

A revision of the genus *Microcriodes* BREUNING, 1943 (Coleoptera: Cerambycidae: Lamiinae: Batocerini)

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Abstract

The longhorn beetle genus *Microcriodes* BREUNING, 1943 is redefined and revised. Two species are described as new: *Microcriodes cheni* sp.n. from southeastern Xizang, China, and *Microcriodes ohbayashii* sp.n. from western Yunnan, China, and northeastern Kachin, Myanmar. Type specimens of *M. cheni* sp.n. were previously misidentified as *M. sikkimensis* BREUNING, 1943. New records of *M. sikkimensis* from Cuona, Xizang, confirm its presence in China. Illustrations of habitus, endophallic structure and major diagnostic features for all involved taxa are provided.

Key words: taxonomy, new species, China, India, Myanmar, Oriental region.

Zusammenfassung

Die Bockkäfergattung *Microcriodes* BREUNING, 1943 wird neu definiert und revidiert. Zwei Arten werden neu beschrieben: *Microcriodes cheni* sp.n. aus dem südöstlichen Xizang, China, und *Microcriodes ohbayashii* sp.n. aus dem westlichen Yunnan, China, sowie aus dem nordöstlichen Kachin, Myanmar. Typusexemplare von *M. cheni* sp.n. wurden früher als *M. sikkimensis* BREUNING, 1943 fehlbestimmt. Neue Nachweise von *M. sikkimensis* aus Cuona, Xizang, bestätigen jedoch ein Vorkommen in China. Abbildungen des Habitus, der Endophallus-Strukturen sowie der wichtigsten diagnostischen äußeren Merkmale aller Arten werden geliefert.

Introduction

The genus *Microcriodes* was established by BREUNING (1943) based on *Microcriodes sikkimensis* BREUNING, 1943 from India. Subsequently, GILMOUR & DIBB (1948), GILMOUR (1963), RIGOUT (1982) and WEIGEL (2012) studied or illustrated this taxon. BI & LIN (2014) described a second species, *M. wuchaoi* BI & LIN, 2014, from Xizang, China, and reported *M. sikkimensis* from the same locality after having compared their specimens with photos of the female holotype.

In the course of our studies, the female holotype of *M. sikkimensis* from “Sikkim” and two conspecific male specimens collected near its type locality were investigated. The voucher specimens of *M. sikkimensis* from Xizang, China reported by BI & LIN (2014) were re-examined and reconsidered to be a new species. However, the presence of *M. sikkimensis* in China is confirmed, based on a single male recently collected from Cuona County, Xizang. In addition, a fourth species of the genus was discovered in Yunnan, China, and Kachin, Myanmar.

The generic definition of *Microcriodes* is modified to accurately include all four species. Endophallic structures of the type species and the two new species in inflated and everted condition are described, figured, and briefly discussed.

Material and methods

Specimens are deposited in the following institutes, museums or private collections:

CBWX Collection of Wen-Xuan Bi, Shanghai, China

CCCC Collection of Chang-Chin Chen, Tianjin, China

CCH Collection of Carolus Holzschuh, Villach, Austria

EUMJ Ehime University Museum, Matsuyama, Japan

IZAS Institute of Zoology, Chinese Academy of Sciences, Beijing, China

NHML The Natural History Museum, London, UK

SNUC Insect Collection of Shanghai Normal University, Shanghai, China

The following abbreviations for terminology of endophallic structures are used in the text and the illustrations:

af apical furrow

APH apical phallomere

as rod-like sclerite

BPH basal phallomere

CT central trunk

ej ejaculatory duct

gn gonopore

im internal membrane

lt lateral tubercle

MPH median phallomere

MT medial tube

PB preapical bulb

The measurements are standardised as follows:

Body length: length from tip of head to elytral apices in dorsal view.

Pronotal length: length from middle of anterior margin to base of pronotum in dorsal view.

Elytral length: length from the base of elytra including the scutellum to the apices in dorsal view.

Humeral width: maximum width of elytral base in dorsal view.

Elytral width: equal humeral width.

Lower eye lobe length: vertical length of lower eye lobe in frontal view of head.

Lower eye lobe width: horizontal maximum width of lower eye lobe in frontal view of head.

Gena length: vertical length of gena in frontal view of head.

Taxonomy

***Microcriodes* BREUNING, 1943** (Figs. 1–23)

Microcriodes BREUNING, 1943: 14. Type species: *Microcriodes sikkimensis* BREUNING, 1943, by original designation.

Microcriodes: GILMOUR & DIBB 1948: 99; GILMOUR 1963: 483; RIGOUT 1982: 10; NYLANDER 2004: 249; BI & LIN 2014: 2.

Diagnostic redescription: Body elongate. Eyes coarsely faceted, emarginate; lower lobe large, distinctly longer than wide. Frons transverse, with anterior and lateral margins sparsely bearing short to long suberect setae. Antennal tubercles widely separated, moderately raised. Antennae long and smooth, 1.6–2.7 times (in male) or 1.1–1.6 times (in female) as long as body length; basal three antennomeres sparsely fringed beneath by suberect setae; scape long and thin, lacking cicatrix, the 3rd antennomere 1.8–2.1 times as long as scape, subequal to the 4th antennomere. Pronotum broader than long; with fine transverse furrows at the anterior and posterior margin and transverse premedian and postmedian depressions; lateral spine short to long, acute at apex; disc more or less provided with umbilicated granules postmedially, which are associated with long, suberect setae. Prosternal process widened and emarginate at apex, procoxal cavities slightly open posteriorly. Mesosternal process without tubercle, obliquely sloped in lateral view; mesocoxal cavities open externally to epimera. Elytra elongate, 2.4–2.6 times as long as humeral width; more than 3 times as long as head and pronotum combined; subparallel-sided, rounded at apex, distinctly wider than pronotal base. Abdomen (Fig. 8) with first ventrite fringed with long light-coloured hairs along apical margin. Legs long and slender; mesotibia with an external oblique groove near apex; tarsus five-segmented, tarsal claws divaricated. Endophallus in everted condition (Figs. 19–23) S-shaped, long and slender, longer than triple length of median lobe; BPH, MPH, and APH well defined; crescent shaped sclerites (cs) present; MPH subdivided into MT+CT and PB by constrictions; MT+CT curved at apical fourth dorsally, swollen near apex with a pair of lateral tubercles (lt, Fig. 21), PB strongly constricted at basal half, swollen apically; APH (Figs. 20, 22) not subdivided, strongly protruding and directed ventrally in lateral view, dorsal surface with a pair of rod-like sclerites (as) reaching from gonopore to apex; apical furrow (af) with internal membrane (im) incomplete, represented by a spoon-shaped dorsal appendix; spicules mainly distributed on apical fourth of MT+CT and apical half of PB; ejaculatory ducts (ej) paired, gonopore (gn) situated at dorsal side of APH.

Remarks: This genus was placed within the tribe Batocerini by most of the previous authors (GILMOUR & DIBB 1948, GILMOUR 1963, RIGOUT 1982, WEIGEL 2012, BI & LIN 2014), and is readily distinguishable by the following combination of characters: antennae smooth, without spinous rugosity or traces of spines on the surface; antennal scape lacking cicatrix; lower eye lobe longer than broad. However, based on the results of a comparison of the male genitalia among roughly 90 genera of Lamiini s.l., Morimopsini, Gnomini, Petrognathini, or Batocerini (unpublished contents by the primary author), the endophallic structures of *Microcriodes* indicate a relatively close resemblance to e.g. *Morimopsis* spp. of Morimopsini than to other genera of Batocerini. Detailed conclusions will be proposed in the future.

***Microcriodes sikkimensis* BREUNING, 1943** (Figs. 1, 2, 9, 13, 17, 19)

Microcriodes sikkimensis BREUNING, 1943: 15; GILMOUR & DIBB 1948: 100; GILMOUR 1963: 483, pl. 2, figs. 4–5; RIGOUT 1982: 10, pl. 14; WEIGEL 2012: 408, pl. 28, fig. h.

nec *Microcriodes sikkimensis* BI & LIN 2014: 3 [misidentification].

Type material examined: Holotype (Fig. 2), female, “Sikkim” [white label printed]; “*Microcriodes / sikkimensis / mihi* Type” (handwritten) / “det. Breuning” (printed) [white label]; “Type” [white label with red circle printed] (NHML).

Other materials examined: 2 males, India, Darjeeling District, Tiger Hill, 2340–2500 m a.s.l., 5.VIII.1981, leg. W. Suzuki (CCH); 1 male, China, Xizang, Cuona, Mamaxiang, 2576 m a.s.l., 23.VII.2018, leg. Xiao-Dong Yang (CCCC).

Diagnostic description of male (Fig. 1): Length: 24.8–27.0 mm, humeral width: 7.6–7.8 mm. Body and legs dark brown; antenna with basal three antennomeres dark brown, remainders light brown; body, scape, and legs densely covered with greyish yellow pubescence. Elytron mostly covered with thick greyish yellow pubescence; provided with two main, bright yellow, longitudinal pubescent maculae, one on basal third and another one occupying apical two-fifths near the lateral margin.

Head slightly narrower than pronotal base; median furrow narrow, indistinctly exceeding from frons to postvertex; lower eye lobe twice as long as width, 4.6 times as long as gena (Fig. 9). Antenna 2.4–2.6 times as long as body length. Pronotum (Fig. 13) 0.9 times as long as basal width, the width across lateral spines about 1.29 times of basal width; lateral spine short and acute; disc smooth, sparsely and minutely granulated. Scutellum elongated-triquetrous. Elytra 1.7 times as wide as pronotal base, 2.5 times as long as humeral width, 3.1 times as long as the head and pronotum combined; minutely granulated near base.

Genitalia: Tergite VIII, tegmen and median lobe as shown in Figure 17. Endophallus in everted condition (Fig. 19, slightly broken); diagnostic features identical to those provided in the generic remarks, except APH with an additional dorsal protrusion near base in lateral view.

Diagnostic description of female (Fig. 2): Similar to male, except for antenna relatively shorter, pronotum and elytra relatively broader, pronotal lateral spine more developed.

Distribution: India: “Sikkim” (BREUNING 1943), Arunachal Pradesh (WEIGEL 2012), Darjeeling District; China: Xizang (Cuona County).

Remarks: A single male recently collected from Cuona County, Xizang, has proven conspecific with the female holotype of *M. sikkimensis* and two conspecific male specimens collected near its type locality, and represents the first correct record from China. Earlier records from China (BI & LIN 2014) were based on a misidentification of *M. cheni* sp.n.

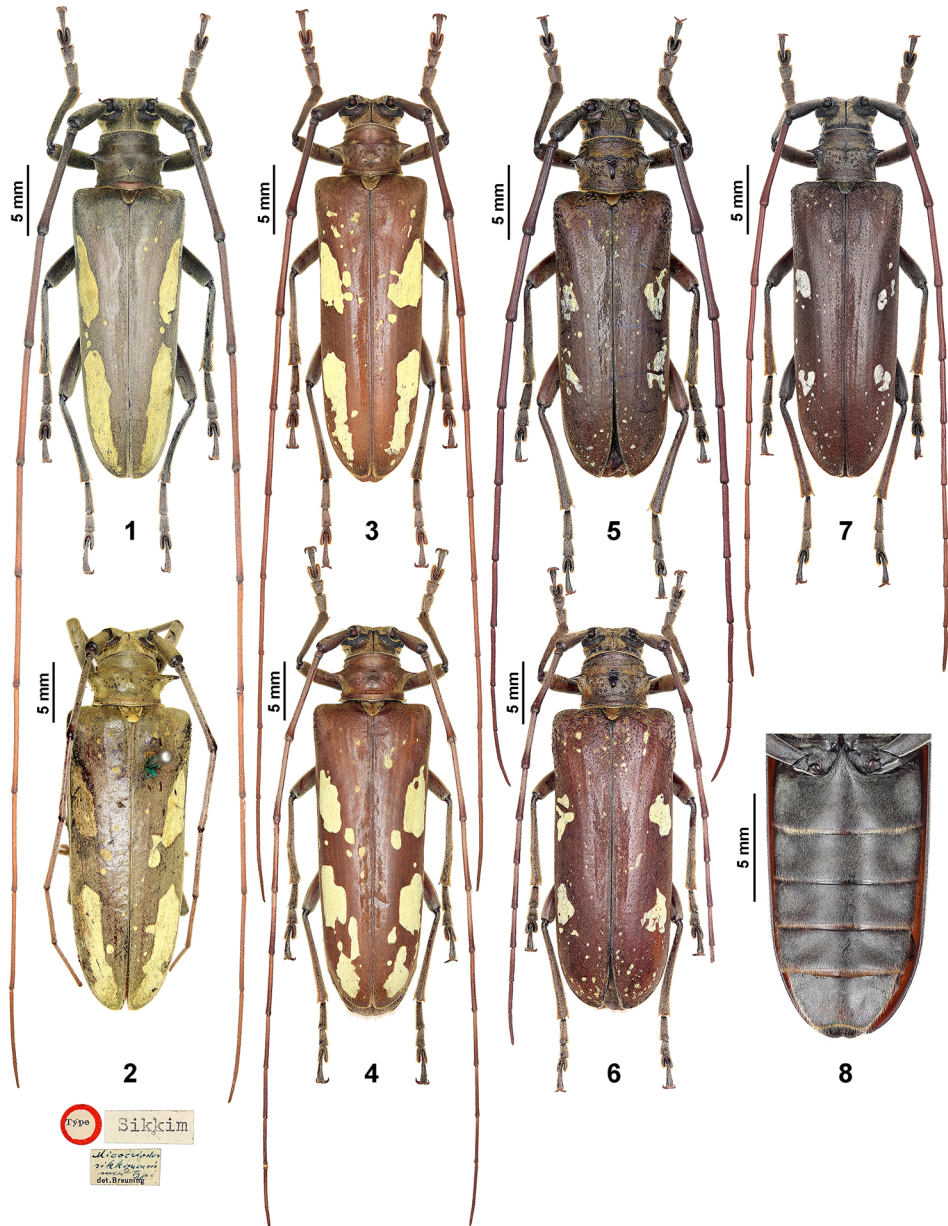
***Microcriodes wuchaoi* BI & LIN, 2014** (Figs. 5, 6, 11, 15)

Microcriodes wuchaoi BI & LIN, 2014: 5, figs. 5, 6, 11–14.

Type material examined: Holotype (Fig. 5): male, “China: Xizang, Motuo, 62K / 2013.VIII.9 / 2780 m / leg. Chao Wu” [white label printed], “HOLOTYPE / *Microcriodes / wuchaoi / Bi & Lin, 2014*” [red label printed] (SNUC). Paratype (Fig. 6): 1 female, “China: Xizang, Motuo, 62K / 2013.VIII.10 / 2780 m / leg. Chao Wu” [white label printed], “PARATYPE / *Microcriodes / wuchaoi / Bi & Lin, 2014*” [red label printed] (SNUC).

Other materials examined: 1 male, China, Xizang, Motuoxian, Zhamogonglu, 62K, 2787 m, 29.7086°N, 95.5775°E, 30.VII.2015 D, leg. Jian Yao (IZAS).

Diagnosis: This species is characterized by the following combination of characters: integument dark brown; antenna short and thick, 1.8 times (in male) or 1.1 times (in female) as long as body length; lower eye lobe twice as long as width, 4.3 times as long as gena;



Figs. 1–8: Habitus of *Microcriodes* spp.: (1–2) *M. sikkimensis*, male (1) and female, holotype (2); (3–4) *M. cheni* sp.n., male, holotype (3) and female, paratype (4); (5–6) *M. wuchaoi*, male, holotype (5) and female, paratype (6); (7–8) *M. ohbayashii* sp.n., male, holotype; (8) abdomen in ventral view showing light-coloured hairs along apical margin of ventrite I. Figure 5 from Bi & LIN (2014).

pronotum 0.8 times as long as basal width, with short lateral spine, disc provided with a shiny posteromedial callus; elytra 2.4 times as long as humeral width, 3.1 times as long as the head and pronotum combined; each elytron with the main maculae reduced, never exceeding apical fourth; pronotal disc and elytral base coarsely granulated.

Distribution: China: Xizang (Motuo County).

***Microcriodes cheni* sp.n.** (Figs. 3, 4, 10, 14, 20)

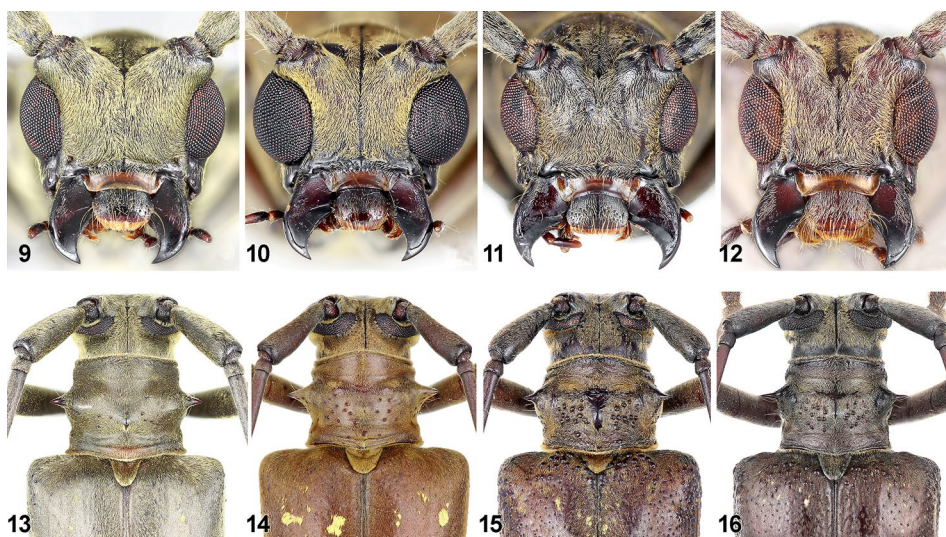
Microcriodes sikkimensis: BI & LIN 2014: 3, figs. 1–4, 7–10.

Type material: Holotype: male, “CHINA. Xiang, Motuo / Hanmi / 2100 m, 2011.VII.23 / leg. Ye Liu” [white label printed] (IZAS). Paratypes: 1 female, same locality as holotype, 23–26.VII.2011, leg. Ye Liu (IZAS); 4 males, 1 female, ditto except 23–31.VII.2011, leg. Wen-Xuan Bi (CBWX); 1 male, ditto except 29.VII.2011 (CBWX); 1 female, ditto except 2.VIII.2011 (CBWX); 1 male, ditto except 23–28.VII.2011 (CCH); 1 male, ditto except 30.VII.2011, leg. Xiao-Dong Yang (CCCC); 1 male, 1 female, ditto except 2.VIII.2011 (CCCC); 1 male, ditto except 3.VIII.2011 (CCCC); 1 male, ditto except 6.VIII.2011, leg. Hai-Lin Yang & Jian-Yun Wang (CCCC); 2 males, ditto except 15.VII.2013, leg. Wen-Xuan Bi (CBWX); 1 male, ditto except 18.VII.2013 (CBWX); 1 male, ditto except 22.VII.2013 (CBWX); 1 male, ditto except 26.VII.2013 (CCH); 2 males, ditto except 29.VII.2013 (CBWX); 2 males, ditto except 30.VII.2013 (CBWX); 1 female, ditto except 2128 m a.s.l., 13.VII.2013, leg. Xiao-Dong Yang (CCCC); 1 male, ditto except 1989 m a.s.l., 26.VII.2013 (CCCC); 1 male, ditto except 2128 m a.s.l., 28.VII.2013 (CCCC); 1 female, ditto except 212 m a.s.l., 30.VII.2013 (CCCC); 1 male, Xizang, Motuo, “80 K”, 2100 m a.s.l., 23.VII.2012, leg. Xiao-Dong Yang (CCCC); 1 female, Xiang, Motuo, “62 K”, 2780 m a.s.l., VIII.2013.VIII.10, leg. Chao Wu (CBWX); 2 males, Xizang, Motuo, Renqinbeng, 1942 m a.s.l., 29.VII.2014, leg. Xiao-Dong Yang (CCCC); 1 female, ditto except 2166 m a.s.l., 5.VIII.2016 (CCCC).

Description of male (Fig. 3): Length: 21.0–28.0 mm; humeral width: 6.0–9.0 mm. Body and legs brown; antenna with basal three antennomeres dark brown, remainders light brown; ventral surface and legs evenly covered with tawny pubescence. Head with mandible (base and outer surface), frons, gena, and vertex (except for the median furrow) densely covered with tawny pubescence. Antenna covered with greyish yellow pubescence, relatively denser on scape. Pronotum moderately covered with same coloured pubescence as head. Scutellum covered with same coloured pubescence as pronotum but relatively denser. Elytron predominantly covered with fine greyish yellow pubescence; near the lateral margin provided with three main, bright yellow, longitudinal but somewhat irregularly shaped pubescent maculae on basal third, a little behind middle and near apex, the middle macula normally fused with the hind one, rarely attached to the front one; additionally with small, round, same coloured spots scattered along suture and near apex.

Body subcylindrical, feebly narrowed posteriorly. Head nearly as wide as pronotal base, with median furrow exceeding from frons to postvertex; lower eye lobe 1.4 times as long as wide, 6.9 times as long as gena (Fig. 10). Antenna long and slender, 2.0–2.1 times as long as body length, approximately surpassing elytral apex at tip of 6th antennomere; 3rd antennomere twice as long as scape, slightly shorter than 4th. Relative length of antennomeres as follows: 0.47 : 0.09 : 1.00 : 1.03 : 0.97 : 0.88 : 0.86 : 0.77 : 0.74 : 0.71 : 1.02.

Pronotum (Fig. 14) 0.8 times as long as basal width, the width across lateral spines about 1.28 times of basal width; lateral spine moderately long, thickened at base with acute apex; disc smooth, sparsely provided with several fine umbilicate, setigerous granules behind the middle. Scutellum tongue-shaped.



Figs. 9–16: Diagnostic features of *Microcriodes* spp., (9–12) head in frontal view (males), (13–16) head, pronotum and elytral base in dorsal view (males): (9, 13) *M. sikkimensis*; (10, 14) *M. cheni* sp.n.; (11, 15) *M. wuchaoi*; (12, 16) *M. ohbayashii* sp.n. Figures 10, 11, 14, 15 from Bi & LIN (2014).

Elytra ca. 1.8 times as wide as pronotal base, 2.7 times as long as humeral width, 3.7 times as long as head and pronotum combined; provided with a few minute granules at base; disc sparsely and very finely punctured. Legs moderately long and slender, metatibia reaching elytral apex.

Genitalia: Tergite VIII, tegmen, and median lobe are as shown in Bi & LIN (2014: figs. 7–9). Endophallus in everted condition as in Figure 20 (diagnostic features are identical to these provided in the generic description).

Description of female (Fig. 4): Length: 30.0–34.0 mm; humeral width: 9.0–10.5 mm. Almost identical to male in general appearance. Antenna 1.5–1.6 times as long as body length, 3rd antennomere slightly longer than 4th; relative length of antennomeres as follows: 0.48 : 0.11 : 1.00 : 0.95 : 0.82 : 0.72 : 0.66 : 0.58 : 0.57 : 0.54 : 0.73.

Diagnosis: This new species is most similar to *M. sikkimensis*, but can be distinguished from it by the following combination of characters: male with lower eye lobe larger and broader, 1.4 times as long as wide, 6.9 times as long as gena (instead of 2.0 times and 4.6 times, respectively); antenna shorter, 2.0–2.1 times as long as body length (instead of 2.4–2.6 times); scape more slender; elytra more elongated, 2.7 times as long as humeral width (instead of 2.5 times), 3.7 times as long as the head and pronotum combined (instead of 3.1 times); each elytron (besides the bright maculae) finely pubescent, giving the elytron a brown appearance (thickly pubescent, giving the elytron of *M. sikkimensis* a greyish yellow appearance).

Etymology: The specific epithet is dedicated to Mr. Chang-Chin Chen in deep gratitude for his continuous support.

Distribution: China: Xizang (Motuo County).

***Microcriodes ohbayashii* sp.n.** (Figs. 7, 8, 12, 16, 18, 23)

Type material: Holotype (Fig. 7): male, "CHINA. Yunnan, Lushui / Pianma / 2450-2400m, 2018.IX.17 / leg. Xiao-Dong Yang" [white label printed] (SNUC). Paratype: 1 male, "NORTH MYAMMAR [sic!] / Chudu, Razi / North Kachin / VII, 2005 / Native collector leg." [white label printed] (EUMJ).

Description of male (Fig. 7): Body length 25.2–27.0 mm; humeral width 7.4–8.0 mm. Body and legs dark brown; antenna with scape and pedicel dark brown, remainders light brown; ventral surface mostly and legs evenly covered with dense greyish yellow pubescence. Head with mandible (base and outer surface), frons, gena, and vertex (except for the median furrow) densely covered with tawny pubescence. Antenna with scape covered with same kind of pubescence as head; remainders covered with fine greyish pubescence. Pronotum and scutellum covered with same kind of pubescence as head. Elytron predominantly covered with fine greyish pubescence; provided with two greyish yellow, irregularly shaped maculae on basal third and apical third near lateral margin; with small, round, greyish yellow spots scattered around humerus, along suture and near apex.

Body subcylindrical, feebly narrowed posteriorly. Head nearly as wide as pronotal base, occiput with a few granules anteriorly. Lower eye lobe 1.9 times as long as width, 6.2 times as long as gena (Fig. 12). Antenna slender, about 1.6 times as long as body length, approximately surpassing elytral apex at tip of 7th antennomere; 3rd antennomere twice as long as scape, slightly longer than 4th or 5th; relative length of antennomeres as follows: 0.51 : 0.12 : 1.00 : 0.92 : 0.87 : 0.74 : 0.71 : 0.63 : 0.55 : 0.46 : 0.52.

Pronotum (Fig. 16) 0.9 times as long as basal width, the width across lateral spines about 1.33 times of basal width; lateral spine short, thickened at base, with acute apex; disc provided with 8 to 12 umbilicate, setigerous granules at sides behind the middle. Scutellum elongated-triquetrous.

Elytra ca. 1.8 times as wide as pronotal base, 2.6 times as long as humeral width, 3.4 times as long as head and pronotum combined; provided with a few granules near suture and humeri at base; disc moderately punctured, becoming more shallow near apices. Legs moderately long and slender, metatibia reaching elytral apex at apical fifth.

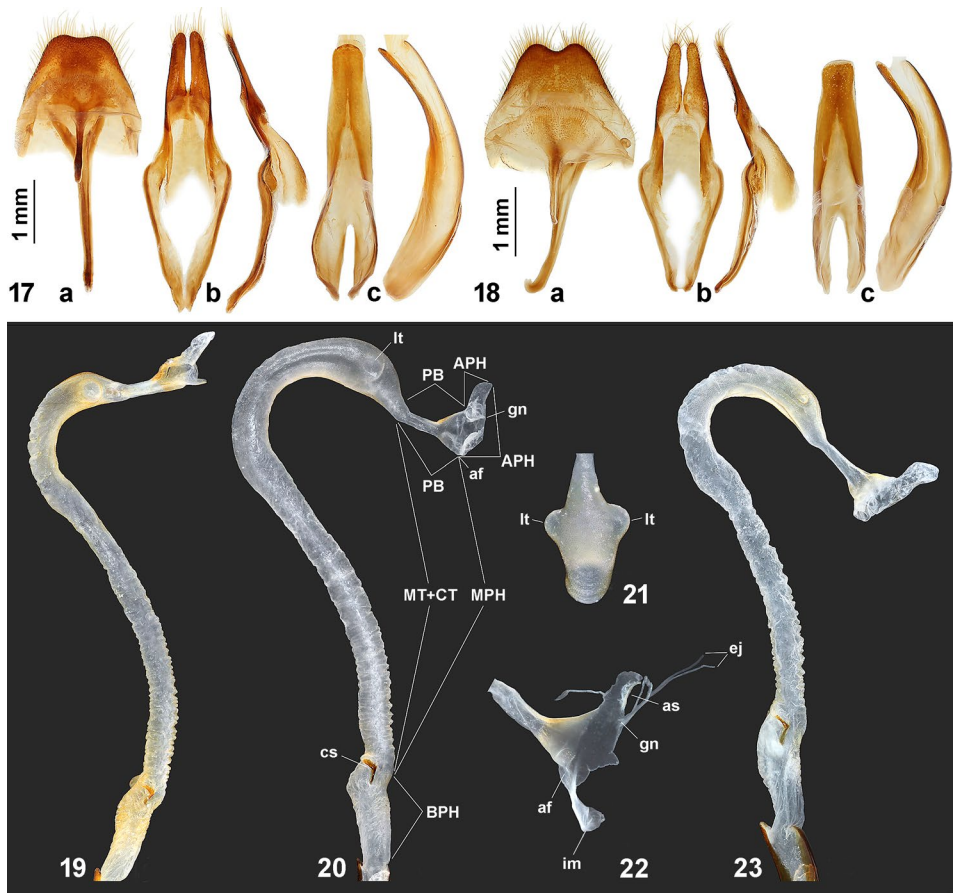
Genitalia: Tergite VIII, tegmen, and median lobe as shown in Figure 18. Endophallus as shown in Figure 23 (slightly broken).

Female unknown.

Diagnosis: This new species resembles *M. wuchaoi* by the similarity of elytral colourations, but is distinguishable by the following characters: lower eye lobe larger, 6.2 times as long as gena (instead of 4.3 times); pronotum less broad, 0.9 times as long as basal width (instead of 0.8 times), pronotal disc with finer granules, lacking a posteromedial callus; elytra more elongated, 2.6 times as long as humeral width (instead of 2.4 times), 3.4 times as long as the head and pronotum combined (instead of 3.1 times); elytral granules smaller. It is also unique in the genus by the male having a rather short and slender antenna, only 1.6 times as long as body length.

Etymology: The specific epithet is dedicated to emeritus Prof. Nobuo Ohbayashi, who provided the first specimen of the new species for this study.

Distribution: China: Yunnan (Lushui County); Myanmar: Kachin (Putao District).



Figs. 17–23: Terminalia of *Microcriodes* spp.: (17–18) genitalia of *M. sikkimensis* (17) and *M. ohbayashii* sp.n. (18); (a) tergite VIII with sternites VIII and IX, ventral view; (b) tegmen, ventral and lateral view; (c) median lobe, ventral and lateral view. (19–23) Endophallus: (17) *M. sikkimensis*; (20–22) *M. cheni* sp.n.; (23) *M. ohbayashii* sp.n.; (19–20, 23) everted condition, (22) non-everted condition; (19, 20, 22, 23) lateral view, (21) ventral view.

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