

New genera of Alleculinae (Coleoptera: Tenebrionidae: Alleculinae: Alleculini) from the Oriental Region XXII - *Flavostetha* gen. nov.

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Taxonomy, new genus, new species, description, Coleoptera, Tenebrionidae, Alleculinae, Alleculini, Alleculina, *Flavostetha*, Malaysia, Oriental Region

Abstract. A new genus of Alleculini Laporte, 1840 - *Flavostetha malayica* gen. and sp. nov. is described and illustrated from peninsular Malaysia as a type species. New genus *Flavostetha* gen. nov. is compared with habitually similar genus *Bolbostetha* Fairmaire, 1896. The similar species of the genus *Bolbostetha* Fairmaire, 1896 mainly by these characters (pale antenna and dorsal surface of elytra, pale legs with apex of femora and base of tibiae narrowly blackish, male profemora have sharp angle near apex in inner side, male protibiae are very finely angled in basal part and slightly excised in inner side).

INTRODUCTION

A new Alleculine genus *Flavostetha* gen. nov. is described with a type species *Flavostetha malayica* sp. nov. from peninsular Malaysia. New genus *Flavostetha* gen. nov. is compared with habitually similar genus *Bolbostetha* Fairmaire, 1896.

Flavostetha malaica gen. and sp. nov. is described, illustrated (including male genitalia) and compared with species of habitually similar genus *Bolbostetha* Fairmaire, 1896.

MATERIAL AND METHODS

Two important morphometric characteristics used for the descriptions of species of the subfamily Alleculinae, the 'ocular index' dorsally (Campbell & Marshall 1964) and 'pronotal index' (Campbell 1965), are used in this paper as well. The ocular index equals $(100 \times \text{minimum dorsal distance between eyes}) / (\text{maximum width of head across eyes})$. The pronotal index is calculated as $(100 \times \text{length of pronotum along midline}) / (\text{width across basal angles of pronotum})$.

'Type material' information is taken from recent locality labels.

In the list of type material, a slash (/) separates data in separate rows.

The following collection code is used:

VNPC private collection of Vladimír Novák, Praha, Czech Republic.

Measurements of body parts and corresponding abbreviations used in text are as follows: AL - total antennal length, BL - maximum body length, EL - maximum elytral length, EW - maximum elytral width, HL - maximum length of head (visible part), HW - maximum width of head, OI - ocular index dorsally, PI - pronotal index dorsally, PL - maximum pronotal

length, PW - pronotal width at base, RLA - ratios of relative lengths of antennomeres 1-11 from base to apex (3=1.00), RL/WA - ratios of length / maximum width of antennomeres 1-11 from base to apex, RLT - ratios of relative lengths of tarsomeres 1-5 respectively 1-4 from base to apex (1=1.00).

Measurements were made with an Olympus SZ 40 stereoscopic microscope with continuous magnification and with the Soft Imaging System AnalySIS. Snapshots were taken by using camera Canon EOS 550 D and Canon Macro Photo Lens MP-E and software Helicon Focus 7.7.5.

TAXONOMY

Flavostetha gen. nov.

(Figs. 1-6)

Type species: *Flavostetha malayica* sp. nov.

Description (male). Habitus as in Fig. 1, body outline (Fig. 2), body large, narrow, elongate, *Leptura* - shaped, slightly shiny, dorsal surface with pale setae, punctures and microgranulation, widest near elytral humeri. Head (as in Fig. 3) through the eyes slightly wider than anterior margin, narrower than base of pronotum. Dorsal surface with long, pale setae, fine microgranulation and dense punctures. Clypeus transverse, half-heart shaped, excised in middle of apex. Mandibles glabrous, shiny with pale setae on sides. Eyes very large, transverse, excised, space between eyes narrow, distinctly narrower than diameter of one eye, a little wider than length of antennomere 2. Antenna pale, long - almost reaching three quarters body length, antennomeres narrow. Dorsal surface with pale setation, microgranulation and very small punctures. Antennomeres 3-10 slightly widened apically. Antennomere 2 shortest, antennomeres 4-11 longer than antennomere 3. Ultimate antennomere widest near middle. Ultimate palpomere widely triangular. Pronotum (as in Fig. 3) bell-shaped, slightly convex, widest at base, almost as wide as elytra at humeri. Dorsal surface with setae, dense punctures and very fine microgranulation. Interspaces between punctures distinctly narrower than diameter of punctures. Border lines very narrow, margins conspicuous from dorsal view only in the middle of anterior margin not clearly distinct. Base bisinuate, anterior margin slightly arcuate in middle, excised near angles, anterior and posterior angles distinct, obtuse. Elytra narrow, elongate, slightly convex, widest near humeri. Suture narrowly darker. Elytral striae with rows of punctures, intervals between punctures in rows almost narrower than diameter of punctures. Elytral intervals finely convex, with fine microgranulation and very sparse punctures. Scutellum pentagonal, with shallow impression in middle. Elytral epipleura well-developed, distinctly narrowing to ventrite 1, then relatively narrow and parallel on apical part. Legs long and narrow, yellow with apex of femora and base of tibiae narrowly blackish. Protibiae very finely angled on basal part and slightly excised on inner side. Profemora with sharp angle near apex as in Fig. 4. Protarsomeres 1-4, mesotarsomeres 2-4 and penultimate metatarsomere widened and lobed. Protarsal claws smaller and hollow with more than 50 teeth on upper part. Aedeagus

as in Figs. 5, 6. Apical piece beak-shaped from dorsal and lateral views.

Female has body slightly wider than male, space between eyes a little wider than in male, protibiae and profemora without angles on inner side, protarsal claws are shorter than in male with only 13-15 visible teeth.

Differential diagnosis. The closest and habitually similar genus from this area is *Bolbostetha* Fairmaire, 1896.

The species of the new genus *Flavostetha* gen. nov. clearly differ from similar species of *Bolbostetha* mainly by the pale antenna and dorsal surface of the elytra, by pale legs with the apex of the femora and base of the tibiae narrowly blackish. The male has the profemora with a sharp angle near the apex on the inner side (as in Fig. 4), the male protibiae is very finely angled on the basal part and is slightly excised on the inner side; while species of *Bolbostetha* have darkened legs, the antenna is dark or bicolored and the dorsal surface of the elytra is almost dark, the male profemora have no sharp angle on the inner side and the protibiae have various types of shapes on the inner side (Novák 2008, 2020, 2022) - only *Bolbostetha genualis* (Borchmann, 1925) and *Bolbostetha thailandica* Novák, 2020 have legs bicolor (yellow and dark).

Etymology. The compound name formed by *Flavo-* (from Latin - yellow) and ending *-stetha* - marking similarity to the genus *Bolbostetha* Fairmaire, 1896. Gender: feminine.

Distribution. Peninsular Malaysia.

Flavostetha malayica sp. nov.

(Figs. 1-6)

Type locality. Malaysia, Kelantan, road between Kampong Raja and Gua Musang, 1400-1700 m (Ladang Pandrak), 4°63-88'N; 101°45-95'E.

Type material. Holotype (♂): MALAYSIA, KELANTAN / road between Kampong Raja / and Gua Musang, 1400-1700 m, / (Ladang Pandrak), 1.-28. / iv.2006; 4°63-88'N; 101°45-95'E / Čechovský Petr lgt., (VNPC). Paratypes: (1 ♂, 8 ♀♀): same data as holotype, (VNPC); (1 ♂, 3 ♀♀): MALAYSIA W., PAHANG / 50 km NE of Kuala / Rompin, Endau Rompin / Nat. P., 400 m, G. Keriung / (Kg. Tebu Hitam); 9.-30.iv. / 2008; P. Čechovský lgt., (VNPC); (1 ♂, 2 ♀♀): MALAYSIA W KELANTAN / 60 km N of Tanah Rata / TANAH KERAJAAN / 12.-30.iv.2007, 1000 m / Petr Čechovský lgt., (VNPC), (4 ♀♀): MALAYSIA West, PAHANG / Cameron Highlands, TANAH / RATA, 3.ii.-19.ii.2005 / P. Čechovský lgt., 1200-1500 m, (VNPC); (1 ♂): MALAYSIA-W, Pahang, / 30km SE of IPOH, 1500m, / Banjaran Titi Wangsa, / TAMAH RATA, 14.-15.iii. / 2002, P. Čechovský lgt., (VNPC); (1 ♂): MALAYSIA West, PERAK / 40 km SE of IPOH, 900m, / Banjaran Titi Wangsu, / RINGLET, 29.iii.-15.iv.2004 / P. Čechovský lgt., (VNPC); (1 ♂): MALAYSIA W KELANTAN / 30 km NW of Gua Musang / Ulu Lalat Mt. 800-1000m / KAMPONG SUNGAI OM; 27.v. / -19.vi.2011; P.Čechovský lgt., (VNPC); (5 ♂♂, 2 ♀♀): W Malaysia / Cameron Highlands / Tanah Rata – Mt. Gunung Jasar / 30.1. - 24.2.2008, P. Viktora lgt., (VNPC); (1 ♂): Malaysia NW / Cameron Highlands / Tanah Rata \ 16.-29.1.2006 / P. Viktora lgt., (VNPC); (1 ♂): MALAYSIA - Perak / Cameron Highland / Tanah Rata / 13.-17.ii.1997 / lgt. Oliver Dulík, (VNPC); (1 ♂): MALAYSIA / CAMERON HIGHL. / TANAH RATA / 20.-24.2.1998 / A.KUDRNA JR LGT., (VNPC). The types are provided with a printed red label: 'Flavostetha / malayica sp. nov. / HOLOTYPUS [or PARATYPUS] / V. Novák det. 2023'.

Description of holotype. Habitus as in Fig. 1, body large, narrow, elongate, *Leptura* - shaped, slightly shiny, from yellow to dark brown, dorsal surface with pale setae, punctures and microgranulation, BL 13.01 mm. Widest near elytral humeri; BL/EW 3.30.

Head (Fig. 3) slightly wider than long, through the eyes slightly wider than anterior margin, narrower than base of pronotum. Dorsal surface semi-matte with long, pale setae, fine microgranulation and dense punctures. Posterior part with coarser punctures than those on brown, anterior part. Clypeus brown, transverse, half-heart shaped, with long, pale setae, shallow punctures and microgranulation, apex excised at middle. Mandibles brown, glabrous, shiny with pale setae in sides. HW 1.82 mm; HW/PW 0.60; HL (visible part) 1.69 mm. Eyes very large, transverse, excised, space between eyes narrow, distinctly narrower than diameter of one eye, a little wider than length of antennomere 2 and narrower than length of antennomere 1; OI equal to 16.03.

Antenna. Long, antennomeres narrow (AL 9.54 mm, almost reaching three quarters body length - AL/BL 0.73). Dorsal surface with pale setation, microgranulation and very small punctures. Antennomeres 1-4 yellow, semi-matte, antennomeres 5-11 ochre yellow, rather matte, antennomeres 3-10 slightly widened apically. Antennomere 2 shortest, antennomeres 4-11 longer than antennomere 3. Ultimate antennomere widest near middle.

RLA(1-11): 0.65 : 0.37 : 1.00 : 1.89 : 1.76 : 1.73 : 1.81 : 1.73 : 1.73 : 1.65 : 1.60.

RL/WA(1-11): 1.60 : 1.59 : 3.52 : 6.36 : 5.42 : 5.12 : 5.36 : 5.33 : 5.57 : 5.55 : 6.21.

Maxillary palpus yellow, semi-matte, with pale setae, fine microgranulation and very small punctures. Palpomeres 2 and 3 distinctly narrowest at base and widest at apex with long pale setae, ultimate palpomere a little darker, widely triangular.

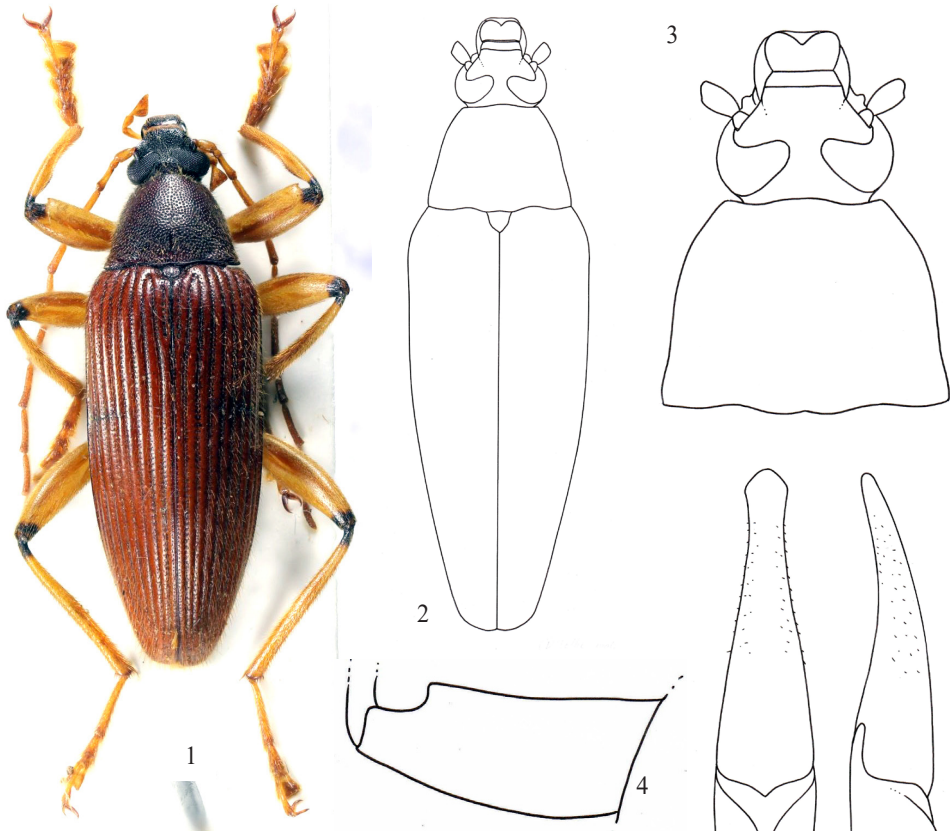
Pronotum (Fig. 3) reddish brown, bell-shaped, shiny, slightly convex, widest at base, almost as wide as elytra at humeri. Disk with two very small and shallow oblique impressions near base from both sides between posterior angles and scutellum. Dorsal surface with pale setae, dense punctures and very fine microgranulation. Interspaces between punctures distinctly narrower than diameter of punctures. PL 2.22 mm; PW 3.02 mm; PI equal to 73.51. Border lines very narrow, margins conspicuous from dorsal view only at the middle of anterior margin not clearly distinct. Base bisinuate, anterior margin slightly arcuate at middle, excised near angles, anterior and posterior angles distinct, obtuse.

Elytra. Pale reddish brown, narrow, elongate, slightly convex, semi-matte, widest near humeri. Suture narrowly darker. Dorsal surface with pale setae. EL 9.10 mm; EW 3.94 mm; EL/EW 2.31. Elytral striae with rows of punctures, intervals between punctures in rows almost narrower than diameter of punctures. Elytral intervals finely convex, with fine microgranulation and very sparse punctures.

Scutellum. Reddish brown, pentagonal, with sides darker and shallow impression on middle, semi-matte, with a few long, recumbent, dark setae, fine microgranulation and microrugosities and a few small, shallow punctures.

Elytral epipleura well-developed, pale reddish brown, with small punctures on basal part distinctly narrowing to ventrite 1, then relatively narrow and parallel on apical part with denser pale setation than on basal half.

Legs. Long and narrow, yellow with apex of femora and base of tibiae narrowly blackish, dorsal surface with setae, small, shallow punctures and fine microgranulation. Protibiae



Figs. 1-6: *Flavostetha malayica* sp. nov. (Figs. 1-4: male holotype; Figs. 5, 6 - male paratype): 1- habitus; 2- body outline; 3- head and pronotum; 4- profemora; 5- apical piece of aedeagus, dorsal view; 6- apical piece of aedeagus, lateral view.

very finely angled on basal part and slightly excised on inner side. Profemora with sharp angle near apex as in Fig. 4. Protarsomeres 1-4, mesotarsomeres 2-4 and penultimate metatarsomere widened and lobed. RLT: 1.00 : 0.84 : 0.93 : 0.92 : 1.40 (protarsus), 1.00 : 0.82 : 0.80 : 0.80 : 1.25 (mesotarsus), 1.00 : 0.42 : 0.50 : 0.57 (metatarsus).

Protarsal claws smaller and hollow with teeth on upper part, both protarsal claws with more than 50 teeth.

Ventral side of body dark reddish brown with short, pale setae and small punctures. Abdomen reddish brown, shiny with dense, long, recumbent, pale setation, dense, small punctures and fine microgranulation, ultimate ventrite with shallow, matte impression at middle.

Aedeagus (Figs. 5, 6) ochre yellow. Basal piece semi-matte, rounded laterally and narrowing in dorsal view. Apical piece with punctures and setae, beak-shaped from dorsal and lateral views. Ratio of length of apical piece to length of basal piece in dorsal view 1: 2.75.

Female has body slightly wider than male, space between eyes a little wider than in male, protibiae and profemora without angles in inner side, protarsal claws are shorter than in male with only 13-15 visible teeth.

Measurements of female body. BL 14.19 mm; HL 1.90 mm; HW 2.04 mm; OI 20.78; PL 2.28 mm; PW 3.36 mm; PI 67.68; EL 10.01 mm; EW 4.47 mm; AL(1-11) 8.57 mm; AL/BL(1-11) 0.60; HW/PW 0.61; BL/EW 3.18; EL/EW 2.24.

RLA(1-11): 0.68 : 0.33: 1.00 : 1.69 : 1.58 : 1.60 : 1.62 : 1.59 : 1.57 : 1.54 : 1.42.

RL/WA(1-11): 1.81 : 1.23 : 3.77 : 5.60 : 4.37 : 4.75 : 5.15 : 4.89 : 5.02 : 6.74 : 6.94.

RLT: 1.00 : 0.84 : 0.94 : 1.09 : 1.59 (protarsus), 1.00 : 0.52 : 0.67 : 0.76 : 1.30 (mesotarsus), 1.00 : 0.41 : 0.50 : 0.68 (metatarsus).

Variability. The type specimens somewhat vary in size; each character is given as its mean value, with full range in parentheses. Males (n= 14). BL 13.58 mm (12.82-14.57 mm); HL 1.78 mm (1.69-1.85 mm); HW 1.92 mm (1.82-1.99 mm); OI 16.15 (15.39-17.04); PL 2.26 mm (2.07-2.38 mm); PW 3.08 mm (2.95-3.22 mm); PI 73.43 (71.70-75.60); EL 9.54 mm (8.91-10.34 mm); EW 4.13 mm (3.90-4.40 mm). Females (n= 20). BL 14.56 mm (13.37-15.72 mm); HL 1.97 mm (1.82-2.16 mm); HW 2.11 mm (1.96-2.32 mm); OI 20.12 (19.09-21.57); PL 2.45 mm (2.20-2.70 mm); PW 3.59 mm (3.17-3.93 mm); PI 68.45 (67.86-69.40); EL 10.15 mm (9.33-10.88 mm); EW 4.71 mm (4.14-5.17 mm).

Differential diagnosis. See the differential diagnosis of the genus *Flavostetha* gen. nov.

Etymology. Toponymic, named after the country of its origin (Malaysia).

Distribution. Malaysia.

ACKNOWLEDGEMENTS. Sincere thanks are due to Petr Čechovský (Brno, Czech Republic) for bringing me new material and to Zuzana Čadová (Liberec, Czech Republic) for excellent drawings and Larry G. Bezar (California, U.S.A.) for reviewing english text.

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Received: 20.9.2023
Accepted: 10.10.2023
Printed: 31.3.2024