

## A SYNOPSIS OF THE GENUS *EUMORPHUS* (Coleoptera: Endomychidae)<sup>1</sup>

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*Abstract*: A revisionary taxonomic review based upon study of holo- or lectotype of nearly all described species. 7 new species are described, 10 nominal species are reduced to subspecies and 4 new trinomials are introduced. 3 names are synonymized. *Eumorphus nanus* and *E. calcaratus* Arrow are removed from the genus; *Engonius bicoloripedoides* Mader is transferred to *Eumorphus*.

Gerstaecker, in his 1858 monograph, cites lack of subapical internal mandibular tooth as the "Hauptcharakter" of the genus *Eumorphus* and I have found no other salient bisexual features which separate this genus from *Engonius* and *Indalmus*; the apex of mandible is minutely to distinctly chisel-shaped. Arrow's key in Fauna of British India cites the sharp angulation of the posterior submarginal groove of metasternum as a generic character but this feature is shown by other genera. Neither labium nor maxilla has distinctive structure. The prosternal process is rather wide between procoxae, prolonged behind, its apex with concave dorsal surface embracing a smooth tubercle on front of mesosternum. Mesosternum pentagonal between coxae with transverse declivent area in front of each mesocoxa. Protibia of ♂ with tooth on inner margin in all forms except *csikii* and *bulbosus arrowi*, mesotibia curved, with small tooth in *quadriguttatus* group, metatibia straight or curved, its apex prolonged in many species.

On the basis of mandibular structure I have removed *Eumorphus nanus* and *E. calcaratus* Arrow from the genus, but have included *Engonius bicoloripedoides* Mader. While the many species show great diversity in appearance they constitute a fairly homogeneous group, with many intergrades. Guérin in 1858 introduced 4 additional generic names but used them inconsistently; they have long been regarded as synonyms.

1. The accomplishment of this review has been made possible by the many courtesies extended to me by the following gentlemen and the institutions which they have represented: E. B. Britton, J. Balfour-Browne, M. E. Bacchus of British Museum (BMNH); O. L. Cartwright, J. M. Kingsolver of U. S. National Museum (USNM); A. Descarpentries of Paris Museum (PM); Heinz Freude of Bayerische Staatssammlung (BSS); George Frey (MGF); Delfa Guiglia of Museo G. Doria (GM); J. L. Gressitt of Bishop Museum (BPBM); F. Hieke, K. Delkeskamp of Humboldt University Museum (HUM); Zoltan Kaszab of Hungarian Museum (MNM); O. L. Kryzhanovskij of Zoological Institute Leningrad (ZIL); Sven Larsson of Universitetets Zoologiske Museum (UZM); H. B. Leech of California Academy of Sciences (CAS); A. M. R. Wegner of Bogor Museum and Ambon; R. Wenzel of Field Museum (FM).

Financial support, including part of publication cost, has come from National Science Foundation Grant GB-4991.

Those forms having broad elytral margins are apparently older species, now largely limited to peripheral and insular areas of SE Asia. The species with narrow elytral margins appear to occupy available niches on the mainland and have spread to some extent into the peripheral islands. *Eumorphus quadriguttatus* with its races and sibling species covers the entire range of the genus.

Little has been published on early stages and ecology of the genus. Adults and larvae are recorded as associated with delicate fungi on dead wood. Bugnion (1909: 282) described and figured the larva of *E. quadriguttatus pulchripes*. His observations were summarized by Arrow in 1925.

Users of this paper may feel (as I do) that decisions on specific or subspecific status are uneven. In general, closely similar allopatric forms have been given subspecific status. Either decision would be, with present knowledge, conjectural. The major intent of this paper is to define more clearly the usage of names.

### Genus *Eumorphus* Weber

*Eumorphus* Weber, 1801, *Observ. Ent.*, p. 31.—Gerst., 1858, *Mon. Endom.*, p. 88. —Arrow, 1925,

*Fauna Br. India, Erotyl.*, p. 294.—Strkr., 1953, *Genera Ins.* **210**: 101.

*Eumorphoides* Guérin, 1858, *Rev. Mag. Zool.* (2) **10**: 12.

*Enaisimus* Guérin, 1858, *op. cit.*, p. 16.

*Haplomorphus* Guérin, 1858, *op. cit.* p. 18.

*Heterandrus* Guérin, 1858, *op. cit.*, p. 26.

Type-species: *Eumorphus sumatrae* Weber (= *Erotylus quadriguttatus* Illiger).

The key is practical and superficial. Its use should enable rapid approximation to specific determination but illustrations should be consulted. Where dimensions of elytral spots are cited "length" is measured in long axis of insect, "width" in transverse axis. The "basal carina" of protibia of ♂ of some species is a ridge on extensor surface which begins near base and descends near base of protibial tooth; the "distal carina" is mesad of this and extends from base of tooth to apex of tibia. In aedeagal preparations the endophallus is often somewhat everted and has been shown in the drawings but no taxonomic value should be given its appearance. I am not yet able to devise a complete key to ♀♀ but many can be recognized by their overall appearance.

All drawings have been made with camera lucida. The asterisk (\*) indicates that the monotype, holotype or lectotype has been studied in the preparation of the synopsis.

### KEY TO SPECIES OF *EUMORPHUS* (BASED LARGELY ON ♂♂)

- |       |   |                   |
|-------|---|-------------------|
| 1.    | Elytral side margins flat, wide up to apex .....          | 2                 |
|       | Side margins narrow, vanishing at apex .....              | 38                |
| 2(1). | Elytral margin wide up to base (see also couplet 38)..... | 3                 |
|       | Elytral margin narrow along shoulder .....                | 16                |
| 3(2). | Elytral spots almost touching suture and base .....       | 4                 |
|       | Spots distant from suture <i>or</i> base .....            | 6                 |
| 4(3). | Sutural margin of elytral apex excavate .....             | <i>insignis</i>   |
|       | Sutural margin of apex straight .....                     | 5                 |
| 5(4). | Elytra subcycloid in outline; spots round .....           | <i>marginatus</i> |

	Elytra oval ; spots quadrate .....	<b>quadrinotatus</b>
6 (3).	Spots large, narrowly separated at suture .....	7
	Spots small, round, distant .....	8
7 (6).	Elytra subcycloid, apices not prolonged .....	<b>marginatus</b>
	Elytra oval, apices somewhat prolonged .....	<b>felix</b>
8 (6).	Elytra of ♂ conically elevated at middle .....	9
	Elytra of ♂ not so elevated .....	14
9 (8).	Elytra cordiform, steel-blue (Celebes) .....	<b>wegneri</b>
	Elytra bluntly rounded behind .....	10
10 (9).	Margins and suture of elytra pale brown (Java) .....	<b>dilatatus</b>
	Elytral margins and suture dark .....	11
11 (10).	Front-rear spot interval less than twice length of spot .....	12
	This interval more than twice length of spot .....	13
12 (11).	Protibia of ♂ terete .....	<b>tumescens</b>
	Protibia of ♂ bicarinate, broad .....	<b>marginatus</b>
13 (11).	Front spots callose (Borneo ; Malacca).....	<b>dilatatus turritus</b>
	Front spots not callose (Celebes).....	<b>costatus</b>
14 (8).	Sutural margins of elytral apices excavate.....	15
	These margins convex, divergent .....	<b>politus</b>
15 (14).	Elytral margin subequal in width to disc .....	<b>helaeus</b>
	Elytral margin much narrower than disc .....	<b>fraternus</b>
16 (2).	Femora bicolored .....	17
	Femora uniformly dark .....	20
17 (16).	Elytral margin, epipleuron, suture brown (Java) .....	18
	Elytral margin, epipleuron, suture dark .....	19
18 (17).	Elytral apices rounded together ; 10.5-15 mm long .....	<b>columbinus</b>
	Apices separately rounded ; 7.5-10 mm long .....	<b>oculatus</b>
19 (17).	Elytral surface dull purplish brown .....	<b>austerus</b>
	Elytral surface shining .....	<b>hilaris</b>
20 (16).	Elytra widened to apical 1/3, margin not wider at apex .....	21
	Elytra long-oval, narrowed caudad from mid-length .....	32
21 (10).	Front spot distant from suture by its own length .....	22
	Front spot less than its own length from suture .....	28
22 (21).	Antennae thin, length art. 8 twice apical width .....	23
	Antennae stout, length art. 8 about 1.5 x apical width .....	24
23 (22).	Elytral apices obtusely rounded (Perak).....	♂ <b>leptocerus</b>
	Elytral apices narrowly rounded (NE Borneo) .....	? ♂ <b>lucidus</b>
24 (22).	Larger, length 10.5 mm or more .....	25
	Smaller, length 10 mm or less .....	26
25 (24).	Elytral umbo with low sharp carina (Palawan) .....	<b>purpureus</b>
	Umbo obtusely subcarinate (Borneo ; Malacca) .....	<b>tetraspilotus</b>
26 (24).	Pronotal hind angles acute but short .....	<b>micans</b>
	Pronotal hind angles spiniform .....	27
27 (26).	Length antennal art. 9 subequal to apical width .....	<b>dehaani</b>
	Length art. 9 about 3/4 apical width .....	<b>minor</b>
28 (21).	Elytral side margin yellow-brown (Java) .....	<b>e. eburatus</b>
	Elytral margin black .....	29
29 (28).	Front spots distant by width of spot or more .....	30
	Front spots distant by much less than width of spot .....	31
30 (29).	Basal carina of ♂ protibia low, even.....	<b>eburatus guerini</b>
	Basal carina of ♂ protibia angulately raised .....	<b>f. fryanus</b>

31 (29). Form narrow; front spot oblique, distant from base of elytron .....	<b>macrospilotus</b>
Form broad; front spot close to base .....	<b>fryanus festivus</b>
32 (20). Front spot not touching umbo (Borneo) .....	<b>macrospilotus</b>
Front spot partly or wholly covering umbo (Philippines) .....	33
33 (32). Front spot broadly meeting elytral base .....	<b>staudingeri</b>
Front spot may touch base at shoulder angle .....	34
34 (33). Elytral margin but little wider at apex .....	35
Elytral margin much wider at apex .....	36
35 (34). Pronotum sparsely punctate (Samar to Surigao) .....	<b>c. cyanescens</b>
Pronotum rather densely punctate (Luzon) .....	<b>c. thomsoni</b>
36 (34). Form narrow; elytral margin weakly arcuate, less than 1/3 as wide as disc (Agu- san; Davao) .....	<b>productus</b>
Broad; elytral margin strongly arcuate, 1/3 as wide as disc .....	37
37 (36). Elytral umbo "pinched" carinate (Mt Katanglad) .....	<b>eurynotus</b>
Umbo roundly carinate (Mt McKinley) .....	<b>elegans</b>
38 (1). Upper surface granulate, opaque; sides of pronotum without raised margins, often crenulate .....	39
Upper surface smooth, shining; pronotum margined .....	44
39 (38). Elytral umbo low, bluntly subcarinate .....	40
Umbo elevated, compressed carinate .....	41
40 (34). Femora and elytra in part red or brown (Java) .....	<b>c. coloratus</b>
Femora and elytra deep black (Indo-China) .....	<b>c. vitalisi</b>
41 (39). Base of elytra depressed only near umbo .....	<b>assamensis</b>
Elytral base broadly depressed; wings short, strap-like .....	42
42 (41). Front spot covering most of umbonal carina .....	<b>drescheri</b>
Front spot behind umbo .....	43
43 (42). Front spot distinctly callose (Java) .....	<b>carinatus</b>
Front spot not callose (Sumatra) .....	<b>constrictus</b>
44 (38). Femora partly orange or red .....	45
Femora wholly dark .....	54
45 (44). Elytron with 3 yellow spots .....	<b>ocellatus</b>
Elytron with 2 yellow spots .....	46
46 (45). Elytral umbo inflated, overhanging margin .....	<b>panfilovi</b>
Elytral umbo weakly elevated .....	47
47 (46). Front spot round, distant from side margin .....	<b>longespinosus</b>
Front spot touching (or almost) side margin .....	48
48 (47). Mesotibia of ♂ with disto-internal tooth .....	49
Mesotibia of ♂ without tooth .....	50
49 (48). Protibia of ♂ with minute proximal tooth .....	<b>quadriguttatus pulchripes</b>
Protibia of ♂ with short stout tooth at middle .....	<b>q. andamanensis</b>
50 (48). Metatibia of ♂ with disto-internal excision .....	51
Metatibia of ♂ without such excision .....	52
51 (50). Front spot distant from elytral base by little more than its own length .....	<b>simplex erythromerus</b>
Front spot 2 spot-lengths from base .....	<b>sanguinipes</b>
52 (50). Pronotal hind angles of ♂ rectangular .....	<b>trabeatus</b>
Pronotal hind angles of ♂ briefly produced, acute .....	53
53 (52). Length 7 mm; front spot cycloid .....	<b>bicoloripedoides</b>
Length 8-9 mm; front spot transverse .....	<b>m. murrayi; m. carinensis</b>
54 (44). Umbo much inflated, overhanging side margin .....	<b>inflatus</b>
Umbo weakly elevated .....	55

55 (54). Elytron white, base, suture, margin, discal spot black .....	<b>b. bipunctatus</b>
Elytron not colored as above .....	56
56 (55). Spots small; front-rear interval twice (or nearly) length of front spot .....	57
Front-rear interval not over 3/2 length front spot .....	62
57 (56). Mesotibia of ♂ with disto-internal tooth .....	58
Mesotibia of ♂ without tooth .....	61
58 (57). Sternites 3-5 of ♂ with tufts of hairs.....	59
Sternite 5 of ♂ with tuft (s) of hairs.....	60
59 (58). Protibial tooth of ♂ proximal to mid-length .....	<b>q. quadriguttatus</b>
Protibial tooth ♂ at mid-length .....	<b>q. convexicollis</b>
60 (58). 11 mm or more; protibia of ♂ with tubercle .....	<b>b. bulbosus</b>
10 mm; protibia of ♂ without tubercle (Sangi) .....	<b>b. arrowi</b>
61 (57). Metatibia of ♂ with disto-internal excision deep .....	<b>s. simplex; parvus</b>
Metatibial excision shallow .....	<b>parvus; sybarita sybarita</b>
62 (56). Form long-oval; antennal article 8 longer than wide .....	63
Short-oval; antennal article 8 nearly quadrate .....	67
63 (62). Front-rear interval more than length of spot .....	64
This interval less than length of front spot .....	65
64 (63). Interval between front spots about 4/3 length of spot (Borneo) .....	<b>bipunctatus ?subsp</b>
This interval subequal to length of spot (Java) .....	<b>sybarita consobrinus</b>
65 (63). Black areas of elytra forming narrow-limbed cross .....	<b>bipunctatus crucifer</b>
Black intervals at least 1/2 length of spot.....	66
66 (65). Protibia of ♂ strongly bowed distad (Sumatra).....	<b>bipunctatus mirus</b>
Protibia of ♂ hardly bowed distad (Java) .....	<b>alboguttatus</b>
67 (62). Mesotibia of ♂ gently curved, not serrate .....	<b>csikii</b>
Mesotibia of ♂ undulate, broad, internally serrate .....	68
68 (67). Antennal club shorter than preceding 5 articles .....	<b>cryptus</b>
Club subequal to preceding 5 articles .....	<b>westwoodi</b>

***Eumorphus marginatus*** Fabricius Fig. 1, 61.

*Eumorphus marginatus* Fabr., 1801, Syst. Eleuth. 2: 12, Grstkr., 1858, Mon. Emdom., p. 91.

Arrow, 1925, Fauna Br. India, Erotyl., p. 53.

Blue-black, each elytron with two round yellow spots which show variation in size. Width of elytra together subequal to length, side margin at mid-length subequal in width to disc. In ♂ the elytra are conically elevated together; in profile the front and hind slopes of the cone are similar, slightly concave.

"Taken on *Polyporus* by Mr. Jacobson, who notes that the beetles have a strong unpleasant smell—". (Arrow 1925).

The type is unknown. Recorded by Arrow from Tenasserim, Malay Peninsula, Sumatra, Java, Borneo. Most specimens which I have seen are from these areas. A series labeled "Mafalu, N. Guinea" (Strkr.) and a single specimen labeled "S. Celebes" may have been erroneously sorted. Length 14-20 mm.

***Eumorphus tumescens*** Gorham Fig. 2, 62.

\**Eumorphus tumescens* Gor., 1892, Proc. Zool. Soc. Lond., p. 86, pl. 4, fig. 4.

Very similar to *marginatus* and of about the same size. In ♂ of *tumescens* the elytral elevation is higher, in profile obtusely rounded at summit, posterior slope strongly concave. Protibia of ♂ terete, distally widened but without strong carination as found in

*marginatus*. Length 17 mm.

Holotype ♂ and allotype ♀ from Mt Kinabalu, N. Borneo (BMNH). Tenompok, Mt Kinabalu, XI-4-1958, T. C. Maa (BPBM). A ♂ in USNM is labeled "Baguio" but the record needs verification.

***Eumorphus dilatatus dilatatus*** Perty Fig. 3, 63.

*Eumorphus dilatatus* Perty, 1831, Observ. Col. Ind. Or., p. 42.-Grstrkr., 1858, Mon. Endom., p. 93.

Elytra with side margins, epipleura, suture yellow-brown, disc violet-black with 2 small yellow spots. Pronotum brown at sides with disc dark. Protibia of ♂ toothed and weakly carinate, meso and metatibia curved, elytral cone rather high, its summit in profile much rounded. Length 13-14.5 mm.

I have not sought the depot of the type. Apparently confined to Java. E. Java : Kendeng Gbg. W. Java : Banten ; Arjuno.

***Eumorphus dilatatus turritus*** Gerstaecker, new status Fig. 4.

\**Eumorphus turritus* Grstrkr., 1857, *Archiv Naturg.* **23** : 225 ; 1858, Mon. Endom., p. 95.

Violet-black, each elytron with 2 small yellow spots. In size and structure *turritus* is very close to *dilatatus* and is here treated as a subspecies.

Lectotype from Penang I. (BMNH): co-types from Singapore and Borneo (UZM ; Stettin). Singapore ; Malacca ; N. Borneo. E. Borneo : Balikpapan, A. M. R. Wegner. N. Borneo : Kalabakan R., 48 mi. W. Tawau, prim. forest, Nov., L. W. Quate (BPBM). Lower Siam : Trong, W. L. Abbott (USNM).

***Eumorphus wegneri*** Strohecker Fig. 10, 64.

\**Eumorphus wegneri* Strkr., 1956, *Treubia* **23** : 245, fig. 1.

Elytral margins narrowed caudad, giving the elytra a broadly cordiform outline. This is more pronounced in ♀ than in ♂. Dark steel-blue, each elytron with 2 very small round yellow spots. Length 16.7-21.5 mm.

The external ♂ features are much like those of *marginatus*.

Holotype ♂ and allotype ♀ from Nanggala, S. Celebes in Leiden Museum. Rantepao, F. C. Drescher ; Celebes (MNM).

***Eumorphus costatus*** Gorham Fig. 11, 65.

\**Eumorphus costatus* Gorch., 1873, End. Recit. p. 34, pl., fig. 6.

Blue or violaceous black, each elytron with two small yellow spots, widely separated in both axes. More elongate in form than the 5 preceding forms, elytral margin at mid-length not more than 1/2 width of disc. Length 15-16 mm.

Holotype ♀ and paratype ♀ from Celebes (BMNH). 3♂♂ and 2♀♀ labeled "Celebes" and "Tjamba, Zuid Celebes, Aug." (Strkr. ex Janson Coll.)

***Eumorphus quadrinotatus*** Gerstaecker Fig. 6, 66.

\**Eumorphus quadrinotatus* Grstrkr., 1857, *Archiv Naturg.* **23** : 226 ; 1858, Mon. Endom., p. 96, pl. 1, fig. 1-13, 19, 25, 27, 32, 34-39.

The large quadrate yellow elytral spots seem rather uniform in the numerous specimens examined. The hind angles of pronotum are rectangular, not produced. Length 13-15 mm.

Lectotype ♂ from Java (HUM, Nr. 21739). Bogor ; Djakarta ; Mons Gede 4000', Fruhstorfer.

***Eumorphus insignis*** Gorham Fig. 5, 67.

*Eumorphus insignis* Gorh., 1901, *Stett. Ent. Ztg* **62**: 200.—Arrow 1926, *Ent. Mitt.* **15**: 248.

Deep black, each elytron with 2 large yellow or orange spots. More elongate than *quadrinotatus*, elytra tapering caudad, apices much extended with sutural edge excavate, tip feebly inflexed. Length 17–19 mm.

In ♂ mesotibia strongly, metatibia weakly bowed, apex of latter produced into hook turned upward and outward, hind angles of pronotum briefly spiniform.

Holotype ♂ and allotype ♀ from Sinaborg, Sumatra (Stettin Museum). Deli, Sumatra. Other specimens labeled "Sumatra".

***Eumorphus helaeus*** Arrow Fig. 7, 68.

\**Eumorphus helaeus* Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 20.

Dark violaceous above, each elytron with 2 small yellow spots. Broadly oval, combined width of elytra but little less than their length, apices not produced but with sutural edge slightly excavate. Length 15–16 mm.

In ♂ protibia has strong tooth beyond mid-length, meso- and metatibia strongly bowed, apex of metatibia hook-like, hind angles of pronotum briefly spiniform.

Holotype ♂, allotype ♀ and paratypes from Merang, Sumatra, Doherty (BMNH) ; Medan, Sumatra, Hayek.

***Eumorphus fraternus*** Arrow Fig. 8, 69.

\**Eumorphus fraternus* Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 20.

Similar to *helaeus* but more elongate due to narrower elytral margins. Length 13–13.5 mm.

External ♂ features are similar to those of *helaeus* ; in both spp. apical process of metatibia is hooked.

Holotype ♂, allotype ♀ and 4 paratypes from Perak, Doherty (BMNH).

***Eumorphus politus*** Gerstaecker Fig. 9, 70.

\**Eumorphus politus* Grstkr., 1857, *Archiv Naturg.* **23**: 226 ; 1858, *Mon. Endom.* p. 98.—Arrow, 1925, *Fauna Br. India, Erotyl.*, p. 298.

\**Eumorphus opalinus* Gorh., 1901, *Stett. Ent Ztg* **62**: 201.—Arrow, 1925, l. c.

Upper surface violaceous, margins of elytra brownish, each elytron with 2 small round yellow spots. Of narrower form than *fraternus*, apices of elytra divergent but sutural margin not excavate. Length 11–12 mm.

The ♂ has protibia bicarinate and internally toothed, mesotibia strongly, metatibia weakly bowed, its apical process short, triangular.

Lectotype ♂ (BMNH) and co-type (Stettin Museum) from Singapore designated by Arrow, 1925. Malacca. Reported by Arrow from Tenasserim, Thailand, Borneo, Sumatra.

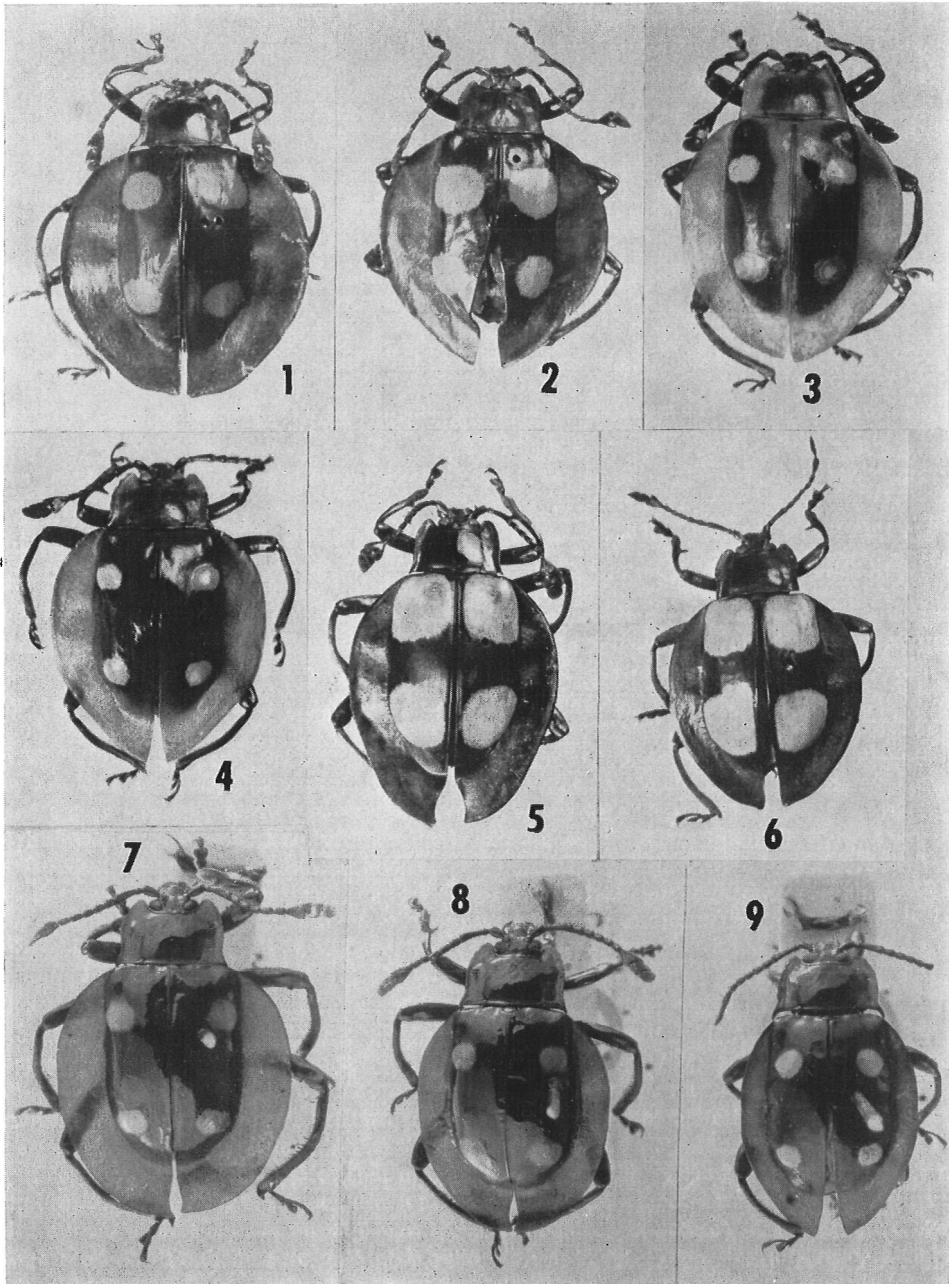


Fig. 1-9. 1, *Eumorphus marginatus* Fab. ♂ ..... Batavia, Java ; 2, *E. tumescens* Gorh. ♂ ..... ?Baguio, P. I. (elytra deformed) ; 3, *E. d. dilatatus* Perty ♂ ..... Java ; 4, *E. dilatatus turritus* Grstkr. ♂ ..... Malacca ; 5, *E. insignis* Gorh. ♂ ..... Sumatra ; 6, *E. quadrinotatus* Grstkr. ♂ ..... Java ; 7, *E. helaeus* Arrow ..... holotype ♂ ; 8, *E. fraternus* Arrow ..... holotype ♂ ; 9, *E. politus* Grstkr. ..... lectotype ♂.



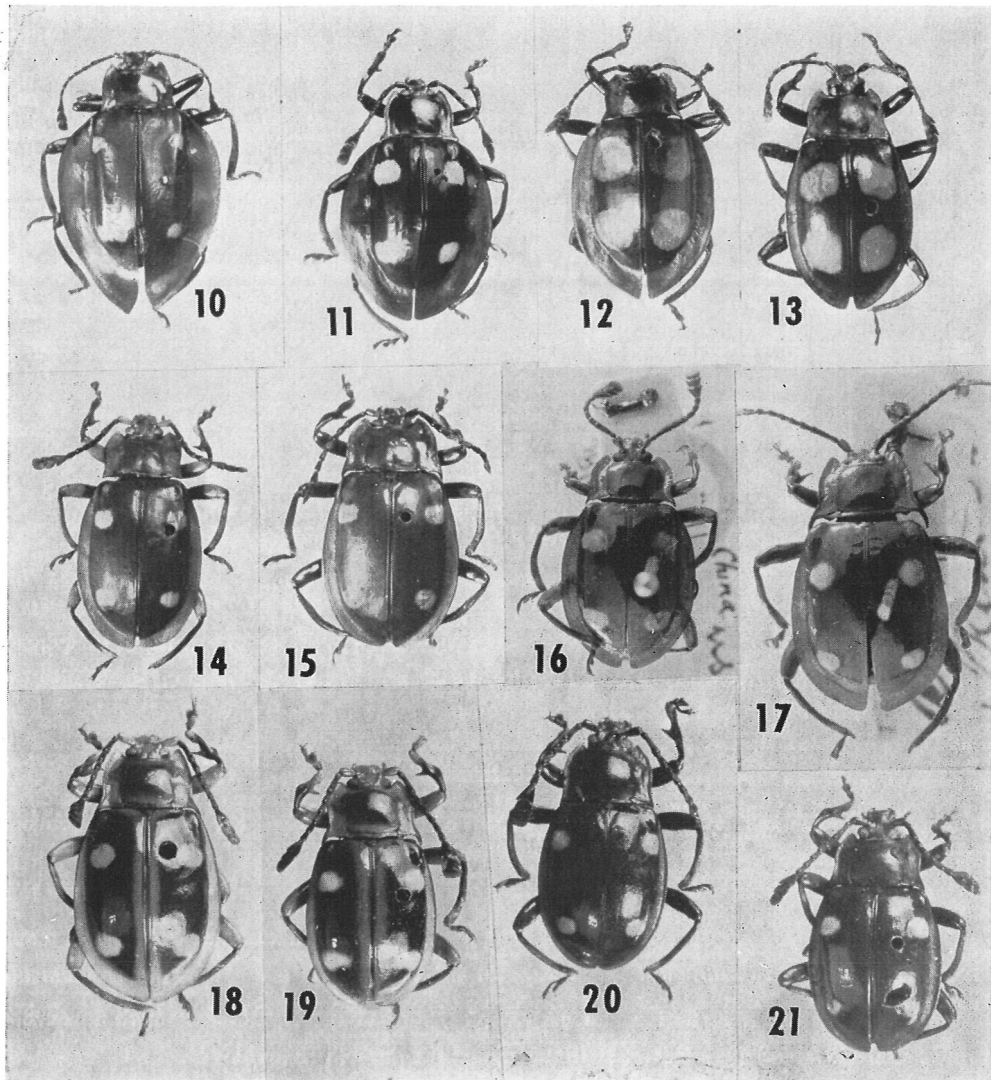


Fig. 10-21. 10, *Eumorphus wegneri* Strkr. ....paratype ♀ ; 11, *E. costatus* Gorh. ♂ ..... S. Celebes ; 12, *E. felix* Arrow ♂ .....Mt. Kinabalu, N. Borneo ; 13, *E. macropilotus* Arrow .....paratype ♂ ; 14, *E. austerus* Grstkr.....lectotype ♂ ; 15, *E. purpureus* Strkr., n. sp. ... paratype ♂ ; 16, *E. hilaris* Arrow.....monotype ♂ ; 17, *E. tetraspilotus* Hope.....monotype ♂ ; 18, *E. columbinus* Grstkr. ♂ .....W. Java ; 19, *E. oculatus* Grstkr. ♂ .....Bantam, Java ; 20, *E. micans* Strkr., n. sp. .... paratype ♂ ; 21, *E. minor* Grstkr. ♂ .....Singapore.

***Eumorphus hilaris* Arrow** Fig. 16, 76.

\**Eumorphus hilaris* Arrow, 1928., Faune Col. Fr. 2 : 348.

Purplish-brown above, shining, each elytron with 2 small round widely spaced yellow spots, distal half of femora and antennal article 1 red-orange. Length 12 mm.

In monotype ♂ lateral areas of pronotum are somewhat reflexed, pronotal hind angles briefly spiniform, protibia with internal tooth and moderate carinae, not twisted in appearance, mesotibia strongly bowed, metatibia almost straight.

Monotype ♂ from Giaray, Cochin China, Feb., Vitalis (BMNH).

**Eumorphus felix** Arrow Fig. 12, 71.

\**Eumorphus felix* Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 17.

*Eumorphus costatus* Gorh., 1892 (not of Gorh. 1873), *Proc. Zool. Soc. Lond.*, p. 87.

Deep blue-black, each elytron with 2 large yellow-orange patches. Broadly oval, elytral margin at mid-length slightly more than 1/3 width of disc, broader distad, elytral tips hardly divergent. Length 15 mm.

Protibia of ♂ toothed, sinuously bicarinate, meso- and metatibia moderately curved, apical process of metatibia triangular, straight, acute. Elytra of ♀ with prominent shoulder ridge, high juxta-scutellar carina, suture elevated.

Holotype ♂ and allotype ♀ from Mt. Kinabalu, N. Borneo, Whitehead (BMNH). N. Borneo: Kenokok, Apr. (BMNH); Tenompok, 1460 m, Jan., T. C. Maa (BPBM).

**Eumorphus austerus austerus** Gerstaecker Figs. 14, 72, 73.

\**Eumorphus austerus* Grstrk., 1857, *Archiv Naturg.* 23: 227; 1858, *Mon. Endom.*, p. 105.

\**Eumorphus depressus* Arrow, 1925, *Fauna Br. India, Erotly.*, p. 302 (n. syn.).

Dark purplish-brown, feebly shining, elytral spots small round, widely spaced. Elytral margin at mid-length 1/5 width of disc. Length 10-11 mm.

Protibia of ♂ with large sharp tooth and high distal carina, meso- and metatibia slightly bowed, hind angles of pronotum briefly spiniform.

The holotype of *depressus* is certainly con-specific with the Berlin specimen cited as "type" of *austerus* by Arrow. A co-type of *austerus* (BMNH) is included in the series of *E. austerus indianus* below. Specimens examined indicate that this is a species of wide range and shows a number of variations in aedeagal structure.

Lectotype ♂ from "Birma" (HUM, Nr. 21743). Holotype ♂ of *depressus* from Karenni Hills, Burma (BMNH). Tenasserim, Helfer. Viet Nam: 30 mi. NW of Saigon, in dead bamboo, July, M. Poilane (USNM); Din Quam, in polypore on rotting tree, Jan., M. Poilane (USNM). Laos: Sala Nam Chau Chin, Dec. (BMNH); Xieng Khouang, Jan.; Nam Tiene, Haut Mekong, Apr., Vitalis (BMNH); Ban Van Eue, Apr. 1965, Gressitt (BPBM). Laos-Tonkin (Strkr.). Cambodia and Thailand (BMNH).

**Eumorphus austerus indianus** Strohecker, new subspecies Fig. 74.

*Eumorphus austerus* Arrow, 1925, *Fauna Br. India, Erotly.*, p. 300.

Very similar to *austerus* but of broader form and average larger size. Length 12.1 mm.

Holotype ♂, allotype ♀ and 4 ♂ paratypes from Pattcai (Patkai) Mts, Assam (BMNH). Upper Assam (HUM). Probably this form reported by Kryzhanovskij from Yunnan and by Mader from Kiaochow, China.

**Eumorphus tetraspilotus** Hope Fig. 17, 77.

\**Eumorphus tetraspilotus* Hope, 1832, *Griffith's Anim. Kingd.*, p. 787, pl. 60, fig. 6., pl. 75, fig. 6.-Grstrk., 1858, *Mon. Endom.*, p. 103.-Arrow, 1925, *Fauna Br. India, Erotyl.*, p. 299, pl. 1, fig. 2.

Deep violet-black, each elytron with 2 small round yellow spots. Teneral specimens are violet as illustrated by Arrow. Length 11–14 mm.

In ♂ protibia appears twisted due to high basal and distal carinae and has large acute tooth bent upward at apex, mesotibia moderately, metatibia feebly bowed, hind angles of pronotum moderately to greatly prolonged, the monotype extreme in this feature.

Monotype ♂ from Singapore (BMNH). Reported by Arrow from Thailand, Johore, Perak, Singapore, and Sumatra and N. Borneo. E. Borneo : Tabang, Bengen R., Sept. ; Balikpapan, Oct., A. M. R. Wegner.

***Eumorphus columbinus*** Gerstaecker Fig. 18, 78.

\**Eumorphus columbinus* Grstrk., 1857, *Archiv Naturg.* **23** : 227 ; 1858, *Mon. Endom.*, p. 107.

Very much like *tetraspilotus* in structure and perhaps to be regarded as a subspecies, but markedly different in coloration. The pronotal hind angles in ♂ are less produced than is usual in *tetraspilotus*. Length 11–13 mm.

Lectotype ♂ from Java (BMNH). Apparently confined to Java : Bantam ; Dungus Iwul, A. M. R. Wegner.

***Eumorphus purpureus*** Strohecker, new species Fig. 15, 75.

*Eumorphus tetraspilotus* : Strkr., 1943, *Proc. U. S. N. M.* **93** : 381 ; 1958, *Fieldiana Zool.* **42** : 40 (not of Hope 1832).

*Eumorphus* sp. Strkr., 1966, *Ent. Meddel.* **34** : 357.

Black with purplish tints especially elytra, each elytron with 2 small yellow spots. Length 10.5–12 mm.

In appearance very similar to *tetraspilotus* but not so shining. A notable but small feature is the low sharp carina on elytral shoulder ; this is more pronounced in ♀.

Protibia of ♂ with basal carina moderate, evenly curved, distal carina very high, compressed, arcuate, pronotal hind angles spiniform, metatibial apex flat, rounded.

Holotype ♂ and allotype ♀ from Palawan, P. I., Robinson Bequest (USNM, Nr. 69218). 8 paratype ♂♂ and 5 ♀♀ have the same data (USNM ; BMNH ; Strkr.). Palawan : Montalingajan, Pinigisan, 600 m, Sept. (UZM).

***Eumorphus leptocerus*** Strohecker, new species Fig. 117, 132.

Dark blue-black, each elytron with 2 small yellow spots, the anterior slightly transverse and callose. Length 9–11 mm.

Male with antennae very slender, articles 4–8 each twice as long as its apical width, club narrow. Protibia with high basal and distal carinae, sharp internal tooth directed distad at 45° angle, elytral apices separately rounded. Elytral apices of ♀ much extended and divergent, narrowly rounded. The ♂ looks much like a small *tetraspilotus* but slender antennae are clue to its identity.

Holotype ♂, allotype ♀ and 3 ♀♀ from PERAK, Doherty (BMNH). One ♀ is 9 mm. long, the other specimens 10.5–11 mm.

***Eumorphus lucidus*** Gorham Fig. 27, 118, 131.

\**Eumorphus lucidus* Gorh., 1892, *Proc. Zool. Soc. Lond.*, p. 87, pl. 4, fig. 1.

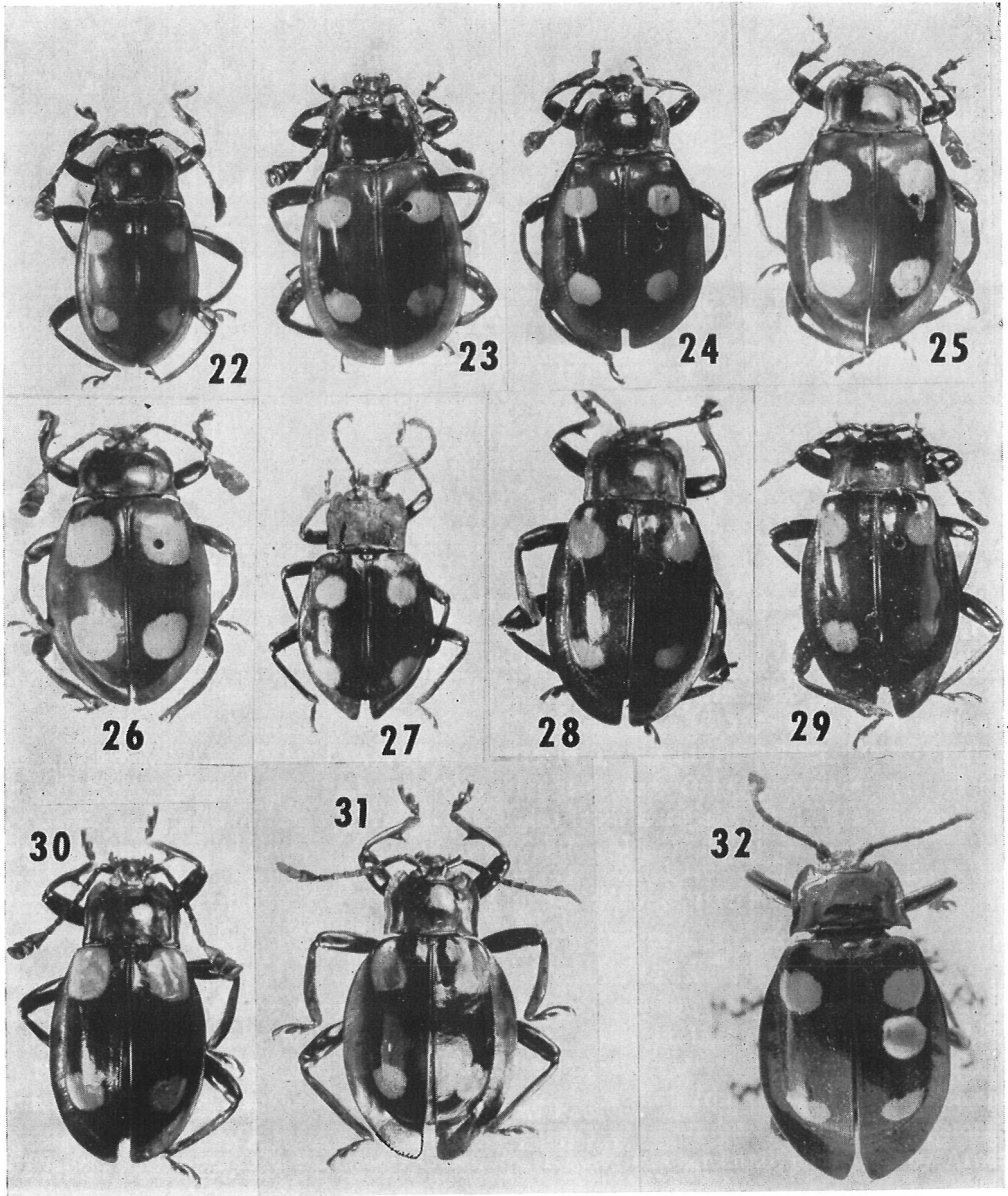


Fig. 22-32. 22, *Eumorphus dehaani* Guérin, ♂ ..... Banguay I.; 23, *E. e. eburatus* Grstkr. ♂ ..... W. Java; 24, *E. eburatus guerini* Gorh. ♂ ..... Malacca; 25, *E. f. fryanus* Gorh. ♂ ... Malacca; 26, *E. fryanus festivus* Arrow ♂ ... E. Borneo; 27, *E. lucidus* Gorh. ♀ ... Borneo; 28, *E. c. cyanescens* Grstkr. ♂ ..... Panaon, P. I.; 29, *E. productus* Arrow ♂ ..... Davao, P. I.; 30, *E. staudingeri* Mader ♂ ..... paratype; 31, *E. eurynotus* Strkr., n. sp. ♂ ... holotype; 32, *E. productus* Arrow ♂ ..... monotype.

Described from ♀, which is unusual for its granulately opaque pronotum with long, deep lateral sulci. Length 8-8.5 mm.

If my identification of a single ♂ from Mt Kinabalu as *lucidus* is correct this species shows unusual sexual differences. In this specimen the pronotum has a soft, silky gloss, hind angles long-spiniform, curved, embracing elytral shoulders, lateral sulci short, shallow, basal sulcus broad, vague. Elytra widened to beyond mid-length, apices somewhat produced and narrowly rounded. Protibia with high, subangulate basal carina, prominent distal carina and long sharp tooth. Meso- and metatibia gently curved. Length 12 mm.

Holotype ♀ and 3 paratype ♀♀ from Mt Kinabalu, N. Borneo, Whitehead (BMNH). Borneo, W. Horn (Deutsch. Ent. Inst.; Strkr.). Sabah: Mt Kinabalu, Mesilau, Feb., J. Smart, Royal Soc. Exped. 1964 (BMNH).

**Eumorphus oculatus** Gerstaecker Fig. 19, 79.

\**Eumorphus oculatus* Grstkr., 1857, *Archiv Naturg.* **23**: 227; 1858, *Mon. Endom.*, p. 108.

\**Eumorphus laetus* Guérin, 1857, *Arch. Ent.* **1**: 246.

In appearance much like *columbinus* but structural affinity is with *minor*. The unusual color pattern of this and some other Javan *Eumorphus* suggests Muellerian mimicry but I know of no observations on the biology of these insects.

Protibia of ♂ with sharp internal tooth, high arcuate basal carina and blunt distal carina. In ♀ elytral apices are somewhat extended and divergent. Length 8-10 mm.

Lectotype ♀ from Java (HUM, Nr. 21745), co-types (BMNH; Stettin). Java: Bantam; Mons Gede, 4000', Fruhstorfer; Idjin, H. Lucht (Bogor).

**Eumorphus dehaani** Guérin Fig. 22, 80, 128.

\**Eumorphus dehaani* Guérin, 1858, *Rev. Mag. Zool.* ser 2, **10**: 15.- Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 16.

Dark violet-black, with 2 small yellow spots on each elytron. Elytral margins rather narrow, 1/5 width of disc. Length 8-9 mm.

Protibia of ♂ with high arched basal carina, base of tooth very broad, apex finely acute, directed almost distad.

Monotype ♂ attributed to Java by Guérin (BMNH). N. Borneo: Sandakan, C. F. Baker, BMNH); Banguay (Banggi) I. (MNM).

**Eumorphus minor** Gerstaecker Fig. 21, 81, 129.

\**Eumorphus tetraspilotes minor* Grstkr., 1858, *Mon. Endom.*, p. 103.

\**Eumorphus opacicollis* Arrow, 1925, *Fauna, Br. India, Erotyl.*, p. 301.

Very similar to *dehaani*; the only good characters for separating the two are accessory ♂ structures: tooth of protibia narrower basad and directed more mesad in *minor*; aedeagus, ventral view, with apex narrower and hooked, ramus slenderer. Length 8-9 mm.

Lectotype ♂ from Penang I. (HUM). Holotype ♂ of *opacicollis* from Momeit, Burma (BMNH). Recorded by Arrow from Mergui, Tenasserim; Ranong, Thailand; Penang I. Perak: Malacca; Sumatra: Palembang; Liangagas. Sarawak: Matang. Singapore, Dec., T. C. Maa (BPBM). N. Borneo. Selangor. Sinkip I. Dinding I.

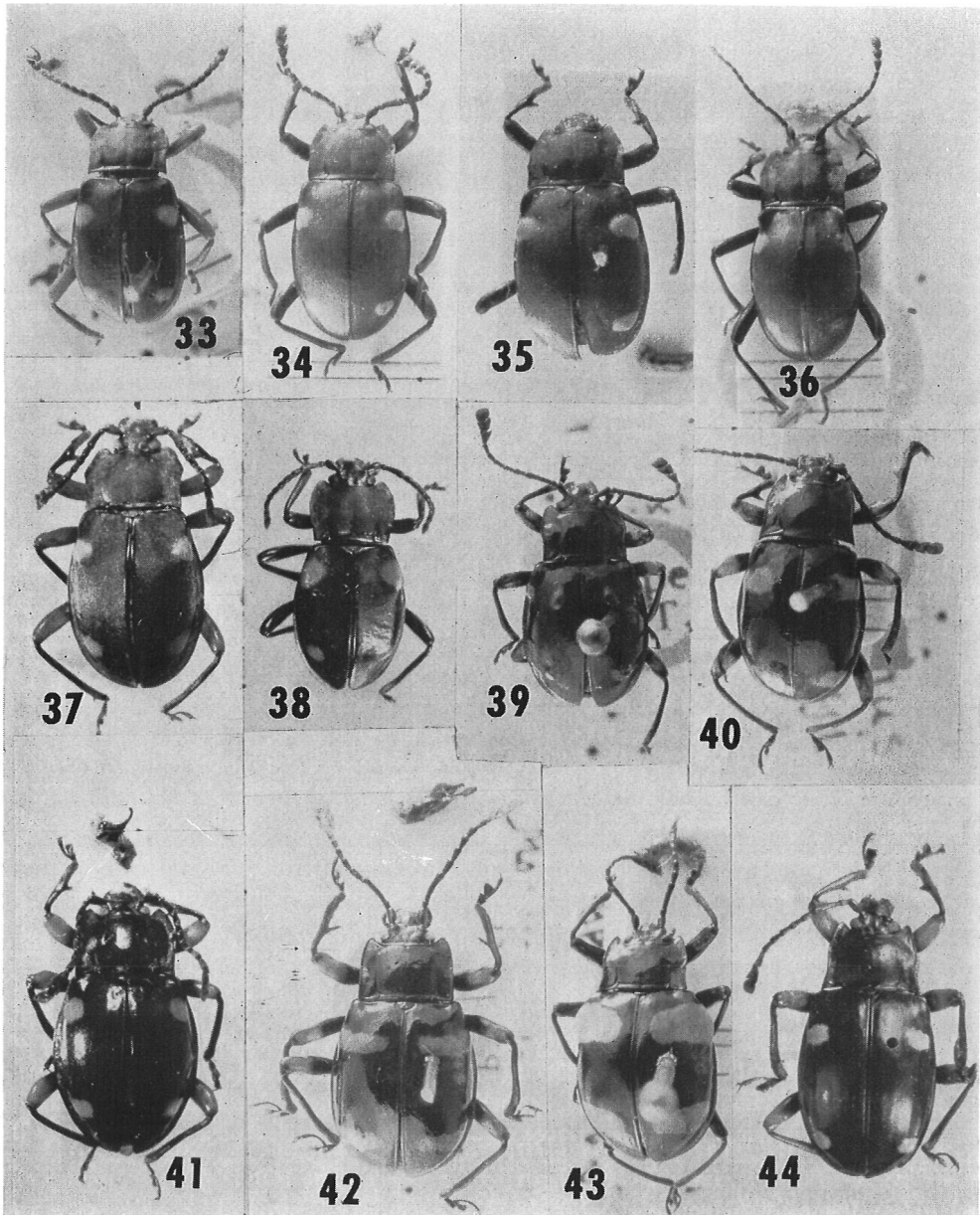


Fig. 33-44. 33, *Eumorphus c. coloratus* Grskr. .... lectotype ♂ ; 34, *E. coloratus vitalisi* Arrow ... holotype ♂ ; 35, *E. a. assamensis* Grskr. .... lectotype ♂ ; 36, *E. constrictus* Arrow ..... holotype ♂ ; 37, *E. carinatus* Grskr. ♂ ..... Telagarwana, W. Java ; 38, *E. drescheri* Strkr. .... paratype ♀ ; 39, *E. ocellatus* Arrow ..... monotype ♀ ; 40, *E. murrayi* Gorh. .... monotype ♂ ; 41, *E. bicoloripedoides* (Mader) .....paratype ♂ ; 42, *E. trabeatus* Arrow ..... monotype ♂ ; 43, *E. inflatus* Arrow ..... holotype ♂ ; 44, *E. longespinosus* Pic ♂ ..... Montes Manson, Tonkin.

***Eumorphus micans*** Strohecker, new species Fig. 20, 82, 130.

Slightly larger than *minor* and of somewhat narrower form. Upper surface dark violaceous, strongly shining, each elytron with 2 small yellow spots. Length 9–11 mm.

Protibia of ♂ with tooth very long and sharp, distal carina well elevated, basal carina obsolete, aedeagus much stouter than in *minor* and *dehaani*.

Holotype ♂ and allotype ♀ from Balikpapan, E. Borneo, Kalimantan, A. M. R. Wegner (Strkr. Coll.<sup>2</sup>). Also taken by Wegner at Tabang, E. Borneo, Oct. Sumatra: Liangagas, Dohrn (MNM). Sarawak, Shelford, (BMNH).

***Eumorphus eburatus eburatus*** Gerstaecker Fig. 23, 83.

\**Eumorphus eburatus* Grstrk., 1857, *Archiv Naturg.* 23: 226; 1858, Mon. Endom., p. 100.

\**Haplomorphus circumcinctus* Guérin, 1857, Arch. Ent. 1: 247, pl. 13, fig. 4.-Gorh., 1873, Endom. Recit., p. 34.

Violaceous or aeneous black above, elytron with 2 fairly large yellow spots, and yellow-brown margin. Length 12–13 mm.

Size of elytral spots is variable but some of variation is due to stage of development; teneral specimens have larger spots. The lateral areas of pronotum may be pale but are normally dark in mature specimens. Elytra are shining in ♂, finely granulate, dull in ♀.

Protibia of ♂ with basal carina low, broadly arched, distal carina rather high, tooth stout, setose.

Lectotype ♀ from Java (HUM). Monotype ♂ of *circumcinctus* from Java (BMNH). W. Java: Dungus Iwul, Dec., A. M. R. Wegner; G. Slamet, Jul-Aug., F. C. Drescher; Tjikadjang, Bandung, Apr., M. A. Lieftinck (Bogor, Strkr.)

***Eumorphus eburatus guerini*** Gorham, new status Fig. 24.

\**Eumorphus guerini* Gorh., 1873, Endom. Recit., p. 33.

In all its structure, including aedeagus, *guerini* appears identical to *eburatus*; the only differences I have noted are slightly smaller elytral spots and dark margin in *guerini*.

Holotype ♂ and allotype ♀ from Malacca (BMNH). Other specimens seen have been from this area.

***Eumorphus fryanus fryanus*** Gorham Fig. 25.

\**Eumorphus fryanus* Gorh., 1875, *Trans. Ent. Soc. Lond.*, p. 13.-Arrow, 1925, Fauna Br. India, Erytyl., p. 300.

Broadly oval, elytral margin at mid-length almost 1/3 width of disc, blue-black, shining but elytra of ♀ rather dull, each elytron with 2 rather large yellow spots, transverse interval subequal to width of a spot, longitudinal interval subequal to or slightly more than length of spot. Length 12–13 mm.

Protibia of ♂ with large tooth, basal carina high and angulately arcuate, mesotibia angulately bowed at middle, metatibia almost straight. Pronotal hind angles spiniform.

Lectotype ♂ and co-types from Malacca (BMNH). Reported by Arrow from Tenasserim, Malay Peninsula, Sumatra, Sarawak. Other specimens seen are from the same areas.

<sup>2</sup> Temporary depot.

**Eumorphus fryanus quadripustulatus** Frivaldzsky, new status

\**Eumorphus quadripustulatus* Friv., 1883, *Termész. Fuz.* **10** : 20.

Differs from nominate *fryanus* only by slightly larger size of elytral spots. In this feature it is transitional between nominate *fryanus* and the following form and the name *quadripustulatus* is probably valueless.

Holotype ♂, allotype ♀ and paratypes from Mt Matang, Borneo(MNM).

**Eumorphus fryanus festivus** Arrow, new status Fig. 26, 84.

\**Eumorphus festivus* Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 19.

I have found no differences between *fryanus* and *festivus* except size of elytral spots. In some specimens of *festivus* from N. Borneo the yellow spots are even larger than in the holotype, resembling the pattern of *quadrinotatus*. Specimens collected by Wegner on Gunungsari and Balikpapan, E. Borneo show variation in size of spots but generally resemble *festivus*.

Holotype ♂ from Sarawak, R. Shelford(BMNH). N. Borneo: Sandakan, Baker (USNM). E. Borneo: Gunungsari; Balikpapan, Aug., Wegner(Bogor; Strkr.). Other material labeled "Borneo"; "N. Borneo"; "Sarawak".

**Eumorphus macropilotus** Arrow Fig. 13, 85.

\**Eumorphus macropilotus* Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 18.

Form(for group) elongate, elytral margin at mid-length hardly 1/4 width of disc. Blue-black, each elytron with 2 large orange spots, the anterior quadrate, oblique, distant from base, approaching side margin and suture. Length 11.5-12 mm.

In ♂ pronotal hind angles long spiniform, protibia with large tooth, high arched basal carina, strong distal carina, meso- and metatibia weakly curved.

Holotype ♂ and 3 paratype ♂♂ from Mt Kinabalu, Whitehead and Kiou, R. Hanitsch, N. Borneo(BMNH).

Placed by Arrow with *guerini* and *fryanus* but a species of obscure affinities.

The **cyanescens** Group

The general appearance of the forms of this group suggests origin from the same stock as *E. costatus* but differentiation in Mindanao argues long isolation. Whether the forms treated as species are to be considered as races I cannot confidently decide, but their occurrence within the area of Mindanao is evidence, I think, of specific differentiation.

**Eumorphus cyanescens cyanescens** Gerstaecker Fig. 28, 86.

\**Eumorphus cyanescens* Grstkr., 1857, *Archiv Naturg.* **23** : 226; 1858, *Mon. Endom.*, p. 101, pl. 2, fig. 5.—Strkr., 1958, *Feldiana Zool.* **42** : 41.

Long-oval, elytral margins at mid-length slightly more than 1/4 width of disc. Blue-black, each elytron with 2 rather small yellow spots, anterior obliquely oval, covering part of umbonal ridge. Length 13-15.5 mm.

Pronotal hind angles of ♂ briefly acute, not spiniform, protibia with large tooth, feeble carinae, mesotibia feebly curved, metatibia straight.

Lectotype ♂ from Philippines (HUM, Nr. 21741). In other material examined closest



agreement with lectotype is shown by specimens from Panaon I. and Surigao, Mindanao.

Many specimens labeled "Philippines". Samar, Baker(USNM). Mindanao: Surigao, Baker; Agusan, Butuan, Baker (USNM); Agusan, S. Francisco, Sept., Yoshimoto (BPBM); Momungan, Lanao; Cabuntung, Siargao, Staudinger(Strkr.).

***Eumorphus cyanescens thomsoni*** Guérin, new status

\**Enaisimus thomsoni* Guérin, 1858, *Rev. Mag. Zool.* ser 3, 1: 16—Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 17.—Strkr., 1858, *Fieldiana Zool.* 42: 40.

\**Eumorphus expatriatus* Gorh., 1873, *Endom. Recit.*, p. 35.—Arrow, 1920, 1. c.

Differs from nominate *cyanescens* only in denser puncturing of pronotum; this more decided in ♀.

Monotype ♂ from Philippines(BMNH). Monotype ♀ of *expatriatus* without locality data(BMNH). Probably occurs over whole of Luzon. Specimens examined have come from Provinces of Abra, Bataan, Camarines Sur, Isabela, Laguna, Rizal, and Zambales.

***Eumorphus productus*** Arrow Fig. 29, 32, 87.

\**Eumorphus productus* Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 17—Strkr., 1958, *Fieldiana Zool.* 42: 41.

Much like *cyanescens* but of narrower form, elytral margin at mid-length about 1/4 width of disc, widened distad, apices produced, divergent, narrowly rounded. Length 12–15.7 mm.

Monotype ♂ from Philippines(BMNH). The specimen is teneral with abdomen shriveled; I did not dissect it. Other specimens referred to *productus* differ from monotype in narrower form and elytral spots covering most of umbonal ridge. All specimens examined are from Mindanao. Davao: head of Davao Bay, H. Hoogstraal, (FM); Mati, R. C. McGregor(USNM). Agusan: 10 km S of S. Francisco, L. W. Quate, C. M. Yoshimoto (BPBM). Misamis Or.; Mt Kibungol, 20 km S of Gingoog, H. Torre Villas (BPBM); Minalwong; Hindangan, 20 km S of Gingoog, Apr., Torre Villas(BPBM).

***Eumorphus staudingeri*** Mader Fig. 30, 88.

*Eumorphus staudingeri* Mader, 1936, *Ent. Rundschau* 54: 61.—Strkr., 1958 *Fieldiana Zool.* 42: 40.

Resembles *productus* in narrow form but has anterior elytral spots more extensive, covering umbo and broadly touching base, elytral tips less produced, aedeagal ramus in apical view broader. Length 12–14 mm. May intergrade with *productus* in Bukidnon.

Holotype ♂ and allotype ♀ from Basilan I. (MGF). Paratypes from Basilan I. and "Mindanao" have been distributed(BMNH, Strkr.). Zamboanga: Dapitan, Baker(USNM); Manucan, L. W. Quate (BPBM); Basilan I., C. F. Baker (USNM). Lanao: Iligan, C. F. Baker; Kolambugan, Baker(USNM). Bukidnon: Sta. Fe, L. H. Phillips(FM); Tangcolan, Baker(USNM).

***Eumorphus eurynotus*** Strohecker, new species Fig. 31, 89.

Resembles *cyanescens* but of broader form, elytral margins at mid-length fully 1/3 width of disc, widened distad, apices somewhat prolonged, anterior yellow spot covering umbonal ridge, which is compressed, its inner side oblique. Pronotum finely punctured on disc and shining, lateral areas dull. Length 15.2–16 mm.

Protibial tooth of ♂ very broad at base, acute at apex, mesotibia feebly curved, metatibia straight. Last sternite broadly v-excised. In ♀ humeral carina is more compressed and there is a short, high parascutellar ridge.

Holotype ♂ (BISHOP 7561), allotype ♀ from Mt Katanglad, Bukidnon, Mindanao, 27/31-X-1959, L. W. Quate (BPBM). 2 paratype ♂♂ have same data (BPBM; Strkr.).

**Eumorphus elegans** Strohecker, new species Fig. 90.

Of the same size and broad form as *eurynotus*, elytral margins similar, elytral spots larger, humeral carina blunt, not compressed. These 2 species seem to be high altitude "island" forms; the features they present make it difficult to regard them as merely local populations of *productus* or *cyanescens*.

Holotype ♂ from E. Slope, Mt McKinley, 6000', Davao, Mindanao, F. G. Werner (FM). A paratype ♂ with same data is in Strkr. Coll.

#### The *coloratus* Group

**Eumorphus coloratus coloratus** Gerstaecker Fig. 33, 91.

\**Eumorphus coloratus* Grstkr., 1857, *Archiv Naturg.* 23: 230.—Strkr., 1957, *Treubia* 24: 71, fig. 11.

\**Eumorphus quadriverrucosus* Guérin, 1857, *Arch. Ent.* 1: 249.—Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 16.

*Enaisimus quadriverrucosus* Guérin, 1858, *Rev. Mag. Zool.* ser 2, 10: 18.

Dark red-brown to blackish, each elytron with 2 small yellow spots. Femora red-brown, tibiae and antennae black. The various shades of coloration may be due to degree of color development at death. Length 6.5–8mm.

Protibia of ♂ with short stout acute tooth and low distal carina, pronotal hind angles rectangulate to briefly acute.

Lectotype ♀ from Java (BMNH). Java: Gunung Simpang, 600 m., C. P. J. de Haas; G. Kadoe, Nov., F. C. Drescher; G. Slamet, Aug., Drescher; G. Oengaran, June, Drescher; G. Raveng, Feb., H. Lucht (Bogor; Strkr.).

**Eumorphus coloratus vitalisi** Arrow, new status Fig. 34, 92.

\**Eumorphus vitalisi* Arrow, 1920, *Ann. Mag. Nat. Hist.* ser 9, 5: 327; 1928, *Faune Col. Fr.* 2: 349, fig. 12.

Very similar to *coloratus* in structure but of deep sooty black color except for small elytral spots. Length 7–8 mm.

Holotype ♂, allotype ♀ and paratype series from Ban Nam Mo near Luang Prabang, Laos, *Vitalis* (BMNH). Reported by Arrow from Ban Na Ghao, Ban Houei Soui and Van Nham in Laos, from Karenni Hills, Burma and Tenasserim, coll. Jan.-March. Laos: Vientiane and Vanky areas, Mar.-June (BSS). Thailand: Chiangdao, Apr., T. C. Maa (BPBM). Specimens collected by Hayek at 1000 m. near Padang, Sumatra seem referable to this form.

**Eumorphus carinatus** Gerstaecker Fig. 37, 94.

\**Eumorphus carinatus* Grstkr., 1857, *Archiv Naturg.* 23: 229; 1858, *Mon. Endom.*, p. 123.

Most specimens examined are ferruginous with lateral area of elytra, tibiae and anten-

nae blackish but some specimens are entirely black; this may be the mature coloration. The yellow elytral spots are small, much as in *coloratus*. Elytra broadly depressed between humeri but convex at middle with glabrous sutural margin elevated and wide. Length 7.5–8.5 mm.

Protibia of ♂ without basal carina, distal carina low, subangulate in profile, tooth large, acute, pronotal hind angles short, acute.

Lectotype ♀ from Java (HUM, Nr. 21754). Java: Telagawarma, 1450 m., Apr., Feb., A. M. R. Wegner; G. Tangkuban Prahū, 4–5000', Jan.-Nov., F. C. Drescher; G. Slamāt, May, Sept., Drescher; Mt. Gede Panggerango, July, L. W. Butot (Bogor; Strkr.).

***Eumorphus constrictus*** Arrow Fig. 36, 95.

\**Eumorphus constrictus* Arrow, 1926, *Ent. Mitt.* **15**: 249—Strkr., 1957, *Treubia* **24**: 71, fig. 13.

Sooty black with 2 small yellow spots on each elytron. Similar in appearance to *carinatus* but with elytra notably convergent basad, umbonal carina highly elevated. Length 7.5–9 mm.

Protibia of ♂ with very large, sharp tooth, distal carina high, compressed.

Holotype ♂ from Gunung Singgalang, W. Sumatra, 1800 m, E. Jacobson (BMNH) Arrow mentions "several specimens"; no others have been reported,

***Eumorphus drescheri*** Strohecker Fig. 38, 96.

\**Eumorphus drescheri* Strkr., 1957, *Treubia* **24**: 69, fig. 9.

While similar in general appearance to *constrictus* this species is quickly separable by the larger anterior elytral spots, which almost cover the shoulders. Pronotum narrowed behind, elytra convergent basad, humeral carina high, compressed. Between humeri elytra area depressed. Length 7.7–8 mm

Protibia of ♂ with moderate tooth, distal carina low, evenly elevated.

Holotype ♂, allotype ♀ and paratype series from Gunung Tangkuban Prahū, Prianger, W. Java (Leiden Museum; Strkr.).

***Eumorphus assamensis assamensis*** Gerstaecker Fig. 35.

\**Eumorphus assamensis* Grstkr., 1857, *Archiv Naturg.* **23**: 229; 1858, Mon. Endom., p. 121—Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 16; 1925, Fauna Br. India, Erotyl., p. 307.—Strkr., 1957, *Treubia* **24**: 71, fig. 10.—Kryzh., 1960, *Rev. Ent. URSS* **39**: 875.

Dull black, each elytron with 2 yellow spots which are variable in size but always widely separated from each other, base and suture. Length 8–11 mm.

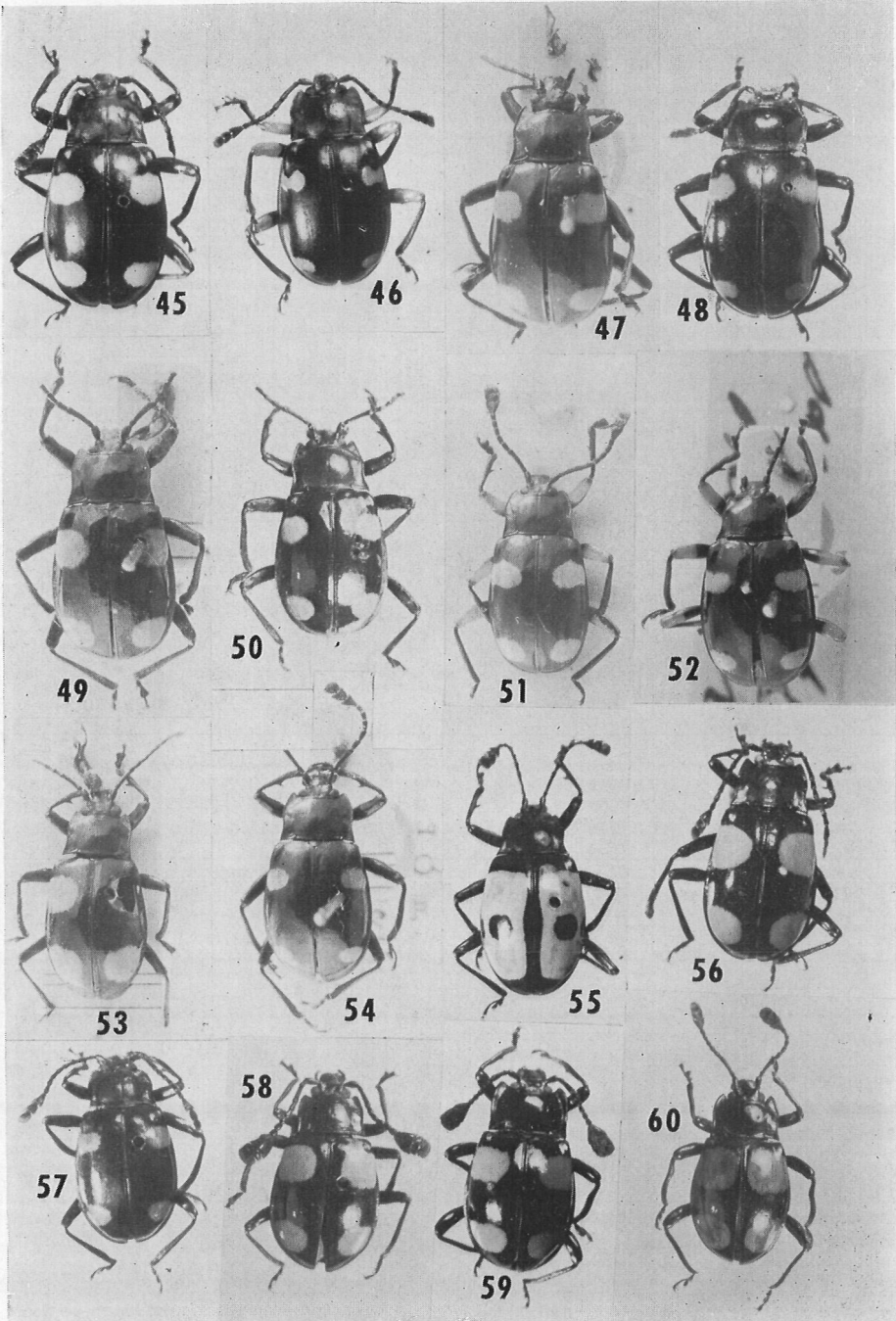
Protibia of ♂ with large sharp tooth, distal carina high, compressed, pronotal hind angles briefly spiniform.

Lectotype ♂ (Arrow 1925) from Assam (BMNH). Reported by Arrow from Khasi and Naga Hills, Assam and by Kryzhanovskij from Yunnan.

***Eumorphus assamensis subguttatus*** Gerstaecker Fig. 93.

\**Eumorphus subguttatus* Grstkr., 1857, *Archiv Naturg.* **23**: 229; 1858, Mon. Endom., p. 122.—Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 16; 1925, Fauna Br. India, Erotyl., p. 307.

*Eumorphus assamensis sinuatifipes* Pic, 1927, *Mél. Exot.-Ent.* **50**: 2. n. syn.



My observations are in accord with Arrow's, that difference between *subguttatus* and *assamensis* is limited to size of elytral spots. This form inhabits the area of Indo-China, Malaya, Sumatra, Borneo. Although I did not find the type of *sinuatipes* in the Pic Collection I have no doubt about the application of the name.

Lectotype ♀ (Arrow 1925) from Singapore (BMNH)

***Eumorphus assamensis subsinuatus* Pic, new status**

\**Eumorphus subsinuatus* Pic, 1927, *Mél. Exot.-Ent.* 50 : 2.—Strkr., 1958, *Fieldiana Zool.* 42 : 39.

Elytral spots much as in nominate *assamensis*. I question the usefulness of this trinomial but more detailed studies may establish it for the Philippine populations.

Monotype ♂ from Philippines in Pic Coll. (PM). Luzon: Los Banos; Mt. Banahan; Mt. Makiling. Samar. Bohol. Mindanao: many localities; Basilan I.

Species of undetermined affinities

***Eumorphus ocellatus* Arrow Fig. 39.**

\**Eumorphus ocellatus* Arrow, 1920, *Ann. Mag. Nat. Hist. Ser. 9, 5* : 327; 1928, *Faune Col. Fr.* 2 : 350.—Kryzh., 1960, *Rev. Ent. URSS* 39, p. 877.

Known only from ♀ sex. Black, shining, each elytron with 3 small raised yellow spots, 2 basal, 1 pre-apical, distal 1/3 of femora red. Elytral humeri prominent, rounded. Length 9 mm.

Monotype ♀ from Chapa, Tonkin(BMNH). Yunnan (Kryzh.).

***Eumorphus panfilovi* Kryzhanovskij Fig. 102.**

*Eumorphus panfilovi* Kryzh., 1960, *Rev. Ent. URSS* 39 : 877, fig. 18-23.

"Black, shining, elytra nearly dull, with purplish lustre, each with two yellow patches, distal part of all femora bright coral red; shoulder with convex tubercle..... Length 8-8.2 mm.

"Closely similar to *E. ocellatus* Arrow but differs in only two yellow patches on each elytron."

Holotype ♂ and allotype ♀ from Mt. Taweishan near Pingpien, S. E. Yunnan(Leningrad).

***Eumorphus inflatus* Arrow Figs. 43, 101.**

\**Eumorphus inflatus* Arrow, 1920, *Ann. Mag. Nat. Hist. ser 9, 5* : 328; 1928, *Faune Col. Fr.* 2 : 350.

Form short, broad, elytra highly convex with humeri greatly, roundly inflated, each elytron with 2 large transverse yellow patches, the anterior covering most of humeral swelling. Length 9.5 mm.

Fig. 45-60. 45, *Eumorphus q. quadriguttatus* (Illig.) ♂.....Sumatra; 46, *E. q. formosanus* Pic ♂.....Formosa; 47, *E. q. convexicollis* Grstkr.....co-type ♂; 48, *E. b. bulbosus* Schauff. ♂.....S. Celebes; 49, *E. sybarita consobrinus* Grstkr. co-type ♂; 50, *E. s. sybarita* Grstkr. ♂.....Singapore; 51, *E. quadriguttatus andamanensis* Gorh. .... lectotype ♂; 52, *E. sanguinipes* (Guérin) ..... monotype ♂; 53, *E. alboguttatus* Grstkr.....co-type ♂; 54, *E. simplex simplex* Arrow.....holotype ♂; 55, *E. b. bipunctatus* Perty ♂.....Java; 56, *E. bipunctatus mirus* Strkr., n. subsp..... paratype ♂; 57, *E. parvus* Strkr., n. sp.....holotype ♂; 58, *E. csikii* Strkr.....paratype ♂; 59, *E. westwoodi* (Guérin) ♂.....Tebing-tinggi, Sumatra; 60, *E. cryptus* Strkr., n. sp.....paratype ♂.

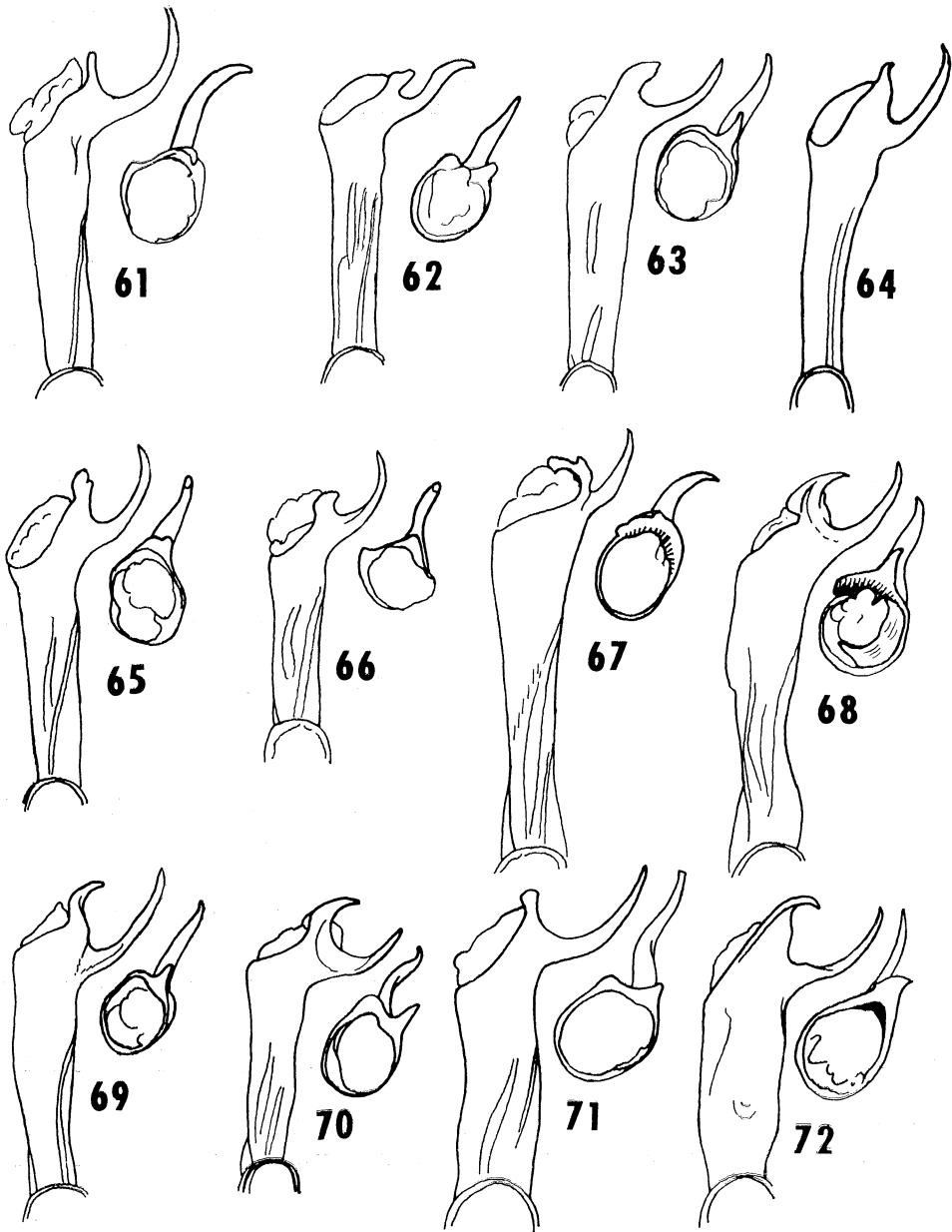


Fig. 61-72. Left member of numbered pairs and single fig. 64 show aedeagus in ventral view; right member aedeagus in apical view. 61, *Eumorphus marginatus* Fab.; 62, *E. tumescens* Gorch.; 63, *E. d. dilatatus* Perty; 64, *E. wegneri* Strkr.; 65, *E. costatus* Gorch.; 66, *E. quadrinotatus* Grstkr.; 67, *E. insignis* Gorch.; 68, *E. helaeus* Arrow; 69, *E. fraternus* Arrow; 70, *E. politus* Grstkr.; 71, *E. felix* Arrow; 72, *E. a. austerus* Grstkr.

Protibia of ♂ with small tooth just distal to mid-length, mesotibia bowed near apex. Holotype ♂ and other specimens from area of Xieng Khouang, Laos (BMNH).

#### The *murrayi* group

***Eumorphus murrayi murrayi*** Gorham Fig. 40, 97.

\**Eumorphus murrayi* Gorh., 1874, *Trans. Ent. Soc. Lond.*, p. 437; 1896, *Ann. Mus. Civ. Genova* 36 : 38,

*Eumorphus sanguinipes* (in part) Arrow, 1920, *Trans. Ent. Soc. Lond.*, p. 17; 1925, *Fauna Br. India*, Erotyl., p. 304.—Strkr., 1939, *Proc. Ent. Soc. Lond.* B 8 : 119, fig. 1.

Black or violet-black, shining. Elytral yellow patches decidedly transverse, touching side margin but distant from suture. Distal 1/3 or more of femora orange-red. Length 9–10 mm.

Protibia of ♂ with large sharp tooth, mesotibia moderately bowed, metatibia weakly curved. Monotype ♂ attributed to Philippines by Gorham (BMNH).

Subsequent to his original description Gorham assigned Burmese specimens to *murrayi* and questioned locality data of the type. These Burmese specimens were included under *sanguinipes* by Arrow. Specimens from Kachin Hills, N. Burma closely resemble the monotype and this area appears to be the provenance of Gorham's first specimen. India or.: Manipur, Doherty (BMNH). N. Burma: Adung Valley, F. K. Ward (BMNH).

***Eumorphus murrayi carinensis*** Strohecker, new subspecies Fig. 98.

Closely similar in external features to nominate *murrayi*. Protibial tooth of ♂ smaller than in *murrayi*. The aedeagi show pronounced differences and it is on the basis of this structure that the trinomial is introduced.

Holotype ♂ and allotype ♀ from Karenni Hills (Carin Ghecu), Burma, 1400 m., Mar.-Apr., L. Fea (GM). Paratype specimens bear labels "Carin Ghecu; Carin Ascuii; Carin Cheba".

***Eumorphus bicoloripedoides*** (Mader), new combination Fig. 41, 99.

*Engonius bicoloripedoides* Mader, 1955, *Kol. Rundschau* 33 : 68.—Kryzh., 1960, *Rev. Ent. URSS* 39 : 873, fig. 8.

Black, very shining, each elytron with 2 small round yellow spots, the anterior behind the humerus, touching side margin, remote from base and suture. Distal 1/3 or more of femora orange-red. Length 6.5–8 mm.

Elytra strongly convex, sides rounded in outline, contracted basad, humeri hardly projecting beyond hind angles of pronotum, which are feebly acute in both sexes, umbones low.

Protibia of ♂ with rather large, sharp tooth just distad of mid-length.

Holotype ♂ and allotype ♀ from Kuantun, Fukien (MGF). Sikkim (MNM). Tonkin: Tan Dao, M. Perrot (BMNH). Laos: Nam Tiene. Yunnan (ZIL).

***Eumorphus trabeatus*** Arrow Fig. 42, 100.

\**Eumorphus trabeatus* Arrow, 1925, *Fauna Br. India*, Erotyl., p. 303.

Brilliant black above, each elytron with 2 transverse orange-yellow bands which approximate both suture and side margin, distal 1/2 of femora red-orange. Length 11 mm.

Protibia of ♂ with long slender acute tooth near mid-length, mesotibia abruptly incurved near tip, metatibia feebly undulate, pronotal hind angles rectangulate.

Monotype ♂ from Sumprabum, Putao Distr., Burma (BMNH).

#### The *quadriguttatus* group

***Eumorphus quadriguttatus quadriguttatus*** (Illiger) Fig. 45, 103.

*Erotylus quadriguttatus* Illiger, 1800, Arch. f. Zool. (1) 2: 124, pl. 1, fig. 4.

*Eumorphus sumatrae* Weber, 1801, Observ. Ent., p. 59.

*Eumorphus immarginatus* Fab., 1801, Syst. Eleuth. 2: 11.

*Eumorphus quadriguttatus* Grstkr., 1857, Archiv Naturg. 23: 228; 1858, Mon. Endom., p. 112.—Arrow, 1925, Fauna Br. India, Erotyl., p. 305.—Kryzh., 1960, Rev. Ent. URSS 39: 878, fig. 24.

\**Pedanus laevis* Gorh., 1874, Trans. Ent. Soc. Lond., p. 439.—Arrow, 1920, Trans. Ent. Soc. Lond., p. 16.

Black, moderately shining, each elytron with two yellow patches which show some variation in size but are always near side margin and well separated from base and suture, the anterior spot farther from base than from suture, Length 7.5–12 mm.

In ♂ protibia has, proximal, to mid-length, a tubercle surmounted by a pointed tuft of setae, in appearance like a short slender tooth directed distad, sternites 3–5 with tufts of whitish setae, most conspicuous on 4.

The type, according to Arrow, is in HUM.

As treated here *quadriguttatus* is a species of wide range with 4 recognizable subspecies or races, including the nominate form. Small differences in features of male sternites and aedeagus can be noted in various populations but essential similarity appears to be preserved throughout. Many specimens have been studied from localities in Lombok, Java, Malaya, Sumatra, Indo-China, India, Burma, Borneo, S. Palawan. A specimen with label "Kiunga, Fly R., Papua" (BPBM) may have been erroneously labeled.

***Eumorphus quadriguttatus pulchripes*** Gerstaecker Fig. 46.

\**Eumorphus pulchripes* Grstkr., 1857, Archiv Naturg. 23: 228; 1858, Mon. Endom., p. 112.—Bugnion, 1909, Ann. Soc. Ent. Fr., p. 282, pl. 12, fig. 1–6.

*Eumorphus quadriguttatus pulchripes* Arrow, 1925, Fauna Br. India, Erotyl., p. 306.—Kryzh., 1960, Rev. Ent. URSS 39: 878.

*Eumorphus quadriguttatus formosanus* Pic, 1930, Mël. Exot.—Ent. 55: 8.—Chûjô, 1938, Trans. Nat. Hist. Soc. Formosa 28: 398. n. syn.

*Engonius baibaranus* Ohta, 1931, J. Fac. Agr. Sapporo 30: 219, pl. 3, fig. 7.

*Engonius taitoensis* Ohta, 1931, l. c., pl. 3, fig. 6.

Differs from nominate form chiefly by bicolored femora. In ♂ there is some tendency to reduction of the setose areas on sternites and limitation to sternite 4. Over the great range attributed to this race some variation in aedeagal structure is shown but this is quite small. In material from Assam and northward and eastward elytral spots tend to transverse bands; this is most marked in specimens from Tsushima. This phase was named *formosanus* by Pic. Perhaps the taxon has some usefulness but I have subordinated it to



*pulchripes*.

Lectotype ♂ from Ceylon (HUM, Nr. 21747). Reported by Arrow from S. Mysore; Sikkim; Ceylon. I have examined many specimens from Ceylon, Assam, Hainan I., and Taiwan, a few from Kiaochow, China(MNM) and Tsushima, Japan(Strkr.). Yunnan(ZIL).

***Eumorphus quadriguttatus convexicollis*** Gerstaecker, new status Fig. 47, 104.

\**Eumorphus convexicollis* Grstrkr., 1857, *Archiv Naturg.* **23**: 228; 1858, *Mon. Endom.*, p. 113.—Strkr., 1958, *Fieldiana Zool.* **42**: 39; 1966, *Ent. Meddel.* **34**: 356.

\**Heterandrus confusus* Guérin, 1857, *Arch. Ent.* **1**: 254, pl. 13, fig. 8.

Little differentiated from nominate form. Elytral spots larger, protibial tooth of ♂ at mid-length. There is a tendency to widening of aedeagal ramus; Tawi Tawi specimens are extreme in this respect although typical *quadriguttatus* occurs in NE Borneo.

Lectotype ♂ from Philippines (HUM, Nr. 21748). Monotype of *H. confusus* in BMNH.

Material of *convexicollis* examined has come from N. Palawan, Leyte, Panaon, Siargao, Tawi Tawi, and numerous localities in Luzon and Mindanao.

***Eumorphus quadriguttatus andamanensis*** Gorham, new status Fig. 51, 105.

\**Eumorphus andamanensis* Gorh., 1875, *Ent. Mon. Mag.* **11**: 180. — Arrow, 1925, *Fauna Br. India*, *Erotyl.*, p. 305.

Very similar to *q.pulchripes* but elytral spots larger and protibia of ♂ with short stout tooth at mid-length, antennal club slightly broader. It is a somewhat larger insect than *pulchripes*. Length 11.5–12.5 mm.

Lectotype ♂ and co-type series from Andaman Islands(BMNH). Arrow reports it from Nicobar Islands.

***Eumorphus bulbosus bulbosus*** Schaufuss Fig. 48, 106, 107.

*Eumorphus bulbosus* Schauf., 1887, *Horae Soc. Ent. Ross.* **21**: 142.

Similar to *quadriguttatus* but of broader more convex form, upper surface shining black with usual 2 yellow spots on each elytron; these small, front edge of anterior spot excised by umbonal ridge. Length 11.5–13 mm.

Protibia of ♂ with small tubercle proximad of mid-length, mesotibia with small tooth at distal 1/3, strongly incurved.

Type from Macasser, Celebes. I have not found its location. S. Celebes: Samanga, July, H. Lucht; Rantepao, Feb., F. C. Drescher; Tjamba, Aug.-Sept., Doherty. A single ♂ from N. Celebes seems to be intermediate between *bulbosus* and the following form.

***Eumorphus bulbosus arrowi*** Strohecker, new status Fig. 108.

\**Eumorphus arrowi* Strkr., 1939, *Proc. Ent. Soc. Lond B* **8**: 118, fig. 6.

Smaller than Celebes *bulbosus* but separable only by features of ♂: protibia unarmed, mesotibia with small tooth at distal 1/3, thence incurved, last sternite with smooth median elevation with tuft of short setae on each side. Length 10–11 mm.

Holotype ♂, allotype and other ♀♀ from Sangi (Strkr.) A ♀ from Halmahera may be of this form.

The *bipunctatus* group***Eumorphus bipunctatus bipunctatus*** Perty Fig. 55, 116.

*Eumorphus bipunctatus* Perty, 1831, Observ. Col. India Or., p. 42.—Grstkr., 1857, *Archiv Naturg.* **23** : 229; 1858, Mon. Endom., p. 119.—Guérin, 1857, Arch. Ent. 1, p. 250; 1858, *Rev. Mag. Zool.* ser 2, **10** : 21.

Ivory-colored, black bordered elytra give this species a distinctive facies; each elytron has 2 black spots, transversely placed, behind mid-length, the inner spot larger. Length 10–11 mm.

Protibia of ♂ with cylindrical tooth at mid-length, this truncate but topped by pointed tuft of hairs, thus, appearing sharp, inner margin distal to tooth excavately bowed, mesotibia enlarged distad and slightly incurved, metatibia enlarged distad, rather flat.

I have not sought the type of this distinctive species. Specimens examined have been labeled "Java".

***Eumorphus bipunctatus mirus*** Strohecker, new subspecies Fig. 56, 120.

Black, shining, each elytron with 2 large pale yellow spots, which are separated in both axes by less than diameter of spot. While very similar in appearance to *alboguttatus*, this insect in all its structure is so close to *bipunctatus* that I record it as a subspecies. Length 11.5–12 mm.

Holotype ♂ (MNM), allotype ♀ and paratypes from Montes Battak, Sumatra (MNM; Strkr.). E. Sumatra (BMNH).

***Eumorphus bipunctatus* ?subsp.** Fig. 121.

A single ♂ from Mowong, W. Borneo resembles *sybarita* but has elytral spots somewhat larger. Its structure, including aedeagus is close to that of *bipunctatus*. Length 10 mm.

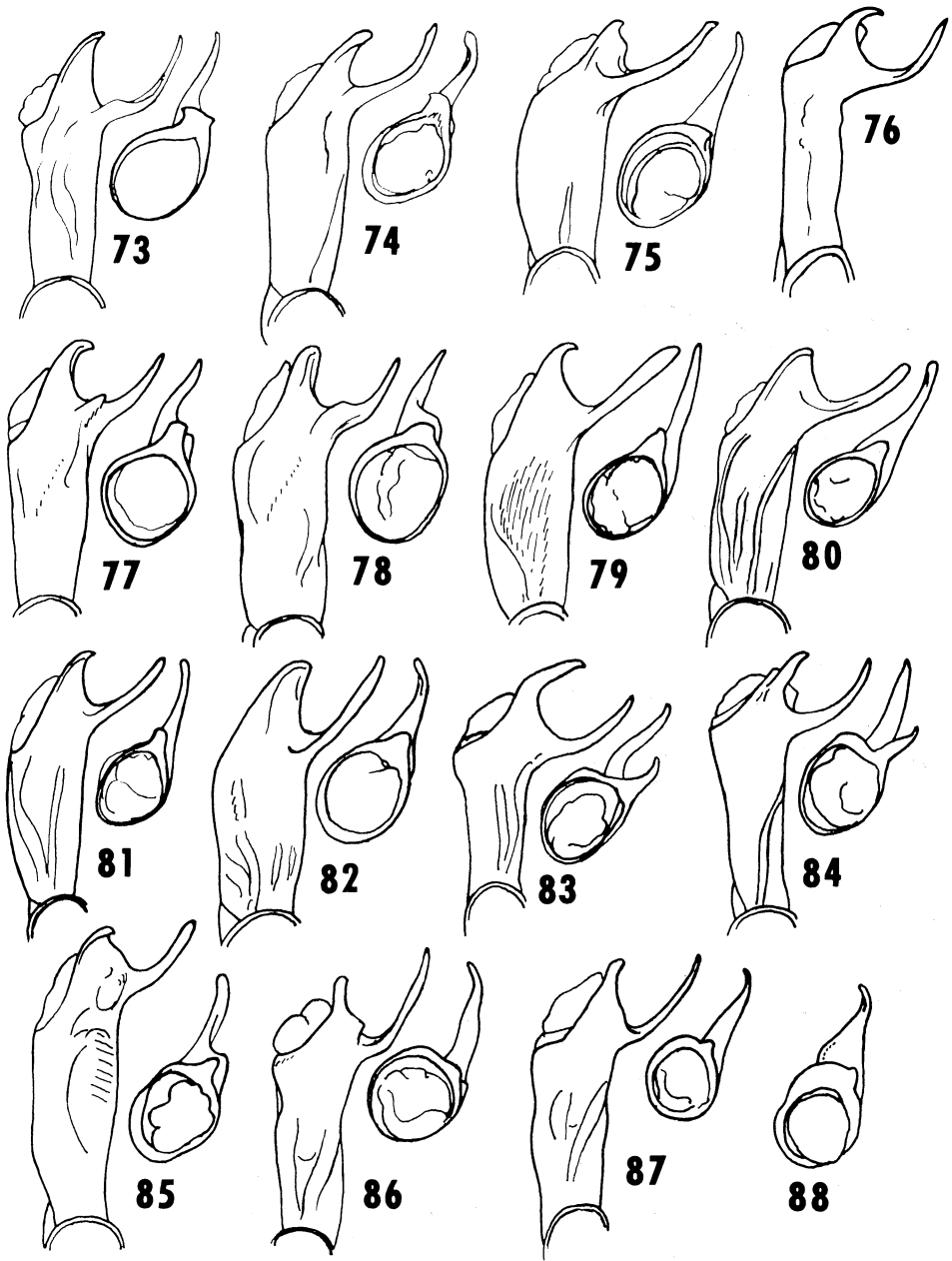
***Eumorphus bipunctatus crucifer*** Strohecker, new subspecies

Three specimens from N. Borneo have the yellow spots covering most of the elytra, the black areas reduced to a very narrow-limbed cross. The form of these specimens is somewhat more elongate than nominate *bipunctatus* but details of structure are very similar. The single ♂ is teneral with aedeagus, soft and translucent but evidently quite similar to that of *bipunctatus*. Length 11–12 mm.

Holotype ♂ (BISHOP 7562) and allotype ♀ from Tenompok (Mt Kinabalu), Sabah, N. Borneo, 1460 m., Oct. 1958, Jan. 1959, T. C. Maa (BPBM). N. Borneo: Mt Kinabalu, Feb., J. Smart, Royal Soc. Exped. 1964 (BMNH).

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Fig. 73–88. Left member of numbered pairs and single figure 76 show aedeagus in ventral view; right member and single figure 88 aedeagus in apical view: 73, *Eumorphus ?a. austerus* Grstkr., Saigon, Viet Nam.; 74, *E. austerus indianus* Strkr.; 75, *E. purpureus* Strkr., n. sp.; 76, *E. hilaris* Arrow; 77, *E. tetraspilotus* Hope; 78, *E. columbinus* Grstkr.; 79, *E. oculus* Grstkr.; 80, *E. dehaani* Guérin; 81, *E. minor* Grstkr.; 82, *E. micans* Strkr., n. sp.; 83, *E. e. eburatus* Grstkr.; 84, *E. fryanus festivus* Arrow; 85, *E. macrospilotus* Arrow; 86, *E. c. cyanescens* Grstkr.; 87, *E. productus* Arrow, Davao, P. I.; 88, *E. staudingeri* Mader.



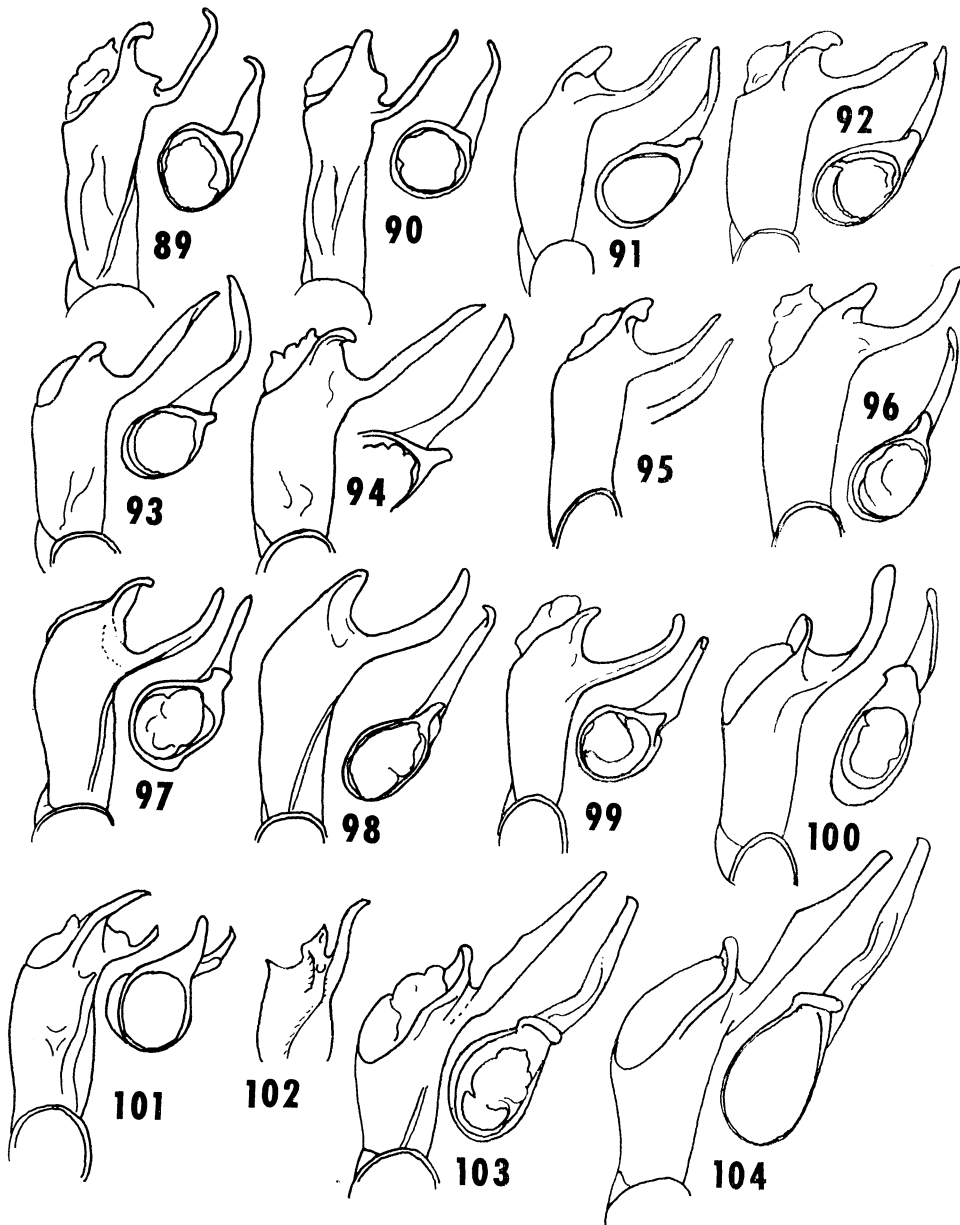


Fig. 89-104. Left member of numbered pairs and single figure 102 show aedeagus in ventral view ; right member aedeagus in apical view (ramus only Fig. 95) : 89, *Eumorphus eurynotus* Strkr., n. sp. ; 90, *E. elegans* Strkr., n. sp. ; 91, *E. c. coloratus* Grstkr. ; 92, *E. coloratus vitalisi* Arrow ; 93, *E. assamensis subguttatus* Grstkr. ; 94, *E. carinatus* Grstkr. ; 95, *E. constrictus* Arrow ; 96, *E. drescheri* Strkr. ; 97, *E. m. murrayi* Gorh. ; 98, *E. murrayi carinensis* Strkr., n. subsp. ; 99, *E. bicoloripedoides* (Mader) ; 100, *E. trabeatus* Arrow ; 101, *E. inflatus* Arrow ; 102, *E. panfilovi* Kryzh., re-drawn from Kryzh. ; 103, *E. q. quadriguttatus* (Illig.) ; 104, *E. q. convexicollis* Gerst.

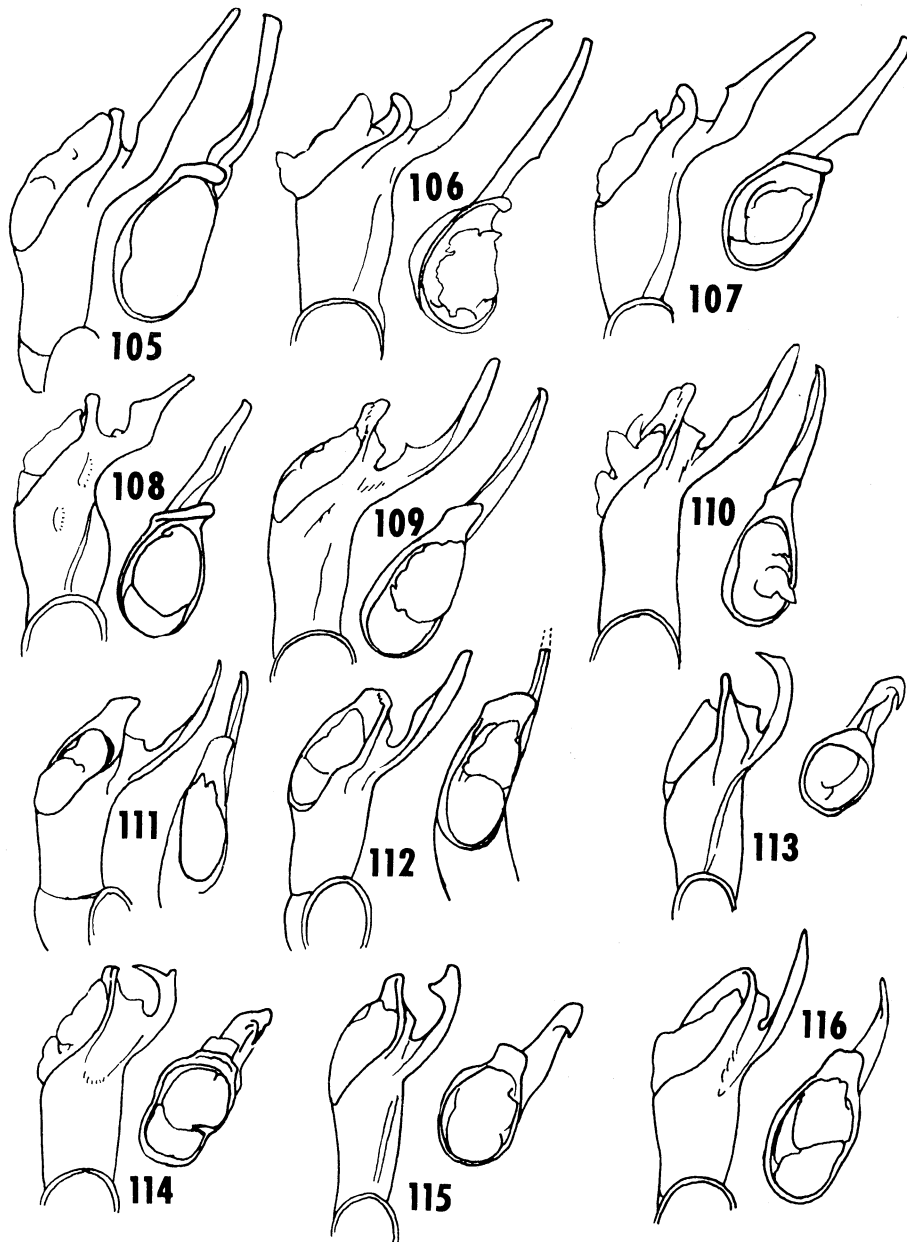


Fig. 105-116. Left member of numbered pairs shows aedeagus in ventral view ; right member aedeagus in apical view : 105, *Eumorphus quadriguttatus andamanensis* Gorh. ; 106, *E. b. bulbosus* Schauf. ; 107, *E. ?b. bulbosus* Schauf., N. Celebes ; 108, *E. bulbosus arrowi* Strkr. ; 109, *E. s. sybarita* Grstrkr. ; 110, *E. sybarita consobrinus* Grstrkr. ; 111, *E. sanguinipes* (Guérin) ; 112, *E. longespinosus* Pic ; 113, *E. s. simplex* Arrow ; 114, *E. parvus* Strkr., n. sp. ; 115, *E. alboguttatus* Grstrkr. ; 116, *E. bipunctatus* Perty.

**Eumorphus alboguttatus** Gerstaecker Fig. 53, 115.

\**Eumorphus alboguttatus* Grstkr., 1857, *Archiv Naturg.* **23**: 228; 1858, *Mon. Endom.*, p. 115.

\**Eumorphus quadrimaculatus* Guérin, 1857, *Arch. Ent.* **1**: 249, pl. 13, fig. 6.

*Haplomorphus quadrimaculatus* Guérin, 1858, *Rev. Mag. Zool.* ser 2, **10**: 18.

Larger size of elytral spots in this species seems to be a useful feature for separation from sympatric *consobrinus*.

Protibia of ♂ with triangular tooth topped by tuft of hairs, internal margin distal to tooth scarcely excavate, almost straight. Length 10–11 mm.

Lectotype ♂ from Java (HUM, Nr. 21749). Other specimens studied have come from Java: Mons Gede, 4000' (MNM; HUM); Mons Tjikorai, 4000'; Pengalengen, Fruhstorfer (MNM); Mt. Tengger (HUM).

**Eumorphus csikii** Strohecker Fig. 58, 122, 125.

\**Eumorphus csikii* Strkr., 1957, *Ann. Hist.-Nat. Mus. Nat. Hung.* ser 2, **8**: 280.

The short-oval form and stout antennae make this species easily separable from others of the group. Externally it differs from *westwoodi* in being much less convex. Length 8.5 mm.

Antennal club of ♂ very broad, convex above, concave beneath with long distally-directed bristles, protibia produced inward at tip as a minute tooth, meso- and metatibia feebly curved.

Holotype ♂ (MNM) and paratype ♂ (Strkr.) from Montes Battak, Sumatra are all specimens seen.

**Eumorphus sanguinipes** (Guérin) Fig. 52, 111, 119.

\**Haplomorphus sanguinipes* Guérin, 1858, *Rev. Mag. Zool.* ser 2, **10**: 20.

*Eumorphus sanguinipes* Gorham, 1874, *Trans. Ent. Soc. Lond.*, p. 438—Arrow, 1925, *Fauna Br. India*, *Erotyl.*, p. 304.

Black, shining, elytra with purplish luster, each with 2 transversely oval yellow spots, distal 1/2 of femora red. Length 11 mm. Tibial features similar to those of *bipunctatus*, hind angles of pronotum divergent, acute.

Monotype ♂ from Tenasserim (BMNH) is only specimen seen during this study. Some specimens from Burma assigned to this species by Arrow are here treated under *E. murrayi*.

**Eumorphus longespinosus** Pic Fig. 44, 112.

*Eumorphus longespinosus* Pic, 1930, *Mél. Exot.-Ent.* **55**: 7.

Differs externally from *sanguinipes* in much smaller size of elytral spots; both anterior and posterior distant from suture by more than their own width. The aedeagi show considerable differences. Length 12 mm. (13, Pic).

Neither holotype ♂ from Hoa Binh, Tonkin nor other material was found in Pic Collection. Illustrations were prepared from material from Montes Manson, Tonkin, Apr. (HUM).

**Eumorphus sybarita sybarita** Gerstaecker Fig. 50, 109.

\**Eumorphus sybarita* Grstkr., 1857, *Archiv Naturg.* **23**: 229; 1858, *Mon. Endom.*, p. 118.

*Eumorphus popovi* Kryzh., 1960, *Rev. Ent. URSS* **39**: 876, fig. 12–16. n. syn.

In appearance similar to *quadriguttatus* but somewhat larger, in structures of ♂ similar

to *bipunctatus*; the aedeagus must be examined for certain determination. Length 12.8–13.3 mm.

Lectotype ♂ and paratype ♂ from Singapore (UZM), allotype ♀ from Singapore (BMNH). Holotype ♂ of *popovi* from 30 mi. SE of Kinning, SE Yunnan (ZIL). Other records are Malacca; N. Borneo: Kuching; Sumatra: Montes Battak; Burma.

The published figures of *E. popovi* conform minutely to structures of *sybarita*.

***Eumorphus sybarita consobrinus*** Gerstaecker, new status Fig. 49, 110.

\**Eumorphus consobrinus* Grstkr., 1857, *Archiv Naturg.* **23**: 229; 1858, *Mon. Endom.*, p. 117.—Kryzh., 1960, *Rev. Ent. URSS* **39**: 876, fig. 17.—Csiki, 1910, *Col. Cat.* **12**: 21.

\**Eumorphus quadrimaculatus* var. Guérin, 1857, *Arch. Ent.* **1**: 250.

\**Eumorphus spencei* Guérin, 1858, *Rev. Mag. Zool.* ser 2, **10**: 20.

Smaller than nominate *sybarita* and with larger yellow spots. Aedeagi of the two forms are similar but recognizably different. I have sacrificed line priority of names to zoogeographical considerations. Length 11–12 mm.

Lectotype ♂ from Java (HUM, Nr. 21750). Other "types" in HUM, BMNH, UZM: Java: Mts Kawie; Malang; Mt Tengger (MNM).

***Eumorphus simplex simplex*** Arrow Fig. 54, 113.

\**Eumorphus simplex* Arrow, 1920, *Ann. Mag. Nat. Hist.* ser 9, **5**: 324; 1928, *Faune Col. Fr.* 2: 349.—Kryzh., 1960, *Rev. Ent. URSS* **39**: 879, fig. 26.

In appearance much like *quadriguttatus* but with tibiae of ♂ similar to those of *bipunctatus*. An additional character is the deep disto-internal excavation of the metatibia. Length 11–11.5 mm.

Holotype ♂ and type series from Lat Ham, Luang Prabang, Laos (BMNH). Other specimens in BMNH are from Xieng Khouang and Pou Bin, Jan.-Apr.

***Eumorphus simplex erythromerus*** Kryzhanovskij

*Eumorphus simplex erythromerus* Kryzh., 1960, *Rev. Ent. URSS* **39**: 880, fig. 27.

*Eumorphus rejectus* Strkr., 1939, *Proc. Ent. Soc. Lond.* **B 8**: 118, fig. 2 (*n. nudum*).

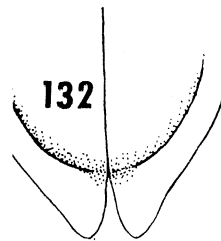
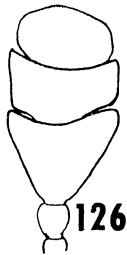
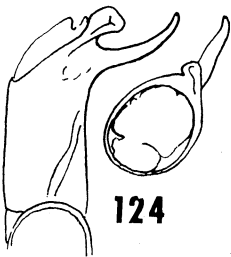
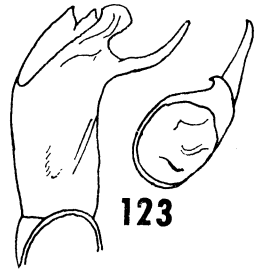
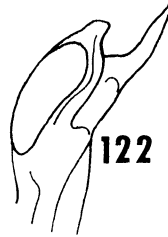
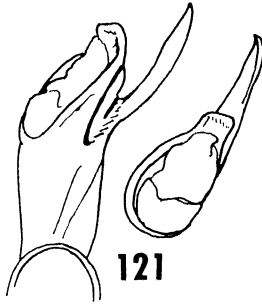
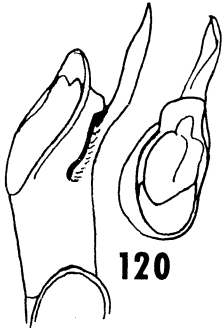
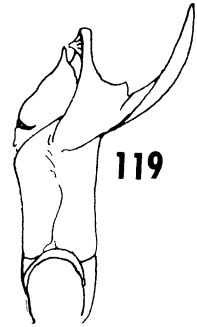
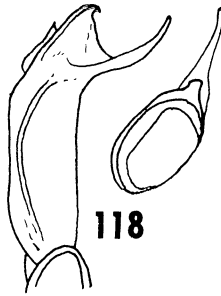
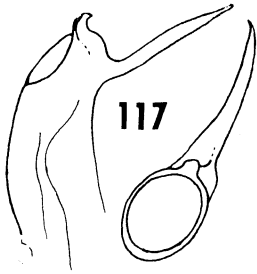
Differs from nominate form chiefly in having distal part of femora orange-red. It apparently inhabits part of the range of *quadriguttatus pulchripes*, which it generally resembles. I have discarded the name *rejectus* because my illustration of aedeagus (from teneral specimen) is not merely inadequate; it is misleading.

Holotype ♂ from Yuili, W. Yunnan (ZIL). Also reported from Mt Santaishan, 1200 m, 30 mi. SW Mangshi. Burma: Cheba, Karenni Hills, 900–1100 m, Dec., L. Fea (GM). Assam: Khasia Hills (Strkr.). India or.: Manipur. Burma: Ruby Mines, Doherty (BMNH).

***Eumorphus parvus*** Strohecker, new species Fig. 57, 114.

Small for the genus, black, each elytron with 2 small widely separated yellow spots. Length 7.8 mm.

Antennae slender, articles 4–8 each twice as long as its apical width, club broad, strongly flattened, its last article transverse, rectangular. Pronotum subopaque, its disc with a feeble median sulcus, lateral sulci short, shallow, basal sulcus shallow, hind angles of ♂ briefly spiniform. Elytra rather abruptly rounded to apex.





Protibia of ♂ with large, tufted tooth at mid-length, metatibia widened distad with slight internal excision near apex. Looks like small *simplex* and may be race of that species.

Holotype ♂ from Perak, Doherty (BMNH). A paratype ♂ with same data (Strkr.) is the only other specimen seen.

#### The *westwoodi* group

***Eumorphus westwoodi*** (Guérin) Fig. 59, 123, 126.

\**Haplomorphus westwoodi* Guérin, 1858, *Rev. Mag. Zool.* ser 2, 10: 19.

*Eumorphus westwoodi* Gorh., 1873, *Endom. Recit.*, p.36.—Arrow, 1925, *Fauna Br. India*, *Erotyl.*, p. 302.

Form short-oval, highly convex. Black, shining, each elytron with 2 large yellow spots. Length 8.5–10 mm.

Antennae short, stout, articles 7, 8 hardly longer than wide, club very broad, strongly flattened, article 10 about 4× as wide as 8.

Protibia of ♂ with short tooth distad of mid-length, mesotibia broad, flat, undulate, its internal edge finely denticulate or serrate, metatibia incurved in distal 1/3, its apex scarcely produced.

Monotype ♂ from Tenasserim (BMNH). Arrow reports the species from Malaya and Borneo. Sumatra: Tebing tinggi, Schultheiss; Sumatra, Forster (BSS). SE Borneo (HUM). Brunei, Borneo (Strkr.). N. Borneo: 19 km N of Kalabakan, Dec., Y. Hirashima (BPBM).

***Eumorphus westwoodi cruciatus*** Arrow

\**Eumorphus westwoodi cruciatus* Arrow, 1926, *Ent. Mitt.* 15: 249.

This seems to be not a race but a color form in which the pale spots cover most of the elytra, the black areas reduced to a cross.

***Eumorphus cryptus*** Strohecker, new species Fig. 60, 124, 127.

Short-oval but slightly more elongate than *westwoodi*, which it closely resembles. As in *westwoodi* the elytral spots show variation in size. Length 8.8–9 mm.

Antennae stout, articles 4–8 each longer than wide, 8 about 3/4 as wide as long, club normal for genus, article 10 about 3× as wide as 8.

Protibia of ♂ as in *westwoodi*, mesotibia expanded in basal 1/3, inner edge there subangulate, thence curved, internally serrate, metatibia feebly undulate, its apex hooked in-

Fig. 117–132. Left member of numbered pairs and single figures 119, 122 show aedeagus in ventral view; right member of pairs shows aedeagus in apical view: 117, *Eumorphus leptocerus* Strkr., n. sp.; 118, *E. ?lucidus* Gorh.; 119, *E. sanguinipes* (Guérin), c. *lucida* drawing by J. Balfour-Browne; 120, *E. bipunctatus mirus* Strkr., n. subsp.; 121, *E. bipunctatus* ?subsp., Mowong, W. Borneo; 122, *E. csikii* Strkr.; 123, *E. westwoodi* (Guérin); 124, *E. cryptus* Strkr., n. sp.; 125, *E. csikii* Strkr., antennal club ♂, ventral view; 126, *E. westwoodi* (Guérin), antennal club ♂; 127, *E. cryptus* Strkr., n. sp., antennal club ♂; 128, *E. dehaani* Guérin, protibia ♂; 129, *E. minor* Grstkr., protibia ♂; 130, *E. micans* Strkr., n. sp., protibia ♂; 131, *E. ?lucidus* Gorh., protibia ♂; 132, *E. leptocerus* Strkr., n. sp., elytral tips ♀.

ward.

Holotype ♂ (BISHOP 7563) and allotype ♀ from Tenompok, 50 km E of Jesselton, Sabah, N. Borneo, 1460 m, 2-4 Feb. 1959, T. C. Maa (BPBM). Maa collected 31 specimens at Tenompok, Jan.-Feb. (BPBM; Strkr.).