

## New *Bolbostetha* Fairmaire species from Malaysia and Vietnam (Coleoptera: Tenebrionidae: Alleculinae: Alleculini)

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**Taxonomy, new species, descriptions, Coleoptera, Tenebrionidae, Alleculinae, Alleculini, *Bolbostetha*, Oriental Region, Malaysia, Vietnam**

**Abstract.** New species of the alleculine genus *Bolbostetha* Fairmaire, 1896 are described as follows: *Bolbostetha bintangica* sp. nov., and *Bolbostetha svatopluki* sp. nov. from Malaysia, *Bolbostetha crockerica* sp. nov. from Malaysia (Borneo Island). The first three species of *Bolbostetha* from Vietnam are described as follows: *Bolbostetha daklakica* sp. nov. from Dak Lak Province, *Bolbostetha hueica* sp. nov. from Thua Thien Hue Province and *Bolbostetha vietnamica* sp. nov. from Binh Thuan Province. All new species are illustrated and compared with similar species. A list of the currently known species of *Bolbostetha* is added.

### INTRODUCTION

The genus *Bolbostetha* Fairmaire 1896 with the type species *Bolbostetha soleata* Fairmaire 1896 was established by Fairmaire (1896). Borchmann (1910) knew only 2 species worldwide, Novák & Pettersson (2008) listed 5 species and Novák (2020a) 6 species from the Palaearctic Region. The genus comprises 44 species today (Novák 2008 and 2020b) living mainly in the Oriental Region. Main distinguishing morphological characters are large *Leptura*-shaped body, antenna longer than half body length, antennomere 4 longer than antennomere 3, space between eyes mainly in males narrow, protarsomeres 1-4 or 2-4 very wide, femora strong, profemora almost stronger than meso- or metafomora, protibiae often unusually shaped.

The first three species are described from Vietnam as new as well as one species from Malaysia (Borneo Island) and further two from peninsular Malaysia compared with similar species *Bolbostetha pendleburyi* Pic, 1936 known from Cameron Highlands (Malaysia). All new species are described and illustrated.

List of *Bolbostetha* species known from the Oriental and Palaearctic Regions is added.

### 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).

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

The following collection codes is used:

NMEG collection of Naturkundemuseum, Erfurt, Germany;

SMNS collection of Staatliches Museum für Naturkunde, Stuttgart, Germany;

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

ZSMG collection of Zoologische Staatssammlung, München, Germany.

Measurements of body parts and corresponding abbreviations used in the text are as follows: AL - total antennae 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 Olympus SZ 40 stereoscopic microscope with continuous magnification and with 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 5.2.

## TAXONOMY

### genus *Bolbostetha* Fairmaire, 1896

**Type species:** *Bolbostetha soleata* Fairmaire, 1896: 117.

#### *Bolbostetha bintangica* sp. nov.

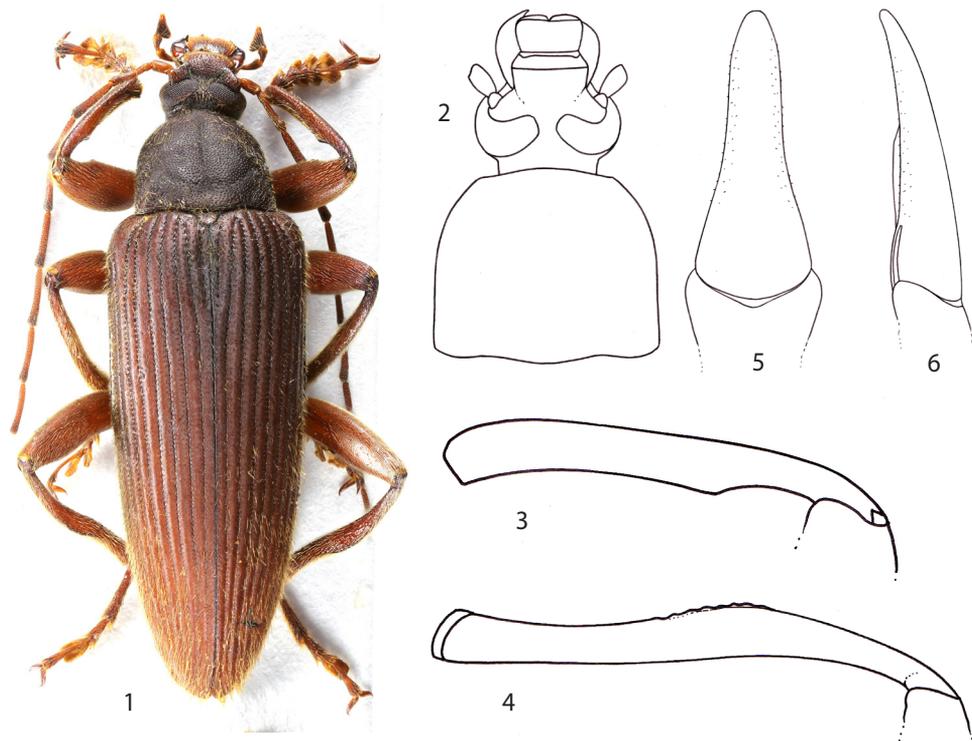
(Figs. 1-6)

**Type locality.** West Malaysia, Perak, Bukit Larut, Bintang Mountains, 04°51'N, 100°48'E, 1100-1400 m.

**Type material.** Holotype (♂): WEST MALAYSIA, Perak / BUKIT LARUT, Bintang Mts. / WGS 84: 04°51'N, 100°48'E / 4.-6.8.2004, alt. 1100-1400m / lgt. Fouqué R.+H., (VNPC). The type is provided with a printed red label: 'Bolbostetha / bintangica sp. nov. / HOLOTYPUS / V. Novák det. 2022'.

**Description of holotype.** Habitus as in Fig. 1, body large, elongate, *Leptura*-shaped, rather matte, from ochre yellow to blackish brown, dorsal surface with pale setation, punctuation and fine microgranulation, BL 17.91 mm. Widest near elytral humeri; BL/EW 3.46.

Head (Fig. 2) slightly longer than wide, through the eyes distinctly narrower than base of pronotum. Dorsal surface with fine microgranulation and dense punctuation, punctures small. Posterior part blackish brown, matte, anterior part reddish brown, shiny with denser pale setation than those in posterior part. Clypeus reddish brown with ochre yellow sides and apex, wide and transverse. Dorsal surface with punctuation, long and dense, pale setation, very fine microgranulation, shiny. Mandibles pale reddish brown with darker sides and apex, glabrous,



Figs. 1-6: *Bolbostetha bintangica* sp. nov. (male holotype): 1- habitus; 2- head and pronotum; 3- protibia; 4- metatibia; 5- apical piece of aedeagus, dorsal view; 6- apical piece of aedeagus, lateral view.

shiny, with pale setae on sides. HW 2.28 mm; HW/PW 0.72; HL (visible part) 2.37 mm. Eyes large, transverse, excised, space between eyes very narrow, distinctly narrower than diameter of one eye; approximately as wide as length of antennomere 2; OI equal to 11.10.

Antenna. Long, narrow (AL 11.45 mm, reaching almost two thirds body length - AL/BL 0.64). Antennomeres 1 and 2 pale brown, slightly shiny, antennomeres 3-11 reddish brown with blackish brown apex, rather matte, each distinctly longer than antennomere 3. Surface with short, pale setation, microgranulation and small punctures. Antennomere 2 shortest, antennomeres 3-10 slightly widened apically. Ultimate antennomere widest before apex.

RLA(1-11): 0.60 : 0.24 : 1.00 : 1.19 : 1.10 : 1.19 : 1.35 : 1.35 : 1.32 : 1.42 : 1.54.

RL/WA(1-11): 2.19 : 1.10 : 3.90 : 5.15 : 4.77 : 5.15 : 6.38 : 5.28 : 7.10 : 7.58 : 10.69.

Maxillary palpus brown, rather matte, with pale setation, microgranulation and very small punctures, apex of palpomeres 2-4 slightly paler. Palpomeres 2 and 3 distinctly narrowest at base and widest at apex, ultimate palpomere widely triangular.

Pronotum (Fig. 2) blackish brown, matte, slightly convex, almost semicircular, widest at base, distinctly narrower than elytra in humeri. Disk with longitudinal shallow furrow in the middle. Dorsal surface with pale setation, fine microgranulation and dense punctuation, punctures small, intervals between punctures almost as wide as diameter of punctures. PL

2.74 mm; PW 3.18 mm; PI equal to 86.16. Border lines very narrow, margins conspicuous in dorsal view. Lateral margins straight in posterior part, arcuate in apical half, base finely bisinuate. Anterior margin slightly arcuate, anterior and posterior angles obtuse.

Elytra. Reddish brown, narrow, elongate, slightly convex, matte, widest near humeri. Dorsal surface with pale setation denser near lateral margins and at apex. EL 12.80 mm; EW 5.17 mm; EL/EW 2.48. Elytral striae with rows of small punctures, intervals between punctures in rows almost narrower than diameter of punctures. Elytral intervals slightly convex, with very fine microgranulation and sparse, very small punctures.

Scutellum. Brown with sides darker, roundly triangular, semimatte, with a few shallow punctures, fine microgranulation and long, pale setae.

Elytral epipleura well-developed, reddish brown, with large punctures in basal part and long and dense, pale setae in apical part, distinctly narrowing to ventrite 1, then relatively wide and parallel in apical part.

Legs (Figs. 3, 4). Long, reddish brown, dorsal surface with pale setation, fine microgranulation and very small and dense punctuation. Protibiae widened apically, excised and with angle in one third from base in inner side (as in Fig. 3), mesotibiae normally shaped, metatibiae excised in basal half of inner side (as in Fig. 4). Protarsomeres 1-4, mesotarsomeres 3, 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.85 : 1.07 : 1.31 : 2.46 (protarsus); 1.00 : 0.42 : 0.44 : 0.63 (metatarsus).

Both protarsal claws with more than 40 visible teeth.

Ventral side of body dark brown, with longer and dense, pale setae. Abdomen dark brown, matte, with microgranulation. Ventrites 1-3 with denser and longer pale setation than in penultimate and ultimate ventrites. Ultimate ventrite with large shallow impression in middle.

Aedeagus (Figs. 5, 6) large, ochre yellow, shiny. Basal piece strong, rounded laterally and narrowing in dorsal view. Apical piece triangular dorsally, beak shaped from dorsal and lateral view. Ratio of length of apical piece to length of basal piece in dorsal view 1 : 3.10.

**Female** unknown.

**Differential diagnosis.** The most similar species from Malaysia are large species *Bolbostetha pendleburyi* Pic, 1936 and *Bolbostetha svatopluki* sp. nov.

*Bolbostetha bintangica* sp. nov. clearly differs from the similar species *B. svatopluki* mainly by antenna, tibiae and tarsi pale (reddish brown or pale reddish brown), by metatibia distinctly excised in basal half of inner part and aedeagus is as in Figs. 5 and 6; while *B. svatopluki* has dark brown or blackish brown antenna, tibiae and tarsi, metatibiae are normally shaped and aedeagus is as in Figs. 32, 33.

*B. bintangica* is clearly different from similar species *Bolbostetha pendleburyi* Pic, 1936 mainly by antenna pale (reddish brown or pale reddish brown) and by shape of aedeagus (Figs. 5 and 6); while *B. pendleburyi* has antennomeres in most part blackish brown and aedeagus is as in Figs. 24, 25.

**Etymology.** Toponymic, named after the type locality Bintang Mountains in Malaysia.

**Distribution.** Malaysia (State of Perak).

***Bolbostetha crockerica* sp. nov.**

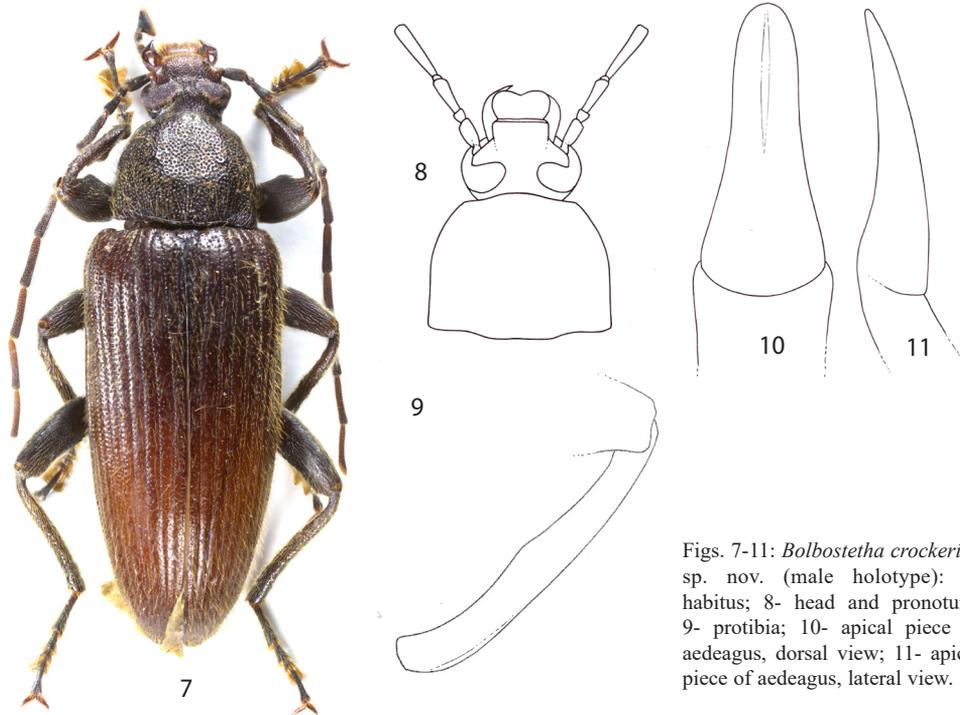
(Figs. 7-11)

**Type locality.** East Malaysia (Borneo Island), Sabah, Crocker Range, environ of Tamburan, 5°43'N, 116°18'E.

**Type material.** Holotype (♂): EAST MALAYSIA BORNEO / Sabah, Tambunan env., Crocker / Range foothills, 5°43'N, / 116°18'E, 02-04.VI.2007, edge of / disturbed primary lower montane / rainforest, leg. local collector, DTelnov, (NMEG). The type is provided with a printed red label: 'Bolbostetha / crockerica sp. nov. / HOLOTYPE / V. Novák det. 2022'.

**Description of holotype.** Habitus as in Fig. 7, body narrow, elongate, *Leptura*-shaped, slightly convex, slightly shiny, from ochre yellow to blackish brown, dorsal surface with pale setation, fine microgranulation and punctuation, BL 16.02 mm. Widest near elytral humeri; BL/EW 3.13.

Head (Fig. 8) slightly wider than long, through the eyes distinctly narrower than base of pronotum. Dorsal surface with dense punctuation, punctures coarse, microgranulation and pale setation. Posterior part blackish brown with larger punctures than those in dark reddish brown anterior part. Clypeus ochre yellow, matte, wide and transverse, lateral margins rounded, anterior margin excised in middle, surface with long, pale setae, shallow punctures and microgranulation. Mandibles reddish brown with darker lateral margins and apex, glabrous, shiny, with a few pale setae on sides. HW 2.36 mm; HW/PW 0.85; HL (visible part) 2.22 mm. Eyes large, transverse, excised, space between eyes very narrow, distinctly



Figs. 7-11: *Bolbostetha crockerica* sp. nov. (male holotype): 7- habitus; 8- head and pronotum; 9- protibia; 10- apical piece of aedeagus, dorsal view; 11- apical piece of aedeagus, lateral view.

narrower than diameter of one eye; slightly wider than length of antennomere 2; OI equal to 16.04.

Antenna. Long, narrow, rather matte (AL 11.89 mm, reaching almost three quarters body length - AL/BL 0.74). Antennomeres 1-5 blackish brown, antennomeres 6-11 blackish brown with reddish brown basal half. Antennomeres 4-11 each distinctly longer than antennomere 3, antennomeres 1-10 slightly widened apically, antennomere 1 approximately as long as antennomere 3, antennomere 2 shortest. Surface with short, pale setation, microgranulation and small punctures. Ultimate antennomere widest before apex.

RLA(1-11): 1.00 : 0.37 : 1.00 : 1.95 : 1.88 : 2.07 : 2.14 : 2.22 : 2.11 : 2.10 : 2.20.

RL/WA(1-11): 1.18 : 1.23 : 2.31 : 4.36 : 4.98 : 5.28 : 5.10 : 6.31 : 6.78 : 6.46 : 8.58.

Maxillary palpus blackish brown, matte, with pale setae, small, shallow punctures and microgranulation. Palpomeres 2 and 3 distinctly narrowest at base and widest at apex, ultimate palpomere widely triangular, paler in apex.

Pronotum (Fig. 8) blackish brown, shiny, slightly convex, widest at base, distinctly narrower than elytra at humeri. Dorsal surface with long, pale setation, dense, large and coarse punctures, intervals between punctures almost narrower than diameter of punctures. Disk with shallow impression in the middle of apical half. PL 2.75 mm; PW 2.78 mm; PI equal to 98.85. Border lines very narrow, margins conspicuous in dorsal view. Lateral margins straight in basal part, arcuate in apical half, anterior margin arcuate, base finely bisinuate. Posterior and anterior angles obtuse.

Elytra. Dark reddish brown or reddish brown in apical half, narrow, elongate, slightly convex, shiny. Dorsal surface with long and dense, pale setation. EL 11.05 mm; EW 5.12 mm; EL/EW 2.16. Surface with distinct impression near scutellum and suture in basal part. Elytral striae with rows of coarse punctures (slightly smaller than those in pronotum), intervals between punctures in rows almost narrower than diameter of punctures. Elytral intervals slightly convex, with microgranulation and relatively dense punctures slightly smaller than those in rows.

Scutellum. Blackish brown, smaller, pentagonal, rather matte, with microgranulation and a few shallow punctures.

Elytral epipleura well-developed, blackish brown with larger punctures and very wide near base, narrowing to metaventricle, then reddish brown, relatively wide and parallel with pale setae in apical part.

Legs. Long and narrow, blackish brown, dorsal surface with pale setation, small punctures and microgranulation. Protibiae (Fig. 9) widened apically with unique shaped large angle in lower side. Profemora excised with distinct tubercle in inner side. Meso- and metatibiae normally shaped. Metafemora with small angle before apex in inner side. Protarsomeres 1-4, mesotarsomeres 3, 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.93 : 1.30 : 2.00 : 3.26 (protarsus); 1.00 : 0.83 : 0.98 : 1.20 : 2.22 (mesotarsus); 1.00 : 0.41 : 0.54 : 0.88 (metatarsus).

Both protarsal claws with more than 30 visible teeth.

Ventral side of body blackish brown, with pale setae. Abdomen reddish brown, with dense, small and shallow punctures, fine microgranulation and long, pale setae, ultimate ventrite darker with shallow impression in middle.

Aedeagus (Figs. 10, 11) large and shiny. Basal piece ochre yellow, rounded laterally and narrowing in dorsal view. Apical piece dark, triangular dorsally, beak shaped from dorsal view and beak or hook shaped in lateral view. Ratio of length of apical piece to length of basal piece in dorsal view 1: 4.07.

**Female unknown.**

**Differential diagnosis.** *Bolbostetha crockerica* sp. nov. is a unique species with unusually shaped, strongly widened lower part of male protibiae (as in Fig. 9). No similar species of *Bolbostetha* is not known yet.

**Etymology.** Toponymic, named after type locality Crocker Range in Borneo Island (East Malaysia).

**Distribution.** East Malaysia, Borneo Island.

***Bolbostetha daklakica* sp. nov.**

(Figs. 12-16)

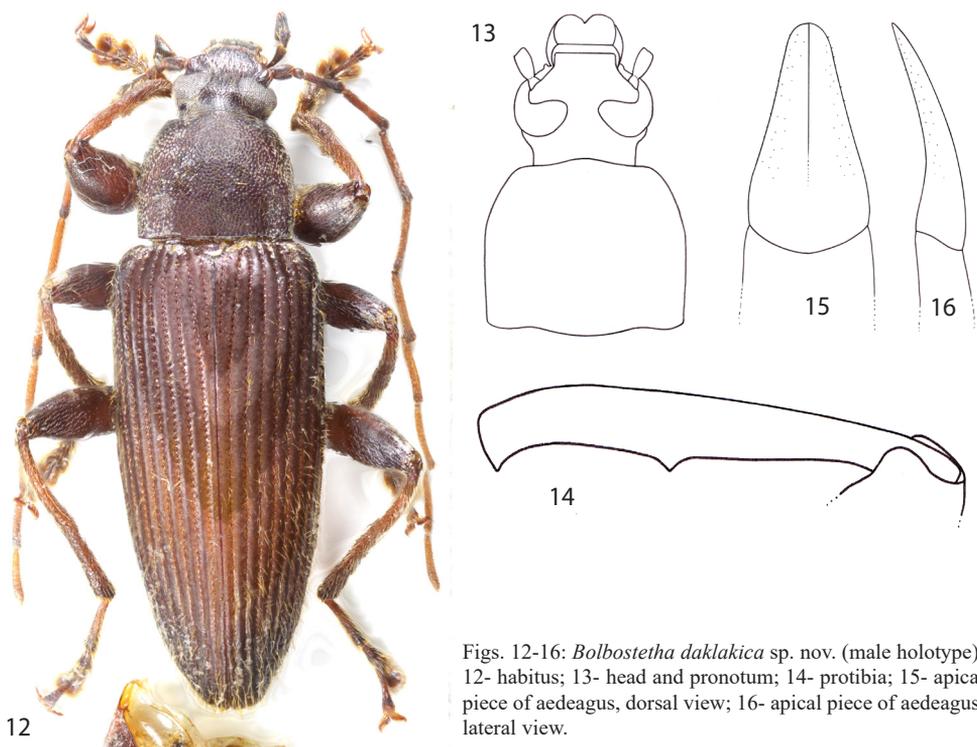
**Type locality.** Vietnam, Dak Lak Province, Bounmathuon.

**Type material.** Holotype (♂): VIETNAM: Buonmathuot / Prov. Dak Lak / 23.-26. [hb]6. 1985, (SMNS). The type is provided with a printed red label: 'Bolbostetha / daklakica sp. nov. / HOLOTYPUS / V. Novák det. 2022'.

**Description of holotype.** Habitus as in Fig. 12, body narrow, elongate, *Leptura*-shaped, slightly convex, matte, from ochre yellow to dark brown, dorsal surface with pale setation, fine microgranulation and punctuation, BL 10.55 mm. Widest near elytral humeri; BL/EW 3.37.

Head (Fig. 13) dark brown, slightly wider than long, through the eyes distinctly narrower than base of pronotum, approximately as wide as anterior margin of pronotum. Dorsal surface with dense and coarse punctuation and pale setation. Posterior part with microgranulation inside punctures, anterior part with distinct microgranulation also between punctures. Clypeus dark brown with apex ochre yellow, half heart shaped, in middle distinctly excised, matte, wide and transverse, lateral margins rounded, surface with long, pale setae, few small, shallow punctures and microgranulation. Mandibles pale reddish brown, glabrous and shiny dorsally, with a few pale setae in sides. HW 1.58 mm; HW/PW 0.75; HL (visible part) 1.44 mm. Eyes large, transverse, excised, space between eyes narrow, distinctly narrower than diameter of one eye; wider than length of antennomere 2, approximately as wide as antennomere 1; OI equal to 23.26.

Antenna. Long, narrow, rather matte (AL 9.34 mm, exceeding three quarters body length - AL/BL 0.88). Antennomeres 1-3 dark brown, antennomeres 4-10 pale brown with dark brown apex, ultimate antennomere pale brown widest before apex. Antennomeres 4-11 each distinctly longer than antennomere 3, antennomeres 1-10 slightly widened apically, antennomere 2 shortest. Surface with short, pale setation, microgranulation and small punctures.



Figs. 12-16: *Bolbostetha daklakica* sp. nov. (male holotype): 12- habitus; 13- head and pronotum; 14- protibia; 15- apical piece of aedeagus, dorsal view; 16- apical piece of aedeagus, lateral view.

RLA(1-11): 0.48 : 0.24 : 1.00 : 1.27 : 1.66 : 1.63 : 1.61 : 1.51 : 1.51 : 1.37 : 1.31.

RL/WA(1-11): 1.62 : 1.23 : 3.83 : 6.35 : 9.10 : 10.39 : 8.04 : 9.67 : 9.67 : 7.48 : 8.39.

Maxillary palpus blackish brown, slightly shiny, with pale setae, small, shallow punctures and fine microgranulation. Palpomeres 2 and 3 distinctly narrowest at base and widest at apex, ultimate palpomere widely triangular.

Pronotum (Fig. 13) dark brown, matte, slightly convex, widest in posterior half, distinctly narrower than elytra at humeri. Dorsal surface with pale setation, dense, small punctures, intervals between punctures as wide or narrower than diameter of punctures. PL 1.92 mm; PW 2.11 mm; PI equal to 91.00. Border lines very narrow, margins conspicuous in dorsal view. Lateral margins straight in posterior half, arcuate in apical part, anterior margin arcuate, base finely bisinuate. Posterior and anterior angles obtuse.

Elytra. Brown, narrow, elongate, slightly convex, matte. Dorsal surface with pale setation. EL 7.19 mm; EW 3.14 mm; EL/EW 2.29. Elytral striae with rows of coarse punctures (slightly larger than those in pronotum), intervals between punctures in rows approximately as wide as diameter of punctures. Elytral intervals slightly convex, with fine microgranulation.

Scutellum. Dark brown, pentagonal, slightly shiny, with microgranulation and small punctures.

Elytral epipleura well-developed, blackish brown with large punctures and very wide

near base, narrowing to metaventrite, then reddish brown, relatively wide and parallel with pale setae in apical part.

Legs. Long and narrow, reddish brown, dorsal surface with pale setation, small punctures and microgranulation. Tibiae and tarsi paler than dark reddish brown strong femora. Protibiae (Fig. 14) widened apically with one tooth behind middle of lower part. Profemora distinctly wider than meso- and metafemora. Mesotibiae with small angle in the middle of inner side, metatibiae slightly excised in inner side of posterior part. Protarsomeres 2-4, mesotarsomeres 3, 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.65 : 0.92 : 1.26 : 2.14 (protarsus); 1.00 : 0.41 : 0.45 : 0.78 (metatarsus).

Both protarsal claws with more than 25 visible teeth.

Ventral side of body with pale setae and punctures. Prothorax blackish brown, meso- and metaventrite reddish brown. Abdomen blackish brown, matte, with pale setae and fine microgranulation.

Aedeagus (Figs. 15, 16) ochre yellow, large and shiny. Basal piece rounded laterally and slightly narrowing in dorsal view. Apical piece widely triangular dorsally, beak shaped in dorsal and lateral views. Ratio of length of apical piece to length of basal piece from dorsal view 1: 2.50.

**Female unknown.**

**Differential diagnosis.** Similar species known from Vietnam are *Bolbostetha hueica* sp. nov. from Central Vietnam (Thua Thien Hue Province) and *Bolbostetha vietnamica* sp. nov. from South Vietnam (Binh Thuan Province).

*Bolbostetha daklakica* sp. nov. distinctly differs from similar species *B. hueica* mainly by apical third of ultimate ventrite distinctly impressed, by apical margin of ultimate ventrite straight and brown, by shape of protibiae (as in Fig. 14) and by shape of aedeagus (Figs. 15, 16); while impression of apical third of ultimate ventrite of *B. hueica* is indistinct, margin of ultimate ventrite is rounded and paler than rest of ventrite, shape of protibiae is as in Fig. 19) and shape of aedeagus is as in Figs. 21, 22.

*Bolbostetha daklakica* sp. nov. is clearly different from similar species *B. vietnamica* mainly by dorsal surface rather matte, by smaller body (BL 10.6 mm), by protarsomeres 2-4 distinctly widened and lobed and by antennomeres 4-11 1.27-1.66 times longer than antennomere 3; while *B. vietnamica* has dorsal surface shiny, body is larger (BL approximately 18 mm), protarsomeres 1-4 are widened and lobed and antennomeres 4-11 are only 1.09-1.23 times longer than antennomere 3.

**Etymology.** Toponymic, named after the type locality Province Dak Lak in Vietnam.

**Distribution.** Vietnam (Dak Lak Province).

***Bolbostetha hueica* sp. nov.**

(Figs. 17-22)

**Type locality.** Central Vietnam, Thua Thien Hue Province, Phu Loc Bach Ma National Preserve, 16°11'39'' N, 107°51'12'' E, top area 1250-1400 m.

**Type material.** Holotype (♂): C- VIETNAM, Thua Thien- / Hue Prov. Phu Loc Bach Ma / NP Top Area, 1250-1400 m / 16°11'39'' N, 107°51'12'' E / 05.V.2019, leg. A. Weigel, (NMEG). The type is provided with a printed red label: '*Bolbostetha / hueica* sp. nov. / HOLOTYPUS / V. Novák det. 2022'.

**Description of holotype.** Habitus as in Fig. 17, body narrow, elongate, *Leptura*-shaped, slightly convex, from reddish brown to dark brown, dorsal surface semimatte, with relatively dense, pale setation, punctuation and fine microgranulation, BL 13.76 mm. Widest near elytral humeri; BL/EW 3.67.

Head (Fig. 18) dark brown, slightly longer than wide, through the eyes slightly wider than anterior margin of pronotum, narrower than base of pronotum. Dorsal surface with long, pale setation and punctures. Surface between eyes with coarser punctures. Clypeus reddish brown with ochre yellow apex, slightly shiny, wide and transverse, anterior margin excised in middle, surface with long, pale setae, shallow punctures and fine microgranulation. Mandibles brown, glabrous, shiny, with a few long, pale setae on sides. HW 1.77 mm; HW/PW 0.65; HL (visible part) 1.93 mm. Eyes large, transverse, excised, space between eyes narrow, distinctly narrower than diameter of one eye; slightly narrower than length of antennomere 1; OI equal to 24.78.

Antenna. Long, narrow (AL 9.89 mm, distinctly exceeding half body length - AL/BL 0.72). Antennomeres 1-3 slightly shiny, antennomeres 4-11 rather matte. Surface with short, recumbent, pale setation, small punctures and microgranulation. Antennomere 1 strong, antennomere 2 the shortest, antennomeres 3-10 slightly widened apically. Ultimate antennomere widest before apex.

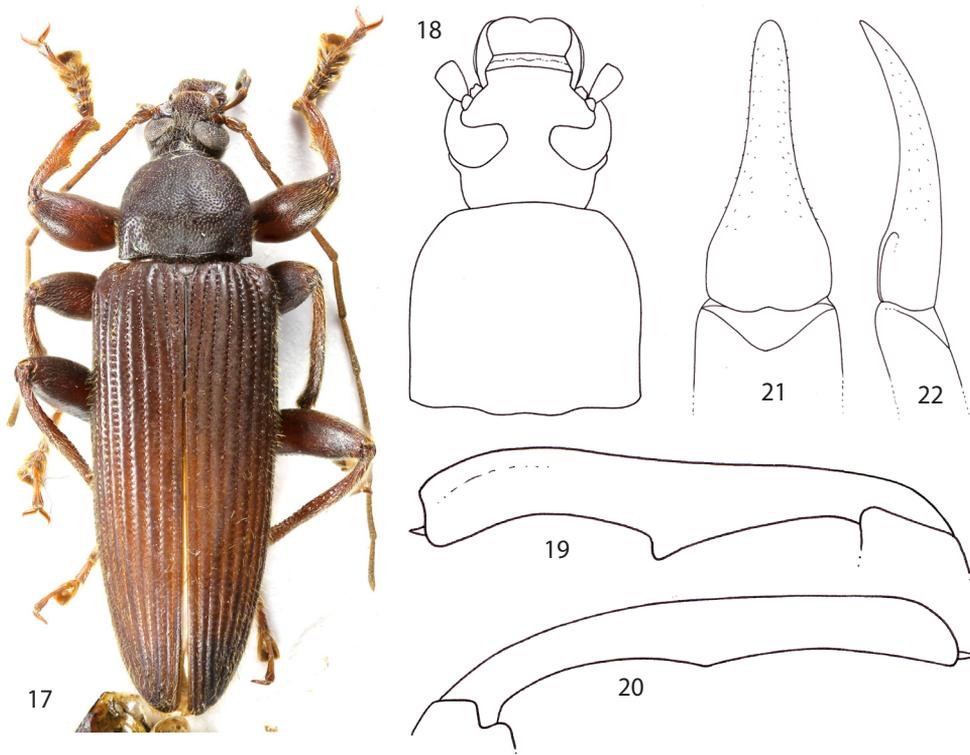
RLA(1-11): 0.67 : 0.24 : 1.00 : 1.56 : 1.46 : 1.52 : 1.52 : 1.42 : 1.36 : 1.36 : 1.25.

RL/WA(1-11): 2.08 : 1.59 : 4.67 : 7.57 : 6.89 : 8.97 : 9.74 : 9.09 : 8.71 : 9.50 : 10.00.

Maxillary palpus pale brown, slightly shiny, with pale setae, microgranulation and small, shallow punctures. Palpomeres 2 and 3 distinctly narrowest at base and widest at apex, ultimate palpomere blackish brown, widely triangular.

Pronotum (Fig. 18) blackish brown, rather matte, convex, widest at base, distinctly narrower than elytra in humeri. Dorsal surface with long, pale setae, relatively dense, small punctures and microgranulation. Two oblique impressions near base, each before posterior angles. PL 2.50 mm; PW 2.72 mm; PI equal to 91.91. Border lines very narrow, margins conspicuous in dorsal view, only in the middle of anterior margin not clearly distinct. Lateral margins almost straight in posterior part, arcuate in apical half, anterior margin slightly arcuate, base finely bisinuate. Posterior angles obtuse, anterior angles not clearly distinct.

Elytra. Reddish brown, narrow, elongate, slightly convex, rather matte. Dorsal surface with pale setae denser near lateral margins and apex than in middle. EL 9.33 mm; EW 3.75 mm; EL/EW 2.49. Elytral striae with rows of coarse punctures (almost larger than those in pronotum), intervals between punctures in rows as wide or narrower than diameter of punctures. Elytral intervals slightly convex with microgranulation.



Figs. 17-22: *Bolbostetha hueica* sp. nov. (male holotype): 17- habitus; 18- head and pronotum; 19- protibia; 20- mesotibia; 21- apical piece of aedeagus, dorsal view; 22- apical piece of aedeagus, lateral view.

Scutellum. Brown, pentagonal, matte, with microgranulation, small punctures and pale setae.

Elytral epipleura well-developed, widest in base, narrowing to metaventrite, brown with punctures and sparser pale setae than those in narrow and parallel apical part.

Legs (Figs. 19, 20). Long and narrow, reddish brown, dorsal surface with pale setation, small punctures and microgranulation. Protibiae (as in Fig. 19) widened in middle of inner side. Mesotibiae (as in Fig. 20) with small angle in the middle of inner side. Profemora strong, wider than meso- and metafemora. Metatibiae slightly excised, with small horns in basal part of inner side. Protarsomeres 1-4, mesotarsomeres 3, 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 1.01 : 1.01 : 1.13 : 1.91 (protarsus); 1.00 : 0.60 : 0.65 : 0.77 : 1.38 (mesotarsus); 1.00 : 0.46 : 0.53 : 0.89 (metatarsus).

Both protarsal claws with more than 35 visible teeth.

Ventral side of body reddish brown, with long pale setae and small punctures. Abdomen blackish brown, matte, with microgranulation and recumbent, pale setae.

Aedeagus (Figs. 21, 22) large and strong, shiny. Basal piece ochre yellow, rounded laterally and narrowing in dorsal view. Apical piece little darker, triangular dorsally, beak shaped in dorsal and lateral views. Ratio of length of apical piece to length of basal piece from dorsal view 1: 4.22.

**Female** unknown.

**Differential diagnosis.** Similar species known from Vietnam are *Bolbostetha daklakica* sp. nov. from Dak Lak Province and *Bolbostetha vietnamica* sp. nov. from South Vietnam (Binh Thuan Province).

*Bolbostetha hueica* sp. nov. distinctly differs from similar species *B. daklakica* mainly by indistinct impression of apical third of ultimate ventrite, by rounded margin of ultimate ventrite, paler than rest of ventrite, by shape of protibiae is as in Fig. 19 and by shape of aedeagus is as in Figs. 21, 22; while *B. daklakica* has apical third of ultimate ventrite distinctly impressed, apical margin of ultimate ventrite is straight and brown, shape of protibiae is as in Fig. 14 and shape of aedeagus is as in Figs. 15, 16.

*Bolbostetha hueica* sp. nov. is clearly different from similar species *B. vietnamica* mainly by dorsal surface semimatte, by smaller body (BL 13.8 mm), by protarsomeres 2-4 distinctly widened and lobed and by antennomeres 4-11 1.25-1.56 times longer than antennomere 3; while *B. vietnamica* has dorsal surface shiny, body is larger (BL approximately 18 mm), protarsomeres 1-4 are widened and lobed and antennomeres 4-11 are only 1.09-1.23 times longer than antennomere 3.

**Distribution.** Vietnam (Thua Thiem Hue Province).

***Bolbostetha pendleburyi* Pic, 1936**  
(Figs. 23-25)

*Bolbostetha pendleburyi* Pic, 1936: 172.

**Type locality.** Malaysia, Pahang, Cameron Highlands.

**Material examined.** (♂): W Malaysia / Cameron Highlands / Tanah Rata - Mt. Gunung Jasar / 30.1. - 24.2.2008 / P. Viktora lgt., (VNPC).

**Measurement of examined male.** BL 22.51 mm; HL 2.70 mm; HW 2.71 mm; OI 15.43; PL 3.58 mm; PW 4.10 mm; PI 87.32; EL 16.23 mm; EW 6.14 mm; AL(1-11) 14.69 mm; AL(1-11)/BL 0.65; HW/PW 0.66; BL/EW 3.67; EL/EW 2.64; AED 1: 3.66.

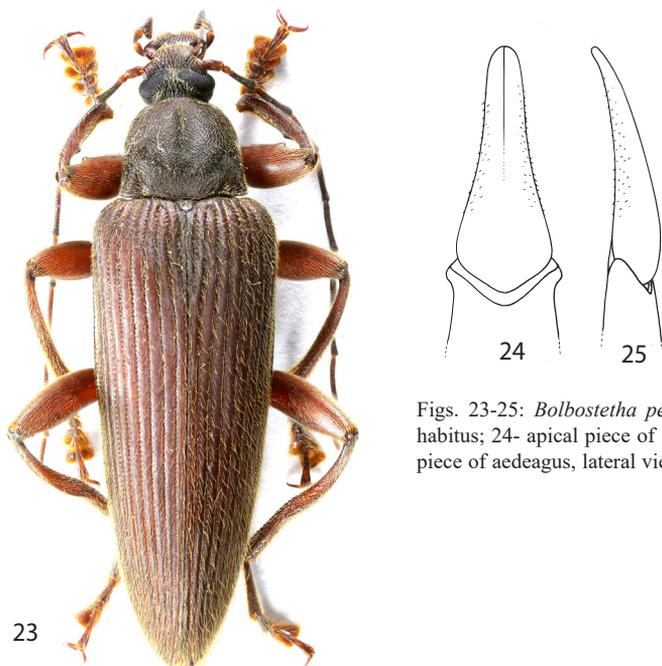
RLA(1-11): 0.52 : 0.25 : 1.00 : 1.56 : 1.58 : 1.60 : 1.62 : 1.70 : 1.63 : 1.63 : 1.50.

RL/WA(1-11): 2.40 : 1.50 : 3.82 : 5.67 : 5.92 : 5.88 : 5.89 : 6.38 : 5.94 : 5.94 : 5.63.

RLT: 1.00 : 1.00 : 1.33 : 1.50 : 2.50 (protarsus); 1.00 : 0.56 : 0.56 : 0.71 : 0.96 (mesotarsus); 1.00 : 0.51 : 0.35 : 0.55 (metatarsus).

**Remark.** Large species, habitus as in Fig. 23, dorsal surface rather matte, space between eyes very narrow, antennomeres 4-11 distinctly longer than antennomere 3, antennomeres 1 and 2 distinctly paler than antennomeres 3-11. Protarsomeres 1-4 widened and lobed, metatibiae of male distinctly excised in basal half of inner part. Apical piece of aedeagus as in Figs. 24 and 25.

**Distribution.** Malaysia.



Figs. 23-25: *Bolbostetha pendleburyi* Pic, 1936 (male): 23- habitus; 24- apical piece of aedeagus, dorsal view; 25- apical piece of aedeagus, lateral view.

***Bolbostetha svatopluki* sp. nov.**  
(Figs. 26-30)

**Type locality.** Malaysia, Perak, Cameron Highlands, Tanah Rata.

**Type material.** Holotype (♂): 13.-17.2.1997 / Ivo Jeniš leg. / MALAYSIA - Perak / Cameron Highlands / Tanah Rata, (VNPC). The type is provided with a printed red label: 'Bolbostetha / svatopluki sp. nov. / HOLOTYPUS / V. Novák det. 2022'.

**Description of holotype.** Habitus as in Fig. 26, body narrow, elongate, *Leptura*-shaped, slightly convex, matte, from reddish brown to blackish brown, dorsal surface with pale setation, fine microgranulation and punctuation, BL 18.09 mm. Widest near elytral humeri; BL/EW 3.69.

Head (Fig. 27) slightly longer than wide, through the eyes distinctly wider than anterior margin and narrower than base of pronotum. Dorsal surface dark brown or blackish brown, with punctuation, long, pale setae and microgranulation. Clypeus reddish brown, matte, wide and transverse, lateral margins rounded, apex ochre yellow excised in middle, surface with long, pale setae, shallow punctures and microgranulation. Mandibles reddish brown with darker lateral margins and apex, glabrous, shiny. HW 2.20 mm; HW/PW 0.62; HL (visible part) 2.68 mm. Eyes large, transverse, excised, space between eyes very narrow, distinctly narrower than diameter of one eye; slightly wider than length of antennomere 2; OI equal to 17.05.

Antenna. Long, narrow, matte (AL(1-10) 10.81 mm, distinctly exceeding half body length - AL(1-10)/BL 0.60). Antennomeres blackish brown, apex of slightly shiny antennomere 1 reddish brown. Antennomeres 4-10 each distinctly longer than antennomere 3, antennomeres 1-10 slightly widened apically, antennomere 2 shortest. Surface with pale setation, microgranulation and punctures.

RLA(1-10): 0.54 : 0.24 : 1.00 : 1.44 : 1.45 : 1.42 : 1.57 : 1.68 : 1.60 : 1.52.

RL/WA(1-10): 1.90 : 1.04 : 4.08 : 5.10 : 6.70 : 8.82 : 10.38 : 11.13 : 10.00 : 10.06.

Maxillary palpus dark brown, rather matte, with long, pale setae, shallow punctures and microgranulation. Palpomeres 2 and 3 distinctly narrowest at base and widest at distinctly paler apex, ultimate palpomere widely triangular.

Pronotum (Fig. 27) dark brown, matte, slightly convex, widest near middle, distinctly narrower than elytra at humeri. Dorsal surface with long, pale setation, relatively dense, small punctures, intervals between punctures narrower than diameter of punctures. Disk with shallow, longitudinal impression in the middle. PL 2.98 mm; PW 3.53 mm; PI equal to 84.50. Border lines very narrow, margins conspicuous from dorsal view. Lateral margins straight in basal part, arcuate in apical half, anterior margin slightly arcuate, base bisinuate. Posterior and anterior angles obtuse, anterior angles not clearly distinct, obtuse.

Elytra. Dark reddish brown or reddish brown in apical half, narrow, elongate, slightly convex, matte. Dorsal surface with long, pale setation denser in apex and near lateral margins. EL 12.43 mm; EW 4.90 mm; EL/EW 2.54. Elytral striae with rows of small, coarse punctures (approximately as large as those in pronotum), intervals between punctures in rows narrow. Elytral intervals slightly convex, with microgranulation and sparse, small punctures slightly smaller than those in rows.

Scutellum. Blackish brown, triangular, rather matte, with microgranulation and long setae.

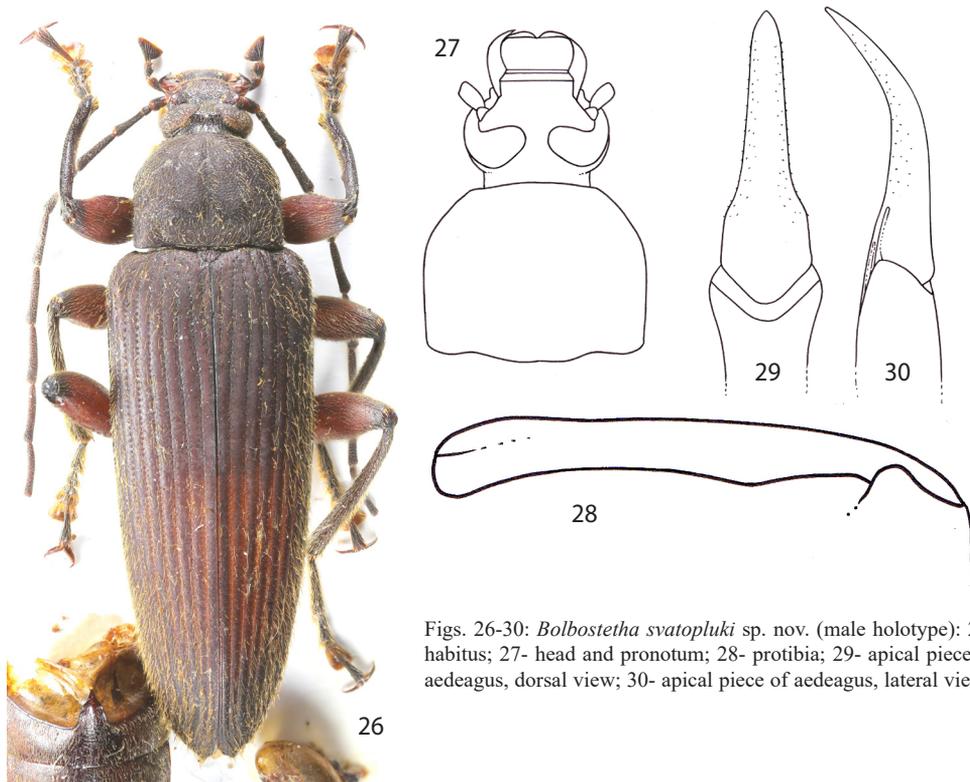
Elytral epipleura well-developed, blackish brown with punctures wide near base, narrowing to metaventrite, then reddish brown, relatively narrow and parallel with pale setae in apical part.

Legs (Fig. 28). Long and narrow, blackish brown, dorsal surface with pale setation, small punctures and microgranulation. Protibiae (Fig. 28) excised in inner side, widened apically in upper part. Femora reddish brown, profemora slightly wider than meso- and metafemora. Meso- and metatibiae normally shaped. Protarsomeres 2-4, mesotarsomere 3 and metatarsomere 3 widened and lobed. RLT: 1.00 : 1.00 : 1.07 : 1.45 : 2.30 (protarsus); 1.00 : 0.58 : 0.54 : 0.89 : 1.57 (mesotarsus); 1.00 : 0.46 : 0.49 : 0.66 (metatarsus).

Both protarsal claws with 35 visible teeth.

Ventral side of body blackish brown, with setae and small punctures. Abdomen blackish brown, with dense, small and shallow punctures, fine microgranulation and long, pale setae, ultimate ventrite with shallow impression in middle of apex.

Aedeagus (Figs. 29, 30) large and robust. Basal piece ochre yellow, rounded laterally and narrowing in dorsal view. Apical piece dark, triangular, beak shaped dorsally, beak or hook shaped in lateral view. Ratio of length of apical piece to length of basal piece in dorsal view 1: 2.32.



Figs. 26-30: *Bolbostetha svatopluki* sp. nov. (male holotype): 26- habitus; 27- head and pronotum; 28- protibia; 29- apical piece of aedeagus, dorsal view; 30- apical piece of aedeagus, lateral view.

Female unknown.

**Differential diagnosis.** The most similar species from Malaysia are large species *Bolbostetha bintangica* sp. nov. and *Bolbostetha pendleburyi* Pic, 1936.

*Bolbostetha svatopluki* sp. nov. clearly differs from the similar species *B. bintangica* mainly by dark brown or blackish brown antenna, tibiae and tarsi, by normally shaped metatibiae and by shape of aedeagus (Figs. 29, 30); while *B. bintangica* has antenna, tibiae and tarsi pale (reddish brown or pale reddish brown), metatibia is distinctly excised in basal half of inner part and aedeagus is as in Figs. 5 and 6.

*B. svatopluki* is clearly different from similar species *Bolbostetha pendleburyi* Pic, 1936 mainly by antennomere 1 and 2 in most part blackish brown as colour as antennomere 3, by normally shaped metatibiae and by shape of aedeagus (Figs. 29, 30); while *B. pendleburyi* has antennomere 1 and 2 in most part reddish brown - distinctly paler than antennomere 3, metatibia is distinctly excised in basal half of inner part and aedeagus is as in Figs. 24, 25.

**Etymology.** The name of this species, in honour Svatopluk Bílý - world know specialist in beetle family Buprestidae, who died this spring. According his first name.

**Distribution.** Malaysia (State of Perak).

***Bolbostetha vietnamica* sp. nov.**

(Figs. 31-37)

**Type locality.** South Vietnam, Binh Thuan Province, Dong Tien, Ara.

**Type material.** Holotype (♂): Vietnam mer. Dong Tien / Ara, Binh Thuan, vii.2018 / local collector lgt., (VNPC). The type is provided with a printed red label: 'Bolbostetha / vietnamica sp. nov. / HOLOTYPUS / V. Novák det. 2022'.

**Description of holotype.** Habitus as in Fig. 31, body large, narrow, elongate, *Leptura*-shaped, slightly convex, slightly shiny, from reddish to blackish brown, dorsal surface with pale setation and punctuation, BL 17.92 mm. Widest near elytral humeri; BL/EW 3.39.

Head (Fig. 32) blackish brown, approximately as wide as long, through the eyes distinctly narrower than base of pronotum and slightly wider than anterior margin of pronotum. Dorsal surface shiny, with dense and coarse punctures and long, pale setation. Apex of anterior part dark reddish brown, clypeus blackish brown with reddish brown apex, shiny, half heart shaped, anterior margin excised in middle, surface with long, ochre yellow setae, shallow punctures and microgranulation. Mandibles reddish brown with darker lateral margins and apex, glabrous, shiny, with a few pale setae in sides. HW 2.39 mm; HW/PW 0.83; HL (visible part) 2.38 mm. Eyes large, transverse, excised, space between eyes narrow, distinctly narrower than diameter of one eye; distinctly wider than length of antennomere 2, approximately as wide as length of antennomere 1; OI equal to 30.13.

Antenna. Long, narrow, reddish brown or pale reddish brown (AL 12.45 mm, exceeding two thirds body length - AL/BL 0.70). Surface of antennomeres with short pale setae, microgranulation and very small punctures. Antennomeres 3, 4 slightly darker (brown), antennomeres 1-5 slightly shiny, antennomeres 6-11 matte. Antennomeres 4-11 each distinctly longer than antennomere 3, antennomeres 1-10 slightly widened apically, antennomere 2 shortest. Ultimate antennomere widest before apex.

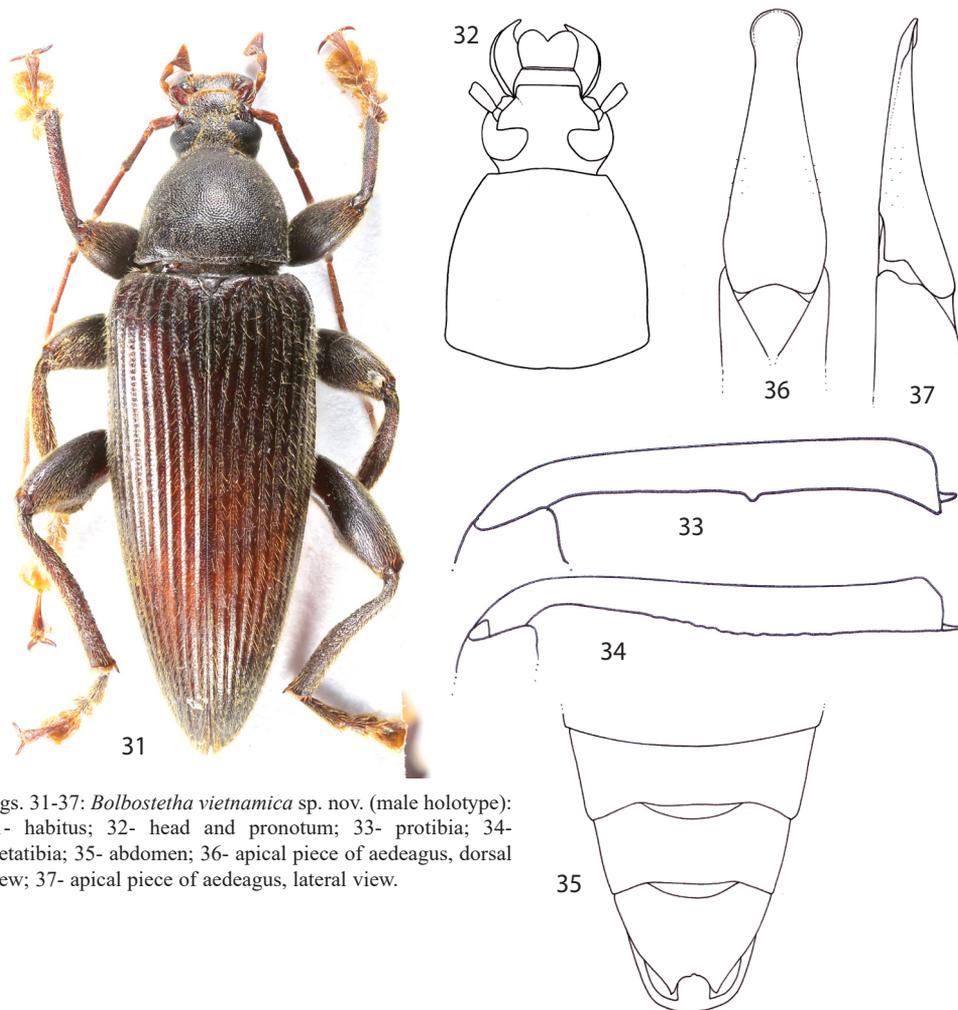
RLA(1-11): 0.55 : 0.19 : 1.00 : 1.23 : 1.19 : 1.23 : 1.20 : 1.19 : 1.15 : 1.09 : 1.18.

RL/WA(1-11): 2.77 : 1.39 : 5.20 : 6.40 : 6.16 : 7.62 : 8.67 : 8.56 : 8.77 : 8.88 : 9.56.

Maxillary palpus brown, rather matte, with pale setae, small, shallow punctures and microgranulation. Palpomeres 2 and 3 distinctly narrowest at base and widest at paler apex, ultimate palpomere widely triangular.

Pronotum (Fig. 32) blackish brown, shiny, slightly convex, bell shaped, widest at base, distinctly narrower than elytra at humeri. Dorsal surface with relatively short, pale setation, dense and coarse, small punctures, intervals between punctures distinctly narrower than diameter of punctures. PL 2.84 mm; PW 2.88 mm; PI equal to 98.50. Border lines very narrow, margins conspicuous in dorsal view. Lateral margins almost straight in basal part, slightly arcuate in apical half, anterior margin slightly arcuate, base finely bisinuate. Posterior and anterior angles obtuse.

Elytra. Dark reddish brown, narrow, elongate, slightly convex, shiny, widest near humeri. Dorsal surface with pale setation. EL 12.70 mm; EW 5.21 mm; EL/EW 2.40. Surface with very fine impression near scutellum in the first row of punctures in basal part. Elytral striae with rows of coarse punctures (approximately as large as those in pronotum), intervals



Figs. 31-37: *Bolbostetha vietnamica* sp. nov. (male holotype): 31- habitus; 32- head and pronotum; 33- protibia; 34- metatibia; 35- abdomen; 36- apical piece of aedeagus, dorsal view; 37- apical piece of aedeagus, lateral view.

between punctures in rows narrower than diameter of punctures. Elytral intervals slightly convex, with sparse punctures near striae, distinctly smaller than those in rows.

Scutellum. Dark brown with sides darker, pentagonal, semimatte, with microgranulation, pale setae and very small punctures.

Elytral epipleura well-developed, blackish brown with punctures narrowing to metaventricle, then reddish brown with denser pale setation, relatively wide and parallel in apical part.

Legs (Figs. 33, 34). Long and narrow, blackish brown, tarsi paler, dorsal surface with pale setation, small punctures and microgranulation. Protibiae (Fig. 33) slightly widened apically with indistinct angle in the middle and slightly excised before apex in inner side. Femora strong, profemora slightly wider than meso- and metafemora. Mesotibiae normally

shaped, metatibiae widened apically, distinctly bent (as in Fig. 34). Protarsomeres 1-4, mesotarsomeres 2-4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.92 : 1.13 : 1.41 : 1.56 (protarsus); 1.00 : 0.52 : 0.67 : 0.96 (metatarsus).

Both protarsal claws with more than 40 visible teeth.

Ventral side of body blackish brown, with small punctures and short, pale setae. Abdomen blackish brown, matte, with small and shallow punctures, microgranulation and pale setae, ultimate ventrite roundly excised in middle of apex (as in Fig. 35).

Aedeagus (Figs. 36, 37) ochre yellow, large and slightly shiny. Basal piece rounded laterally and slightly narrowing in dorsal view. Apical piece triangular dorsally, beak shaped from dorsal and lateral view. Ratio of length of apical piece to length of basal piece in dorsal view 1: 4.05.

**Female** unknown.

**Differential diagnosis.** Similar species known from Vietnam are *Bolbostetha daklakica* sp. nov. from Dak Lak Province and *Bolbostetha hueica* sp. nov. from Central Vietnam (Thua Thien Hue Province).

*Bolbostetha vietnamica* sp. nov. distinctly differs from similar species *B. daklakica* and *B. hueica* mainly by dorsal surface shiny, by larger body (BL approximately 18 mm), by protarsomeres 1-4 widened and lobed and by antennomeres 4-11 only 1.09-1.23 times longer than antennomere 3 and by ultimate ventrite roundly excised in middle of apex (as in Fig. 35); while *B. daklakica* and *B. hueica* have dorsal surface rather matte, body is smaller (BL 10.6 for *B. daklakica* and 13.8 for *B. hueica*), protarsomeres 2-4 are distinctly widened and lobed antennomeres 4-11 are 1.23-1.66 times longer than antennomere 3 and ultimate ventrites are not excised.

**Etymology.** Toponymic, named after the name of country of its origin - Vietnam.

**Distribution.** Vietnam (Binh Thuan Province).

#### LIST OF THE SPECIES OF THE GENUS *BOLBOSTETHA* FAIRMAIRE, 1896

*Bolbostetha* Fairmaire, 1896 type species: *Bolbostetha soleata* Fairmaire, 1896  
=*Alleculodes* Borchmann, 1925 type species *Alleculodes discrepans* Borchmann, 1925

<i>analisis</i> Borchmann, 1932 ( <i>Alleculodes</i> )	Indonesia, Singapore
<i>atricolor</i> Pic, 1944	Malaysia
<i>baluana</i> Pic, 1936	Malaysia (Borneo Island)
<i>baumi</i> Mařan, 1940 ( <i>Alleculodes</i> )	Singapore
<i>bintangica</i> sp. nov.	Malaysia
<i>borchmanni</i> Novák, 2008	Malaysia
<i>cameronensis</i> Novák, 2008	Malaysia
<i>crockerica</i> sp. nov.	Malaysia (Borneo Island)

<i>daklakica</i> sp. nov.	Vietnam
<i>discrepans</i> Borchmann, 1925 ( <i>Alleculodes</i> )	Indonesia (Java, Sumatra)
<i>fairmairei</i> Novák, 2008	Malaysia
<i>genualis</i> Borchmann, 1925 ( <i>Alleculodes</i> )	Malaysia
<i>glos</i> Borchmann, 1925 ( <i>Alleculodes</i> )	Indonesia, Malaysia
<i>huahinica</i> Novák, 2020	Thailand
<i>hueica</i> sp. nov.	Vietnam
<i>jakli</i> Novák, 2008	Indonesia
<i>kimioi</i> Akita, 2011	Japan
<i>klausi</i> Novák, 2008	Indonesia
<i>latipes</i> Borchmann, 1925 ( <i>Alleculodes</i> )	Singapore
<i>longicornis</i> Pic, 1915	Malaysia
<i>major</i> Pic, 1936	Malaysia
<i>malaisei</i> Borchmann, 1942	Burma
<i>malangana</i> Pic, 1936	Indonesia (Java)
<i>martapurana</i> Pic, 1936	Indonesia (Borneo: Martapura)
<i>neptis</i> Borchmann, 1925 ( <i>Alleculodes</i> )	Burma
<i>oliveri</i> Novák, 2008	Malaysia
<i>opaca</i> Borchmann, 1925 ( <i>Alleculodes</i> )	Hongkong
<i>oshimana</i> Nakane, 1968 ( <i>Alleculodes</i> )	Japan (Ryukyu)
<i>pahangensis</i> Novák, 2008	Malaysia
<i>pendleburyi</i> Pic, 1936	Malaysia
<i>petri</i> Novák, 2020	Malaysia
<i>pici</i> Novák, 2008	Malaysia
<i>proavia</i> Borchmann, 1925 ( <i>Alleculodes</i> )	Hongkong
<i>quadricollis</i> Fairmaire, 1896	Singapore
<i>sauteri</i> Borchmann, 1925 ( <i>Alleculodes</i> )	Japan, Taiwan
<i>socia</i> Borchmann, 1932 ( <i>Alleculodes</i> )	Singapore
<i>soleata</i> Fairmaire, 1896	Singapore
<i>svatopluki</i> sp. nov.	Malaysia
<i>tazi</i> Novák, 2008	Malaysia
<i>thailandica</i> Novák, 2020	Thailand
<i>uniseriatus</i> Mařan, 1940 ( <i>Alleculodes</i> )	Malaysia
<i>varus</i> Borchmann, 1925 ( <i>Alleculodes</i> )	Indonesia (Sumatra), Malaysia
<i>vietnamica</i> sp. nov.	Vietnam
<i>yoshitakei</i> Masumoto, Novák, Lee & Akita, 2017	Taiwan

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