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Sinocatops gen. nov., an apterous genus of Cholevini (Coleoptera: Leiodidae: Cholevinae) from China, with emphasis on differences with allied *Rybinskiella* Reitter, 1906

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Abstract

A new apterous genus (*Sinocatops* **gen. nov.**) with a single new species (*S. ruzickai* **sp. nov.**) of Cholevini, is described from Sichuan Province, China. It is compared in detail to allied *Rybinskiella* Reitter, 1906 with some selected but important morphological characters to show their differences presented in a table. Color plates are presented to illustrate important morphological characters of *S. ruzickai* **sp. nov.** and examined species of *Rybinskiella.* The taxonomic state of *Rybinskiella* is also briefly disscussed.

Key words: Leiodidae, Cholevinae, Cholevini, *Sinocatops*, *Rybinskiella*, taxonomy, new genus, new species, China

摘要

本文描述了产自中国四川省的小葬甲族Cholevini一无翅新属（华脊小葬甲属*Sinocatops* **gen. nov.**）及其单一新种（鲁卡华脊小葬甲 *S. ruzickai* **sp. nov.**）。我们挑选了某些重要形态特征来详细比较该新属与近缘属雷小葬甲属*Rybinskiella* Reitter, 1906 之间的差异，并且列表对比，以示区别。本文还提供了彩色图版，以明确图示鲁卡华脊小葬甲 *S. ruzickai* **sp. nov.** 与雷小葬甲属 *Rybinskiella* 已检视种之重要形态特征，最后简要讨论了雷小葬甲属*Rybinskiella* 的属内分类学杂乱。

Introduction

The tribe Cholevini Kirby, 1837 is the second most speciose tribe in the subfamily Cholevinae of the family Leiodidae (Coleoptera), which includes 24 genera. The characters shared by all members of this tribe are the mesocoxal cavities contiguous, the male urite IX reduced to ringform, and the elytra not transversely striolate. This tribe is divided into 2 subtribes, Cholevina Kirby, 1837 (8 genera) and Catopina Chaudoir, 1845 (16 genera), based mainly on whether clypeofrontal suture present and characters on outer tibial spurs, parameres, male 1st mesotarsomere and female ventrite VIII (Szymczakowski, 1964; Newton, 1998; Perreau, 2000; Salgado *et al.*, 2008). Species of Cholevini can be found in Palaearctic, Oriental and Nearctic regions.

The loss of metathoracic wings in Cholevinae is probably a phenomenon generally correlated with subterranean or endogean life. Within the tribe Cholevini, there are several wingless groups: apterous genera *Apterocatops* Miyama, 1985 (Miyama, 1985; Harusawa, 2005), *Dzungarites* Jeannel, 1936 (Jeannel, 1936), *Rybinskiella* Reitter, 1906 (Frank, 1988; Lafer *et al.*, 2001), and most likely *Fusi* Perkovsky, 1989 (Perkovsky, 1989; original description only mentioned its elytra fused together); some species in *Cholevinus* Reitter, 1901 (Jeannel, 1936; Perkovsky, 1999); and with a few exceptions in winged genera *Catops* Paykull, 1798 (Peck & Cook, 2002), *Choleva* Latreille, 1796 (Růžička & Vávra, 2003; Bordoni, 2005) and *Nargus* Thomson, 1867 (Perreau, 1996).

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The Chinese fauna is known for stretching over the zoogeographical regions of Palaearctic and Oriental, its fauna consists of some endemic groups of Cholevini like *Dzungarites* Jeannel, 1936 and *Eunargus* Perreau, 1996. Here, we describe a new apterous genus, *Sinocatops* **gen. nov.**, of Catopina (Cholevini); it is monotypic with only species *S. ruzickai* **sp. nov.,** from Sichuan Province, China. The body shape of the new genus is similar to *Rybinskiella* Reitter, 1906, but significantly smaller. In order to compare *Sinocatops* **gen. nov.** with *Rybinskiella* on their detail morphological characters, we dissected the specimens of the single species in the subgenus *Rybinskiella* s. str. and one species in the subgenus *Sintania* Pic, 1908 (the only species recorded from China in this genus); important morphological characters were selected and listed in a table to distinguish the taxa concerned. Color plates are offered to illustrate important morphological characters of *S. ruzickai* **sp. nov.** and two examined species of *Rybinskiella*. The two examined species of *Rybinskiella* are redescribed and the taxonomic state of *Rybinskiella* is briefly disscussed.

Material and methods

Specimens were relaxed and softened in a hot saturated solution of potassium hydroxide for 4 minutes (for mounted dry specimens) or 8 minutes (for alcohol-preserved specimens), and then transferred to distilled water to rinse the residual potassium hydroxide off and stop any further bleaching. The softened specimens were moved into glycerin and dissected there to observe morphological details. After examination, the body parts were mounted on a plastic slide with Gum Arabic for future studies. Observations and measurements were performed using a Zeiss Axio Zoom.V16 motorized stereo zoom microscope (magnification up to ×270). Color photographs were taken with a Zeiss AxioCam MRc 5 and the final deep focus images were created with the stacking software Helicon Focus 5.3. The program Adobe Photoshop® CS6 was used for image post-processing. Individual labels are separated by a "/" (forward slash).

The material examined for this study is deposited in the following collections:

IZ-CAS Institute of Zoology, Chinese Academy of Sciences, Beijing, China
ISEA Institute of Systematics and Ecology of Animals, Russian Academy of Sciences, Siberian Branch, Novosibirsk, Russia

The following abbreviations are used with the measurement in millimeters (mm):

AL (antennal length): length from the antennal base to its tip.
BTW (basitarsal width): width of the widest portion of 1st protarsomere.
EBL (extended body length): summation of HL, PL, ELL and length of exposed scutellum, preventing the error introduced by exposed or retracted head.
ELL (elytral length): length from the tail end of scutellum to the elytral apex.
ELW (elytral width): width of the widest portion of two elytra closed together.
EW (eye width): width of a single compound eye in dorsal view.
HL (head length): axial length from the anterior apex of clypeus through the posterior margin of occipital carina.
HW (head width): width of the widest portion of head (usually including eyes).
PL (pronotal length): axial length of the pronotum.
PW (pronotal width): width of the widest portion of pronotum.
TW (tibial width): width of the widest portion of protibia (excluding spines along outer margin etc.).

Taxonomy

Sinocatops gen. nov.

Type species: *Sinocatops ruzickai* **sp. nov.**

Description. This new genus with sexual dimorphism: male rather narrow which is rarely seen in Cholevini, while female are wider and stout. Body size small; body shape elongate, regularly convex; dorsum continually clothed with homogeneous fine and recumbent pubescence, interspaces without microsculpture, smooth. Head distinctly wider than long; clypeofrontal suture absent. Maxillary palps with 3rd palpomere distinctly dilated; 4th feebly arched, shorter than 3rd. Labial palps with 3rd palpomere more than twice as long as 2nd. Antennae long and slender, AL just a little more than twice of HW. Pronotum subcampanulate and transverse, widest around middle; sides regularly narrowed forward from widest and weakly constricted before hind corners; hind corners rounded, protruding backward; surface without depression in each latero-basal area. Elytra tightly fused with each other; sutural striae absent; epipleura commonly narrow. Metathoracic wings absent. Tibiae with smooth outer spurs; male with basal three protarsomeres strongly expanded and 1st mesotarsomere moderately expanded. Aedeagus symmetrical, with filiform parameres reached about apical 2/5 of median lobe; endophallus without apical tooth. Female ventrite VIII with spiculum ventrale; ovipositor with minute stylus.

Distribution. China (Sichuan).

Etymology. The new genus name is derived from the Latin prefix "*sino*-", which means "Chinese" and "*catops*", a genus name in the same subtribe Catopina. The gender is masculine.

Diagnosis. *Sinocatops* undoubtedly belongs to the subtribe Catopina Chaudoir, 1845 by the combination of following characters: clypeofrontal suture absent, outer tibial spurs smooth, parameres filiform, male 1st mesotarsomere moderately expanded and female spiculum ventrale present on ventrite VIII. Within this subtribe, as mentioned in the Introduction, five known genera have the phenomenon of loss of metathoracic wings: *Apterocatops* Miyama, 1985, *Catops* Paykull, 1798, *Cholevinus* Reitter, 1901, *Dzungarites* Jeannel, 1936 and *Rybinskiella* Reitter, 1906. The new genus can be distinguished from all of them by sexual dimorphism (male rather narrow; female wider and stout); body size small (EBL: 3.20 mm); pronotum subcampanulate and transverse, widest around middle, sides weakly constricted before hind corners; elytra without sutural striae. However, *Sinocatop* looks quite like a mini version of *Rybinskiella*, its body shape bears close resemblance to some species of the latter genus; common characters also include subcampanulate pronotum, fused elytra and loss of metathoracic wings. We compared them in detail with some selected but important morphological characters to show the differences (Table 1), from which we can see the new genus has following characters distinctly different from two *Rybinskiella* species at generic level: EBL considerably smaller; whole dorsum without microsculpture, smooth (×270); head distinctly wider than long, ratio approximate 1.30; maxillary palps with 3rd palpomere distinctly dilated; labial palps with 3rd palpomere more than twice as long as 2nd; AL just a little more than twice of HW; pronotum without depression in each latero-basal area; metendosternite with length of stalk much shorter than width of furcal arm; elytral epipleura commonly narrow; endophallus without apical tooth.

***Sinocatops ruzickai* sp. nov.**

(Figs. 1A, B; 2A, B; 3A–F; 4A; 5A; 6A–C; 7A; 8A; 9A; 10A–K; 11A–I)

Type material. Holotype: CHINA, Sichuan: ♂, Wolong, Wuyipeng, Erdaoping, 2945–3055 m, virgin fir forest, pitfall trap, 30.VII–15.VIII.2004, Xiao-Dong Yu leg. (IZ-CAS). **Paratypes:** 5♂♂, 8♀♀, same data as holotype (IZ-CAS); 1♀, same data as holotype except: secondary birch forest, 29.IV–2.V.2004 (IZ-CAS); 1♂, same data as holotype except: secondary birch forest, 30.V–2.VI.2004 (IZ-CAS); 2♂♂, 10♀♀, same data as holotype except: secondary birch forest, 15–30.VI.2004 (IZ-CAS); 1♂, 1♀, same data as previous except: forest edge of virgin fir (IZ-CAS); 2♀♀, same data as holotype except: 2535 m, mixed forest, 29.VI–14.VII.2004 (IZ-CAS); 3♂♂, 14♀♀, same data as holotype except: 2580–3055 m, secondary birch forest, 29.VI–15.VII.2004 (IZ-CAS); 4♀♀, same data as previous except: virgin fir forest (IZ-CAS); 1♀, same data as holotype except: forest edge of virgin fir, 15–30.VII.2004 (IZ-CAS); 1♀, same data as previous except: secondary birch forest (IZ-CAS); 1♂, same data as holotype except: 2600–2650 m, *Rhododendron* forest, 14–29.VIII.2004 (IZ-CAS); 1♀, same data as previous except: mixed forest (IZ-CAS); 2♀♀, same data as holotype except: 2710–3045 m, 14–30.VIII.2004 (IZ-CAS); 2♀♀, same data as holotype except: 30.VIII–15.IX.2004 (IZ-CAS).

Description. *Male*. EBL: 3.20 mm. Length of different body parts: HL : AL : PL : ELL = 0.54 : 1.52 : 0.82 : 1.75 mm; width: HW : EW : PW : ELW = 0.71 : 0.07 : 1.15 : 1.21 mm. Proportion of antennomeres from base to tip in μm (length × width): 166 × 72, 145 × 61, 134 × 64, 123 × 63, 112 × 69, 104 × 75, 127 × 90, 84 × 80, 112 × 105, 106 × 107, 186 × 98. (Measurements are mean values based on 5 specimens).

TABLE 1. Selected important morphological differences between *Sinocatops* **gen. nov.** and *Rybinskiella* Reitter, 1906.

		***Sinocatops* gen. nov.**	***Rybinskiella* Reitter, 1906**	
		***S. ruzickai* sp. nov.**	***R.* (*Sintania*) *bodoana* Reitter, 1913**	***R.* (s. str.) *magnifica* (Rybiński, 1902)**
♂	**Body length (mm)**	< 3.50 (Fig. 2A)	> 5.50 (Fig. 2E)	> 5.50 (Fig. 2C)
	Microsculpture (×270)	head: smooth; pronotum: smooth; elytra: smooth	head: microreticulate; pronotum: microreticulate; elytra: with microtrichiae, aligning into transverse line	head: microreticulate; pronotum: smooth; elytra: smooth
	Head	HW / HL = 1.31.	HW / HL = 1.14.	HW / HL = 1.14.
	Maxillary palps	length / width of 3rd = 1.78; 4th feebly arched, length of 4th / 3rd = 0.77 (Figs. 3D, E)	length / width of 3rd = 2.46; 4th conoid, not arched, length of 4th / 3rd = 0.64 (Figs. 3J, K)	length / width of 3rd = 2.14; 4th feebly arched, length of 4th / 3rd = 1.06 (Figs. 3P, Q)
	Labial palps	length of 3rd / 2nd = 2.29 (Fig. 3F)	length of 3rd / 2nd = 0.96 (Fig. 3L)	length of 3rd / 2nd = 1.78 (Fig. 3R)
	Compound eye	built from ca. 62–66 ommatidia, EW / HW = 0.10	built from ca. 23–27 ommatidia, EW / HW = 0.05	built from ca. 57–62 ommatidia, EW / HW = 0.07
	Antennae	AL / HW = 2.13	AL / HW = 3.27	AL / HW = 2.55
	Cervical sclerites	length / width = 1.79 (Fig. 4A)	length / width = 2.11 (Fig. 4B)	length / width = 1.80 (Fig. 4C)
	Pronotum	PW / PL = 1.39; without depression in each latero-basal area (Fig. 10B)	PW / PL = 1.35; with distinct depression in each latero-basal area (Fig. 12B)	PW / PL = 1.43; with shallow depression in each latero-basal area (Fig. 15B)
	Scutellum and metatergal apparatus	area of scutellum / metatergal apparatus = 0.30 (Fig. 5A)	area of scutellum / metatergal apparatus = 0.40 (Fig. 5B)	area of scutellum / metatergal apparatus = 0.25 (Fig. 5C)
	Metendosternite	length of stalk / width of furcal arm = 0.70; stalk narrow; anterior arm unconspicuous (Figs. 6A–C)	length of stalk / width of furcal arm = 0.91; stalk narrow; anterior arm unconspicuous (Figs. 6D–F)	length of stalk / width of furcal arm = 0.84; stalk wide; anterior arm well developed (Figs. 6G–I)
	Protarsi	TW / BTW = 1.12	TW / BTW = 0.96	TW / BTW = 1.30
	Mesotarsi	1st mesotarsomere moderately expanded (Fig. 7A)	1st mesotarsomere strongly expanded (Fig. 7B)	1st mesotarsomere moderately expanded (Fig. 7C)
	Elytra	widest at about basal 2/7; sutural striae absent; epipleura commonly narrow; homogeneous type of pubescence (Fig. 8A)	widest at about basal 1/3; sutural striae absent; epipleura rather wide; double type of pubescence (Fig. 8B)	widest at about basal 2/5; sutural striae present; epipleura rather wide; homogeneous type of pubescence (Fig. 8C)

……continued on the next page

TABLE 1. (Continued)

		***Sinocatops* gen. nov.**	***Rybinskiella* Reitter, 1906**	
		***S. ruzickai* sp. nov.**	***R.* (*Sintania*) *bodoana* Reitter, 1913**	***R.* (s. str.) *magnifica* (Rybiński, 1902)**
	Meso- & metasterna	normally thick (Fig. 9A)	much thinner (Fig. 9B)	normally thick (Fig. 9C)
	Abdominal ventrite VIII	with middle indentation at anterior edge, while elongated posteriorly and distinctly notched at posterior edge (Fig. 10I)	without middle indentation at anterior edge, while protruded posteriorly in middle of posterior edge (Fig. 12I).	with middle indentation at anterior edge, and narrowly emarginate at middle of posterior edge (Fig. 15I)
	Median lobe	long and moderately wide (length / width = 5.74), almost parallel below preapical part which inconspicuously expanded, then narrowed apically and terminated to a shortly round knob in dorsal view (Fig. 11A)	extremely long and slender (length / width = 10.78), slightly undulate, gradually narrowing apically from preapical part and terminated to a widely subrounded knob in dorsal view (Fig. 13A)	large and wide (length / width = 5.25), slightly undulate and subequal above base, apex much wide and gently emarginate in dorsal view (Fig. 16A)
	Internal sac	with a cluster of spines at median of apex, following two spine rows convergent apically and two rows of phanerae, and a pair of curved large teeth in basal region (Figs. 11A–C)	with a long acuminated tooth at apex, a cluster of phanerae in middle region, and a pair of teeth in basal region (Figs. 13A–C)	with a huge fan-like tooth at apex, a pair of spine clusters in middle region, and abundant toothlets in basal region (Figs. 16A–C)
♀	**Ventrite VII**	with a small subtriangular tooth at middle of posterior edge (Fig. 11D)	almost simply emarginate at posterior edge (Fig. 14A)	slightly emarginate at posterior edge (Fig. 17A)
	Tergite VIII	without well-defined desclerotized area (Fig. 11E)	with desclerotized area like the shape of an upside-down Chinese character "工" (Fig. 14B)	desclerotized medioapically and laterally (Fig. 17B)
	Ventrite VIII	shallowly emarginate at posterior edge, and spiculum ventrale relatively narrow (Fig. 11F)	gently curved at posterior edge, with spiculum ventrale moderately wide (Fig. 14C)	regularly rounded at posterior edge, spiculum ventrale rather wide (Fig. 17C)
	Tergite IX	with four strong setae and numerous other finer setae posteriorly (Fig. 11G)	with numerous setae posteriorly (Fig. 14D)	with numerous setae posteriorly (Fig. 17D)
	Ventral sclerite	slender and ligulate, without sensillae (Fig. 11I)	subtriangular, with deep Ω-shaped emargination at posterior edge, a few small sensillae located on posterior corners near emargination, small asperities present in posterior part (Fig. 14E)	broad and shovel-like, regularly rounded at posterior edge, without sensillae (Fig. 17F)
	Stylus	minute (Figs. 11G, H)	long (Fig. 14D)	minute (Figs. 17D, E)

Habitus (Fig. 1A; 2A) elongate and rather narrow, regularly convex and sublustrous; well pigmented: mostly dark brown; mouthparts, basal five antennomeres, protarsi, apical parts of meso- and metatarsi, and elytral apex somewhat paler. Dorsum continually clothed with fine, recumbent and sallow pubescence.

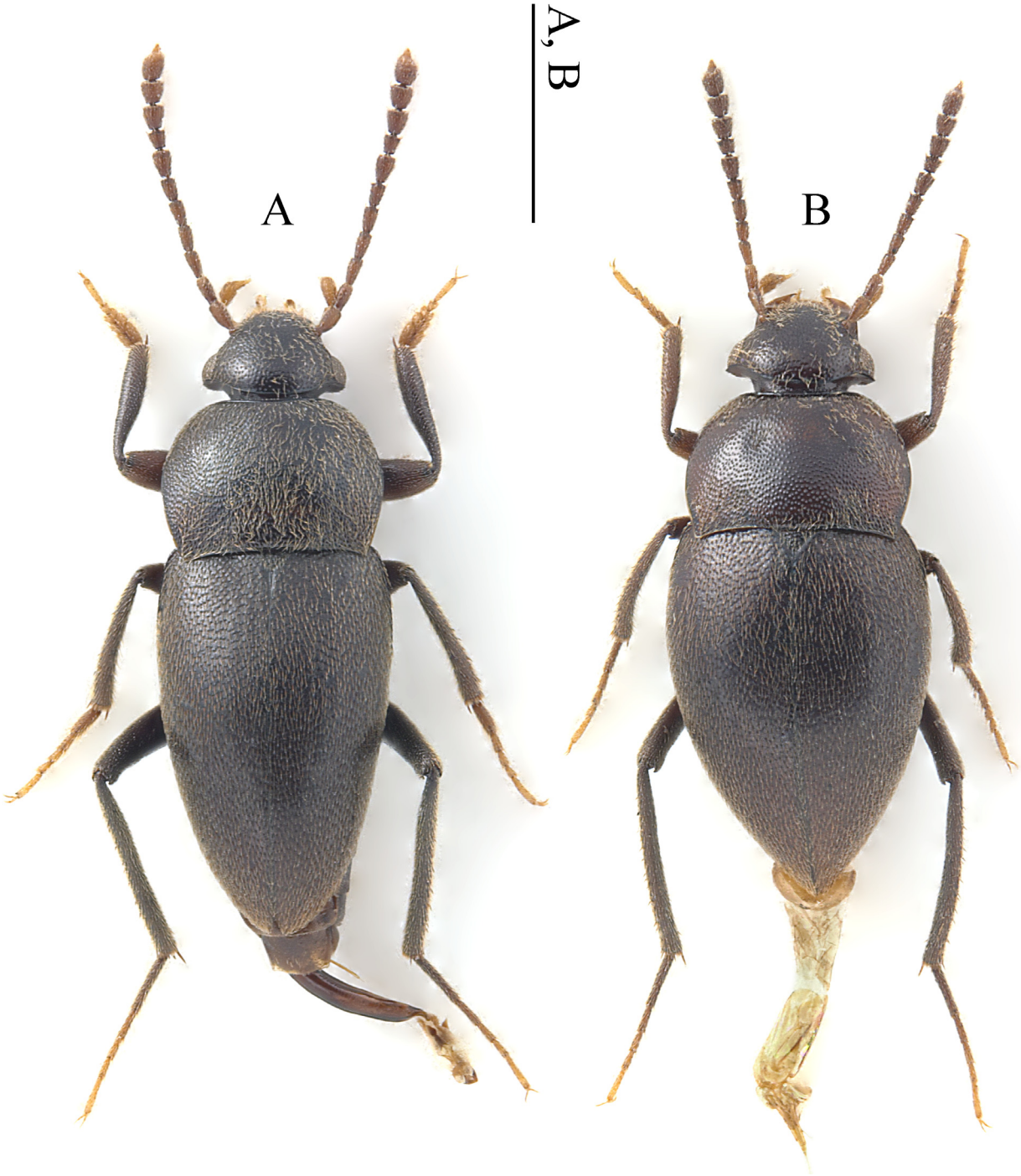

FIGURE 1. ***Sinocatops ruzickai*** **sp. nov.:** habitus (dorsal view): **A**, ♂; **B**, ♀. Scales: 1 mm.

Head wider than long, HW/HL = 1.31. Surface covered with large, coarse and sparse punctures, separated about 2.0–4.0 times of their diameter, interspaces smooth. Clypeofrontal suture absent. Clypeus with straight anterior margin. Compound eye built from ca. 62–66 ommatidia, EW/HW = 0.10. Antennae (Fig. 10A) long and slender, AL/HW = 2.13; all antennomeres longer than wide at different levels, except 8th and 10th almost as long as wide; 3rd slightly shorter than 2nd; 11th longest, elongated pear-shape. Cervical sclerite with length/width = 1.79 in medial view (Fig. 4A).

FIGURE 2. Habitus and size (dorsal view). *Sinocatops ruzickai* **sp. nov.**: **A**, ♂; **B**, ♀; *Rybinskiella* (s. str.) *magnifica* (Rybiński, 1902): **C**, ♂; **D**, ♀; *Rybinskiella* (*Sintania*) *bodoana* Reitter, 1913: **E**, ♂; **F**, ♀. Scales: 1 mm.

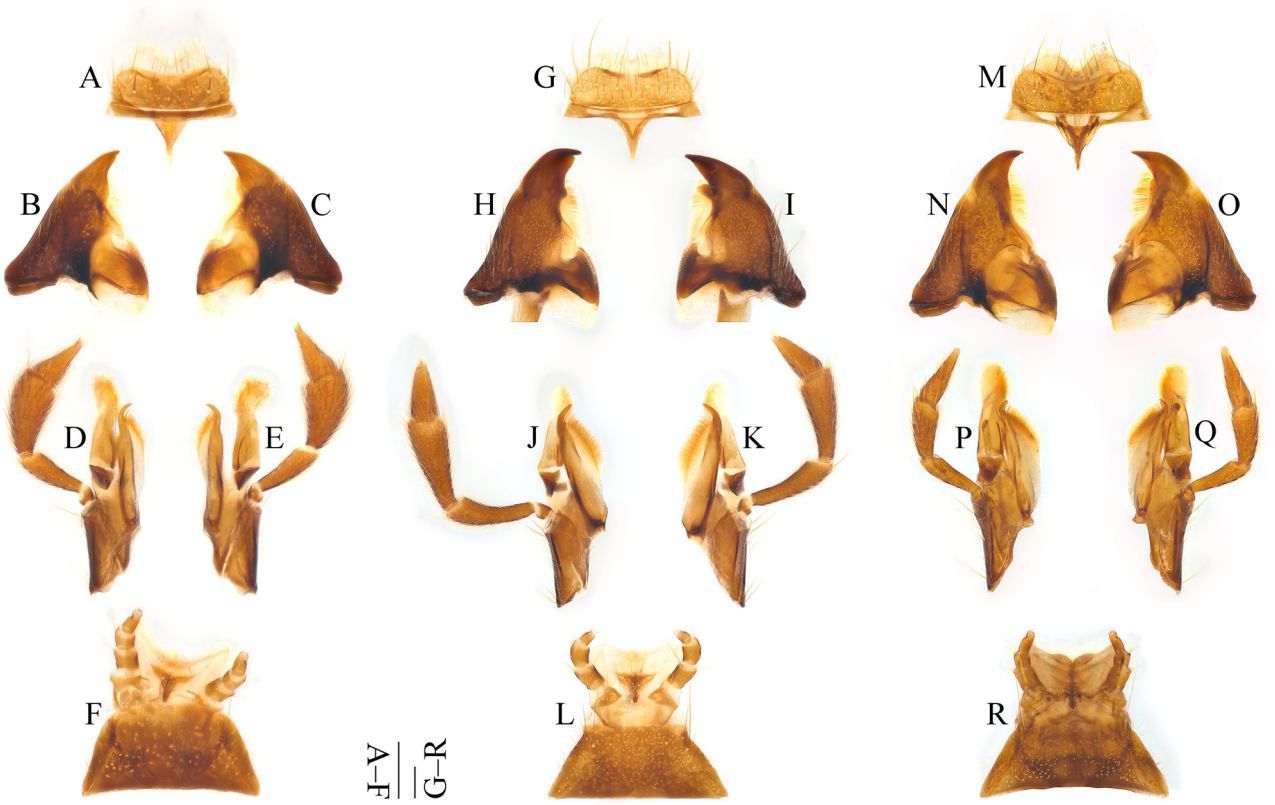

FIGURE 3. Mouthparts ♂. A–F: *Sinocatops ruzickai* **sp. nov.**; **G–L**: *Rybinskiella* (*Sintania*) *bodoana* Reitter, 1913; **M–R**: *Rybinskiella* (s. str.) *magnifica* (Rybiński, 1902). **A**, **G**, **M**, labrum (dorsal view); **B**, **H**, **N**, left mandible (dorsal view); **C**, **I**, **O**, right mandible (dorsal view); **D**, **J**, **P**, left maxilla (dorsal view); **E**, **K**, **Q**, right maxilla (dorsal view); **F**, **L**, **R**, labium (ventral view). Scales: 0.1 mm.

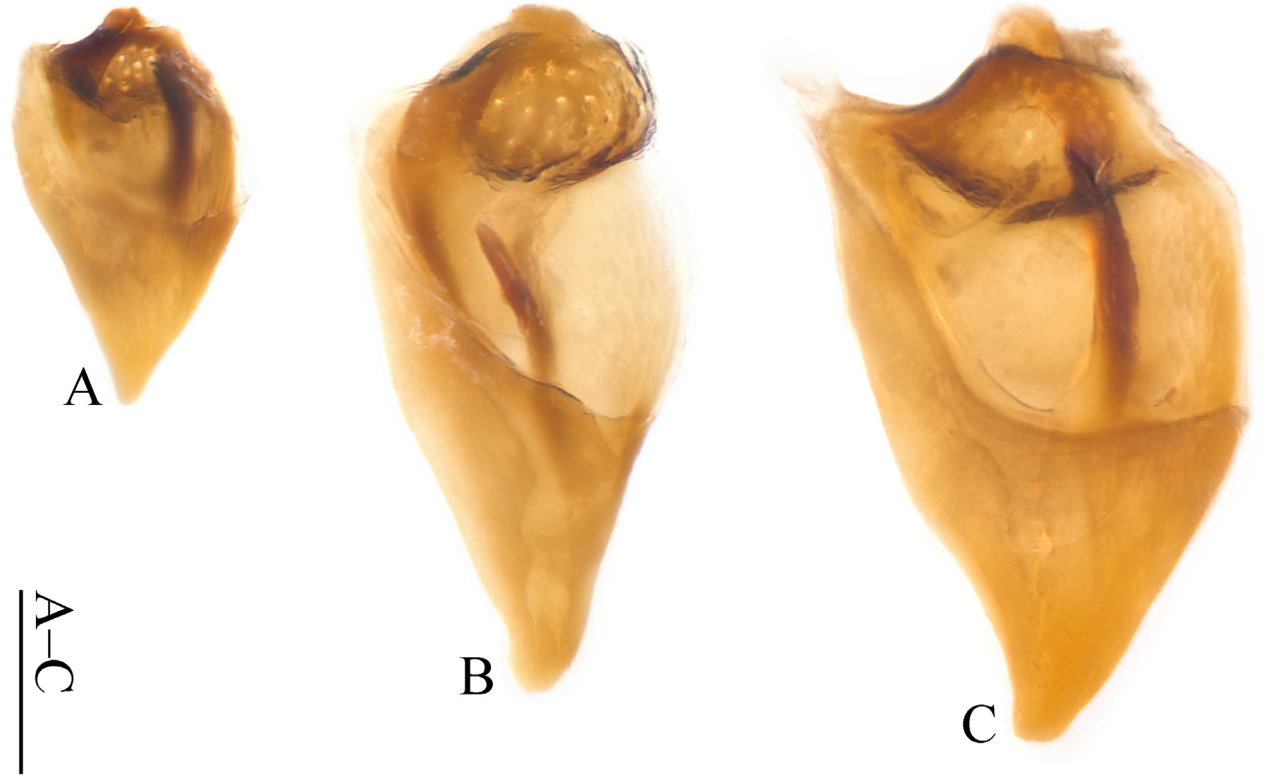

FIGURE 4. Cervical sclerites ♂ (medial view). A, *Sinocatops ruzickai* **sp. nov.**; **B**, *Rybinskiella* (*Sintania*) *bodoana* Reitter, 1913; **C**, *Rybinskiella* (s. str.) *magnifica* (Rybiński, 1902). Scales: 0.1 mm.

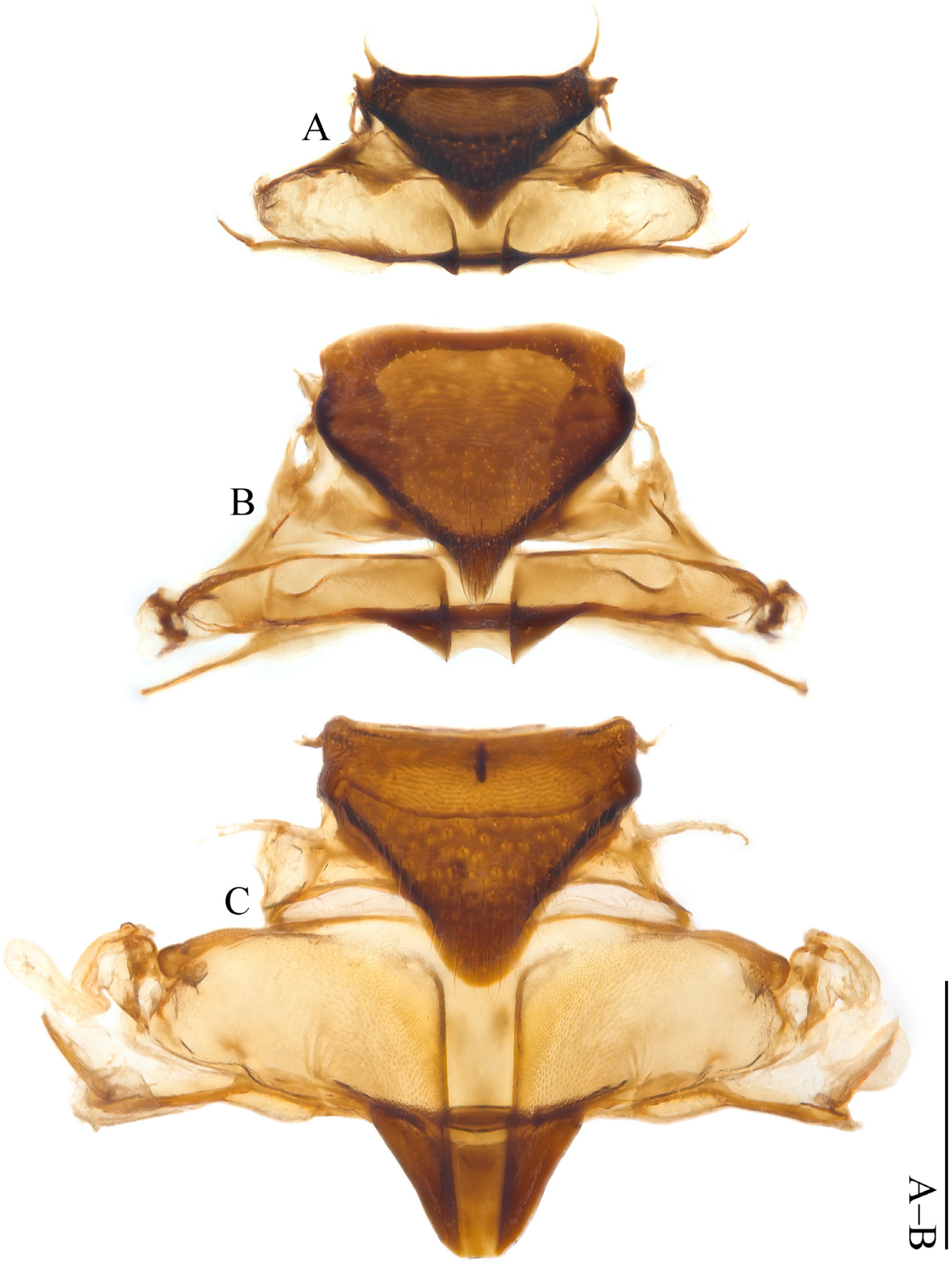

FIGURE 5. Scutelli and metatergal apparatus ♂ (dorsal view). A, *Sinocatops ruzickai* **sp. nov.**; **B**, *Rybinskiella* (*Sintania*) *bodoana* Reitter, 1913; **C**, *Rybinskiella* (s. str.) *magnifica* (Rybiński, 1902). Scales: 0.5 mm.

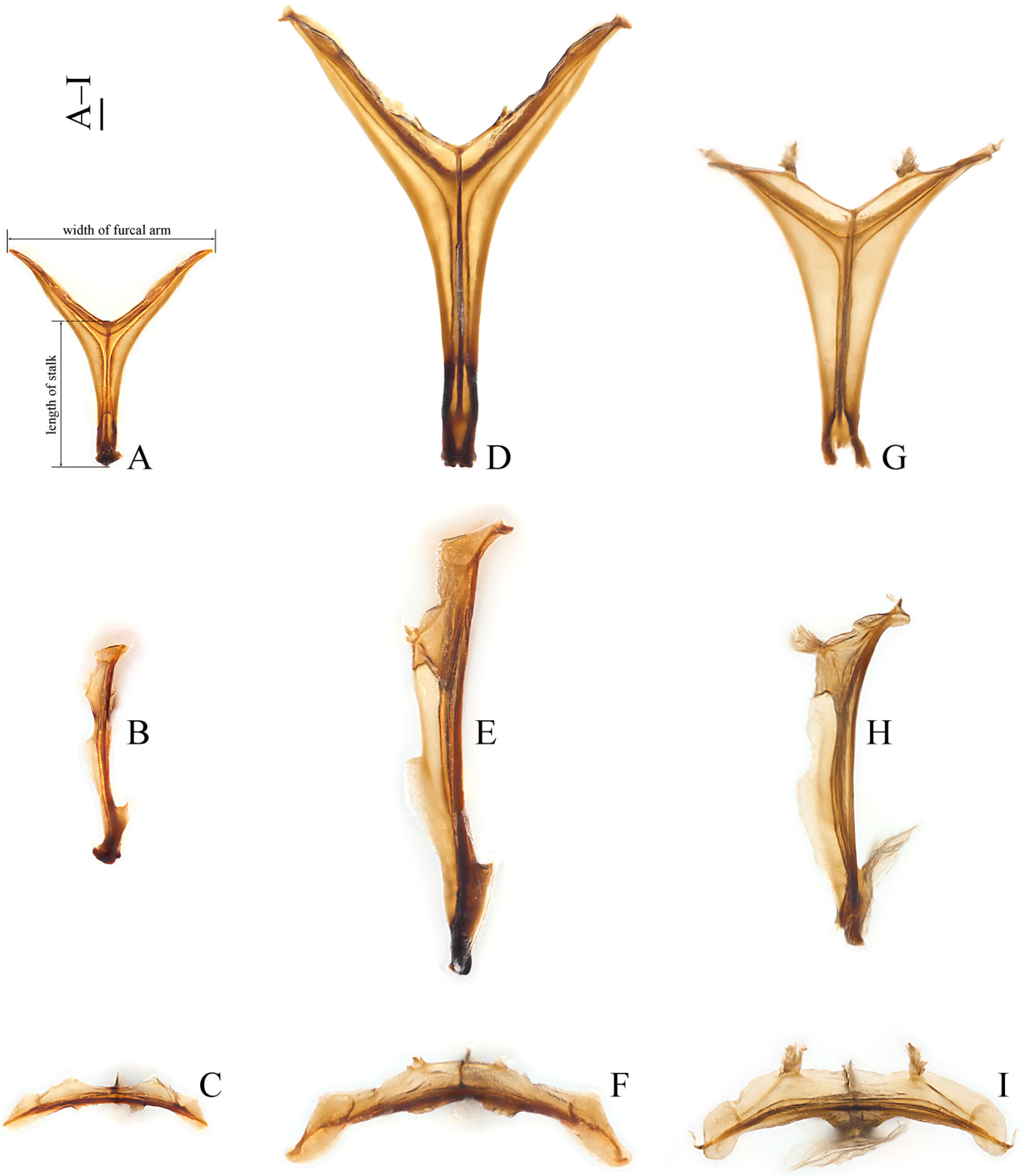

FIGURE 6. Metendosternites ♂. A–C: *Sinocatops ruzickai* **sp. nov.**; **D–F**: *Rybinskiella* (*Sintania*) *bodoana* Reitter, 1913; **G–I**: *Rybinskiella* (s. str.) *magnifica* (Rybiński, 1902). **A**, **D**, **G**, (dorsal view); **B**, **E**, **H**, (lateral view); **C**, **F**, **I**, (frontal view). Scales: 0.1 mm.

Pronotum (Fig. 10B) subcampanulate and transverse, widest around middle, PW/PL = 1.39. Sides regularly narrowed forward from widest and weakly constricted before hind corners. Hind corners rounded, protruding backward. Posterior margin bisinuate, emarginate behind hind corners. Surface covered with fine punctures, interspaces smooth, without depression in each latero-basal area.

Elytra oval, tightly fused with each other (can be separated with some strength), widest at about basal 2/7, ELL/EW = 1.44. Sides regularly curved, evenly narrowing from widest to apices; apices narrowly rounded (Fig. 10G). Sutural striae absent. Surface covered with fine punctures, interspaces smooth. Metathoracic wings absent.

Prolegs slender, with basal three protarsomeres (Fig. 10C) strongly expanded: TW/BTW = 1.12. Protibiae (Fig. 10E) simply and gradually expanded towards apex. Profemora without tubercle on inner side. Mesotibiae with inner margin gently sinuate, 1st mesotarsomere (Fig. 7A) moderately expanded. Metatibiae straight.

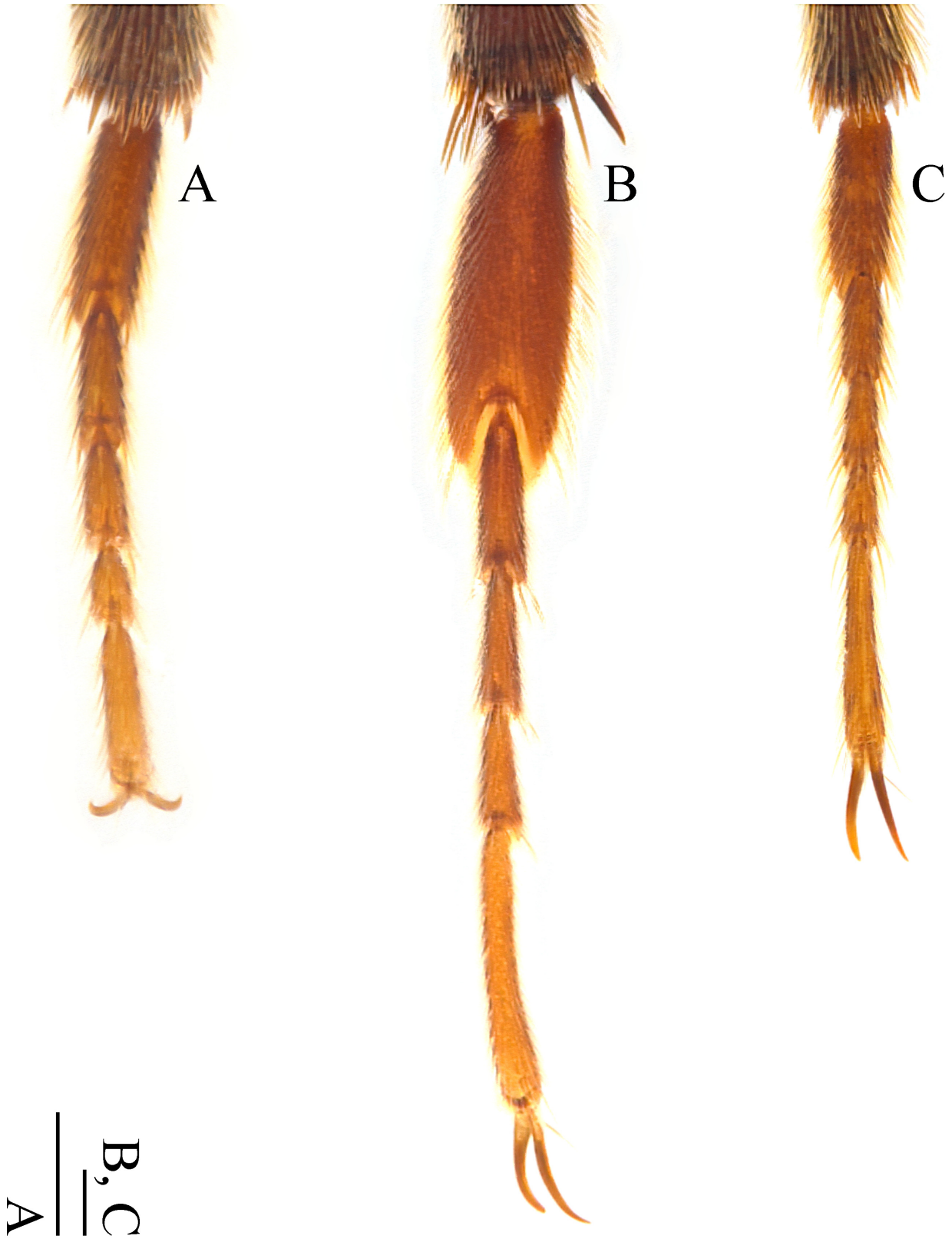

FIGURE 7. Mesotarsi ♂ (dorsal view). A, *Sinocatops ruzickai* **sp. nov.**; **B**, *Rybinskiella* (*Sintania*) *bodoana* Reitter, 1913; **C**, *Rybinskiella* (s. str.) *magnifica* (Rybiński, 1902). Scales: 0.1 mm.

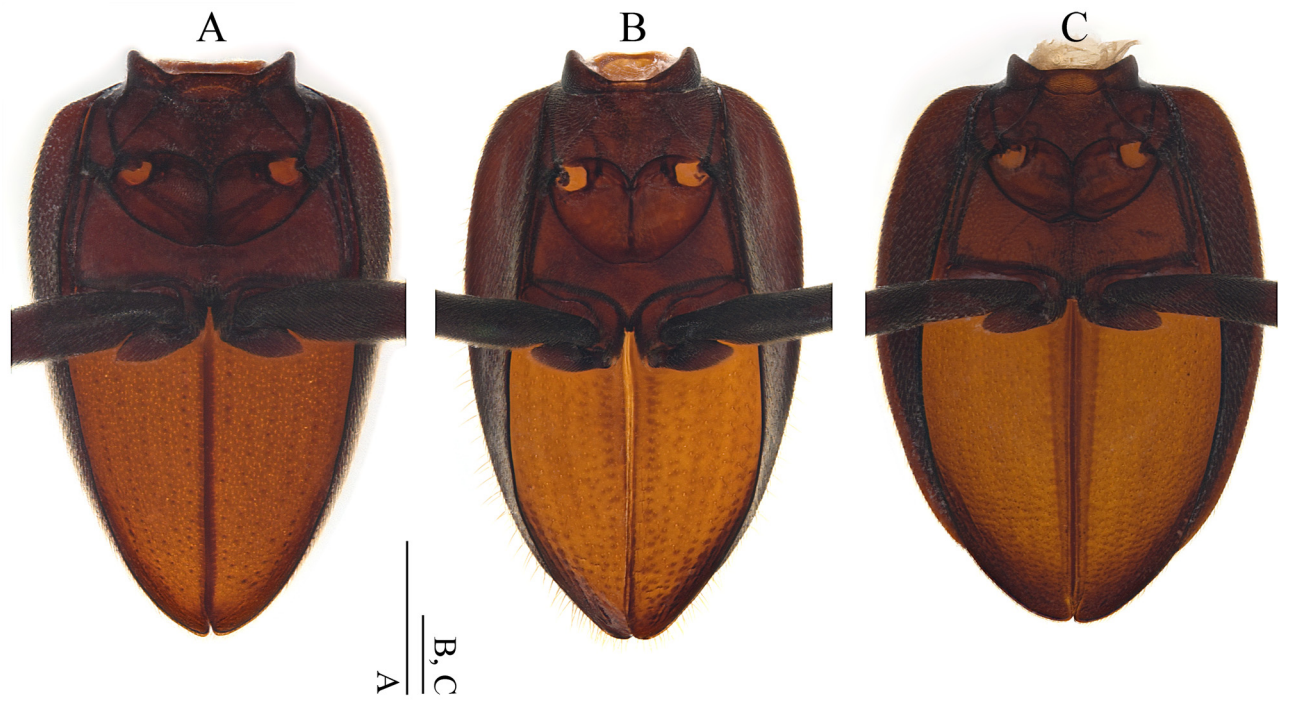

FIGURE 8. Elytral epipleura ♂ (ventral view). A, *Sinocatops ruzickai* **sp. nov.**; **B**, *Rybinskiella* (*Sintania*) *bodoana* Reitter, 1913; **C**, *Rybinskiella* (s. str.) *magnifica* (Rybiński, 1902). Scales: 0.5 mm.

FIGURE 9. Meso- & metasterna ♂ (lateroventral view). A, *Sinocatops ruzickai* **sp. nov.**; **B**, *Rybinskiella* (*Sintania*) *bodoana* Reitter, 1913; **C**, *Rybinskiella* (s. str.) *magnifica* (Rybiński, 1902). Scales: 0.5 mm.

Abdominal ventrite VIII (Fig. 10I) with middle indentation at anterior edge, while elongated posteriorly and distinctly notched at posterior edge. Genital segment (Fig. 10J) with short spiculum gastrale, not expanded dorso-ventrally (Fig. 10K); tergite IX rounded ventro-apically.

Aedeagus (Fig. 11A, B) with median lobe long and moderately wide (length/width = 5.74), almost parallel below preapical part which inconspicuously expanded, then narrowed apically and terminated to a shortly round knob in dorsal view; parameres filiform, reached about apical 2/5 of median lobe, each with two apical setae; basal

lama short; ventral operculum with two lobes rounded at apical edge. In lateral view, median lobe thick, substraight above curved base and abruptly flatted at apex (Fig. 11C). Internal sac (Fig. 11A–C) with a cluster of spines at median of apex, following two spine rows convergent apically and two rows of phanerae, and a pair of curved large teeth in basal region.

Female. Wider and chubbier than male in general appearance (Fig. 1B; 2B), and also can be distinguished from following characteristics: pro- & mesotarsi simply linear (Fig. 10D); protibiae (Fig. 10F) narrower; elytral apices (Fig. 10H) acuminated; ventrite VII (Fig. 11D) with a small subtriangular tooth at middle of posterior edge; tergite VIII (Fig. 11E) subtrapezoidal, sides gently curved, without well-defined desclerotized area; ventrite VIII (Fig. 11F) shallowly emarginate at posterior edge, and spiculum ventrale relatively narrow; tergite IX (Fig. 11G) rounded at posterior edge, with four strong setae and numerous other finer setae posteriorly; ventral sclerite (Fig. 11I) slender and ligulate, without sensillae; valvifer (Fig. 11G, H) with 1 lateral seta; coxite (Fig. 11G, H) with 3 subapical, 1 lateral and 1 basolateral setae; stylus (Fig. 11G, H) minute, cylindrical, with 1 long seta.

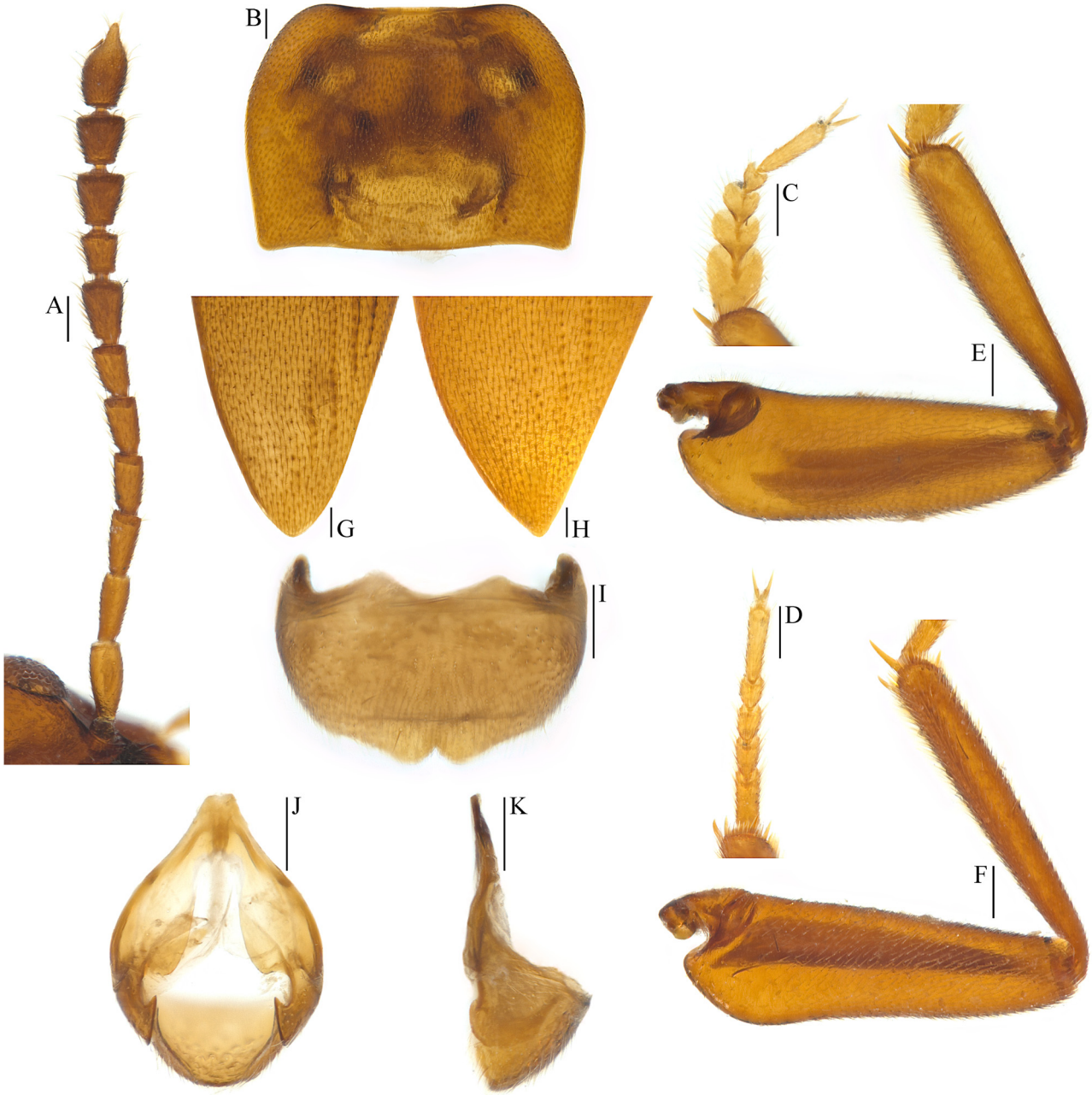

FIGURE 10. ***Sinocatops ruzickai*** **sp. nov.: A**, antenna ♂ (dorsal view); **B**, pronotum ♂ (dorsal view); **C**, protarsus ♂ (dorsal view); **D**, protarsus ♀ (dorsal view); **E**, protibia and profemur ♂ (dorsal view); **F**, protibia and profemur ♀ (dorsal view); **G**, elytral apex ♂ (dorsoapical view); **H**, elytral apex ♀ (dorsoapical view); **I**, ventrite VIII ♂ (ventral view); **J**, genital segment ♂ (ventral view); **K**, genital segment ♂ (lateral view). Scales: 0.1 mm.

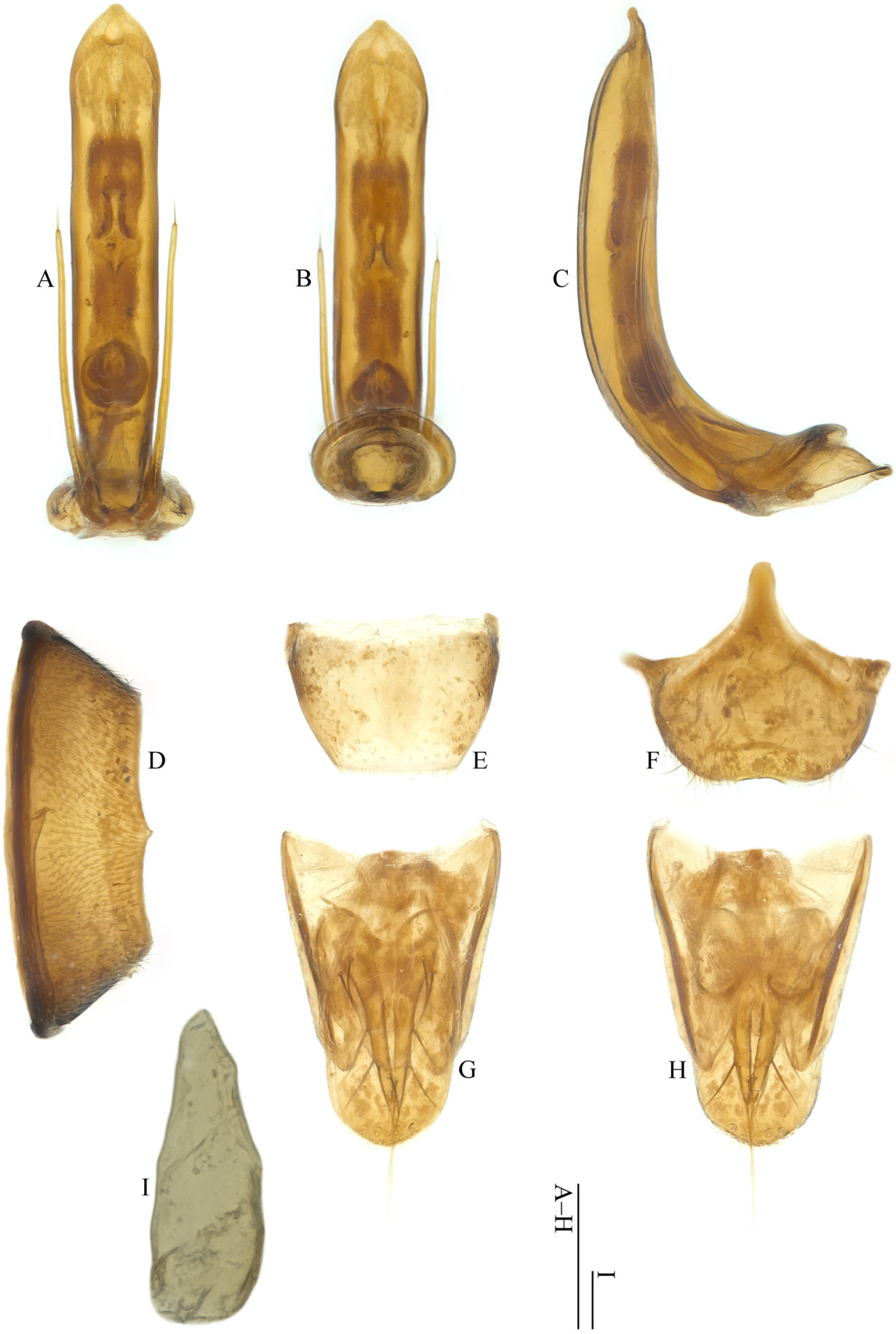

FIGURE 11. ***Sinocatops ruzickai*** **sp. nov.: A**, aedeagus (dorsal view); **B**, aedeagus (ventral view); **C**, aedeagus (lateral view); **D**, ventrite VII ♀ (ventral view); **E**, tergite VIII ♀ (dorsal view); **F**, ventrite VIII ♀ (ventral view); **G**, genital segment and ovipositor (dorsal view); **H**, genital segment and ovipositor (ventral view); **I**, ventral sclerite (ventral view). Scales: 0.1 mm.

Etymology. The specific epithet is dedicated to Dr. Jan Růžička (Czech University of Life Sciences, Prague, Czech Republic), a famous specialist on Agyrtidae, Silphidae and Leiodidae, for his kind help to our study.

Distribution. China (Sichuan).

Genus *Rybinskiella* Reitter, 1906

Reitter, 1906: 243 (species included: *magnifica*); Reitter, 1907: 333 (complementary descriptions); Jeannel, 1936: 290 (characters; key to species); Szymczakowski, 1956: 10 (status change); Frank, 1988: 259 (revision; status change); Perreau, 2000: 146 (world catalog; 11 species); Lafer *et al.*, 2001: 457 (brief review of subgenera; distributional considerations); Perreau, 2004: 141 (Palaearctic catalog; distribution); Perreau, 2015: 191 (Palaearctic catalog; distribution).

Type species: *Choleva magnifica* Rybiński, 1902a, by monotypy.

Note: This genus includes 12 species and it can be divided into 3 subgenera: *Rybinskiella* s. str. (1 sp.), *Eurybinskiella* Iablokoff-Khnzorian, 1970 (3 spp.) and *Sintania* Pic, 1908 (8 spp.). Only one species of this genus, *R.* (*Sintania*) *bodoana* Reitter, 1913, is recorded from China.

Subgenus *Sintania* Pic, 1908

Pic, 1908: 59 (*Sintania*; species included: *himalayica*, *kashmirensis*); Pic, 1914: 318 (*Rybinskiella* (*Sintania*); status change); Jeannel 1922: 47 (*Sintania*; status change; synonymy with *Rybinskiella*); Jeannel, 1936: 292 (*Rybinskiella* (*Sintania*); key to species); Szymczakowski, 1970: 278 (*Rybinskiella* (*Sintania*); status change); Frank, 1988: 262 (*Rybinskiella* (*Sintania*); characters); Perreau, 2000: 146 (*Rybinskiella* (*Sintania*); world catalog; 9 species); Perreau, 2004: 141 (*Rybinskiella* (*Sintania*); Palaearctic catalog; distribution); Perreau, 2015: 192 (*Rybinskiella* (*Sintania*); Palaearctic catalog; distribution).

Type species: *Sintania himalayica* Pic, 1908, by subsequent designation by Jeannel (1922: 47).

Rybinskiella (*Sintania*) *bodoana* Reitter, 1913

(Figs. 2E, F; 3G–L; 4B; 5B; 6D–F; 7B; 8B; 9B; 12A–K; 13A–C; 14A–E)

Reitter, 1913: 668 (*Rybinskiella*; type locality: Chinesich-Turkestan: Thian-Schan); Hach, 1928: 207 (*Rybinskiella*; catalog); Jeannel, 1936: 294 (*Rybinskiella* (*Sintania*); key to species); Frank, 1988: 267 (*Rybinskiella*; complementary description; distribution); Růžička, 1994: 7 (*Rybinskiella*; complementary description; distribution); Perreau, 2000: 146 (*Rybinskiella* (*Sintania*); in catalog); Perreau, 2004: 141 (*Rybinskiella* (*Sintania*); in catalog; distribution); Perreau, 2015: 192 (*Rybinskiella* (*Sintania*); in catalog; distribution).

Material examined. CHINA, Xinjiang: 1♂, 1♀, Narat Mt. R., Bodon Valley, alp. meadows, h = 3000–3240 M, 43°01'09–47"N 83°10'21–25"E, 25.07.2014, I. I. Kabak leg. / Rybinskiella bodoana Reitter, 1913; V. Zinchenko det. 2014 (ISEA).

Redescription. *Male*. EBL: 5.71 mm. Length of different body parts: HL : AL : PL : ELL = 0.93 : 3.45 : 1.23 : 3.28 mm; width: HW : EW : PW : ELW = 1.05 : 0.05 : 1.66 : 2.30 mm. Proportion of antennomeres from base to tip in μm (length × width): 227 × 106, 276 × 99, 355 × 105, 320 × 105, 277 × 105, 294 × 110, 336 × 132, 272 × 98, 271 × 132, 248 × 147, 368 × 135.

Habitus (Fig. 2E) elongate, evenly convex and sublustrous; well pigmented: mostly blackish brown; mouthparts, apical half of ultimate antennomere, and tarsi somewhat paler. Dorsum continually clothed with short, recumbent and sallow pubescence; elytra intermixed with long, erect hairs.

Head only slightly wider than long, HW/HL = 1.14. Surface covered with large, coarse and sparse punctures, separated about 2.0–3.0 times of their diameter, interspaces microreticulate. Clypeofrontal suture absent. Clypeus with gently emarginate anterior margin. Compound eye built from ca. 23–27 ommatidia, EW/HW = 0.05. Antennae (Fig. 12A) very long and slender, AL/HW = 3.27; all antennomeres distinctly longer than wide; length of $3^{rd}/2^{nd}$ = 1.29; 11^{th} longest, narrowly pear-shape. Cervical sclerite with length/width = 2.11 in medial view (Fig. 4B).

FIGURE 12. ***Rybinskiella*** **(*Sintania*)** ***bodoana*** **Reitter, 1913: A**, antenna ♂ (dorsal view); **B**, pronotum ♂ (dorsal view); **C**, protarsus ♂ (dorsal view); **D**, protarsus ♀ (dorsal view); **E**, protibia and profemur ♂ (dorsal view); **F**, protibia and profemur ♀ (dorsal view); **G**, elytral apex ♂ (dorsoapical view); **H**, elytral apex ♀ (dorsoapical view); **I**, ventrite VIII ♂ (ventral view); **J**, genital segment ♂ (ventral view); **K**, genital segment ♂ (lateral view). Scales: 0.1 mm.

Pronotum (Fig. 12B) subcampanulate and not much transverse, widest around middle, PW/PL = 1.35. Sides regularly narrowed forward from widest and gently constricted before hind corners. Hind corners rounded, protruding backward. Posterior margin slightly bisinuate, emarginate behind hind corners. Surface covered with fine punctures, interspaces transversely microreticulate, with distinct depression in each latero-basal area.

Elytra oval, incompletely fused with each other, widest at about basal 1/3, ELL/EW = 1.42. Sides regularly curved, evenly narrowing from widest to apex; apices rounded (Fig. 12G). Sutural striae absent. Surface covered with fine punctures, interspace with microtrichiae, aligning into transverse line. Metathoracic wings absent.

Prolegs slender, with basal three protarsomeres (Fig. 12C) strongly expanded: TW/BTW = 0.96. Protibiae (Fig. 12E) expanded inward in middle part, without visible outer spines. Profemora without tubercle on inner side. Mesotibiae very slightly curved, 1st mesotarsomere (Fig. 7B) strongly expanded. Metatibiae very slightly curved.

FIGURE 13. ***Rybinskiella* (*Sintania*) *bodoana* Reitter, 1913** ♂**: A**, aedeagus (dorsal view); **B**, aedeagus (ventral view); **C**, aedeagus (lateral view). Scales: 0.1 mm.

Abdominal ventrite VIII (Fig. 12I) without middle indentation at anterior edge, while protruded posteriorly in middle of posterior edge. Genital segment (Fig. 12J) with spiculum gastrale slender and expanded at apex, and weakly expanded and deflexed dorso-ventrally (Fig. 12K); tergite IX rounded ventro-apically.

Aedeagus (Fig. 13A, B) with median lobe extremely long and slender (length/width = 10.78), slightly undulate, gradually narrowing apically from preapical part and terminated to a widely subrounded knob in dorsal view; parameres filiform, reached about apical 1/3 of median lobe, each with two apical setae; basal lama short; ventral operculum with two narrow lobes, each tapered towards apex and gently incurved. In lateral view, median lobe almost straight above curved base, thickened in middle part and flatted in apical part, apex slightly dorsally

upturned (Fig. 13C). Internal sac (Fig. 13A–C) with a long acuminated tooth at apex, a cluster of phanerae in middle region, and a pair of teeth in basal region.

Female. Stouter and duller than male in general appearance (Fig. 2F), and also can be distinguished by the following characteristics: pro- & mesotarsi simply linear (Fig. 12D); protibiae (Fig. 12F) simply slender, furnished outer spines; elytral apices (Fig. 12H) distinctly acuminated; ventrite VII (Fig. 14A) almost simply emarginate at posterior edge; tergite VIII (Fig. 14B) truncate at posterior edge, with desclerotized area like the shape of an upside-down Chinese character " 工 "; ventrite VIII (Fig. 14C) gently curved at posterior edge, with spiculum ventrale moderately wide; tergite IX (Fig. 14D) rounded at posterior edge, with numerous setae posteriorly; ventral sclerite (Fig. 14E) subtriangular, with deep Ω-shaped emargination at posterior edge, a few small sensillae located on posterior corners near emargination, small asperities present in posterior part; valvifer (Fig. 14D) with 1 lateral seta; coxite with 3 subapical setae, 1 basolateral seta and some much finer surface seta; stylus (Fig. 14D) long, cylindrical, with 1 long seta.

Distribution. China (Xinjiang), Kazakhstan, Kyrgyzstan.

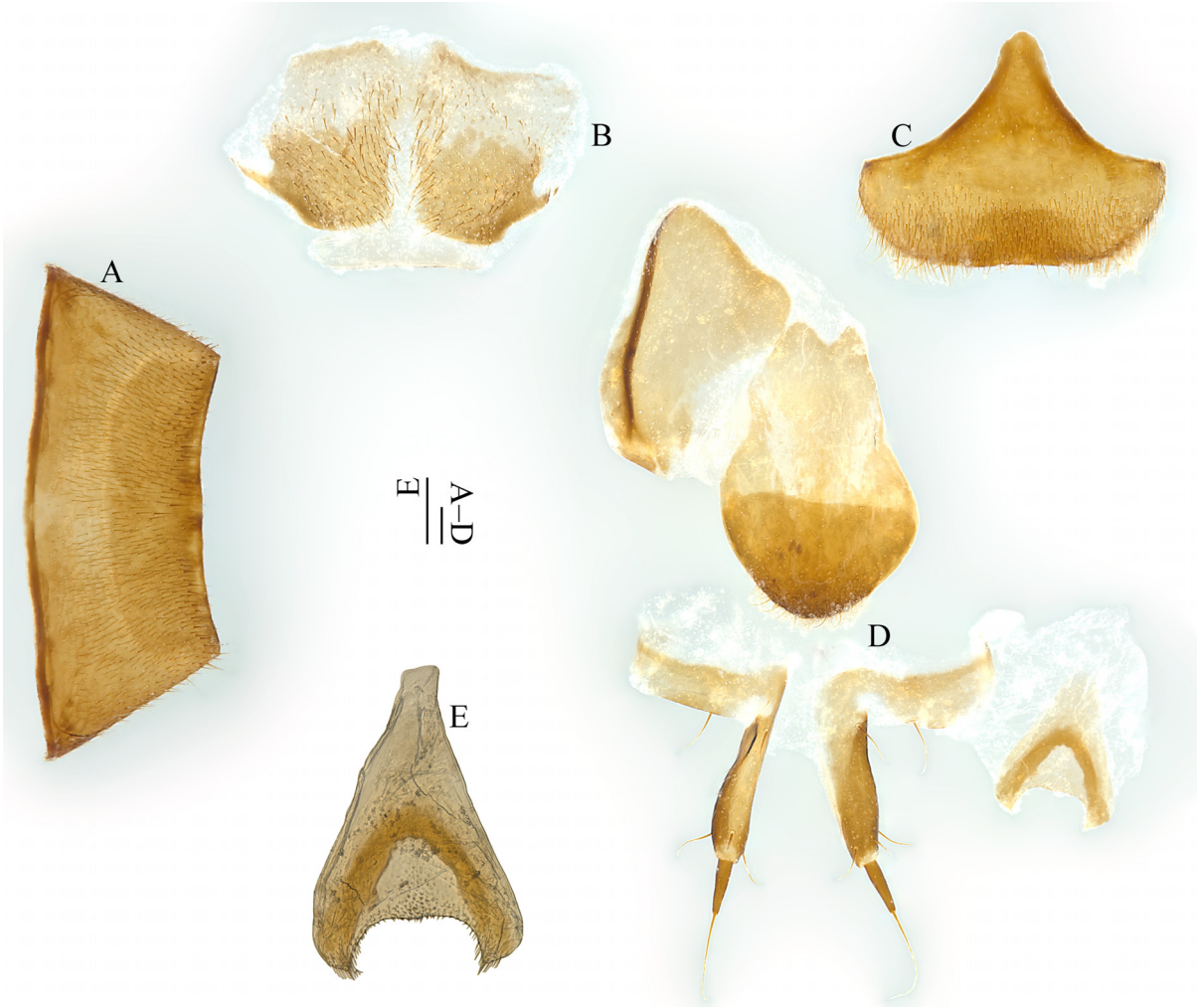

FIGURE 14. ***Rybinskiella*** **(*Sintania*)** ***bodoana*** **Reitter, 1913 ♀: A**, ventrite VII (ventral view); **B**, tergite VIII (dorsal view); **C**, ventrite VIII (ventral view); **D**, genital segment and ovipositor; **E**, ventral sclerite (ventral view). Scales: 0.1 mm.

Subgenus *Rybinskiella* Reitter, 1906

Rybinskiella (s. str.) *magnifica* (Rybiński, 1902)

(Figs. 2C, D; 3M–R; 4C; 5C; 6G–I; 7C; 8C; 9C; 15A–K; 16A–C; 17A–F)

Rybiński, 1902a: 11 (*Choleva*; type locality: Ost-Karpaten [Czarna Hora]); Rybiński, 1902b: 5 (*Choleva*; complementary description); Roubal, 1926: 5 (*Rybinskiella* (s. str.) *daurica*; incorrect determination; distribution); Reitter, 1913: 667

(*Rybinskiella*; combination change; complementary description); Csiki, 1951: 131 (*Rybinskiella*; distribution); Frank, 1988: 263 (*Rybinskiella*; complementary description; distribution); Růžička, 1994: 7 (*Rybinskiella*; complementary description; distribution); Perreau, 2000: 146 (*Rybinskiella* (s. str.); in catalog); Perreau, 2004: 141 (*Rybinskiella* (s. str.); in catalog; distribution); Perreau, 2015: 192 (*Rybinskiella* (s. str.); in catalog; distribution).

Material examined. UKRAINE: 1♂, 1♀, Zakarpatska obl., Rahiv distr., Karpatsky biosferny zapovidnik [Reserve], Chornohora mts, Jan Růžička leg. / Hoverlyanka mt., 1850–1900 m, 6.vi.–28.viii.1999, rock debris on S slope (azimuth 230°), 48°09.3'N 024°30.2'E (GPS, precision ±50 m) / pitfall trap No. 7 (baited with fish meat and cheese) with propylene glycol, outlet 10 cm / Rybinskiella (Rybinskiella) magnifica (Rybiński, 1902); Jan Růžička det. 1999 (ISEA).

FIGURE 15. ***Rybinskiella*** **(s. str.)** ***magnifica*** **(Rybiński, 1902): A**, antenna ♂ (dorsal view); **B**, pronotum ♂ (dorsal view); **C**, protarsus ♂ (dorsal view); **D**, protarsus ♀ (dorsal view); **E**, protibia and profemur ♂ (dorsal view); **F**, protibia and profemur ♀ (dorsal view); **G**, elytral apex ♂ (dorsoapical view); **H**, elytral apex ♀ (dorsoapical view); **I**, ventrite VIII ♂ (ventral view); **J**, genital segment ♂ (ventral view); **K**, genital segment ♂ (lateral view). Scales: 0.1 mm.

FIGURE 16. ***Rybinskiella*** **(s. str.)** ***magnifica*** **(Rybiński, 1902): A**, aedeagus (dorsal view); **B**, aedeagus (ventral view); **C**, aedeagus (lateral view). Scales: 0.1 mm.

Redescription. *Male*. EBL: 5.59 mm. Length of different body parts: HL : AL : PL : ELL = 0.89 : 2.59 : 1.23 : 3.14 mm; width: HW : EW : PW : ELW = 1.02 : 0.07 : 1.75 : 2.50 mm. Proportion of antennomeres from base to tip in μm (length × width): 224 × 116, 215 × 93, 272 × 105, 233 × 98, 214 × 97, 193 × 105, 182 × 134, 146 × 108, 165 × 139, 162 × 148, 273 × 142.

Habitus (Fig. 2C) elongate, not much convex and sublustrous; well pigmented: mostly brown; mouthparts, apical half of ultimate antennomere, and apical part of tarsi a little paler. Dorsum continually clothed with short, recumbent and sallow pubescence.

Head only slightly wider than long, HW/HL = 1.14. Surface covered with large and coarse punctures, separated about 1.0–2.0 times of their diameter, interspaces microreticulate. Clypeofrontal suture absent. Clypeus with substraight anterior margin. Compound eye built from ca. 57–62 ommatidia, EW/HW = 0.07. Antennae (Fig. 15A) long and slender, AL/HW = 2.55; all antennomeres longer than wide; length of $3^{rd}/2^{nd}$ = 1.26; 11^{th} elongate pear-shape. Cervical sclerite with length/width = 1.80 in medial view (Fig. 4C).

Pronotum (Fig. 15B) transverse, widest around middle, PW/PL = 1.43. Sides regularly narrowed forward from widest and gently constricted before hind corners. Hind corners rounded, slightly protruding backward. Posterior margin slightly bisinuate, slightly emarginate behind hind corners. Surface covered with fine punctures, interspaces smooth, with shallow depression in each latero-basal area.

Elytra oval, incompletely fused with each other, widest at about basal 2/5, ELL/EW = 1.26. Sides regularly curved, evenly narrowing from widest to apex; apices (Fig. 15G) narrowly rounded. Sutural striae present. Surface covered with fine punctures, interspace smooth. Metathoracic wings absent.

Prolegs slender, with basal three protarsomeres (Fig. 15C) faintly expanded: TW/BTW = 1.30. Protibiae (Fig.

15E) almost simply and gradually expanded towards apex, without visible outer spines. Profemora without tubercle on inner side. Mesotibiae with inner margin slightly sinuate, 1st mesotarsomere (Fig. 7C) moderately expanded. Metatibiae straight.

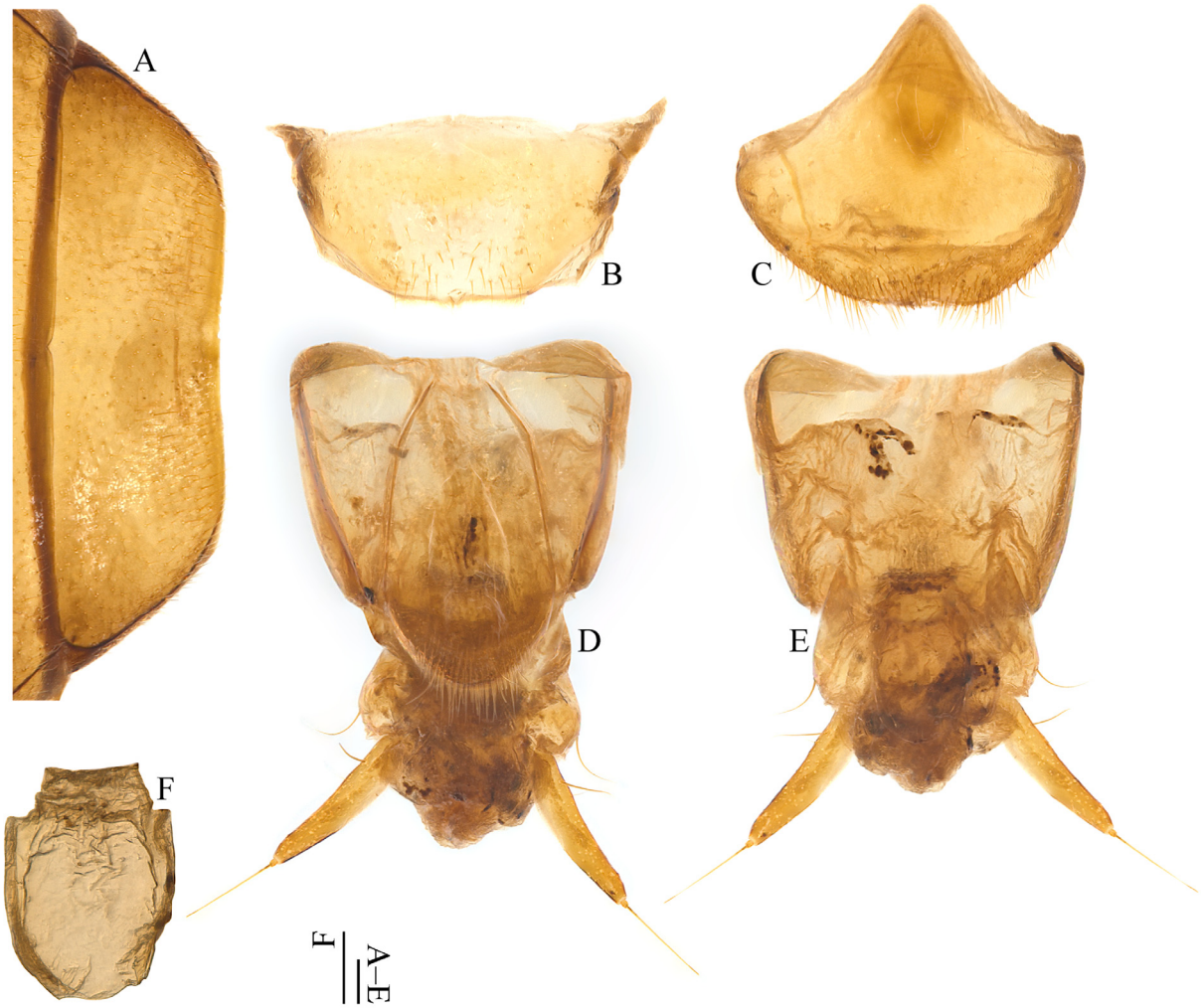

FIGURE 17. ***Rybinskiella*** **(s. str.)** ***magnifica*** **(Rybiński, 1902) ♀: A**, ventrite VII (ventral view); **B**, tergite VIII (dorsal view); **C**, ventrite VIII (ventral view); **D**, genital segment and ovipositor (dorsal view); **E**, genital segment and ovipositor (ventral view); **F**, ventral sclerite (ventral view). Scales: 0.1 mm.

Abdominal ventrite VIII (Fig. 15I) with middle indentation at anterior edge, and narrowly emarginate at middle of posterior edge. Genital segment (Fig. 15J) with slender spiculum gastrale, and never expanded dorso-ventrally (Fig. 15K); tergite IX rounded ventro-apically.

Aedeagus (Fig. 16A, B) with median lobe large and wide (length/width = 5.25), slightly undulate and subequal above base, apex much wide and gently emarginate in dorsal view; parameres filiform, reached about apical 2/5 of median lobe, each with two apical setae; basal lama short; ventral operculum with two wide lobes, each acuminated to a sharp apex. In lateral view, median lobe fairly bent ventrad, gradually tapering towards a dorsally upturned apex (Fig. 16C). Internal sac (Fig. 16A–C) with a huge fan-like tooth at apex, a pair of spine clusters in middle region, and abundant toothlets in basal region.

Female. Somewhat chubbier and duller than male in general appearance (Fig. 2D), and also can be distinguished from following characteristics: pro- & mesotarsi simply linear (Fig. 15D); protibiae (Fig. 15F) simply slender, furnished outer spines; elytral apices (Fig. 15H) more acuminated, sutural angles weakly protruded; ventrite VII (Fig. 17A) slightly emarginate at posterior edge; tergite VIII (Fig. 17B) truncate in middle of posterior edge, desclerotized medioapically and laterally; ventrite VIII (Fig. 17C) regularly rounded at posterior edge, spiculum ventrale rather wide; tergite IX (Fig. 17D) rounded at posterior edge, with numerous setae posteriorly; ventral sclerite (Fig. 17F) broad and shovel-like, regularly rounded at posterior edge, without sensillae; valvifer

(Fig. 17D, E) with 1 lateral seta; coxite (Fig. 17D, E) with 3 subapical, 1 lateral and 1 basolateral setae and some much finer surface setae (some setae missing in the examined specimen; more details see Fig. 20 in Růžička, 1994); stylus minute (Fig. 17D, E), cylindrical, with 1 long seta.

Distribution. Poland, Romania, Ukraine.

Disscussion

During our study of comparing *Sinocatops* with *Rybinskiella*, we found that *R*. (*Sintania*) *bodoana* Reitter, 1913 and *R*. (s. str.) *magnifica* (Rybiński, 1902) also have differences of important morphological characters at generic level, and in our personal communication with Jan Růžička (Czech University of Life Sciences, Prague, Czech Republic), he responded: "I am not very sure if *Rybinskiella* in the present definition is monophyletic." From Table 1, we can see *R*. (*Sintania*) *bodoana* has following characters distinctly different from *R*. (s. str.) *magnifica* (Rybiński) at generic level: microsculpture of pronotum reticulate, and elytra with microtrichiae, aligning into transverse line (×270); maxillary palps with 3rd palpomere considerably longer and slender, 4th conoid, not arched and considerably shorter than 3rd; labial palps with length of 3rd palpomere subequal to 2nd; AL more than thrice of HW; cervical sclerites distinctly more slender; area of scutellum/metatergal apparatus considerably larger; metendosternite with stalk narrow, anterior arm unconspicuous; 1st mesotarsomere strongly expanded; elytra without sutural striae, with double type of pubescence; meso- & metasterna much thinner; median lobe extremely long and slender; ventral sclerite with small sensillae and small asperities; female stylus long.

Therefore, we believe that *R*. (*Sintania*) *bodoana* does not belong to genus *Rybinskiella*, and either *R*. (*Sintania*) *himalayica* (Pic, 1908), the type species of subgenus *Sintania* Pic, 1908, is congeneric with *R*. (*Sintania*) *bodoana*, in which case the subgenus *Sintania* should be raised as a valid genus; or the two species are not congeneric, and another new genus should be erected to accommodate *R*. (*Sintania*) *bodoana*. However, without access to *R*. (*Sintania*) *himalayica* and poorly known of rare *Rybinskiella*, we can not solve this problem. Much works on *Rybinskiella* should be done in the future.

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