisions. Between the margin and the elytral disc runs a narrow, flat to weakly concave, impunctate zone, slightly widening towards elytral apex, and, seen from above, conspicuously protruding beyond the remaining, very convex surface of elytra. Surface shining, with shallow, round to oval, annular punctures, mostly separated by several times their diameters, and locally more or less longitudinally seriate. On central disc, near the suture, an impunctate area. Only a few punctures, mainly along anterior and apical margin of elytron, with an erect seta.

Legs: Fore tibia with two large and acute external lateral teeth, the third, basal, one much smaller, only slightly larger than the adjacent accessory denticles. Six to seven accessory denticles, gradually smaller towards base of tibia. Underside of tibia with a minuscule denticle near articulation of tarsus. Underside of first tarsal segment without acute protrusion. Middle and hind tibiae weakly curved, with fine, strongly and sharply denticulate carinae bordering both sides of dorsal surface. The apical denticle of the inner carina, especially in hind tibia, protruding conspicuously beyond apex of tibia. First three tarsal segments in all legs without tufts of flattened, widened setae. All claws simple, evenly curved.

Abdominal sternites, pygidium and genital apparatus: I did not take the specimen from its card and could not study these details.

Etymology. – *Mulumontis* = from Gunung Mulu, the type-locality; gunung (Malay) = mountain = mons (Latin).

Phaeochridius Lansberge

Phaeochridius Lansberge, 1887: 201.

Type-species. – *Liparochrus derasus* Harold, by monotypy.

Diagnosis. – Length c. 7.5-9.5 mm. Labrum subtrapezoid, anterior margin with an acute apex and blunt ante-apical tooth. Lateral margins of pronotum weakly serrate. Pronotal surface virtually without setosity; setae on elytra very short, mostly shorter than diameter of punctures. Lateral margins of elytra serrate, especially anteriorly. Elytral punctures partly seriate, at least those bordering on both sides the three, very weakly elevate, discal costae. Ventral side of apex of fore tibia and first segment of fore tarsus without special

modifications. Fore tibia with three large, external lateral teeth. Middle and hind tibiae with a weak, submedian, transverse carina. All claws simple, evenly curved. Surface of abdominal sternites densely vermiculate.

Note. – Five species have been described in this genus, three of which are considered synonyms here. The differences between the two remaining ones are not altogether convincing, but until more material has been collected in Borneo I treat them as separate species.

KEY TO THE SPECIES

1. Anterior part of median elytral disc with an impunctate area in ♀; length 7.3-8.8 mm; dorsal margin of left paramere fluently merging into the slender apical part; dorsal and ventral margins of the rather narrow apical part of right paramere subsinuate *Phaeochridius derasus*
- Elytral disc in ♀ without an impunctate area; 7.8-9.6 mm; dorsal margin of left paramere more or less abruptly merging into the slender apical part; dorsal and ventral margins of the wide apical part of right paramere regularly curved *Phaeochridius uniformis*

Phaeochridius derasus (Harold, 1880)

(figs. 3, 48-52)

Liparochrus derasus Harold, 1880: 195 (description; type-locality Simawoeng, Sumatra; compared with *Hybosorus* and *Phaeochrous*); Borre, 1886: 78 (catalogued).

Phaeochridius derasus Harold; Lansberge, 1887: 201 (redescription; compared with *Phaeochroops*); Arrow, 1909: 488 (compared with other genera); Arrow, 1912: 39 (catalogued); Schmidt, 1913: 25 (catalogued; genus redescribed).

Phaeochridius haroldi Fairmaire, 1896: 86 (description; type-locality Sumatra; compared with *Phaeochridius derasus*); Arrow, 1909: 488 (compared with *Phaeochridius derasus*; discussion of smooth area on elytra as ♀ character); Arrow, 1912: 39 (catalogued); Schmidt, 1913: 25 (catalogued; figures); Arrow, 1925: 330 (compared with *Phaeochridius uniformis*; *Phaeochridius derasus* not seen by Arrow); Arrow, 1942: 925 (compared with *Phaeochridius cinereicollis*) (**syn. nov.**).

Type-material. – Lectotype (Leiden), here designated, sex unknown, with labels "Sum. Exp. Simawong 6/77", round, white, hand (77 = 1877); "Simaw 6.77", hand; "Type", blue, hand; "*Liparochrus Derasus* Harold typ.", white, hand; museum name label; my red, typewritten lectotype label. Paralectotype (Leiden), here designated, a ♀ with same Simawong and museum labels, my paralectotype label, but both type labels lacking. Harold explicitly mentioned two specimens of the Sumatra Expedition being the basis of his description; consequently the syntype status of the second specimen is sufficiently established.

Material examined. – Apart from the two above-mentioned types I studied the following specimens (unidentified, or named *Phaeochridius haroldi*, in the collections). One ♂ (Leiden), 12

♂, 5 ♀, 11 unsexed specimens (Amsterdam, Paris), named *Phaeochridius haroldi* by Boucomont, from Fort de Kock, Sumatra, 920 m, one of them “on decaying meat”. Two ♂, 3 ♀ (London), named *Phaeochridius haroldi* by Arrow, from the Batu Islands, near Sumatra. One ♂, 2 ♀ (Paris) from Palembang, Sumatra. Six ♀ (Leiden, Paris) (see below) from Sumatra are the type-material of *Phaeochridius haroldi*. Two ♀ (Paris) with the same handwritten label “Sumatra” and same museum label as the lectotype of *Phaeochridius haroldi*, and glued on a single card, may belong to the original material of that taxon. One ♀ from Tandjong Morawa (Sumatra), 2 ♂ from Manna (Sumatra) and 5 ♀ from Air Njuruk (Sumatra) (all Leiden). One ♂ (coll. Veen → coll. MacGillavry → Amsterdam), from Java, probably equally mislabelled as a specimen of *Hybosorus illigeri* Reiche, that I saw from the same source and locality. Three ♀ (Amsterdam) from Barabei, South East Borneo, have the same impunctate area on elytra as ♀ of *Phaeochridius derasus*, and may belong to this species. One ♂ (Leiden), from Sambas, 150 kms north of Pontianak. Eight ♂, 3 ♀, 8 unsexed specimens (Paris) from Pontianak and Lahaban, West Borneo. One ♂, three ♀ (Leiden), from Gunung Kenepai, c. 300 kms east of Pontianak; the ♀ with impunctate median area on elytra, the ♂ parameres somewhat intermediate between those of *Phaeochridius derasus* and *Phaeochridius uniformis*. More material from this area has to be studied for a decision about the status of these four specimens.

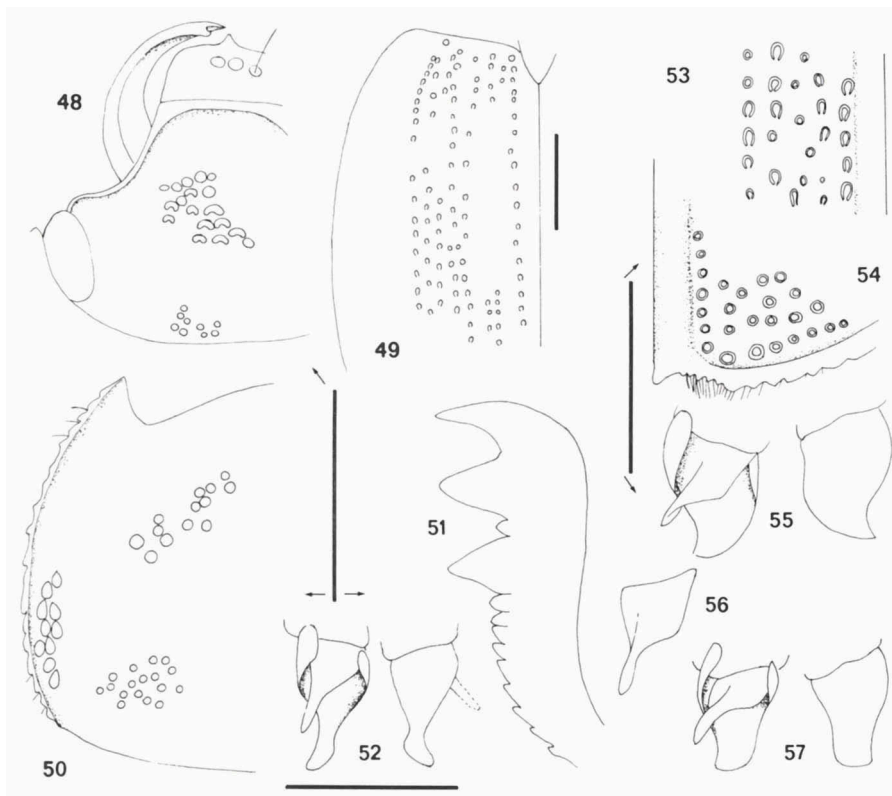
Some specimens (Paris) from Kinabalu, North East Borneo, labelled *Phaeochridius derasus*, probably by Boucomont, belong to *Phaeochridius uniformis*.

Type-material of *Phaeochridius haroldi* Fairmaire. – The following syntypes are here designated lectotype and paralectotypes. The ♀ lectotype and two ♀ paralectotypes (Paris), glued on a single card, with labels “Sumatra”, hand; “Type”, white, print red; “Museum Paris 1906 Coll. Léon Fairmaire”, print; “*Phaeochridius Haroldi* (Fairm.) Sumatra 1896”, Fairmaire’s hand. One ♀ paralectotype (Paris), “Sumatra”, print; “*Phaeochridius Haroldi* Fairm.”, Fairmaire’s hand; “Fairmaire”, print; “Museum Paris 1952 Coll. R. Oberthür”, print; “Type”, red, print. One ♀ paralectotype (Paris), “Type”, white, print red; “Sumatra”, hand; “Museum Paris Coll. M. Pic”, print; “*Phaeochridius Haroldi* Fairm. Sumatra”, Fairmaire’s hand. One paralectotype (Leiden), without abdominal contents, but probably a ♀, labelled “Léon Fairmaire Sumatr.”, round, hand; “*Liparochrus Haroldi* n sp Sumatra” (sic!), Fairmaire’s hand; Leiden curatorial name label. All with my red, typewritten lectotype and paralectotype labels, and identification labels.

Redescription of lectotype of *Phaeochridius derasus*. – Colour: Dark reddish brown, margins slightly more reddish by transparency.

Length: $1.1 + 2.2 + 5.5 = 8.8$ mm.

Head: Labrum subtrapezoid, the anterior and lateral margins weakly curved. Anterior margin with a vestigial median protrusion. Surface shining, with a few large, shallow, setigerous punctures, mainly along anterior margin. Suture between labrum and clypeus evident. Anterior margin of clypeus very weakly convex, lateral margins subrectilinear and divergent towards eyes. Anterior margin of eye-canthus nearly perpendicular on length axis of head; apex of canthus curved and hardly protruding, with a tuft of three to four erect setae. Anterior margin bordered by a rather flat elevation, the elevation narrower along lateral margins and fading out on eye-canthus. Surface of head shining, with dense, round to somewhat transverse and halfmoon-shaped punctures. Interspaces in general not or hardly wider than diameter of punctures. Punctures between posterior parts of eyes much smaller and mostly round.



Figs. 48-52. *Phaeochridius derasus* (Harold), lectotype, except fig. 52. 48, head; 49, lateral margin and discal punctation of elytron; 50, lateral part of pronotum, with some punctures and marginal setae; 51, left fore tibia; 52, left and right parameres in lateral view. Figs. 53-57. *Phaeochridius uniformis* Arrow. 53, suture and discal punctation of left elytron of male; 54, interno-apical part of right elytron with punctures and setae of fringe; 55, left and right parameres in lateral view (lectotype); 56, left paramere (non-type); 57, left and right parameres in lateral view (paralectotype of *Ph. cinereicollis* Arrow). Setae at real relative lengths; punctures at real relative diameters and density. Scale lines represent c. 1 mm.

Mouth parts: Mandibles evenly curved, with an acute apex and an obtuse ante-apical tooth. Dorsal surface flat, bordered on both sides by a fine, subacute ridge. External surface with a longitudinal series of five setae.

Pronotum: Anterior margin subbisinuate. Antero-lateral angles acute and strongly protracted; postero-lateral angles strongly rounded. Lateral margins regularly curved, slightly diverging, with smooth transition into the weakly rounded posterior margin. Lateral margins weakly serrulate, the incisions with minute setae, somewhat shortening towards postero-lateral angles. Lateral margins bordered by an extremely fine, low, flat, partly ill-defined ridge; between this ridge and the convex disc of pronotum runs a narrow, somewhat

flattened zone. Surface without setosity, but with dense punctation; the distances between punctures, especially in lateral parts, often much smaller than diameter of punctures. Most punctures subcircular, but laterally somewhat guttiform; the smallest ones, along posterior margin, about half as wide as the largest, discal, ones.

Scutellum: Elongately triangular, apex somewhat rounded; surface shining, with a few shallow punctures.

Elytra: Lateral margins weakly convex and divergent in approximately anterior two-thirds, more convex, and strongly convergent posteriorly. Margins bordered by a narrow, rather obtuse, low ridge. Margins externally serrate, especially in anterior part, with a seta arising from each incision; setae in posterior half gradually and weakly shortening, but very dense and much longer before the weakly denticulate sutural angle. Surface shining, strongly convex. Each elytron with about 20, rather regular, longitudinal series of small, round, umbilicate or horseshoe-shaped punctures. Some punctures, mainly on posterior declivity, with a minute seta, shorter than diameter of puncture. Lateral and apical part with mostly confused punctation, with only traces of series. On each elytron three of the interserial spaces are very weakly convex, slightly wider, and more regular than the remaining ones; juxta-sutural interspace wider and somewhat more convex than the remaining ones. In anterior part of disc the punctures of some median series are absent, the elytra showing here a smooth and shining area.

Legs: External lateral margin of fore tibia with three large, acute teeth, about nine accessory denticles basally of basal large tooth, and a few between the large teeth. Middle and hind tibiae with a weak, transverse carina, somewhat after middle. All claws simple, evenly curved. No dentiform modifications on ventral sides of apex of fore tibia and first segment of fore tarsus. Underside of first three tarsal segments of all legs with the normal, slender setae only.

Abdominal sternites: Surface rather dull, densely vermiculate; vermiculation more or less transverse in middle, laterally rather abruptly bent in posterior direction. Posterior margins of sternites with some setae.

Pygidium: Lateral margins subrectilinear, convergent; apex broadly rounded. Surface somewhat shining, with dense, transverse rugules, and numerous recumbent setae. Setae especially long and dense along apical margin, all much longer than setae of elytral fringe.

Genital apparatus: Contents of abdomen being absent, the sex remains unknown. Most probably the specimen is a ♀, according to elytral sculpture.

Variation: In this paragraph are included all specimens, mentioned above, of *Phaeochridius derasus* and *Phaeochridius haroldi*.

Length from 7.3 to 8.8 mm. Apart from slight variations in characters of punctuation and setosity, the following may be observed. Punctures of elytral disc predominantly umbilicate in some specimens, horseshoe-shaped in others. Width, elevation and regularity of the three discal costae somewhat varying. In general, most punctures in elytral disc of ♀ ranged in c. 20 more or less regular, longitudinal series, of ♂ somewhat irregularly distributed, except for the ones along the three varyingly evident discal costae. The absence of a certain number, from a few to many, of punctures in antero-median part of elytra apparently is a character of ♀ only, as already supposed by Arrow (1909). Anterior part of lateral margin of pronotum may be subrectilinear. Dorsal margin of left paramere somewhat fluently merging into the very slender apical part. Ventral part of right paramere strongly bent inward; apical part rather narrow, its dorsal and ventral margins somewhat sinuate, locally subparallel.

Note. – Apart from insignificant differences in characters of punctuation and setosity the types of *Phaeochridius haroldi* are completely similar to *Phaeochridius derasus*. Consequently *haroldi* is a synonym of *derasus*.

Phaeochridius uniformis Arrow, 1925

(figs. 53-57)

Phaeochridius uniformis Arrow, 1925: 330 (description; type-locality Kina Balu, Borneo; compared with *Phaeochridius haroldi*); Bacchus, 1978: 114 (lectotype designation).

Phaeochridius benderitteri Pic, 1928: 5 (description; type-locality Kina Balu; comparison with *Phaeochridius haroldi*); Arrow, 1942: 925 (probably synonym of *Phaeochridius uniformis*) (**syn. nov.**).

Phaeochridius cinereicollis Arrow, 1942: 924 (description; type-locality Mt Dulit, Sarawak, Borneo; comparison with the other species of *Phaeochridius*); Bacchus, 1978: 112 (lectotype designation) (**syn. nov.**).

Type-material. – I studied the ♂ lectotype (London), designated by Bacchus (1978), with labels “Lectotype”, print, purple ring; “Kina Balu”, hand; “Coll. Kraatz”, print; “Berl. Ent. Inst., BM 1924-478”, print; “*Phaeochridius uniformis* Arrow type”, Arrow’s hand; Bacchus’ name and lectotype label. I did not study the only other specimen of the original series; it is a ♀ (Eberswalde, DDR) with same labels as lectotype and was designated paralectotype by Bacchus (1978).

Material examined. – Apart from the lectotype I studied 1 ♂ (London), labelled *Phaeochridius uniformis* Arrow, from Kiau, Mt Kinabalu, 3000 ft; 5 ♂, 1 ♀ (Boucomont → Paris) from Kinabalu, placed with *Phaeochridius derasus* possibly by Boucomont; 1 ♂ (Paris) from Kinabalu, named *Phaeochridius* spec. by Arrow; 1 ♂ (Leiden), from Upper Mahakkam, C. Borneo (c. 600 kms east of Pontianak); 7 ♂, 2 ♀, 6 not sexed (Leiden, London), from Mt Trus Madi, N.E. Borneo, 4000 ft, carrion trap, 24.viii.1977; 2 ♂, 3 ♀, type-specimens of the synonyms *Phaeochridius benderitteri* and *Phaeochridius cinereicollis* (see below).

Type-material of *Phaeochridius benderitteri*. – The holotype (Paris), a ♀, is labelled “Kina-Balu-Geb., 1500 m”, print; “type”, white, Pic’s hand; “Type”, red, print; “*Benderitteri* Pic n.sp.”,

Pic's hand. Apart from this holotype I did not see any specimens named *Phaeochridius benderit-teri*. The holotype is in all relevant characters completely similar to *Phaeochridius uniformis*. Consequently the names are synonyms, as already presumed by Arrow (1942).

Type-material of *Phaeochridius cinereicollis*. – The ♀ lectotype (London), designated by Bacchus (1978, as ♂) is labelled “Lectotype”, print, purple ring; “Trap 2, Goat”, print; “Sarawak, Foot of Mt Dulit, Junction of rivers Tinjar & Lejok, 2.x.1932”, print; “Oxford Univ. Exp. BM Hobby & AW Moore, BM 1933-254”, print; “*Phaeochridius cinereicollis* Arrow type”, white, Arrow's hand; Bacchus' label. I saw three of the ten paralectotypes (London), designated by Bacchus (1978, all as ♂), 2 ♂ and 1 ♀, with labels “Paralectotype”, white, blue ring; “Trap 2, Goat”, Trap 1, Fish”, “Trap 2”, respectively, print; Dulit labels with data 1.x, 25.ix, 22.ix, respectively; same BM labels; same Arrow labels, but “co-type”; Bacchus' labels. Apart from slight variations in characters of punctuation, the specimens are completely similar to *Phaeochridius uniformis*, the similarity including the parameres. Consequently *Phaeochridius cinereicollis* has to be synonymized with *Phaeochridius uniformis*. Bacchus (1978) gives the lectotype and paralectotypes, designated in his study, as ♂, following Arrow, because an impunctate area on elytral disc – a character of ♀ according to Arrow (1942) – is absent. However, in *Phaeochridius uniformis* this character does not apply, and dissection of some syntypes showed the same for *Phaeochridius cinereicollis*.

Redescription of ♂ lectotype. – Somewhat broader and flatter than *Phaeochridius derasus*.

Colour: Rather light reddish brown.

Length: $1.1 + 2.2 + 6.3 = 9.6$ mm. Arrow gives 7 mm, certainly due to a different method of measuring.

Head: As described for *Phaeochridius derasus*, but with proportionately more transverse, halfmoon-shaped, somewhat denser, partly coalescent punctures.

Pronotum, scutellum: As in *Phaeochridius derasus*.

Elytra: Lateral margins somewhat curved and divergent in anterior half, strongly curved and convergent in approximately posterior half. Margins serrate, distinctly near humerus, much weaker over rest of length: incisions with short backward setae. Before elytral apex incisions and setosity more developed, the setae considerably longer before sutural denticle. Margins bordered by a low, round-topped ridge, considerably and gradually wider and more elevate towards elytral apex. Surface shining, strongly convex. Punctures dense, round to horseshoe-shaped, mostly irregularly distributed, locally in short, longitudinal series, but a complete series along juxta-sutural interspace; furthermore eight distinct series, each two bordering on both sides a distinct longitudinal interspace: one halfway between suture and humeral umbone, one originating at internal limit, one at external limit of umbone, and one still more laterally. The last mentioned interspace somewhat elevate, forming the border of the steep lateral declivity of elytron. Many punctures with a minute seta, shorter diameter of punctures.

Legs: Fore tibia with c. nine accessory denticles basally of basal large lateral

tooth, and some between the large teeth. Ventral side of apices of fore tibia and first segment of fore tarsus without special modifications. Middle and hind tibiae slender, with a submedian transverse ridge. Setae on ventral surfaces of all tarsal segments normal. All claws simple, evenly and strongly curved.

Abdominal sternites and pygidium: As described for *Phaeochridius derasus*.

Genital apparatus: Left paramere with subrectilinear dorsal margin in about basal half; apical part rather abruptly much narrower. Ventral part of right paramere strongly curved inward; apical part rather wide, its dorsal and ventral margins regularly curved.

Variation: In ♀ most punctures on elytral disc ranged in 17 to 18 regular, longitudinal series, remaining punctures, especially apically, irregularly distributed or with short traces of series. The impunctate area on elytral disc of ♀, as found in *Phaeochridius derasus*, is absent in this species. Weak variations in characters of punctures and setosity are present. Length from 7.8 to 9.6 mm, in general the smallest specimens are ♂.

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