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

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Abstract. A new genus of Alleculini Laporte, 1840 - *Avahicula* gen. nov. is described to include the following new species: *Avahicula kiwlomica* sp. nov. as a type species and *Avahicula placida* sp. nov. both from Thailand. Males of the new genus *Avahicula* gen. nov. differ from male species of the closest genus *Makicula* Novák, 2012 by lacking morphological characters of sexual dimorphism on tibiae, by having short thorns in inner part of apex of elytron and by protarsal claws with less than 20 teeth.

INTRODUCTION

Species of new Alleculine genus *Avahicula* gen. nov. are described as follows: *Avahicula kiwlomica* sp. nov. as a type species from Thailand Province Mae Hong Son and *Avahicula placida* sp. nov. from Thailand Province Chiang Mai. Species of the newly described genus have medium sized, narrow, elongate, *leptura* shaped, almost matte dorsal surface, slightly convex body and narrow space between eyes. Important characters follow to establish a new genus *Avahicula* gen. nov. and distinguish it from the species of the closest genus *Makicula* Novák, 2012 are normally shaped tibiae, elytron terminated by short thorn in inner side of apex and protarsal claws with less than 20 teeth. Species of the genus *Makicula* have tibiae with thorns, angles, excisions etc., elytra are almost rounded in apex and protarsal claws have more than 20 teeth (Novák 2012, 2021 and 2022).

New species are described, illustrated and compared together.

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 × minimum dorsal distance between eyes) / (maximum width of head across eyes). The pronotal index is calculated as (100 × length of pronotum along midline) / (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 codes are used:

NMTJ collection of National Museum, Tokio, Japan;
VNPC private collection of Vladimír Novák, Praha, Czech Republic.

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).

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 7.7.5.

TAXONOMY

genus *Avahicula* gen. nov.

(Figs. 1-9)

Type species: *Avahicula kiwlomica* sp. nov.

Description (male). Habitus as in Figs. 1 and 6, body outline (Fig. 2), body large, elongate, *leptura* shaped, dorsal surface almost matte with pale setation, punctuation and fine microgranulation. Widest near elytral humeri. Head as in Figs. 3 and 7, almost as long as wide, through the eyes distinctly wider than anterior margin of pronotum, narrower than base of pronotum. Dorsal surface with long setation and dense, coarse punctuation. Clypeus wide, transverse, half heart shaped, excised in middle of apex. Mandibles glabrous, shiny, with pale setae on sides. Eyes large, transverse, excised, space between eyes narrow, wider than length of antennomere 2. Antenna long, narrow, exceeding three quarters body length. Antennomere 2 shortest, antennomeres 4-11 longer than antennomere 3. Ultimate palpomere widely triangular. Pronotum as in Figs. 3 and 7 matte, convex, widest near middle, distinctly narrower than elytra in humeri. Disk with two small and shallow oblique impressions. Elytra narrow, elongate, slightly convex, matte, widest near humeri. Elytral striae with rows of coarse punctures. Each elytron terminated by small thorn in inner part. Scutellum pentagonal, elevated up level of elytra. Elytral epipleura well-developed, distinctly narrowing to ventrite 1, then parallel in apical part. Legs long and narrow, protibiae normally shaped, straight, widened apically, without thorns, angles and excisions. Pro- and mesotarsomeres 3 and 4 and metatarsomere 3 widened and lobed. Tarsal claws small, both protarsal claws with less than 20 teeth, not larger than meso- or metatarsal claws. Aedeagus large, apical piece as in Figs. 4 and 5 or 8 and 9.

Female. Unknown.

Differential diagnosis. The closest genus is *Makicula* Novák, 2012. Male species of the new genus *Avahicula* gen. nov. clearly differs from similar species of *Makicula* mainly by lacking morphological characters of sexual dimorphism on tibiae, by having short thorns in inner part of apex of elytron and by protarsal claws with less than 20 teeth; while males of *Makicula* species have morphological characters of sexual dimorphism on tibiae (thorns, angles, excisions etc.), thorns in inner part of apex of elytron have only two species (*Makicula imperator* Novák, 2021: 61-63; figs. 62: 7-11 and *Makicula monica* Novák, 2021: 66-68; figs. 67: 17-21), protarsal claws have more than 20 teeth.

Etymology. The compound name formed of the Czech and Latin names (*Avahi*) of a species of low monkey *Avahi laniger* (Gmelin, 1788) from family Indriidae and the ending - *cula* marking affinity to the genus *Allecula* Fabricius, 1801. Gender: feminine.

Distribution. Thailand.

Avahicula kiwlomica sp. nov.

(Figs. 1-5)

Type locality. Thailand, Mae Hong Son Province, Kiwlom pass near Soppong, 1400+-50m, 19°26´N, 098°19´E.

Type material. Holotype (♂): Thailand / Mae Hong Son prov. / KIWLOM-pass near Soppong / 23.6-2.7.2002,alt. 1400+-50m / WGS 84: 19°26´N , 098°19´E / lgt. Fouqué R. + H., (VNPC). The type is provided with a printed red label: 'Avahicula / kiwlomica sp. nov. / HOLOTYPUS / V. Novák det. 2022'.

Description of holotype. Habitus as in Fig. 1, body outline (Fig. 2), body large, elongate, *leptura* shaped, matte, from ochre yellow to brown, dorsal surface with pale setation, punctuation and very fine microgranulation, BL 11.81 mm. Widest near elytral humeri; BL/EW 3.61.

Head (Fig. 3) almost as long as wide, through the eyes distinctly wider than anterior margin, narrower than base of pronotum. Dorsal surface rather matte with long, pale setation, microgranulation and dense, coarse punctuation, punctures medium sized. Posterior part brown, darker than reddish brown, slightly shiny anterior part. Clypeus wide, transverse, half heart shaped, pale reddish brown with apex excised in middle. Dorsal surface with small, shallow punctures, long and dense, pale setation and very fine microgranulation, shiny. Mandibles pale reddish brown with darker sides and apex, glabrous, shiny, with pale setae in sides. HW 1.73 mm; HW/PW 0.76; HL (visible part) 1.78 mm. Eyes large, transverse, excised, space between eyes narrow, distinctly narrower than diameter of one eye; wider than length of antennomere 2; OI equal to 21.54.

Antenna. Long, narrow, ochre yellow, rather matte (AL 9.87, distinctly exceeding three quarters body length - AL/BL 0.84). Surface with short and dense, recumbent, pale setation, microgranulation and small punctures. Antennomere 2 shortest, antennomeres 4-11 longer than antennomere 3.

RLA(1-11): 0.56 : 0.22 : 1.00 : 1.51 : 1.28 : 1.43 : 1.59 : 1.70 : 1.66 : 1.60 : 1.50.

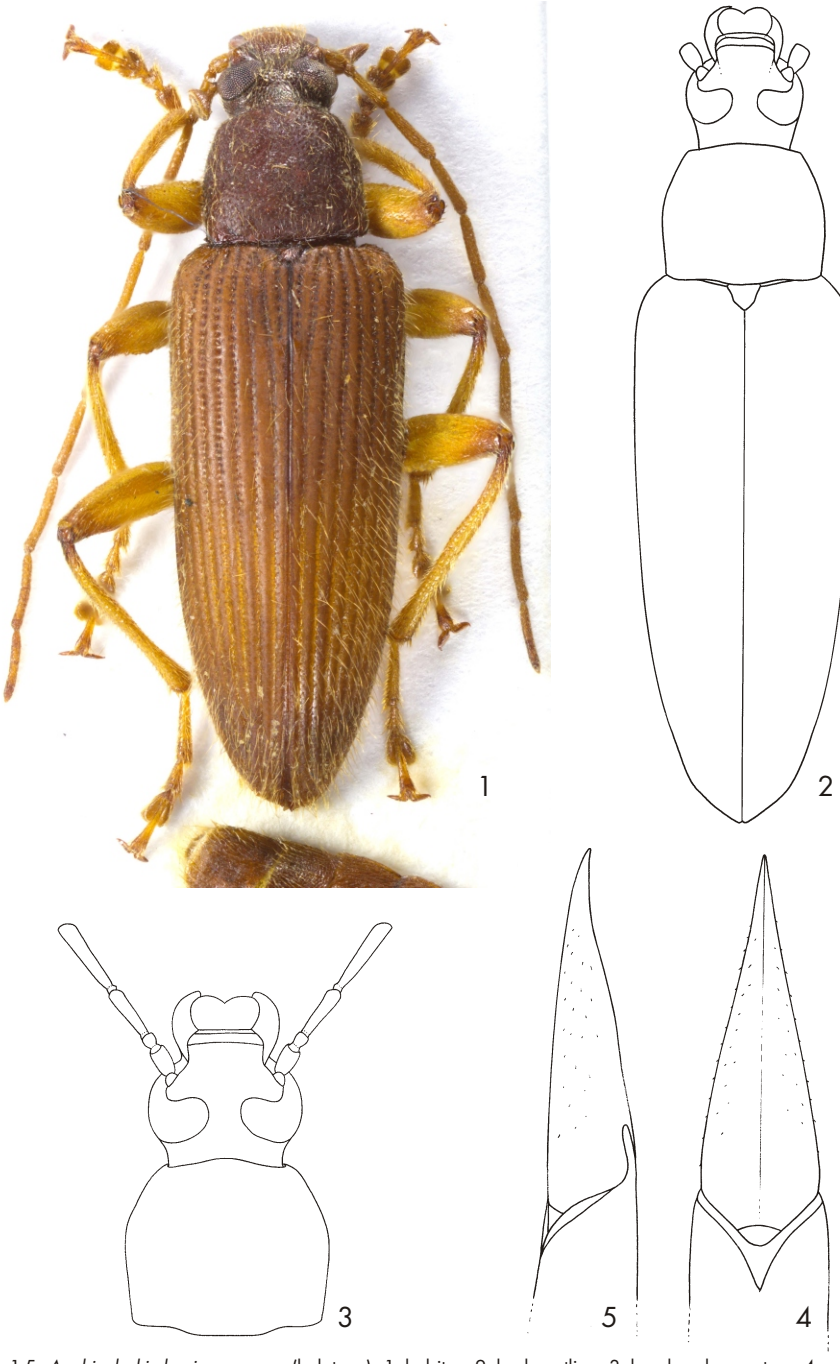
RL/WA(1-11): 1.48 : 1.50 : 4.09 : 4.70 : 5.41 : 6.23 : 7.13 : 7.67 : 7.72 : 8.00 : 9.67.

Maxillary palpus pale brown, rather matte, with pale setation and microgranulation. Palpomeres 2 and 3 distinctly narrowest at base and widest at apex with a few long pale brown setae, ultimate palpomere widely triangular.

Pronotum (Fig. 3) reddish brown, matte, convex, widest near middle, distinctly narrower than elytra in humeri. Disk with two small and shallow oblique impressions. Dorsal surface with sparse and long, pale setae, very fine microgranulation and punctuation, punctures medium sized, intervals between punctures almost wider than diameter of punctures. PL 2.08 mm; PW 2.27 mm; PI equal to 91.86. Border lines very narrow, margins conspicuous in dorsal view. Base finely bisinuate, anterior margin slightly arcuate in middle, anterior and posterior angles distinct, posterior angles obtuse.

Elytra. Pale reddish brown, narrow, elongate, slightly convex, matte, widest near humeri. Dorsal surface with long, pale setation. EL 7.95 mm; EW 3.27 mm; EL/EW 2.43. Elytral striae with rows of coarse punctures, intervals between punctures in rows approximately as wide as diameter of punctures. Elytral intervals rather flat, with very fine microgranulation and sparse, very small punctures. Each elytron terminated by small thorn in inner part.

Scutellum. Reddish brown with sides darker - brown, pentagonal, semimatte, elevated up level of elytra, with a few shallow punctures, fine microgranulation and long, pale setae.



Figs. 1-5. *Avahicula kiwlomica* sp. nov. (holotype): 1- habitus; 2- body outline; 3- head and pronotum; 4- apical piece of aedeagus, dorsal view; 5- apical piece of aedeagus, lateral view.

Elytral epipleura well-developed, pale 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. Long and narrow, ochre yellow, dorsal surface with pale setation, fine microgranulation and very small punctures. Tibiae straight, normally shaped, widened apically, without thorns, angles, excisions etc. Pro- and mesotarsomeres 3 and 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.72 : 1.00 : 1.00 : 1.90 (protarsus), 1.00 : 0.50 : 0.59 : 0.70 : 0.93 (mesotarsus), 1.00 : 0.37 : 0.56 : 0.89 (metatarsus).

Tarsal claws small, both protarsal claws with 16 visible teeth, not larger than meso- or metatarsal claws.

Ventral side of body reddish brown, prothorax and metaventrite with long and dense, pale setae, mesothorax with short dark setae. Abdomen reddish brown with long, recumbent, pale setation and small punctures. Ultimate ventrite not excised in middle, straight in apex.

Aedeagus (Figs. 4, 5) large, ochre yellow. Basal piece strong, rounded laterally and slightly narrowing in dorsal view. Apical piece elongate triangular from dorsal and lateral view. Ratio of length of apical piece to length of basal piece in dorsal view 1: 3.23.

Female unknown.

Differential diagnosis. A similar species from Province Chiang May (Thailand) is *Avahicula placida* sp. nov.

Males of *Avahicula kiwlomica* sp. nov. clearly differ from males of the similar species *A. placida* mainly by shape of pronotum (lateral margins a little angled in middle as in Fig. 3), by protarsal claws with 16 visible teeth, by mesoventrite with dark setae, by ultimate ventrite straight in apex and by shape of apical piece of aedeagus (as in Figs. 4 and 5); while *A. placida* has lateral margins of pronotum slightly rounded (as in Fig. 7), protarsal claws have 18 visible teeeth, mesoventrite is covered by pale setae, ultimate ventrite is distinctly excised in middle and apical piece of aedeagus is as in Figs. 8 and 9.

Etymology. Toponymic, named after the type locality Kiwlom pass in Mae Hong Son Province (Thailand).

Distribution. Thailand (Mae Hong Son Province).

***Avahicula placida* sp. nov.**

(Figs. 6-9)

Type locality. Thailand, Chiang Mai Province, Mae Rim.

Type material. Holotype (♂): Thailand, Chiang Mai, / Mae Rim / 24-26.V.2014, / K. Takahashi leg., (NMTJ). The type is provided with a printed red label: 'Avahicula / placida sp. nov. / HOLOTYPUS / V. Novák det. 2022'.

Description of holotype. Habitus as in Fig. 6, body large, elongate, *leptura* shaped, matte, from ochre yellow to reddish brown, dorsal surface with pale setation, punctuation and very fine microgranulation, BL 10.90 mm. Widest near elytral humeri; BL/EW 3.45.

Head (Fig. 7) almost as long as wide, through the eyes distinctly wider than anterior margin, slightly narrower than base of pronotum. Dorsal surface slightly shiny, with long, pale setation, microgranulation and dense, coarse punctuation, punctures medium sized. Posterior part reddish

brown, a little darker than pale reddish brown apex of apical half of anterior part. Clypeus wide, transverse, half heart shaped, ochre yellow with apex excised in middle. Dorsal surface with relatively large and coarser punctures, long and dense, pale setation and very fine microgranulation, shiny. Mandibles pale reddish brown, glabrous, shiny, with pale setae in sides. HW 1.62 mm; HW/PW 0.75; HL (visible part) 1.56 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 length of antennomere 1; OI equal to 21.10.

Antenna. Long, narrow, ochre yellow, rather matte (AL 9.20, distinctly exceeding three quarters body length - AL/BL 0.84). Surface with short and dense, recumbent, pale setation, microgranulation and small punctures. Antennomere 2 shortest, antennomeres 4-11 longer than antennomere 3. Antennomeres 1-3 slightly shiny.

RLA(1-11): 0.51 : 0.35 : 1.00 : 1.49 : 1.41 : 1.66 : 1.68 : 1.89 : 1.87 : 1.82 : 1.75.

RL/WA(1-11): 1.82 : 1.47 : 3.48 : 4.88 : 4.97 : 6.96 : 6.79 : 8.23 : 7.28 : 7.92 : 7.61.

Maxillary palpus ochre yellow, slightly shiny, with pale setation and microgranulation. Palpomeres 2 and 3 distinctly narrowest at base and widest at apex with long pale setae, ultimate palpomere rather darker than penultimate, pale brown, widely triangular.

Pronotum (Fig. 7) reddish brown, matte, convex, widest near middle, lateral margins finely rounded, distinctly narrower than elytra in humeri. Disk with two small and shallow oblique impressions. Dorsal surface with sparse and long, pale setae, very fine microgranulation and punctuation, punctures medium sized, intervals between punctures almost wider than diameter of punctures. PL 1.94 mm; PW 2.16 mm; PI equal to 89.81. Border lines very narrow, margins conspicuous from dorsal view. Base finely bisinuate, anterior margin slightly arcuate in middle, anterior and posterior angles distinct, obtuse.

Elytra. Pale reddish brown, narrow, elongate, slightly convex, matte, widest near humeri. Dorsal surface with long, pale setation. EL 7.40 mm; EW 3.16 mm; EL/EW 2.34. Elytral striae with rows of coarse punctures, intervals between punctures in rows approximately as wide as diameter of punctures. Elytral intervals rather flat, with very fine microgranulation and sparse, very small punctures. Each elytron terminated by small thorn in inner part.

Scutellum. Reddish brown with sides darker - brown, pentagonal, rather shiny, elevated up level of elytra, with a few shallow punctures, fine microgranulation and long, pale setae.

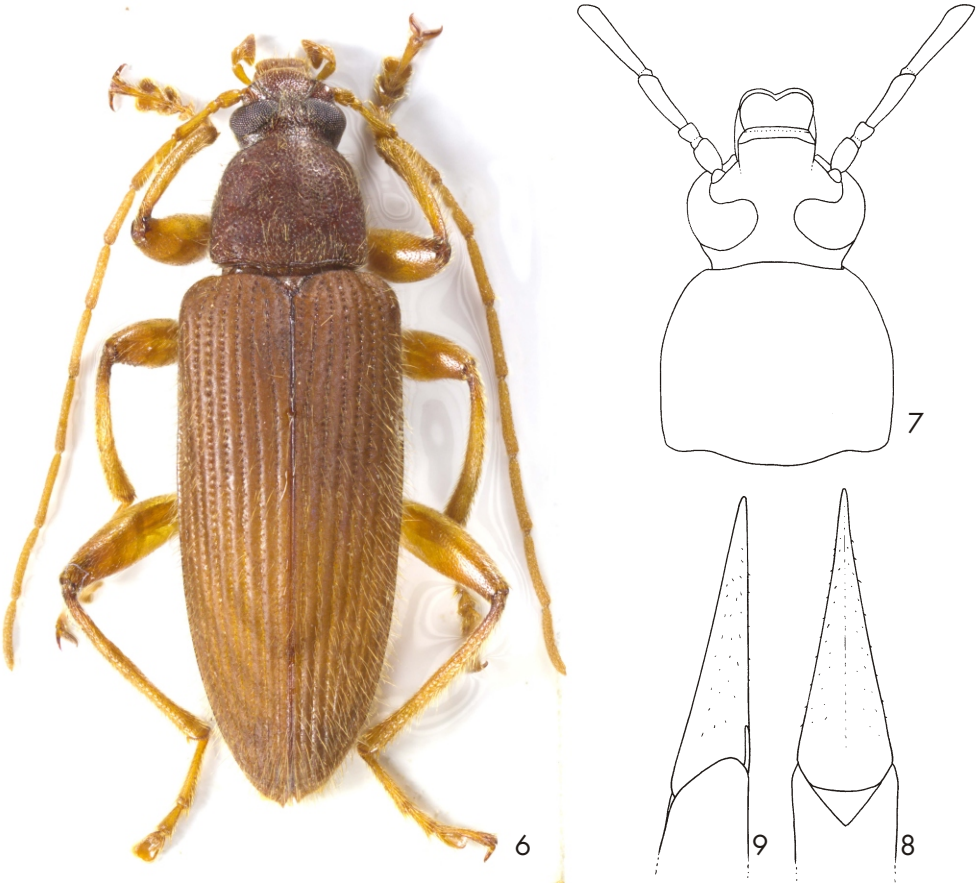
Elytral epipleura well-developed, pale reddish brown, with large punctures in basal part and long and dense, pale setae in apical part, distinctly narrowing to ventrite 1, then relatively wide and parallel in apical part.

Legs. Long and narrow, ochre yellow, dorsal surface with pale setation, fine microgranulation and very small punctures. Tibiae straight, normally shaped, widened apically, without thorns, angles, excisions etc. Pro- and mesotarsomeres 3 and 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.72 : 1.23 : 1.54 : 2.67 (protarsus), 1.00 : 0.56 : 0.58 : 0.71 : 1.39 (mesotarsus), 1.00 : 0.46 : 0.49 : 0.77 (metatarsus).

Tarsal claws small, both protarsal claws with 18 visible teeth, not larger than meso- or metatarsal claws.

Ventral side of body reddish brown, with long and dense, pale setae. Abdomen reddish brown with long, recumbent, pale setation, fine microgranulation and small punctures. Ultimate ventrite excised in middle.

Aedeagus (Figs. 8, 9) large, ochre yellow, slightly shiny. Basal piece strong, finely rounded laterally and narrowing in dorsal view. Apical piece narrow, elongate triangular dorsally and laterally. Ratio of length of apical piece to length of basal piece from dorsal view 1: 2.92.



Figs. 6-9. *Avahicula placida* sp. nov. (holotype): 6- habitus; 7- head and pronotum; 8- apical piece of aedeagus, dorsal view; 9- apical piece of aedeagus, lateral view.

Female unknown.

Differential diagnosis. Similar species from Province Mae Hong Son (Thailand) is *Avahicula kiwlomica* sp. nov.
Males of *Avahicula placida* sp. nov. clearly differs from males of the similar species *A. kiwlomica* mainly by shape of pronotum (lateral margins of pronotum slightly rounded as in Fig. 7), by dorsal surface of clypeus with relatively large and coarser punctures, by protarsal claws with 18 visible teeth, by mesoventrite with pale setae, by ultimate ventrite distinctly excised in middle and by apical piece of aedeagus as in Figs. 8 and 9; while *A. kiwlomica* has shape of pronotum with lateral margins a little angled in middle as in Fig. 3, dorsal surface of clypeus has small and shallow punctures, protarsal claws have 16 visible teeth, mesoventrite is covered by dark setae, ultimate ventrite is straight in apex and shape of apical piece of aedeagus is as in Figs. 4 and 5.

Etymology. The name *placida* is taken from Latin (peaceful).

Distribution. Thailand (Chiang Mai Province).

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