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## Supplement to the knowledge of the genera *Baeocera* ERICHSON, 1845 and *Scaphobaeocera* CSIKI, 1909 (Coleoptera, Staphylinidae, Scaphidiinae) of the People's Republic of China

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**Abstract:** Supplement to the knowledge of the *Baeocera* ERICHSON, 1845 and *Scaphobaeocera* CSIKI, 1909 (Coleoptera, Staphylinidae, Scaphidiinae) of the People's Republic of China. Three new *Baeocera* species discovered in higher elevation of the Yunnan mountains are described (*B. karenovicsi* nov.sp., *B. proclinata* nov.sp., *B. repleta* nov.sp.) and an additional species, *Baeocera erroris* LÖBL, is recorded for the first time from China. A key to the Chinese species of *Baeocera* is provided, and a previously published key to the Chinese species of *Scaphobaeocera* is supplemented.

**Key words:** Shining fungus beetles, Scaphisomatini, taxonomy, China, keys.

### 1. Introduction

The diverse and widely distributed Scaphisomatini genus *Baeocera* ERICHSON, 1845 comprises 276 currently valid species, probably all mycophagous or feeding on slime mould. Many are common in forest floor litter and may be easily extracted from sifted samples, either in Winkler-Moczarski collectors or in Berlese-Tullgren funnels. Twenty species were reported in the sole overview of Chinese *Baeocera* (LÖBL 1999), and four additional species were subsequently described or reported from the People's Republic of China (LÖBL 2003). Subsequently, one of these species (*B. mussardi* LÖBL, 1971), was transferred to a distinct genus, *Kasibaeocera* LESCHEN & LÖBL, 2005. New field-work in the mountains of Yunnan has led to the discovery of three further higher altitude species of *Baeocera* described below. In addition, one species of *Baeocera* is recorded here for the first time from the People's Republic of China.

Members of the myxomycetophageous Scaphisomatini genus *Scaphobaeocera* Csiki, 1909 are often sampled together with *Baeocera*. New data on Chinese *Scaphobaeocera*, including descriptions of seven species, were provided recently (LÖBL 2018), in a paper that gave a key to species. Unfortunately, three of the species previously reported from the People's Republic of China (LÖBL 2003) were inadvertently lacking in that key. Therefore, it is supplemented in the present paper.

### 2. Material and methods

The specimens studied are deposited in the following collections:

APPC: Private collection of Andreas Pütz, Eisenhüttenstadt, Germany.

MHNG: Muséum d'histoire naturelle, Geneva, Switzerland.

ZMUB: Zoologisches Museum, Museum für Naturkunde, Berlin, Germany

The locality data are reproduced verbatim. Data from different labels are separated by a slash. Adequate printed type- and identification labels are fixed under each examined specimen. The body length is measured from the anterior pronotal margin to the posterior or inner angles of elytra. The length/width ratios of the antennomeres are measured on slide-mounted antennae. Statements about punctation on metaventricle do not refer to punctures bordering submesocoxal lines. The sides of the aedeagi refer to their morphological side with the ostium situated dorsally, while it is in resting position rotated 90°. The dissected body-parts are embedded in Euparal on a separate label fixed on the same slide as the respective specimen.

### 3. Results

#### 3.1 *Baeocera karenovicsi* nov.sp. (Figs 1-6)

**Type material:** Holotype ♂, CHINA: Yunnan [CH07-16] Baoshan Pref., mountain range 14 km E Tengchong, 1850 m, 25°00'28"N 98°38'07"E, second. mixed forest, litter sifted, 1.VI.2007, M. Schülke (ZMUB). Paratype, 1♀, with the same data as the holotype (MHNG).

**Description:** Length 1.35 mm, width 0.89 mm. Body dark, reddish-brown, femora and tibiae as body, tarsi and antennomeres I to VI lighter, almost yellowish, antennomeres VII to XI light brown. Head with interocular distance 1.5 eye width. Length/width ratios of antennomeres as: III 21/6: IV 21/6: V 31/6: VI 28/7: VII 33/10: VIII 28/8: IX 37/12: X 38/14: XI 42/15. Pronotum and elytra not microsculptured, with lateral margins continuously arcuate. Pronotal punctation conspicuous and dense, consisting of well delimited punctures distinct at 20x magnification. Exposed tip of scutellum minute. Elytra with lateral margins almost evenly rounded, sutural striae short, parallel and shallow, starting about 0.20 mm posterior tip of scutellum; basal striae absent. Elytral punctation coarse and dense, covering entire disc, punctures well delimited, many puncture diameters about as large as puncture intervals, some intervals distinctly large than puncture diameters. Hind wings reduced. Hypomera impunctate. Mesepimera about two times as long as wide and 2.5 times as long as intervals to mesocoxae. Centre of metaventricle with mesal row of coarse punctures and narrow impunctate admesal areas. Almost entire lateral parts of metaventricle coarsely and densely punctate, many punctures as large as or larger than puncture intervals; narrow oblique areas anterior metacoxae impunctate. Submesocoxal lines convex, submesocoxal areas 0.03 mm, as quarter of intervals to metacoxae. Metanepisterna fused, sutures indicated by outer puncture rows of metaventricle. Ventricle 1 with punctation coarse and dense, less dense near lateral margins than in middle, basal puncture row not interrupted in middle, consisting of hardly elongate punctures. Following ventrites extremely finely punctate. Tibiae straight.

**Male characters:** Protarsomeres not widened. Aedeagus as Figs 1-5, 0.36 mm long.

**Female characters:** Gonocoxite and gonostyle as Fig. 6.

**Differential diagnosis:** This new species may be readily distinguished from its Chinese congeners by the body coarsely punctate in combination with the short-

ened sutural striae of the elytra. The puncture pattern on the median area of the metaventrite and the shape of the sclerotized structures of the internal sac are unique. The new species is similar to the Himalayan *B. puncticollis* LÖBL, though it lacks hypomeral punctation and has significantly larger submesocoxal areas. *Baeocera karenovicsi* shares the fused metanepisterna, the small body-size, the puncture-pattern, and the internal sac bearing proximal compact sclerites with the members of the *B. lenta* and *B. ceylonense* groups (see LÖBL 1971, 1992) but lacks the long ejaculatory duct to part extruded in reposing position, which is a presumed synapomorphy of these two groups. In addition, the internal sac of the new species lacks a proximal tuft of spines which is an autapomorphy of the *B. ceylonensis* group.

**Etymology:** The species is dedicated to doctor Wolfram Karenovics (Geneva), in acknowledgement to his competency.

### 3.2 *Baeocera proclinata* nov.sp. (Figs 7-13)

**Type material:** Holotype ♂, CHINA: Yunnan [CH07-11B] Baoshan Pref., Gaoligong Shan nr. Xiaoheshan N.R., 35 km SE Tengchong, 2110 m, 24°50'16''N 98°45'43''E, decid. forest, litter, sifted, 4.VI.2007, M. Schülke (ZMUB). Paratypes: 1♂, 2♀♀, CHINA: Yunnan [CH07-16] Baoshan Pref., mountain range 25 km E Tengchong, 1850 m, 25°00'28''N 98°38'07''E, second. mixed forest, litter sifted, 1.VI.2007, leg. A. Pütz (APPC, MHNG); 1♀, with the same data but M. Schülke (ZMUB); 3 females, CHINA: Yunnan [CH07-18] Baoshan Pref., mountain range 22 km E Tengchong, 1750 m, 24°49'29''N 98°29'07''E, second. forest, litter, dead wood, sifted, 2.VI.2007, M. Schülke (ZMUB), MHNG); 1♀, with the same data but collected by A. Pütz (APPC); 1♂, 2♀♀, CHINA: Yunnan [CH07-17] Baoshan Pref., mountain range 25 km E Tengchong, 1900 m, 24°48'28''N 98°32'03''E, dev. primary deciduous forest, litter, fungi sifted, 2.VI.2007, leg. A. Pütz (APPC, MHNG).

**Description:** Length 1.18-1.35 mm, width 0.80-0.92 mm. Body reddish-brown to black, femora and tibiae in lighter specimens as body, in darker specimens notably lighter than body, tarsi and antennomeres I to VI light brown to yellowish, antennomeres VII to XI light brown. Head with interocular distance 1.5 eye width. Length/width ratios of antennomeres as: III 27/6: IV 25/6: V 33/6: VI 26/6: VII 35/9: VIII 25/9: IX 37/10: X 34/19: XI 41/11. Pronotum and elytra not microsculptured, with lateral margins continuously arcuate. Pronotal punctation inconspicuous, sparse and very fine, consisting of punctures indistinct at 100x magnification. Exposed tip of scutellum minute, hardly visible. Elytra with lateral margins almost evenly rounded, sutural striae short, parallel and shallow, starting about 0.20 mm posterior tip of scutellum; basal striae absent. Elytral punctation coarse and dense, covering entire disc, punctures well delimited, many puncture diameters about as large as puncture intervals, some intervals distinctly larger than puncture diameters. Hind wings present. Hypomera impunctate. Metaventrite entirely coarsely and densely punctate, punctures as large as or larger than puncture intervals, small central area impunctate in some specimens. Submesocoxal lines parallel, submesocoxal areas 0.02 mm, about as fifth of intervals to metacoxae. Metanepisterna fused, sutures indicated by outer puncture rows of metaventrite. Entire surface of ventrite 1 coarsely and densely punctate, punctures similar as on metaventrite, basal puncture row not interrupted in middle, consisting of very slightly elongate punctures. Ventrite 2 with row of distinct puncture. Following ventrites extremely finely punctate. Tibiae straight.

**Male characters:** Protarsomeres 1 to 3 slightly wider than protarsomeres IV. Aedeagus as Figs 7-12, 0.40-0.44 mm long.

**Female characters:** Gonocoxite and gonostyle as Fig. 13.

**Differential diagnosis:** This species is very similar to *B. karenovicsi*, particularly by the shape of the body, the elytra all over coarsely and densely punctate and with shortened sutural striae, and the metanepisterna fused. It may be readily distinguished by the very finely punctate pronotum, the narrower antennomeres VII and VIII, the metaventrite entirely or almost entirely coarsely punctate, the ventrite 1 entirely densely punctate, and the ventrite 2 bearing a coarse puncture row. The genital characters suggest relationship to *S. karenovicsi*, significant specific characters are the shape of the basal part of the parameres (seen in lateral view) and that of the sclerotized complex of the internal sac.

**Etymology:** The species epithet is a Latin adjective meaning inclined.

### 3.3 *Baeocera repleta* nov.sp. (Figs 14-17)

**Type material:** Holotype ♂, CHINA: Yunnan [CH07-16A] Baoshan Pref., mountain range 14 km E Tengchong, 1850 m, 25°00'28''N 98°38'07''E, field edge, compost and debris sifted, 1.VI.2007, M. Schülke (ZMUB). Paratypes: 3♂♂, with the same data as the holotype (ZMUB, MHNG).

**Description:** Length 1.36-1.50 mm, width 0.94-0.97 mm. Body blackish-brown to black, femora and tibiae reddish-brown, tarsi and antennomeres I to VI lighter, almost yellowish, antennomeres VII to XI light brown. Head with interocular distance about three eye widths. Length/width ratios of antennomeres as: III 30/6: IV 30/6: V 35/6: VI 32/6: VII 40/8: VIII 35/6: IX 43/12: X 42/14: XI 50/15. Pronotum and elytra not micro-sculptured, with lateral contours separately arcuate. Pronotal punctation very fine and sparse, consisting of punctures hardly visible at 20x magnification. Exposed tip of scutellum minute. Elytra with lateral margins almost evenly rounded, sutural striae not shortened, parallel, curved along basal margin and extended to basal mid-width to form basal striae not joined to lateral striae. Elytral punctation coarse and dense, covering entire disc, punctures sharply delimited, puncture intervals mostly about two to three times as large as puncture diameters. Hind wings not reduced. Hypomera impunctate. Mesepimera about three times as long as wide and as intervals to mesocoxae. Centre of metaventrite with small impunctate area, remaining surface of metaventrite with coarse and dense punctation, punctures on lateral areas somewhat elongate, usually larger than puncture intervals. Submesocoxal lines convex, submesocoxal areas 0.03 mm, as third of intervals to metacoxae. Metanepisterna fused, sutures indicated by outer puncture rows of metaventrite. Ventrite 1 with punctation coarse and rather dense, less dense than on metaventrite, basal puncture row not interrupted in middle, consisting of somewhat elongate punctures. Following ventrites extremely finely punctate. Tibiae straight.

**Male characters:** Protarsomeres 1 to 3 slightly wider than protarsomeres IV. Aedeagus as Figs 14-17, 0.42-0.43 mm long.

**Female characters:** Unknown.

**Differential diagnosis:** This new species is a member of the *B. lenta* group. Its aedeagus is similar to that of *B. longicornis* (LÖBL, 1971), *B. keralensis* LÖBL, 1979 and *B. rufula* (LÖBL, 1973). The new species may be readily distinguished from them by the coarsely punctate ventrite 1, and from *B. longicornis* and *B. rufula* by the basal striae of elytra not joined with the lateral striae. It also differs drastically from *B. rufula* by the larger body and the entire elytra coarsely punctate.

**Etymology:** The species epithet is a Latin adjective meaning completed.

### 3.4 *Baeocera erroris* LÖBL, 1990

**M a t e r i a l :** 15♂♂, 13♀♀, NE Guangxi, 10 km S Longshen, ca 1000 m, litter, 15.VI.1995, leg. S. Kurbatov (MHNG).

**C o m m e n t s :** This species was described and known only from Thailand. New to China.

### 4. Key to the *Baeocera* species of the People's Republic of China

- 1 Lateral parts of metaventrite impunctate, or very finely and sparsely punctate.....2
  - Lateral parts of metaventrite coarsely, usually densely punctate, or at least with several conspicuous, coarse punctures.....14
- 2 Elytra with basal striae interrupted, not joined to lateral striae. Exposed part of scutellum large .....3
  - Elytral with basal striae entire, joined to lateral striae. Scutellum concealed or minute, except in *B. breveapicalis* .....6
- 3 Apical part of median lobe large, not overlapped, about as long as basal bulb. Male metatibiae each with subapical denticle ..... *B. satana* NAKANE, 1963
  - Apical part of median lobe small, to part or entirely overlapped, much shorter than basal bulb. Male metatibiae lacking denticles .....4
- 4 Aedeagus with parameres simple, hook-like and curved at apices ..... *B. gilloghyi* LÖBL, 1973
  - Aedeagus with parameres lobed, not hook-like at apices .....5
- 5 Left parameres with small dorsal lobe and ventrally inflexed apex; right parameres lobed ventrally..... *B. yunnanensis* LÖBL, 1999
  - Left parameres with large dorsal lobe and hardly inflexed apex; right parameres not lobed..... *B. pubiventris* LÖBL, 1990
- 6 Antennomere VI short and wide, about 2 times as long as wide and as long as half of antennomere VII.....7
  - Antennomere VI long and narrow, about 3 to 5 times as long as wide, slightly shorter than antennomere VII.....8
- 7 Aedeagus with outer margin of left paramere sinuate and inner lobe subtriangular.....
  - ..... *B. breveapicalis* (PIC, 1926)
  - Aedeagus with outer margin of left paramere convexly rounded and inner lobe blunt ..... *B. takizawai* LÖBL, 1984
- 8 Aedeagus with parameres strongly expanded apico-dorsally to form large, strongly sclerotized lobes..... *B. kubani* LÖBL, 1999
  - Aedeagus with parameres not lobed, or each with small subapical lobe .....9
- 9 Aedeagus with apices of parameres distinctly widened (dorsal view).....
  - ..... *B. huanshana* LÖBL, 1999
  - Aedeagus with apices of parameres not or hardly widened (dorsal view).....10
- 10 Aedeagus lacking strongly sclerotized guide-sclerite, parameres slightly shorter than median lobe..... *B. xichanagna* LÖBL, 1999
  - Aedeagus lacking with strongly sclerotized guide-sclerite, parameres much shorter than median lobe .....11
- 11 Aedeagus with guide-sclerite narrow, angulate basally..... *B. callida* LÖBL, 1986
  - Aedeagus with guide-sclerite robust, not angulate basally .....12
- 12 Aedeagus with guide-sclerite tapering apicad ..... *B. freyi* LÖBL, 1966
  - Aedeagus with guide-sclerite not tapering apicad .....13
- 13 Aedeagus with guide-sclerite straight, becoming stouter apicad..... *B. cooteri* LÖBL, 1999
  - Aedeagus with guide-sclerite abruptly curved in middle, widened subapically, acute at tip ..... *B. hammondi* LÖBL, 1984

- 14 Elytra with sutural striae shortened, starting well behind level of scutellar tip, far from elytral base ..... 15
- Elytra with sutural striae starting at elytral base, usually curved along pronotal lobe and forming basal striae ..... 16
- 15 Pronotal punctation coarse and dense, centre of metaventrite with mesal row of coarse punctures and narrow impunctate admesal areas.....*B. karenovicsi* nov.sp.
- Pronotal punctation very fine and sparse, hardly visible, metaventrite lacking mesal row of coarse punctures..... *B. proclinata* nov.sp.
- 16 Elytra with basal striae widely separated from lateral striae ..... 17
- Elytra with basal striae entire, joined to lateral striae ..... 19
- 17 Elytral punctation coarse anterior mid-length, very fine posterior mid-length or in apical thirds. Aedeagus with notched parameres..... 18
- Elytral punctation coarse on entire discal surfaces. Aedeagus with straight, not notched parameres .....*B. repleta* nov.sp.
- 18 Internal sac of aedeagus bearing tuft of spines.....*B. franzi* (LÖBL, 1973)
- Internal sac of aedeagus lacking tuft of spines ..... *B. proseinata* LÖBL, 2013
- 19 Pronotal and elytral punctation similar, very fine.....20
- Pronotal punctation very fine, elytral punctation in part or entirely coarse .....21
- 20 Aedeagus with flagellum curved and thickened basally. Lateroposterior part of metaventrite coarsely punctate ..... *B. sordidooides* LÖBL, 1992
- Aedeagus with flagellum almost straight in dorsal view, not thicken basally. Lateroposterior part of metaventrite very finely punctate .....*B. coalita* LÖBL, 2013
- 21 Metanepisterna separated from metaventrite by distinct sutures .....*B. serendibense* (LÖBL, 1971)
- Metanepisterna fused with metaventrite .....22
- 22 Punctuation coarse on most of basal half to two thirds of elytral disc, apical third to half of elytral disc very finely punctate, appearing impunctate .....23
- Elytra entirely or nearly entirely coarsely punctate .....24
- 23 Parameres narrow, not folded apically .....*B. erroris* LÖBL, 1990
- Parameres wide, folded apically.....*B. pseudinculta* LÖBL, 1990
- 24 Ventrite 1 very finely punctate posterior basal puncture row, appearing impunctate.....*B. longicornis* (LÖBL, 1971)
- Ventrite 1 coarsely punctate posterior basal puncture row .....25
- 25 Apical halves of parameres distinctly bent and with weakly sclerotized inner margins .....*B. pigra* (LÖBL, 1971)
- - Parameres straight, with inner and outer margins nearly evenly sclerotized.....26
- 26 Parameres almost as long as median lobe. Internal sac without narrow lateral rod .....*B. vidua* LÖBL, 1990
- Parameres much shorter than median lobe. Internal sac with narrow lateral rod.....*B. lasciva* LÖBL, 2013

##### 5. Supplement to the key of the *Scaphobaecera* of the People's Republic of China (LÖBL 2018)

Couplet 7 to be replaced by:

- 7 Aedeagus with flagellum forming three complete loops. Middle part of parameres not widened in dorsal view.....*S. dorsalis* LÖBL, 1980
- Aedeagus with flagellum forming one or two incomplete loops ..... 8
- 8 Ventro-apical side of median lobe oblique and elongate in lateral view .....*S. japonica* (REITTER, 1880)

- Ventro-apical side of median lobe convex and short in lateral view.....*S. schuelkei* LÖBL, 2018  
 Couplet 20 to be replaced by:
- 20 Aedeagus with tip of parameres situated posterior level of tip of median lobe .....21  
 - Aedeagus with tip of parameres situated anterior level of tip of median lobe .....22
- 21 Aedeagus with spiral flagellum, apical third of parameres conspicuously widened in lateral view ..... *S. molesta* LÖBL, 2003  
 - Aedeagus with flagellum not spiral, apical two thirds of parameres moderately widened ....  
 .....*S. cognata* LÖBL, 1984
- 22 Body light, reddish-brown. Aedeagus with complex, robust proximal part of internal sac .....*S. inexpectata* LÖBL, 1981  
 - Body very dark reddish-brown to blackish. Aedeagus with simple, weakly widened proximal part of internal sac.....*S. timida* LÖBL, 1984

## 6. Acknowledgements

The studied material was collected by Michael Schülke (Berlin), Andreas Pütz (Eisenhüttenstadt) and Sergei Kurbatov (Moscow). I thank these friends and colleagues for making their collections available. Jon Cooter (Oxford) kindly reviewed the language.

## 7. Zusammenfassung

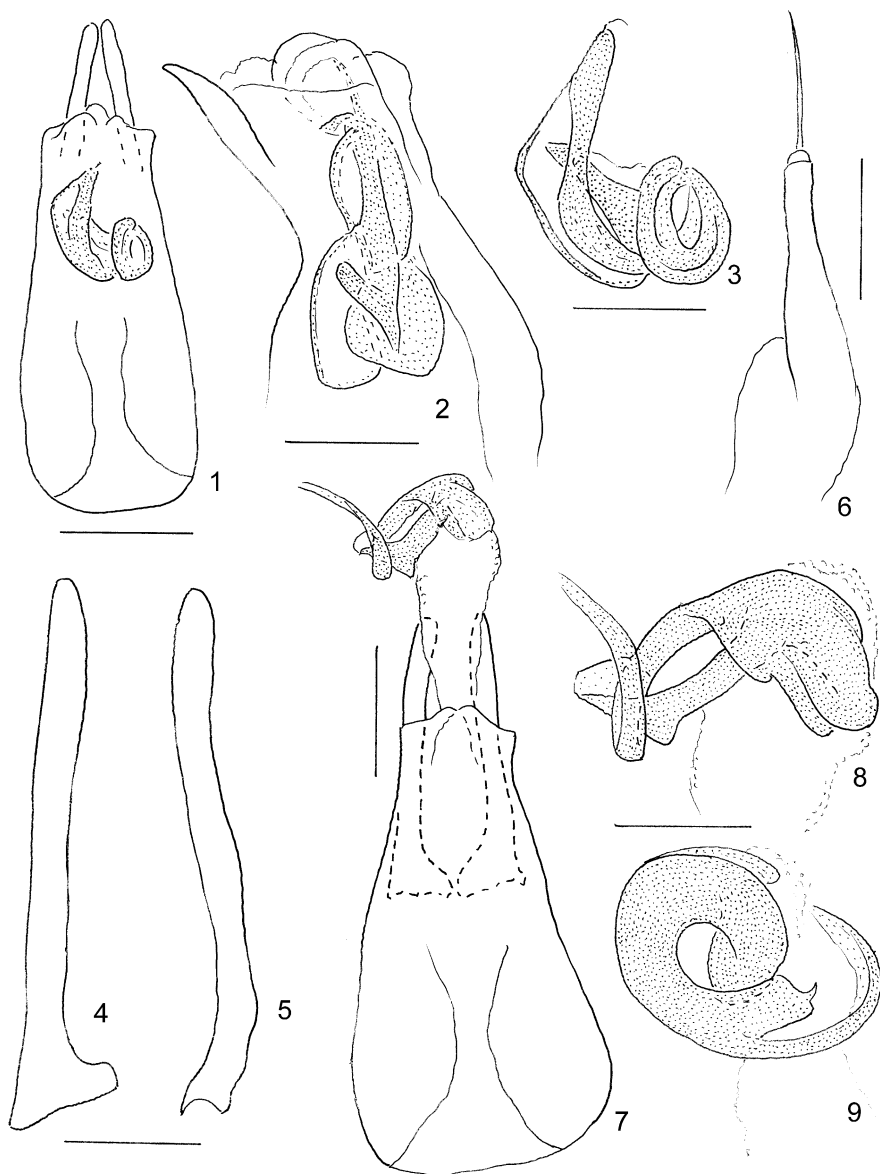
Drei neue chinesische Arten der Gattung *Baeocera* ERICHSON, *B. karenovicsi* nov.sp., *B. proclinata* nov.sp. und *B. repleta* nov.sp. werden beschrieben. *B. erroris* LÖBL wird erstmals von China gemeldet, eine Bestimmungstabelle der chinesischen Arten der Gattung *Baeocera* gegeben und die von LÖBL (2018) publizierte Bestimmungstabelle der chinesischen Arten der Gattung *Scaphobaeocera* ergänzt.

## 8. References

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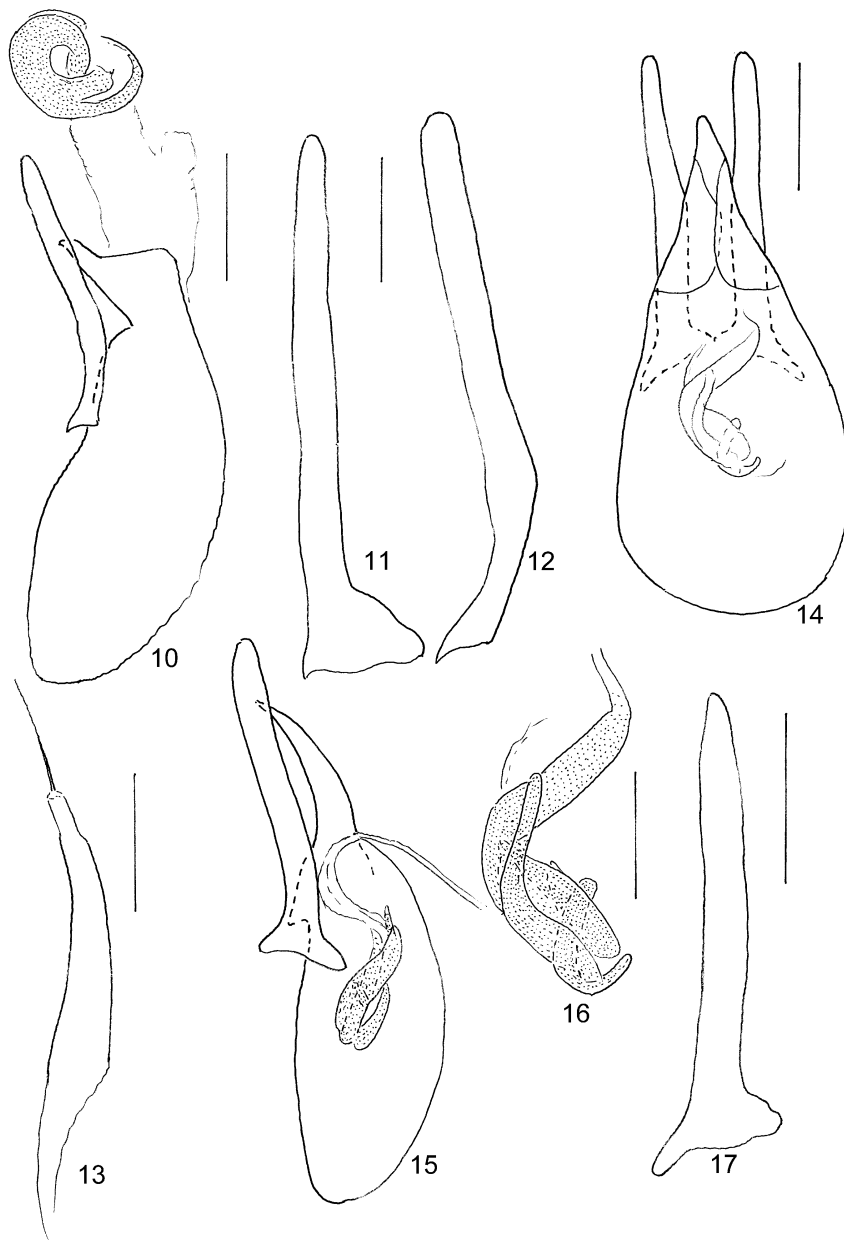
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**Figs 1-6:** *Baeocera karenovicsi* nov.sp., genitalia. (1) Aedeagus in dorsal view; (2) Apical part of median lobe in lateral view; (3) Internal sac; (4) Paramere in ventral view; (5) Paramere in lateral view; (6) Gonocoxite and gonostyle. **Fig. 7-9.** *Baeocera proclinata* nov.sp., genitalia. (7) Aedeagus in dorsal view; (8) Internal sac in dorsal view; (9) Internal sac in lateral view. Scale-bars = 0.1 mm (1, 7); 0.05 mm (2-5, 8); 0.03 mm (6).





**Figs 10-13:** *Baeocera proclinata* nov.sp. genitalia. (10) Aedeagus in lateral view; (11) Paramere in ventral view, (12) Paramere in lateral view; (13) Gonocoxite and gonostyle. **Figs 14-17:** *Baeocera repleta* nov.sp., genitalia. (14) Aedeagus in dorsal view; (15) Aedeagus in lateral view; (16) Internal sac in dorsal view; (17) Paramere in ventral view. Scale-bars = 0.1 mm (10, 14, 15, 17); 0.05 mm (11, 12, 16); 0.03 mm (13).