

**New genera of Alleculinae (Coleoptera: Tenebrionidae) from Oriental region  
Part III. *Microsthes* gen. nov.**

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**Taxonomy, description, new genus, new species, key, Coleoptera, Tenebrionidae, Alleculinae, *Microsthes*, Oriental region**

**Abstract.** Genus *Microsthes* gen. nov. with the species *Microsthes barborae* sp. nov. as a type species from Malaysia, *Microsthes bruggei* sp. nov. and *Microsthes molucensis* sp. nov. from Indonesia, *Microsthes cameronensis* sp. nov., *Microsthes rolciki* sp. nov. and *Microsthes zizui* sp. nov. from Malaysia are described, illustrated and keyed. Species belonged to the new genus *Microsthes* gen. nov. differs from the species belonged to the similar genus *Borboesthes* Fairmaire, 1897 mainly by small body, penultimate tarsomere indistinctly broadened, antennomeres 3-10 broader, distinctly broadest at apex, and from similar genus *Borbochara* Novák, 2009 mainly by pronotum without backwards thornly extended sharp-angled posterior angles and by space between eyes distinctly broader than length of antennomere 2.

## INTRODUCTION

Fairmaire (1897) described the genus *Borboesthes* Fairmaire, 1897, with 2 species from Palaearctic and Oriental region. Now we know 43 species from Palaearctic region (Novák & Pettersson 2008) and further species from Oriental region. Similar species with longitudinally elliptical, egg-shaped body belong to the genus *Borbochara* Novák, 2009, which was described from Oriental region by Novák (2009). New genus *Microsthes* gen. nov. with the species *Microsthes barborae* sp. nov. as type species from Malaysia, *Microsthes bruggei* sp. nov. and *Microsthes molucensis* sp. nov. from Indonesia, *Microsthes cameronensis* sp. nov., *Microsthes rolciki* sp. nov., *Microsthes zizui* sp. nov., all from Malaysia are presently described, illustrated and keyed.

Species of this genus have longitudinally elliptical, egg-shaped body like species of the genus *Borboesthes* Fairmaire, 1897. Species of new genus *Microsthes* gen. nov. differ from the species of the genus *Borboesthes* by small body, penultimate tarsomere indistinctly broadened, antennomeres 3-10 broader, distinctly broadest at apex, and from similar genus *Borbochara* Novák, 2009 mainly by pronotum without backwards thornly extended sharp-angled posterior angles of pronotum and by space between eyes distinctly broader than length of antennomere 2.

## MATERIAL AND METHODS

Two important morphometric characteristics used for the descriptions of the species of the subfamily Alleculinae, the 'ocular index' dorsally (Campbell & Marshall 1964) is calculated

by measuring the minimum distance between the eyes and dividing this value by the maximum dorsal width across eyes, the quotient resulting from this division is converted into an index by multiplying by 100 and 'pronotal index' (Campbell 1965) expresses the ratio of the length of the pronotum along the midline to the width at the basal angles, this ratio is multiplied by 100 for convenience in handling, are used in this paper as well.

The following codens are used in the paper:

- DHBC private collection of David Hauck, Brno, Czech Republic;  
NMEG collection of Naturkundes Museum Erfurt, Germany,  
PVKC private collection of Petr Viktora, Kutná Hora, Czech Republic,  
UNAN collection of Universiteit van Amsterdam, Amsterdam, The Neederland,  
VNPC private collection of Vladimír Novák, Praha, Czech Republic.

Measurements were made with Olympus SZ 40 stereoscopic microscope with continuous magnification and with soft imaging system Analysis. Measurements of body parts and corresponding abbreviations used in 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)

Moreover, a double slash (//) separates data on different labels and a slash (/) data in different rows.

## TAXONOMY

### *Microsthes* gen. nov.

**Type species.** *Microsthes barborae* sp. nov.

**Description.** General shape (Fig. 1) longitudinally elliptical, egg-shaped, Borboressthes-like. Upper part of body with setation and shiny. Head (Fig. 2) relatively small, with punctation and microgranulation, distinctly narrower than pronotum. Eyes large, transverse, strongly excised, space between eyes narrow, approximately as broad as diameter of eye. Antennae with microgranulation and dense setation, relatively long, distinctly exceeding half of the body length. Antennomere 2 shortest, antennomere 3 distinctly shorter than each of antennomeres 4-11. Antennomeres 3-10 narrow, distinctly broadest at apex. Maxillary palpus

with palpomeres 2-4 narrowest at base, broadest at apex, penultimate palpomere shorter than palpomere 2 or broadly triangular ultimate palpomere. Pronotum (Fig. 2) approximately as broad as base of elytra wide, transverse, semicircular, broadest at base. Posterior angles distinct, anterior angles indistinct, base bisinuate. Lateral margins distinct throughout their entire length. Surface densely punctate with microgranulation and dense setation, slightly shiny. Elytra elongate-oval, long and relatively narrow with dense setation. Elytral striae with rows of relatively large punctures. Elytral intervals distinctly vaulted, with small punctures and microgranulation. Elytral epipleura well-developed, basal half with two rows of deep and coarse, large punctures. Scutellum triangular. Ventral side of body brown or reddish-brown with punctation, abdomen five-segmented with pale brown setation and microgranulation. Legs longer, narrow, with dense setation, tibiae narrower than femora, normal without teeth, impressions and depressions, finely dilated anteriorly. Tarsomeres very narrow, distinctly narrower than tibiae, penultimate tarsomere distinctly lobed and very finely broadened. Male genitalia (Figs 3, 4) large with very long basal piece and very short apical piece. Female. Without distinct differences, only anterior claws with less teeth than in male.

**Differential diagnoses.** *Microsthes* gen. nov. is similar to the genera *Borboresthes* Fairmaire, 1897 and *Borbochara* Novák, 2009. Species of *Microsthes* gen. nov. differ from species of the genus *Borboresthes* mainly by small body, penultimate tarsomere indistinctly broadened and antennomeres 3-10 broader and distinctly broadest at apex, while species of the genus *Borboresthes* almost larger, with distinctly broadened penultimate tarsomere (almost distinctly broadened also tarsomere 3) and antennomere 3-10 very narrow. Species of *Microsthes* gen. nov. differ from species of the genus *Borbochara* Novák, 2009 mainly by posterior angles of pronotum normal and space between eyes distinctly broader than length of antennomere 2, while species of the genus *Borbochara* Novák, 2009 with posterior angles of pronotum distinctly thornily extended backwards and space between eyes very narrow, distinctly narrower or as long as length of antennomere 2.

**Etymology.** The compound name formed by greek “micro” marking something very small and the ending -*sthes* marking similarity to the genus *Borboresthes* Fairmaire, 1897. Gender: masculine.

**Distribution.** Indonesia, Malaysia.

#### KEY TO THE SPECIES

- 1(2) Elytra unicoloured .....3
- 2(1) Elytra bicolour .....5
- 3(4) Body dark brown, antennae longer, antennomere 11 distinctly longest, more than 1.5 times longer than antennomere 3 long and more than 3.5 times longer than wide. Habitus as in Fig. 13; head and pronotum as in Fig. 14; aedeagus as in Figs 15 and 16. Indonesia (Moluccas, Halmahera) .....  
*Microsthes molucensis* sp. nov.
- 4(3) Body brown, antennae shorter, antennomere 11 not distinctly longest, more than 1.3 times longer than antennomere 3 long and 2.3 times longer than wide. Habitus as in Fig. 9; head and pronotum as in Fig. 10; aedeagus as in Figs 11 and 12. Malaysia .....  
*Microsthes cameronensis* sp. nov.
- 5(6) Elytra without spot in middle. Apical third of elytra pale reddish-brown, basal part dark blackish-brown. Habitus as in Fig. 1; head and pronotum as in Fig. 2; aedeagus as in Figs 3 and 4. Malaysia .....  
*Microsthes barborae* sp. nov.

- 6(5) Elytra with spot at middle. .... 7  
 7(8) Spot in the middle of elytra distinct, drop-shaped, pronotum shorter (PI near 50). Habitus as in Fig. 21; head and pronotum as in Fig. 22; aedeagus as in Figs 23, 24. Malaysia. .... *Microsthes zizui* sp. nov.  
 8(7) Spot in the middle of elytra indistinct, parallel with suture, pronotum longer (PI near 55) ..... 9  
 9(10) Spot broader, up to fourth elytral interspace, body broader (BL/EW near 2.5), space between eyes approximately as long as length of antennomere 3. Habitus as in Fig. 5; head and pronotum as in Fig. 6; aedeagus as in Figs 7, 8. Indonesia ..... *Microsthes bruggei* sp. nov.  
 10(9) Spot narrower, up to third elytral interspace, body narrower (BL/EW near 2.7), space between eyes distinctly narrower than length of antennomere 3. Habitus as in Fig. 17; head and pronotum as in Fig. 18; aedeagus as in Figs 19, 20. Malaysia. .... *Microsthes rolciki* sp. nov.

***Microsthes barborae* sp. nov.**

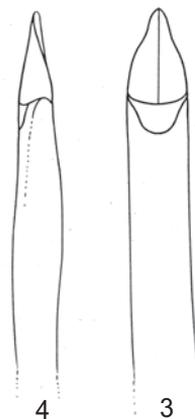
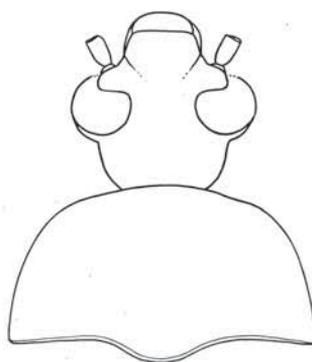
(Figs 1-4)

**Type locality.** Malaysia, Kelantan, Tanah Rata.

**Type material.** Holotype (♂): MALAYSIA W Kelantan, / 60 km N of Tanah Rata / TANAH KERAJAAN, / 12.-30.iv.2007, 1000 m / Petr Čechovský lgt., (VNPC). Paratypes (2 spec.): same data as holotype, (VNPC); (3 spec.): 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); (2 spec.): MALAYSIA West, PAHANG / Cameron Highlands, / TANAH RATA, 3.-19.ii.2005 / P. Čechovský lgt. 1200-1500 m, (VNPC). The types are provided with a printed red label: „*Microsthes barborae* sp. nov. HOLOTYPUS [resp. PARATYPUS] V. Novák det. 2010“.

**Description of holotype.** Habitus as in Fig. 1, body small, longitudinally elliptical, egg-shaped, bicolour, pale reddish-brown and dark blackish-brown, slightly shiny, with pale brown setation, body length 3.53 mm. Widest near middle of elytra length; BL/EW 2.70.

Head (Fig. 2). Reddish-brown, with sparse, pale brown setation and microgranulation, slightly shiny. Punctuation not clearly conspicuous, punctures small-sized and very shallow. HW 0.65 mm; HW/PW 0.59. HL (visible part)



Figs 1-4: *Microsthes barborae* sp. nov.: 1- Habitus of male holotype; 2- Head and pronotum of male holotype; 3- Aedeagus, dorsal view; 4- Aedeagus, lateral view.

0.57 mm. Eyes dark, large, transverse, deeply excised, space between eyes approximately as broad as antennomere 4 long; OI equal to 35.60.

Antennae. Long, relatively narrow; unicoloured pale brown with microgranulation and relatively long pale brown setation, slightly shiny; AL 1.92 mm, AL/BL 0.54. Antennomere 2 shortest, antennomere 3 distinctly longer than antennomere 2; antennomere 4 distinctly longer than antennomere 3. RLA (1-11): 0.94 : 0.67 : 1.00 : 1.52 : 1.33 : 1.41 : 1.47 : 1.56 : 1.45 : 1.39 : 1.59. RL/WA (1-11): 1.88 : 1.57 : 2.45 : 3.13 : 3.14 : 2.91 : 2.85 : 2.86 : 2.40 : 2.42 : 2.76.

Maxillary palpus. Pale brown with sparse and short, pale brown setation and a few long pale brown setae. Palpomeres 2-4 distinctly narrowest at base and broadest at apex, with microgranulation, slightly shiny. Ultimate palpomere broadly triangular.

Pronotum (Fig. 2). Unicoloured reddish-brown, transverse, broader than semicircular, rather dull, with fine microgranulation and punctation. Punctures small-sized, not clearly conspicuous. PL 0.60 mm; PW 1.11 mm. PI equal to 54.43. Border lines complete, only in middle of anterior margin and base indistinct. Base bisinuate, on ante scutellar area straight. Posterior angles finely obtuse, anterior angles indistinct. Surface with relatively sparse pale brown setation, directed backwards.

Ventral side of body. Reddish-brown, with pale brown setation. Abdomen reddish-brown with pale brown setation and microgranulation, slightly shiny.

Elytron. Bicolour, covered by dense and long pale brown setation; posterior two thirds dark blackish-brown, anterior one third reddish-brown. EL 2.36 mm. Broadest near middle of elytra, EW 1.31 mm. EL/EW 1.80. Elytral striae with distinct rows of large-sized punctures, interspaces between punctures in rows very narrow, narrower than diameter of punctures. Elytral intervals with sparse, small punctures and microgranulation, slightly shiny.

Scutellum. Reddish-brown with sides dark blackish-brown, with pale brown setae and microgranulation.

Elytral epipleura. Dark brown, with long, pale brown setation, regularly narrowing to abdominal sternite 1, then leads parallel.

Legs. Narrow, pale brown, with dense pale brown setation. Tibia and tarsi narrow, tibia slightly dilated anteriorly. Penultimate tarsomere of each tarsus very slightly broadened and distinctly lobed. RLT: protarsus: 1.00 : 0.73 : 0.73 : 1.03 : 1.93; mesotarsus: 1.00 : 0.55 : 0.26 : 0.31 : 0.71; metatarsus: 1.00 : 0.37 : 0.18 : 0.27.

Both anterior tarsal claws with 6 teeth.

Aedeagus (Figs 3, 4). Large, pale brown, slightly shiny. Basal piece long, basal half rounded laterally, apical half laterally straight and dorsally parallel. Apical piece very short, triangular. Ratio of length of apical piece to length of basal piece 1: 15.04.

Female without distinct differences.

**Variation.** Measurements: mean (minimum - maximum). Specimens (n=8). BL 3.62 mm (3.25-3.98 mm); HL 0.46 mm (0.38-0.50 mm); HW 0.69 mm (0.63-0.73 mm); OI 35.08 (32.57-37.67), PL 0.60 mm (0.50-0.69 mm) PW 1.22 mm (1.12-1.34 mm); PI 49.79 (46.54-51.67); EL 2.56 mm (2.31-2.87 mm); EW 1.46 mm (1.28-1.62 mm).

**Differential diagnoses.** (for details see the key above). *Microsthes barborae* sp. nov. is clearly different from similar species *Microsthes cameronensis* sp. nov. and *Microsthes molucensis*

sp. nov. mainly by elytra bicolour, while *M. cameronensis* sp. nov. and *M. molucensis* sp. nov. with elytra unicoloured; *M. barborae* sp. nov. clearly differs from the similar species *Microsthes bruggei* sp. nov., *Microsthes rolciki* sp. nov. and *Microsthes zizui* sp. nov. by posterior two thirds of elytra dark blackish-brown and anterior one third of elytra reddish-brown, while elytra of *Microsthes bruggei* sp. nov., *Microsthes rolciki* sp. nov. and *Microsthes zizui* sp. with spot near suture.

**Name derivation.** New species is dedicated to my daughter - after her first name Barbora.

**Distribution.** Malaysia.

***Microsthes bruggei* sp. nov.**  
(Figs 5-8)

**Type locality.** Indonesia, Puntjak - Pass.

**Type material.** Holotype (♂): PUNTJAK - PAS / 22 - I -1950 / C.v.Nidek // Collectio / C. v. Nidek / Acq. 1969, (UNAN). Paratypes (12 spec.): same data as holotype, (UNAN, VNPC). The types are provided with a printed red label: „*Microsthes bruggei* sp. nov. HOLOTYPUS [resp. PARATYPUS] V. Novák det. 2010“.

**Description of holotype.** Habitus as in Fig. 5, body longitudinally elliptical, egg-shaped, from pale brown to dark brown, with pale brown setation, slightly shiny, body length 4.78 mm. Widest near middle of elytra length; BL/EW 2.63.

Head (Fig. 6). Posterior part reddish-brown, anterior part paler, with long pale brown setation and microgranulation, punctuation of posterior part distinct, punctures large and shallow, punctuation of clypeus indistinct. HW 0.77 mm; HW/PW 0.50. HL (visible part) 0.63 mm. Eyes dark, large, transverse, deeply excised, space between eyes approximately as broad as antennomere 3 long; OI equal to 42.30.

Antennae. Long, AL 5.64 mm, AL/BL 0.85. Antennomeres relatively narrow, unicoloured pale brown with microgranulation, long pale brown setation and large, shallow punctures. Antennomere 2 shortest. RLA (1-11): 1.67 : 0.85 : 1.00 : 3.64 : 3.97 : 4.38 : 4.56 : 4.87 : 4.56 : 4.36 : 4.80. RL/WA (1-11): 2.32 : 0.95 : 1.15 : 3.08 : 3.63 : 2.90 : 3.12 : 3.67 : 3.92 : 3.91 : 5.14.

Maxillary palpus. Pale brown with sparse, pale brown setation and microgranulation, slightly shiny. Palpomeres 2-4 distinctly narrowest at base and broadest at apex. Ultimate palpomere broadly triangular.

Pronotum (Fig. 6). Semicircular, unicoloured reddish-brown, transverse, shiny, with fine microgranulation and long, pale brown setation. PL 0.85 mm; PW 1.55 mm. PI equal to 54.90. Border lines complete, only in middle of anterior margin indistinct. Base bisinuate, on ante scutellar area straight. Posterior angles finely sharp, anterior angles indistinct. Surface with large and shallow punctures.

Ventral side of body. Unicoloured brown, shiny with sparse, short, pale brown setation and punctuation. Abdomen unicoloured brown with sparse, pale brown setation, microgranulation and rugosities, shiny.

Elytron. Brown, from suture up to third elytral interval distinctly paler, with long pale brown setation, slightly shiny. EL 3.30 mm. Broadest near middle, EW 1.82 mm. EL/EW

1.81. Elytral striae with distinct rows of large punctures, interspaces between punctures in rows very narrow, narrower than diameter of punctures. Elytral intervals with small punctures and microgranulation.

Scutellum. Pale brown with darker margins, shiny.

Elytral epipleura. Brown as ventral side of body itself, shiny, with pale brown setation. Regularly narrowing to abdominal sternite 1, and then leads parallel to rounded apex again.

Legs. Unicoloured pale brown, with dense pale brown setation. Tibia and tarsi narrow, tibia slightly dilated anteriorly. Penultimate tarsomere of each tarsus distinctly lobed and only very finely broadened. RLT: protarsus: 1.00 : 0.53 : 0.63 : 0.90 : 1.39; mesotarsus: 1.00 : 0.45 : 0.30 : 0.37 : 0.76; metatarsus: 1.00 : 0.29 : 0.27 : 0.51.

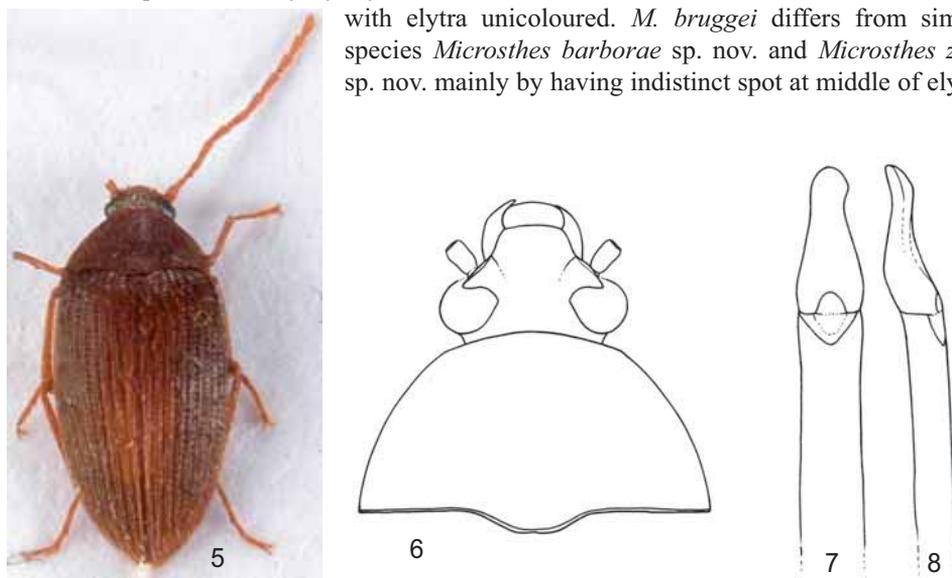
Both anterior tarsal claws with 8 visible teeth.

Aedeagus (Figs 7, 8). Large, pale brown, slightly shiny. Basal piece long and narrow laterally, basal third laterally rounded, sides almost parallel dorsally. Apical piece very short, narrow, shortly triangular dorsally with distinct drop-shaped top laterally. Ratio of length of apical piece to length of basal piece 1 : 9.75.

Female without distinct differences.

**Variation.** Measurements: mean (minimum - maximum). Specimens (n=13). BL 4.88 mm (4.21-5.23 mm); HL 0.52 mm (0.45-0.59 mm); HW 0.81 mm (0.74-0.86 mm); OI 39.40 (35.11-46.91), PL 0.88 mm (0.71-1.01 mm); PW 1.63 mm (1.42-1.77 mm); PI 54.49 (49.73-58.80); EL 3.48 mm (3.17-3.70 mm); EW 1.96 mm (1.74-2.10 mm).

**Differential diagnoses.** (for details see the key above). *Microsthes bruggei* sp. nov. is clearly different from the similar species *Microsthes cameronensis* sp. nov. and *Microsthes molucensis* sp. nov. mainly by elytra bicolour; while *M. cameronensis* and *M. molucensis* with elytra unicoloured. *M. bruggei* differs from similar species *Microsthes barborae* sp. nov. and *Microsthes zizui* sp. nov. mainly by having indistinct spot at middle of elytra;



Figs 5-8: *Microsthes bruggei* sp. nov.: 5- Habitus of male holotype; 6- Head and pronotum of male holotype; 7- Aedeagus, dorsal view; 8- Aedeagus, lateral view.

while *M. barborae* is without spot and *M. zizui* with distinct spot at middle of elytra. *M. bruggei* is clearly different from similar species *Microsthes rolciki* sp. nov. by broader body and broader spot at middle of elytra and by space between eyes approximately as long as length of antennomere 3; while *M. rolciki* with narrower body and narrower spot at middle of elytra and space between eyes distinctly narrower than length of antennomere 3.

**Name derivation.** New species is dedicated to Ben Brugge (Amsterdam, Nederland), who loaned me a specimens of the new species.

**Distribution.** Indonesia.

*Microsthes cameronensis* sp. nov.

(Figs 9-12)

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

**Type material.** Holotype (♂): MALAYSIA West, PAHANG / Cameron Highlands, / TANAH RATA, 3.-19.ii.2005 / P. Čechovský lgt. 1200-1500 m, (VNPC). Paratypes (5 spec.): same data as holotype, (VNPC); (1 spec.): MALAYSIA W Kelantan, / 60 km N of Tanah Rata / TANAH KERAJAAN, / 12.-30.iv.2007, 1000 m / Petr Čechovský lgt., (VNPC); (1 spec.): MALAYSIA W., PAHANG / 50 km N of Kuala Rompin / Endau Rompin Nat. P., 400 m, / G.Keriuang (Kg. Tebu Hitam) / 9.-30.iv.2008, P. Čechovský lgt., (VNPC). The types are provided with a printed red label: „*Microsthes cameronensis* sp. nov. HOLOTYPUS [resp. PARATYPUS] V. Novák det. 2010“.

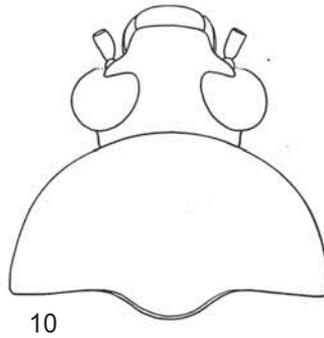
**Description of holotype.** Habitus as in Fig. 9, longitudinally elliptical, egg-shaped, from pale brown to dark brown, slightly shiny with pale brown setation, body length 3.83 mm. Widest near middle of elytra length; BL/EW 2.66.

Head (Fig. 10). Posterior part brown, with microgranulation and pale brown setation, rather dull, narrow interspaces between large and shallow punctures slightly shiny. Anterior part and clypeus paler than posterior part, with microgranulation, punctuation indistinct, clypeus with only few short and sparse pale brown setae. HW 0.72 mm; HW/PW 0.58. HL (visible part) 0.56 mm. Eyes dark, large, transverse, deeply excised, space between eyes approximately as broad as antennomere 3 long and as broad as distance of eye; OI equal to 34.10.

Antennae. Long, AL 2.01 mm, AL/BL 0.53. Antennomeres 1-3 pale brown, shiny with microgranulation, antennomeres 4-11 brown, with long pale brown setation. Antennomere 2 shortest. RLA (1-11): 0.60 : 0.55 : 1.00 : 1.12 : 1.09 : 1.22 : 1.30 : 1.37 : 1.26 : 1.23 : 1.33. RL/WA (1-11): 1.58 : 1.67 : 2.83 : 2.30 : 2.54 : 2.78 : 2.74 : 2.61 : 2.24 : 2.30 : 2.32.

Maxillary palpus. Unicoloured pale brown as colour as antennomeres 1-3, with sparse pale brown setation, fine microgranulation, slightly shiny. Palpomeres 2-4 distinctly narrowest at base and broadest at apex. Penultimate palpomere shortest, ultimate palpomere broadly triangular.

Pronotum (Fig. 10). Brown, transverse, broader than semicircular, with long, pale brown setation and microgranulation, rather dull. PL 0.62 mm; PW 1.24 mm. PI equal to 49.53. Border lines complete, only in middle of anterior margin indistinct. Base bisinuate, on ante scutellar area straight. Posterior angles rounded, rectangular, anterior angles indistinct. Surface with dense, relatively indistinct, very shallow, large-sized punctures.



Figs 9-12: *Microsthes cameronensis* sp. nov.: 9- Habitus of male holotype; 10- Head and pronotum of male holotype; 11- Aedeagus, dorsal view; 12- Aedeagus, lateral view.

Ventral side of body. Brown with pale brown setation. Abdomen brown with sparse, pale brown setation and fine microgranulation, rather dull. Ultimate abdominal sternite with large pale brown spot in middle; on apical margin straight.

Elytron. Unicoloured brown, with long, pale brown setation, slightly shiny. EL 2.65 mm. Broadest near middle of elytra, EW 1.44 mm. EL/EW 1.84. Elytral striae with distinct rows of large-sized punctures, interspaces between punctures in rows narrow, narrower than diameter of punctures. Elytral intervals with small sporadic punctures, with microgranulation, slightly shiny.

Scutellum. Broadly triangular, brown, as colour as elytron itself, with long, pale brown setation.

Elytral epipleura. Brown as elytron itself, shiny, broad, regularly narrowing to abdominal sternite 1, then leads parallel. Posterior part with long, pale brown setation and one row of large punctures.

Legs. Pale brown, with short pale brown setation. Tibia and tarsi narrow, tibia slightly dilated anteriorly. Penultimate tarsomere of each tarsus very finely broadened and distinctly lobed. RLT: protarsus: 1.00 : 0.49 : 0.53 : 0.85 : 1.59; mesotarsus: 1.00 : 0.39 : 0.18 : 0.27 : 0.73; metatarsus: 1.00 : 0.33 : 0.21 : 0.36.

Both anterior tarsal claws with 6 teeth.

Aedeagus (Figs 11, 12). Large, pale brown, slightly shiny. Basal piece long, basal fourth finely rounded laterally, then straight laterally and dorsally parallel. Apical piece very short, dorsally and laterally triangular with rounded top. Ratio of length of apical piece to length of basal piece 1: 13.34.

Female without distinct differences.

**Variation.** Measurements: mean (minimum - maximum). Specimens (n=8). BL 3.94 mm (3.74-4.18 mm); HL 0.51 mm (0.46-0.57 mm); HW 0.72 mm (0.68-0.75 mm); OI 36.40

(34.59-39.61), PL 0.67 mm (0.61-0.74 mm); PW 1.28 mm (1.24-1.34 mm); PI 52.24 (49.45-55.61); EL 2.76 mm (2.62-2.89 mm); EW 1.55 mm (1.46-1.67 mm).

**Differential diagnoses.** (for details see the key above). *Microsthes cameronensis* sp. nov. is clearly different from similar species *Microsthes barborae* sp. nov., *Microsthes bruggei* sp. nov., *Microsthes rolciki* sp. nov. and *Microsthes zizui* sp. nov. mainly by unicoloured elytra; while *M. barborae*, *M. bruggei*, *M. rolciki* and *M. zizui* with elytra bicolour. *M. cameronensis* differs from similar species *M. molucensis* sp. nov. mainly by ultimate antennomere, which is not longest and only 1.32 times longer than antennomere 3; while *M. molucensis* with ultimate antennomere distinctly longest and 1.62 times longer than antennomere 3.

**Name derivation.** Patronymic after the type locality Cameron Highlands.

**Distribution.** Malaysia.

*Microsthes molucensis* sp. nov.

(Figs 13-16)

**Type locality.** Indonesia, N-Molukken, Tolire lake, 0°50'03''N, 127°18'31''E.

**Type material.** Holotype (♂): INDONESIA N-Molukken / Ternate N, Tolire lake, 100m / 0°50'03''N, 127°18'31''E / 29.I.2006 leg. A. Skale plantage, (NMEG); Paratypes (2 spec.): INDONESIA N-Molukken / Ternate N, Tolire lake / 100m 29.I.2005 / 0°50'03''N, 127°18'31''E / leg. A. Weigel plantage, (NMEG, VNPC); (1 spec.): INDONESIA, Halmahera / NW, 7 km S Jailolo / 200mNN, 27.I.2006 / 1°1'18''N, 127°31'39''E / leg. A. Weigel, (NMEG). The types are provided with a printed red label: „*Microsthes molucensis* sp. nov. HOLOTYPUS [resp. PARATYPUS] V. Novák det. 2010“.

**Description of holotype.** Habitus as in Fig. 13, body small, longitudinally elliptical, egg-shaped, from reddish-brown to dark brown, slightly shiny, with pale brown setation, body length 4.0 mm. Widest near middle of elytra length; BL/EW 2.80.

Head (Fig. 14). Posterior part dark reddish-brown, glabrous, with dense and shallow, large-sized punctures, space between punctures narrow, with microgranulation and pale brown setation, slightly shiny. Anterior part and clypeus pale reddish-brown with pale brown setation and microgranulation, punctures sparser, punctures of clypeus indistinct. HW 0.73 mm; HW/PW 0.61. HL (visible part) 0.58 mm. Eyes dark, large, transverse, deeply excised, space between eyes approximately as broad as antennomere 3 long; OI equal to 31.59.

Antennae. Long, narrow, with microgranulation, AL 2.38 mm, AL/BL 0.60. Antennomeres 1-4 pale reddish-brown, antennomeres 5-11 with anterior half dark reddish-brown. Antennomeres 1-3 slightly shiny with pale brown setation, antennomeres 4-11 rather dull with brown setation and distinct, sparse punctures. Antennomere 2 shortest. RLA (1-11): 0.77 : 0.60 : 1.00 : 1.25 : 1.29 : 1.45 : 1.38 : 1.53 : 1.28 : 1.31 : 1.62. RL/WA (1-11): 1.97 : 1.93 : 2.81 : 3.27 : 2.56 : 3.00 : 3.82 : 2.83 : 2.36 : 2.43 : 3.44.

Maxillary palpus. Pale brown with pale brown setation. Palpomeres 2-4 distinctly narrowest at base and broadest at apex with microgranulation, slightly shiny. Ultimate palpomere longly triangular, axe-shaped.

Pronotum (Fig. 14). Semicircular, dark reddish-brown, transverse, rather dull, with microgranulation and pale brown setation. PL 0.70 mm; PW 1.27 mm. PI equal to 55.16. Border lines complete, distinct. Base bisinuate, on ante scutellar area straight. Posterior angles finely obtuse angled, anterior angles rounded, indistinct. Surface with relatively dense and coarse, middle-sized punctures.

Ventral side of body. Reddish-brown, shiny with punctation. Abdomen reddish-brown with sparse, pale brown setation, microgranulation and rugosities, rather dull. Ultimate and penultimate abdominal sternite finely darker, more shiny.

Elytron. Long, dark brown, slightly shiny, with pale brown setation and microgranulation, suture paler. EL 2.62 mm. Broadest near middle of elytral length, EW 1.43 mm. EL/EW 1.83. Elytral striae with distinct rows of large-sized punctures, interspaces between punctures in rows very narrow, narrower than diameter of punctures.

Scutellum. Broadly triangular, dark brown as elytron itself, slightly shiny, with microgranulation.

Elytral epipleura. Brown, shiny, broadest near base, narrowing to abdominal sternite 1, then leads parallel. Posterior half with row of distinct punctures and pale brown setation.

Legs. Narrow, pale reddish-brown, with long and dense pale reddish-brown setation, femora darker. Tibia and tarsi narrow, tibia slightly dilated anteriorly. Penultimate tarsomere of each tarsus only finely broadened and lobed. RLT: protarsus: 1.00 : 0.59 : 0.43 : 0.98 : 1.45; mesotarsus: 1.00 : 1.95 : 0.32 : 0.51 : 0.69; metatarsus: 1.00 : 0.31 : 0.23 : 0.35.

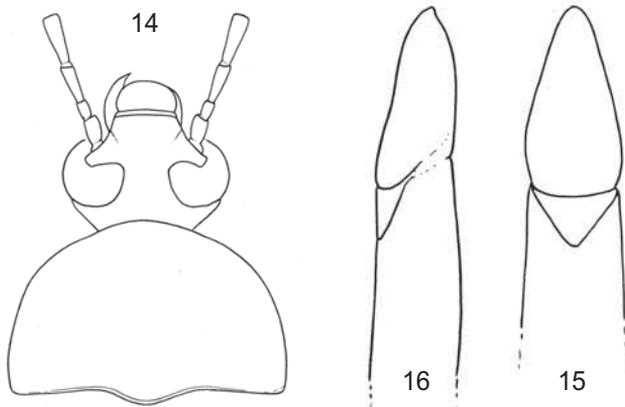
Both anterior tarsal claws with 7 visible teeth.

Aedeagus (Figs 15, 16). Large, pale brown, slightly shiny, with microgranulation. Basal piece long, one third of basal piece rounded laterally, then laterally straight and dorsally parallel. Apical piece very short, regularly triangular dorsally. Ratio of length of apical piece to length of basal piece 1: 10.76.

Female without distinct differences.

**Variation.** Measurements: mean (minimum - maximum). Specimens (n=4). BL 3.86 mm (3.62-4.00 mm); HL 0.53 mm (0.44-0.62 mm); HW 0.73 mm (0.70-0.77 mm); OI 32.46 (31.59-32.67), PL 0.69 mm (0.66-0.72 mm); PW 1.27 mm (1.23-1.33 mm); PI 54.59 (53.75-55.56); EL 2.62 mm (2.50-2.72 mm); EW 1.44 mm (1.41-1.49 mm).

**Differential diagnoses.** (for details see the key above).



Figs 13-16: *Microsthes molucensis* sp. nov.: 13- Habitus of male holotype; 14- Head and pronotum of male holotype; 15- Aedeagus, dorsal view; 16- Aedeagus, lateral view.

*Microsthes molucensis* sp. nov. is clearly different from similar species *Microsthes barborae* sp. nov., *Microsthes bruggei* sp. nov., *Microsthes rolciki* sp. nov. and *Microsthes zizui* sp. nov. mainly by elytra unicoloured; while *M. barborae*, *M. bruggei*, *M. rolciki* and *M. zizui* with elytra bicolour. *M. molucensis* differs from similar species *M. cameronensis* mainly by ultimate antennomere distinctly longest and 1.62 times longer than antennomere 3; while ultimate palpomere of *M. cameronensis* not longest and only 1.32 times longer than antennomere 3.

**Name derivation.** Patronymic, after the type locality Molucca islands (Indonesia).

**Distribution.** Indonesia (Moluccas and Halmahera).

*Microsthes rolciki* sp. nov.

(Figs 17-20)

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

**Type material.** Holotype (♂): MALAYSIA West, PAHANG / Cameron Highlands, TANAH / RATA, 3.ii-19.ii.2005 / P. Čechovský lgt. 1200-1500 m, (VNPC). Paratypes (14 spec.): same data as holotype, (VNPC); (7 spec.): MALAYSIA-W, Pahang, 30 km E of IPOH, 1 500 m, Cameron Highlands, TANAH RATA, 20.ii.-3.iii.1998, P. Čechovský leg., (DHBC, VNPC); (3 spec.): same data, but 14.-17.iii.1998, (DHBC, VNPC); (4 spec.): same data, but 22.-26.i.1999, (DHBC, VNPC); (1 spec.): same data, but 16.-18.iv.2000, (DHBC); (1 spec.): Malaysia NW, Cameron Highlands, Tana Rata, 16.-29.i.2006, P. Viktora lgt., (PVKC). The types are provided with a printed red label: „*Microsthes rolciki* sp. nov. HOLOTYPUS [resp. PARATYPUS] V. Novák det. 2010“.

**Description of holotype.** Habitus as in Fig. 17, body longitudinally elliptical, egg-shaped, from reddish-brown to dark blackish-brown, shiny, with pale brown setation. Body length 4.56 mm. Widest near middle of elytra; BL/EW 2.99.

Head (Fig. 18). Reddish-brown, with microgranulation and sparse, pale brown setation and punctation, slightly shiny. Punctures small-sized, punctation of clypeus indistinct. HW 0.78 mm; HW/PW 0.55. HL (visible part) 0.54 mm. Eyes dark, large, transverse, deeply excised, space between eyes narrow, slightly narrower than length of antennomere 3; OI 32.84.

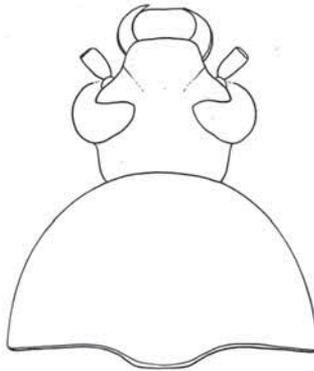
Antennae. Long, AL 2.60 mm, AL/BL 0.55. Antennomeres unicoloured pale reddish-brown with fine microgranulation and pale brown setation. Antennomeres 1-3 slightly shiny, antennomeres 4-11 rather dull; antennomeres 3-10 narrow, distinctly broadest at apex. Antennomere 2 shortest. RLA (1-11): 0.75 : 0.56 : 1.00 : 1.35 : 1.19 : 1.36 : 1.30 : 1.32 : 1.20 : 1.21 : 1.40. RL/WA (1-11): 2.09 : 1.88 : 3.35 : 3.16 : 2.90 : 3.18 : 3.24 : 2.85 : 2.86 : 2.94 : 3.16.

Maxillary palpus. Pale reddish-brown with pale brown setation. Palpomeres 2-4 distinctly narrowest at base and broadest at apex, with microgranulation, slightly shiny. Ultimate palpomere broadly triangular.

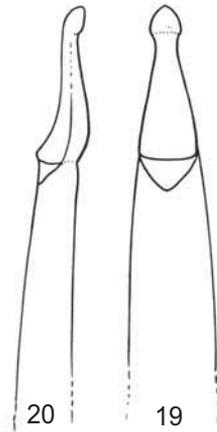
Pronotum (Fig. 18). Reddish-brown, transverse, with fine microgranulation, punctation and pale brown setation, slightly shiny. Punctures small-sized, dense and shallow. PL 0.80 mm; PW 1.40 mm. PI equal to 57.10. Border lines complete, base bisunuate, on ante-scutellar area rounded. Posterior angles finely rounded, rectangular, anterior angles indistinct, side margins rounded.



17



18



20

19

Figs 17-20: *Microsthes rolciki* sp. nov.: 17- Habitus of male holotype; 18- Head and pronotum of male holotype; 19- Aedeagus, dorsal view; 20- Aedeagus, lateral view.

Ventral side of body. Reddish-brown, with large punctures, shiny. Abdomen reddish-brown with sparse, pale brown setation and microgranulation, slightly shiny. Abdominal sternite 3 near sides and penultimate and ultimate

abdominal sternite distinctly darker.

Elytron. Dark blackish-brown, from suture up to elytral interval 2 reddish-brown, shiny, with pale brown setation. EL 3.22 mm. Broadest near middle of elytral length, EW 1.59 mm. EL/EW 2.03. Elytral striae with distinct rows of large punctures, interspaces between punctures in rows very narrow, narrower than diameter of punctures. Elytral intervals with small punctures and fine microgranulation, shiny.

Scutellum. Broadly triangular, reddish-brown, shiny.

Elytral epipleura. Well-developed, reddish-brown shiny, glabrous, with two rows of large punctures, regularly narrowing to metasternum, then leads parallel.

Legs. Unicoloured pale reddish-brown, with short and dense pale brown setation. Tibia and tarsi narrow, tibia slightly dilated anteriorly. Penultimate tarsomere of each tarsus slightly broadened and lobed. RLT: protarsus: 1.00 : 0.80 : 0.65 : 0.59 : 1.16; mesotarsus: 1.00 : 0.41 : 0.33 : 0.37 : 0.58; metatarsus: 1.00 : 0.30 : 0.20 : 0.41.

Both anterior tarsal claws with 9 visible teeth.

Aedeagus (Figs 19, 20). Large, pale brown. Basal fourth of basal piece finely rounded laterally, then laterally straight and almost parallel dorsally. Apical piece short, narrow, finely triangular with rounded top laterally. Ratio of length of apical piece to length of basal piece 1: 7.06.

Female without distinct differences.

**Variation.** Measurements: mean (minimum - maximum). Specimens (n=31). BL 4.43 mm (3.63-5.05 mm); HL 0.48 mm (0.43-0.54 mm); HW 0.75 mm (0.67-0.84 mm); OI 32.91

(30.40-34.97), PL 0.78 mm (0.63-0.84 mm); PW 1.40 mm (1.12-1.63 mm); PI 55.89 (54.70-57.10); EL 3.14 mm (2.54-3.70 mm); EW 1.63 mm (1.33-1.86 mm).

**Differential diagnoses.** (for details see the key above). *Microsthes rolciki* sp. nov. is clearly different from similar species *Microsthes cameronensis* sp. nov. and *Microsthes molucensis* sp. nov. mainly by bicolour elytra; while *M. cameronensis* and *M. molucensis* have elytra unicoloured. *M. rolciki* differs from similar species *Microsthes barborae* sp. nov. mainly by elytra with spot at middle; while elytra of *M. barborae* are without spot at middle. *M. rolciki* differs from similar species *Microsthes zizui* sp. nov. mainly by narrow indistinct spot at middle; while *M. zizui* with spot at middle distinct and broad. *M. rolciki* is clearly different from similar species *Microsthes bruggei* sp. nov. mainly by narrower body and space between eyes narrower than length of antennomere 3; while *M. bruggei* with broader body and space between eyes approximately as long as length of antennomere 3.

**Name derivation.** New species is dedicated to my friend Jakub Rolčík (Prague, Czech Republic).

**Distribution.** Malaysia.

***Microsthes zizui* sp. nov.**  
(Figs 21-24)

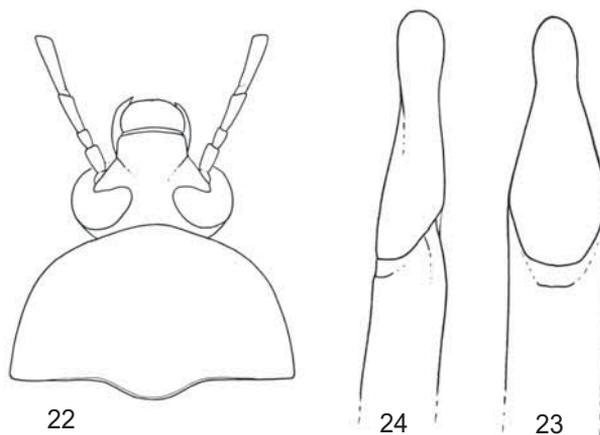
**Type locality.** Malaysia West, Pahang, Cameron Highlands, Tanah Rata.

**Type material.** Holotype (♂): MALAYSIA West, Pahang / Cameron Highlands, / TANAH RATA, 3.-19.ii.2005 / P. Čechovský lgt. 1200-1500 m, (VNPC); Paratypes (6 spec.): same data as holotype, (VNPC); (2 spec.): same data, but 1000-1500 m and 2.-9.iv.1997, (DHBC, VNPC); (2 spec.): MALYSIA W., Pahang / 30 km E of IPOH, 1500 m / Cameron Highlands / TANAH RATA; 7.-9.i.1999 / P. Čechovský leg., (DHBC, VNPC); (1 spec.): same data, but 14.-17.iii.1998, (DHBC); (1 spec.): same data, but 4.-13.iii.1998, (DHBC); (1 spec.): same data, but 21.-24.iv.2001, (DHBC); (11 spec.): MALAYSIA-W, Perak, 25 km NE of IPOH, 2100m, Banjaran Titi Wangsa mts., KORBUN mt., 4.-13.iii.1998, P. Čechovský leg., (DHBC, VNPC); (4 spec.): same data, but 1200 m and 1.-15.iv.2000, (DHBC, VNPC); (2 spec.): MALAYSIA W Kelantan / 60 km N of Tanah Rata / TANAH KERAJAAN / 12.-30.iv.2007, 1000 m / Petr Čechovský lgt., (VNPC). The types are provided with a printed red label: „*Microsthes zizui* sp. nov. HOLOTYPUS [resp. PARATYPUS] V. Novák det. 2010“.

**Description of holotype.** Habitus as in Fig. 21, body longitudinally elliptical, egg-shaped, from pale reddish-brown to dark blackish-brown, slightly shiny, with pale brown setation, body length 4.38 mm. Widest near middle of elytra length; BL/EW 2.69.

Head (Fig. 22). Reddish-brown, with microgranulation and pale brown setation, slightly shiny. Punctuation shallow, punctures small-sized. HW 0.77 mm; HW/PW 0.55. HL (visible part) 0.61 mm. Eyes dark, large, transverse, deeply excised, space between eyes approximately as broad as antennomere 1 long; OI 29.18.

Antennae. Long, AL 2.54 mm, AL/BL 0.58. Antennomeres unicoloured pale reddish-brown with microgranulation and pale reddish-brown setation. Antennomeres 1-3 slightly shiny, antennomeres 4-11 rather dull; antennomeres 3-10 with distinct punctuation. Antennomere 2 shortest, RLA (1-11): 0.84 : 0.51 : 1.00 : 1.39 : 1.28 : 1.27 : 1.30 : 1.31 : 1.19 : 1.10 : 3.46. RL/WA (1-11): 2.21 : 1.69 : 2.88 : 3.81 : 3.58 : 3.40 : 3.47 : 3.33 : 3.14 : 2.68 : 3.17.



Figs 21-24: *Microsthes zizui* sp. nov.: 21- Habitus of male Holotype; 22- Head and pronotum of male holotype; 23- Aedeagus, dorsal view; 24- Aedeagus, lateral view.

Maxillary palpus. Pale reddish-brown with sparse, pale reddish-brown setation and microgranulation, slightly shiny. Palpomeres 2-4 distinctly narrowest at base and broadest at apex. Ultimate palpomere broadly triangular.

Pronotum (Fig. 22). Reddish-brown, transverse, slightly shiny, with fine microgranulation and long pale brown setation, posterior margin darker. PL 0.68 mm; PW 1.40 mm. PI equal to 48.62. Border lines complete, only at middle of anterior margin and at base margin indistinct. Base bisinuate, on ante scutellar area straight. Posterior angles rectangular, anterior angles rounded, indistinct. Surface with dense, small-sized punctures.

Ventral side of body. Reddish-brown, slightly shiny with large punctures. Abdomen pale reddish-brown with sparse, pale brown setation and microgranulation, slightly shiny. Ultimate abdominal sternite dark brown, abdominal sternite 3 and penultimate abdominal sternite dark brown near sides.

Elytron. Long, bicolour, dark blackish-brown with reddish-brown spot broadened to fourth elytral interval, slightly shiny, with microgranulation and long, pale brown setation, broadest at middle of length. EL 3.09 mm, EW 1.63 mm. EL/EW 1.90. Elytral striae with distinct rows of large-sized punctures, interspaces between punctures in rows very narrow, narrower than diameter of punctures. Elytral intervals with very small sporadic punctures, with microgranulation, slightly shiny.

Scutellum. Pale reddish-brown, triangular, with microgranulation.

Elytral epipleura. Reddish-brown, slightly shiny, with pale brown setation and one row of punctures, broadest near base, narrowing to abdominal sternite 1.

Legs. Pale reddish-brown, with dense pale brown setation. Tibia and tarsi narrow, tibia slightly dilated anteriorly. Penultimate tarsomere of each tarsus finely broadened and lobed. RLT: protarsus: 1.00 : 0.80 : 0.63 : 0.76 : 1.66; mesotarsus: 1.00 : 0.41 : 0.29 : 0.33 : 0.53; metatarsus: 1.00 : 0.35 : 0.13 : 0.67.

Both anterior tarsal claws with 7 visible teeth.

Aedeagus (Figs 23, 24). Large, pale brown, slightly shiny with microgranulation. Basal half of basal piece slightly rounded laterally, then laterally straight and parallel dorsally. Apical piece very short, narrow, parallel with rounded top laterally. Ratio of length of apical piece to length of basal piece 1: 7.48.

Female without distinct differences.

**Variation.** Measurements: mean (minimum - maximum). Specimens (n=31). BL 4.24 mm (3.58-4.56 mm); HL 0.61 mm (0.53-0.69 mm); HW 0.76 mm (0.67-0.80 mm); OI 30.13 (29.41-32.64), PL 0.68 mm (0.58-0.76 mm); PW 1.41 mm (1.26-1.48 mm); PI 49.54 (45.73-52.34); EL 3.30 mm (2.73-3.23 mm); EW 1.63 mm (1.45-1.73 mm).

**Differential diagnoses.** (for details see the key above). *Microsthes zizui* sp. nov. is clearly different from similar species *Microsthes cameronensis* sp. nov. and *Microsthes molucensis* sp. nov. mainly by elytra bicolour; while *M. cameronensis* and *M. molucensis* have elytra unicoloured. *M. zizui* differs from similar species *Microsthes barborae* sp. nov. by having spot at middle of elytra; while *M. barborae* is without spot at middle of elytra. *M. zizui* is clearly different from similar species *Microsthes bruggei* sp. nov. and *Microsthes rolciki* sp. nov. mainly by distinct spot at middle of elytra; while *M. bruggei* and *M. rolciki* have spot at middle of elytra indistinct.

**Name derivation.** New species is named in honour of my four-legged friend tom cat Zizu.

**Distribution.** Malaysia.

ACKNOWLEDGEMENTS. Special thanks are due to Luboš Dembický (Brno, Czech Republic) for making digital photographs and Zuzana Čadová (Liberec, Czech Republic) for excellent drawings.

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