

Linzer biol. Beitr.	52/1	327-335	31.7.2020
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Four new Taiwanese species of *Scaphobaeocera* CSIKI (Coleoptera, Staphylinidae, Scaphidiinae)

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A b s t r a c t : *Scaphobaeocera furva* nov.sp., *S. insinuata* nov.sp., *S. montana* nov.sp. and *S. tengchinensis* nov.sp. from Taiwan are described. A key to the Taiwanese species of *Scaphobaeocera* CSIKI is provided.

K e y w o r d s : Coleoptera, Staphylinidae, Scaphidiinae, *Scaphobaeocera*, taxonomy, Taiwan.

Introduction

The Scaphisomatini genus *Scaphobaeocera* CSIKI, 1909 is with 109 valid species one of the more species-rich groups of the tribe. Its members are usually poorly represented in collections, possibly due to their small body-size and inadequate interest or attention of field workers. The life history of *Scaphobaeocera* remains unknown, though some species are quite common in moist forest litter (personal observation), and the available host data, suggesting association with Myxomycetes, are scarce (HAMMOND & LAWRENCE 1989, NEWTON & STEPHENSON 1990). Only four species of *Scaphobaeocera* are currently known from Taiwan. One, *S. formosana* (MIWA & MITONO, 1943) was originally placed in *Toxidium* LECONTE, 1860, the remaining three species were described by LÖBL (1980). LÖBL (1980, 2011a) also redescribed and supplemented information concerning *S. formosana*. One of these three Taiwanese species, *S. dorsalis*, is widely distributed, the remaining are known only from Taiwan. Information about their distribution is summarized in LÖBL (2018c) and taxonomic information about the species from continental China are given in LÖBL 1999, 2003, 2018a and 2018b. The diversity of the Taiwanese *Scaphobaeocera* appears low compared to two species known from the Ryukyus (HOSHINA & SUGAYA 2003, HOSHINA 2008). Therefore, it was not surprising to find additional species in new collections coming from Taiwan. Their descriptions and a new key to the Taiwanese species of *Scaphobaeocera* are provided below.

Material and methods

The material studied is deposited in the Muséum d'histoire naturelle, Genève, Switzerland (MHNG) and the National Museum of Natural Sciences, Taichung, Taiwan (NMNS).

The locality data are reproduced verbatim. The body-length is measured from the anterior pronotal margin to the posterior inner angles of elytra. The length/width ratios of

the antennomeres are measured on slide-mounted antennae. Only the exposed parts of the metanepisterna are measured. 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 and fixed on a separate card on the same pin as the respective specimen.

Results

Scaphobaeocera furva nov.sp. (Figs 1-4)

Type material: Holotype ♂: TAIWAN Taipei Co. Yangmingshan Mts slopes E of Shamao S. Vit, 24.X.2007 400m, rotten bole (MHNG). Paratype ♂: TAIWAN Hsinchu Co. Jienshih Twnsh. env. 1800 m Km 48/Road no 60; 25.iii.2008 Hsingkuang trib. vill., leg. S. Vit Forest litter (MHNG).

Description: Length 1.20-1.35 mm, width 0.65-0.73 mm, dorsoventral diameter 0.69-0.73 mm. Head, pronotum, elytra and ventral side of thorax dark brown to black, elytra lighter near apices. Abdomen dark brown, with apical segments ochraceous. Appendages ochraceous. Length/width ratios of antennomeres as: III 14/6: IV 20/6: V 27/6: VI 20/7: VII 27/8: VIII 13/9: IX 28/12: X 26/14: XI 38/12. Pronotum very finely punctate, not microsculptured. Tip of scutellum exposed. Elytra not iridescent, with parasutural striae, sutural striae deep, curved at base, discal punctation about as fine as pronotal punctation, microsculpture hardly visible. Hypomera not microsculptured, smooth, lacking longitudinal stria. Middle area of metaventrite hardly convex, entirely densely, distinctly punctate, with punctures to part about as large as puncture intervals; pubescence very short, median stria and median impression absent. Lateral parts of metaventrite very finely and sparsely punctate, not microsculptured. Submesocoxal areas about 0.03 mm, submesocoxal lines appearing impunctate. Metanepisterna about 0.02-0.03 mm wide, flat, slightly narrowed posteriad, impunctate, with slightly concave suture reaching metepimera. Tibiae straight. Ventrite 1 not microsculptured, very finely punctate, basal punctures distinct, not elongate. Following sternites with strigulate microsculpture.

Male characters: Protarsomeres 1 to 3 strongly widened, wide almost as apices of protibiae. Aedeagus (Figs 1-4) 0.40-0.46 mm long. Median lobe with narrow basal bulb, apical process asymmetrical, moderately inflexed, much shorter than basal bulb, concave ventral side and tip acute in lateral view, blunt in dorsal view. Articular process not prominent. Parameres symmetrical, straight, reaching level of tip of median lobe, almost evenly broad in dorsal view, strongly widened dorso-apically in lateral view. Internal sac with narrow, convoluted flagellum forming three complete loops, moderately widened at proximal end.

Differential diagnosis: The key given below provides means to distinguish this new species from its Taiwanese congeners. The aedeagal characters suggest relationships with *S. sunadai* HOSHINA & SUGAYA, 2003 from the Ryukyus, *S. glabra* LÖBL, 2018 from Yunnan, and *S. gracilis* LÖBL, 1981 and *S. variabilis* LÖBL, 1981 from Japan. *Scaphobaeocera sunadai* may be readily distinguished from *S. furva* by the parameres gradually widened apically, the apical process of the median lobe strongly inflexed, near apex almost perpendicular to the axis of aedeagus (lateral view) and the flagellum forming a single complete loop. The apical process of the median lobe

is much shorter and has blunt apex in *S. glabra*. This species differs in external characters drastically by its strongly elongate antennomeres XI. The *S. gracilis* and *S. variabilis* described from Japan have the pronotum and elytra microsculptured and iridescent, unlike those in *S. furva*. In addition, the parameres are narrower and only near apices widened in *S. gracilis*, and the oblique proximal section of the flagellum is much shorter and hardly widened in *S. variabilis*.

E t y m o l o g y : The species epithet is a Latin adjective meaning dark.

***Scaphobaeocera insinuata* nov.sp. (Figs 5-7)**

T y p e m a t e r i a l : Holotype ♂: TAIWAN Taitung Co. rd. 20 km 173, 1200 m S. Vit, 13.iv.2009 Canacea litter 10 (MHNG). Paratypes: 1♂, S. TAIWAN, Taitung Co. Rd no 20, km 174, after Litao 8.iv.2007, S. Vit, env. 1300 m mountain forest litter (MHNG); 2♂♂, TAIWAN, Hsinchu Co. Jienshih Twmsh. near Hsinkuang vill., km 44 rd no 60, env. 1600 m S. Vit, 25.iii.2008 Canacea litter, ♂ iii6 (MHNG); 1♂, Taiwan Fenchihu 1400 m, 12.vi.77 J. Klapperich (MHNG); 2♂♂, TAIWAN Nantou Hsien, Shanlinchi 1650 m 16.V.1990 A. Smetana [T60] (MHNG); 1♂. TAIWAN: Nantou County Huisun Forest reserve, track to Xiaochushan Mt., 24.0744602N, 121.0366337E; 1150 m 4.v.2919; Damaška, Fikáček, Hu & Liu lgt. / primary forest on the slope with sparse understory: sifting of small accumulation of leaves / Huisun Leaf Litter Beetles Project (NMNS).

D e s c r i p t i o n : Length 1.15-1.25 mm, width 0.61-0.70 mm, dorsoventral diameter 0.63-0.73 mm. Head, pronotum, elytra and ventral side of thorax light reddish-brown to blackish-brown, elytra usually slightly lighter near apices. Abdomen about as thorax, with apical segments ochraceous. Appendages ochraceous. Length/width ratios of antennomeres as: III 18/7: IV 23/7: V 28/7: VI 23/8: VII 25/13: VIII 18/11: IX 23/15: X 25/17: XI 38/19. Pronotum very finely punctate, not microsculptured. Scutellum concealed or its tip exposed. Elytra not iridescent, with hardly visible parasutural striae, sutural striae deep, curved at base, discal punctation about as fine as pronotal punctation, microsculpture absent. Hypomera not microsculptured, smooth, lacking longitudinal stria. Middle area of metaventrite flat, entirely densely, distinctly punctate, with punctures to part about as large as puncture intervals; pubescence long; median stria and median impression absent. Lateral parts of metaventrite very finely and sparsely punctate, not microsculptured. Submesocoxal areas about 0.02-0.03 mm, submesocoxal lines appearing impunctate. Metanepisterna about 0.03-0.05 mm wide, flat, not narrowed posteriad, impunctate, with straight suture reaching metepimera. Tibiae straight. Ventrite 1 not microsculptured, very finely punctate, basal punctures distinct, slightly elongate. Following sternites with strigulate microsculpture.

M a l e c h a r a c t e r s : Protarsomeres 1 to 3 strongly widened, wide almost as apices of protibiae. Aedeagus (Figs 5-7) 0.28-0.35 mm long. Median lobe with narrow basal bulb, apical process asymmetrical, moderately inflexed, long almost as basal bulb, ventral side irregularly concave, tip acute and bent in lateral view, blunt in dorsal view. Articular process not prominent. Parameres symmetrical, oblique, reaching posterior level of tip of median lobe, almost evenly broad in dorsal view, strongly widened apically in lateral view. Internal sac with narrow, convoluted flagellum forming two complete loops, widened and folded in proximal section.

D i f f e r e n t i a l d i a g n o s i s : This species is very similar and likely related with *S. furva*. It differs in external characters from the latter by the wider antennomeres IX to XI and the setae on the median part of metaventrite distinctly longer. The aedeagi

provide reliable distinguish characters, the apical process of the median lobe is notably longer, the parameres are more expanded apically, and the flagellum forming only two loops is distinctly folded in proximal section.

Etymology: The species epithet is a Latin adjective meaning not sinuate, referring to the proximal section of the flagellum.

***Scaphobaeocera montana* nov.sp. (Figs 8-10)**

Type material: Holotype ♂: TAIWAN Hualien Hsien, Taroko N. P. Nanhushi Hut 2220 m 12.V.1990 A. Smetana [T55] (MHNG). Paratype ♂: TAIWAN Taichung Hsien, Anmachan 2230 m 4.V.1990 A. Smetana [T43] (MHNG).

Description: Length 1.44-1.46 mm, width 0.80-0.83 mm, dorsoventral diameter 0.86-0.94 mm. Frons, pronotum and elytra, elytral apices excepted, blackish. Elytral with narrowly lighter apices. Ventral side of thorax, most of exposed tergites and ventrites somewhat lighter than pronotum and elytra. Femora and tibiae dark reddish-brown, apical abdominal segments, tarsi and antennae lighter than tibiae, yellowish. Length/width ratios of antennomeres as: III 16/7: IV 22/7: V 28/7: VI 20/8: VII 35/15: VIII 24/12: IX 35/15: X 34/18: XI 55/18. Pronotum extremely finely punctate, punctured hardly visible at 100 times magnification, not microsculptured. Minute point of scutellum exposed. Elytra weakly iridescent, with distinct parasutural striae, sutural striae deep, curved at base, discal punctation about as fine as pronotal punctation, microsculpture appearing absent. Hypomeron not microsculptured, smooth, with longitudinal stria separating upper oblique part from lower vertical part. Middle area of metaventrite convex, with large centre smooth, densely, distinctly punctate around impunctate centre and with punctures to part about as large as puncture intervals; pubescence short; median stria and median impression absent. Lateral parts of metaventrite very finely and sparsely punctate, not microsculptured. Submesocoxal areas about 0.02 mm, submesocoxal lines appearing impunctate. Tibiae straight. Ventrite 1 not microsculptured, very finely punctate, basal punctures distinct, not elongate. Following sternites with strigulate microsculpture.

Male characters: Protarsomeres slightly widened, much narrower than apices of tibiae. Aedeagus (Figs 8-10.46-0.48 mm long. Median lobe with narrow basal bulb, apical process asymmetrical, weakly inflexed, almost long much shorter than basal bulb, ventral side weakly concave, tip blunt and not bent in lateral view, blunt in dorsal view. Articular process not prominent. Parameres symmetrical, almost in axis with the median lobe, reaching posterior level of tip of median lobe, almost evenly broad in dorsal view, strongly widened apically in lateral view. Internal sac with large basal sclerite joined with narrow, bent flagellum not forming loops.

Differential diagnosis: The aedeagal characters of this species suggest relationships with the Japanese *S. smetanai* LÖBL, 1981. The latter may be distinguished by the well visible elytral and abdominal microsculpture, the distinctly iridescent elytra, and the length/width ratios of the antennomeres, notably by the antennomeres VIII about as narrow as the antennomeres VI and the antennomeres XI about 2.5 times as long as wide. The aedeagi of these two species differ by apical process of the median lobe narrower (lateral view), the margin of the basal sclerite of the internal sac broadly convex, and the proximal section of the flagellum much narrower in *S. montana*.

Etymology: The species epithet is a Latin adjective meaning mountain.

***Scaphobaeocera tengchinensis* nov.sp. (Figs 11-14)**

Type material: Holotype ♂: TAIWAN Kaohsiung Hsien, Tengchin 1610 m 24.IV.1990 A. Smetana [T20] (MHNG). Paratype ♂: with the same data as the holotype (MHNG).

Description: Length 1.24 mm, width 0.67 mm, dorsoventral diameter 0.73 mm. Head, pronotum and elytra blackish with weak reddish shine, ventral side of thorax and ventrite I dark brown, abdomen gradually light apically, with apical segments yellowish. Femora reddish-brown, tibiae, tarsi and antennae ochraceous to yellowish. Length/width ratios of antennomeres as: III 22/7: IV 23/7: V 28/7: VI 26/8: VII 33/12: VIII 26/9: IX 33/13: X 34/13: XI 42/15. Pronotum very finely punctate, not microsculptured. Scutellum concealed. Elytra not iridescent, with hardly visible parasutural striae, sutural striae deep, curved at base, discal punctation about as fine as pronotal punctation, microsculpture absent. Hypomera not microsculptured, smooth, lacking longitudinal stria. Middle area of metaventricle flat, entirely densely, distinctly punctate, with punctures to part about as large as puncture intervals; pubescence long, median stria and median impression absent. Lateral parts of metaventricle very finely and sparsely punctate, not microsculptured. Submesocoxal areas about 0.02 mm, submesocoxal lines distinctly punctate. Metanepisterna about 0.05 mm wide, flat, not narrowed posteriad, impunctate, with straight suture reaching metepimera. Tibiae straight. Exposed ventrites bearing strigulate microsculpture, very finely punctate, ventrite I with not elongate basal punctures.

Male characters: Protarsomeres 1 to 3 widened, distinctly narrower than apices of tibiae. Aedeagus (Figs 11-14) 0.42-0.43 mm long. Median lobe with basal bulb moderately wide, apical process asymmetrical, strongly inflexed, almost long as basal bulb, ventral side oblique, tip acute, hardly bent in lateral view, blunt in dorsal view. Articular process not prominent. Parameres symmetrical, oblique, reaching posterior level of tip of median lobe, slightly narrowed apically in dorsal view, oblique and widened apically in lateral view. Internal sac with narrow, convoluted flagellum forming two complete loops, widened and sinuate in proximal section (lateral view), capsular in dorsal view.

Differential diagnosis: This species has an aedeagus similar with that of *S. sabapensis* LÖBL, 1990, described from Thailand and subsequently reported from the Philippines (LÖBL 2011b). The proximal sections of the flagellum are, however, quite distinctive, being in *S. sabapensis* oblique, weakly widened and not joint to a proximal capsule. The new species may be also distinguished by the median part of the metaventricle not impressed, and the pronotum and elytra not iridescent and lacking distinct microsculpture.

Etymology: The species epithet is derived from the name of the type locality.

***Scaphobaeocera* sp. near *gracilis* LÖBL, 1981**

Records: 1♂, 1♀, TAIWAN Chia Hsien, Yushan n. P. Mun-Li Cliff 2700 m 27.IV.1990 A. Smetana [T26] (MHNG).

Comments: *Scaphobaeocera gracilis* was described from Nara, Japan. The sole Taiwanese male present in the collections has the internal sac completely extruded, yet very similar with that of the Japanese specimens. It differs from the Japanese specimens by the centre of metaventricle almost smooth.

Key to the *Scaphobaeocera* of Taiwan

- 1 Hypomera each with longitudinal stria separating upper oblique surface from lower surface2
- Hypomera lacking longitudinal striae.....5
- 2 Antennomere XI long about as antennomeres IX and X combined. Aedeagus with flagellum wide, convoluted, forming three complete loops..... *S. dorsalis* LÖBL
- Antennomere XI shorter than antennomeres IX and X combined. Aedeagus with flagellum narrow, bent3
- 3 Tip of parameres reaching posterior tip of median lobe of aedeagus, parameres distinctly widened apically in lateral view4
- Tip of median lobe of aedeagus reaching posterior tip of parameres, parameres not or slightly widened apically.....*S. cyrta* LÖBL
- 4 Proximal sclerites of internal sac narrow, with prominent apophysis.....*S. dispar* LÖBL
- Proximal sclerites of internal sac wide, with broadly rounded anterior margin, lacking apophysis..... *S. montana* nov.sp.
- 5 Metaventricle with elongate median impression*S. formosana* MIWA & MITONO
- Metaventricle without median impression6
- 6 Aedeagus with flagellum forming three complete loops*S. furva* nov.sp.
- Aedeagus with flagellum forming two complete loops7
- 7 Aedeagus with proximal section of flagellum folded and evenly wide*S. insinuata* nov.sp.
- Aedeagus with proximal section of flagellum not folded and widened8
- 8 Aedeagus with apices of parameres slightly widened (in lateral view), flagellum slightly widened and simple in proximal section*S. sp. near gracilis* LÖBL
- Aedeagus with parameres gradually widened apically (in lateral view), flagellum strongly widened proximally and with bulbous vesicle.....*S. tengchinensis* nov.sp.

Acknowledgements

My cordial thanks are due to Aleš Smetana (Ottawa, Canada) and Stanislav Vít (Geneva, Switzerland) for their generous gifts of the studied material to the Geneva Museum. Martin Fikáček (Pague, Czech Republic) and Fang-Shuo Hu (Yilan, Taiwan) provided material from the Huisun Leaf Litter Beetles Project, Taiwan.

Zusammenfassung

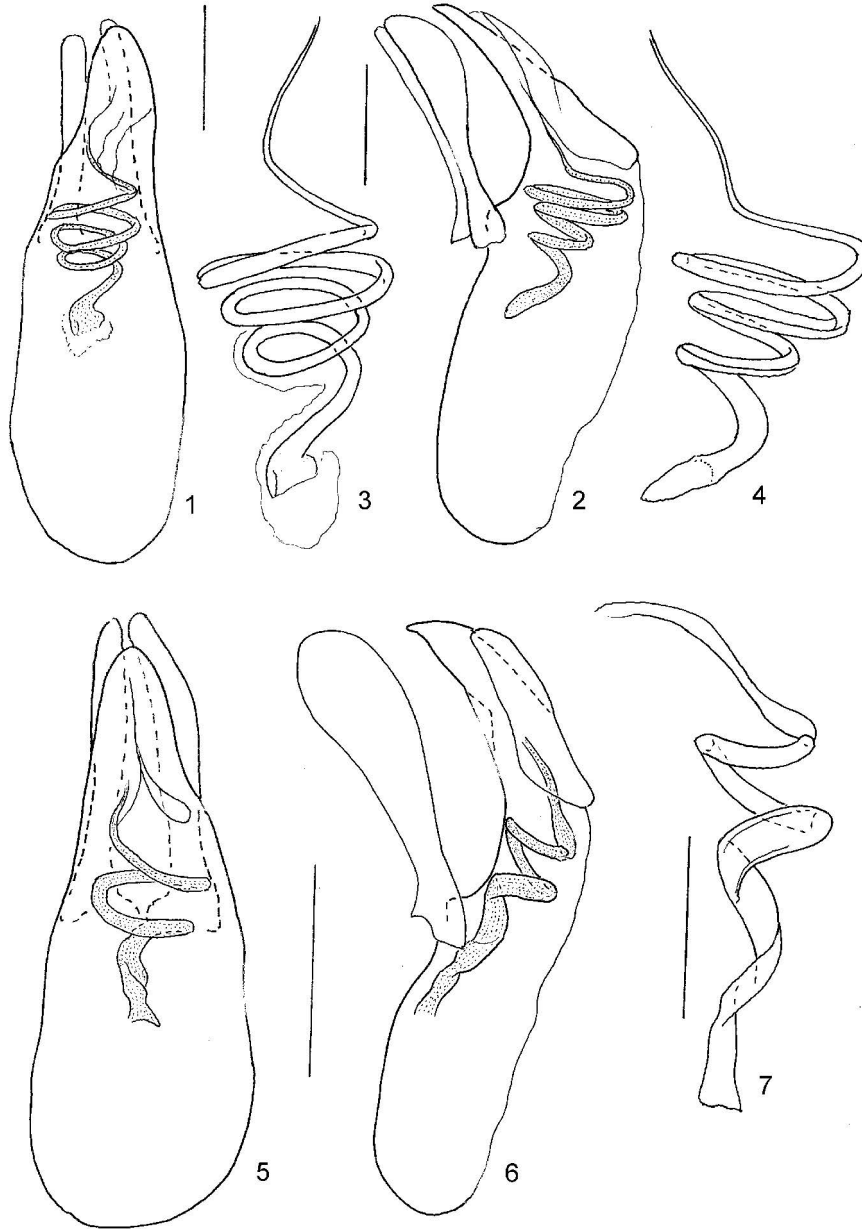
Vier neue taiwanische Arten der Gattung *Scaphobaeocera* CSIKI, *S. furva* nov.sp. *S. insinuata* nov.sp., *S. montana* nov.sp. und *S. tengchinensis* nov.sp., werden beschrieben. Eine Bestimmungstabelle der taiwanischen Arten der Gattung *Scaphobaeocera* wird gegeben.

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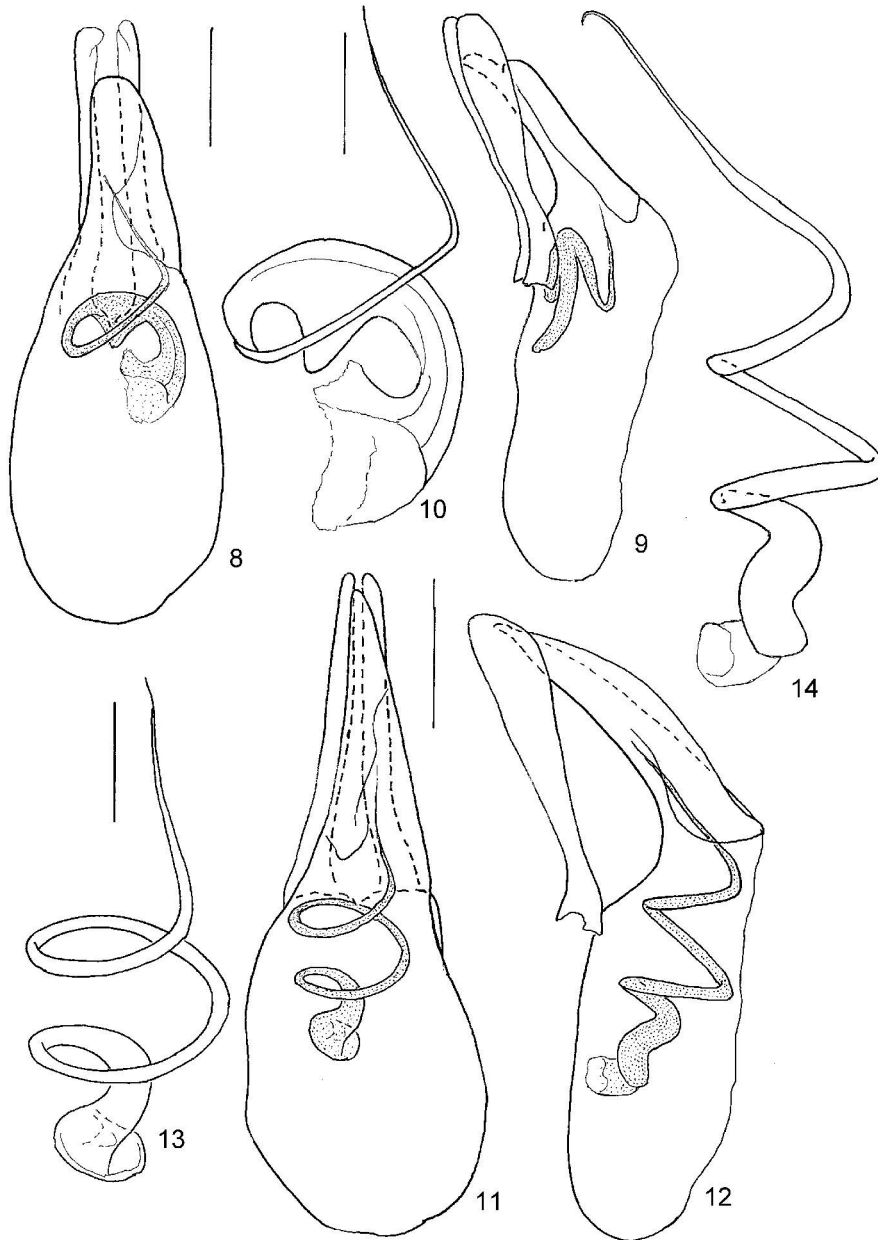
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Figs 1-7: *Scaphobaeocera*, aedeagi; (1, 2) *S. furva* nov.sp., in dorsal and lateral views, scale = 0.1 mm; (3, 4) Ditto, flagellum in dorsal and lateral views, scale = 0.05 mm; (5, 6) *S. insinuata* nov.sp., in dorsal and lateral views, scale = 0.1 mm; (7) Ditto, flagellum in lateral view, scale = 0.05 mm.



Figs 8-14: *Scaphobaeocera*, aedeagi; (8, 9) *S. montana* nov.sp., in dorsal and lateral views, scale = 0.1 mm; (10) Ditto, flagellum and proximal sclerite of internal sac, dorsal view, scale = 0.05 mm; (11, 12) *S. tengchinensis* nov.sp., in dorsal and lateral views, scale = 0.1 mm; (13, 14) Ditto, flagellum in dorsal and lateral views, scale = 0.05 mm.

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Zeitschrift/Journal: [Linzer biologische Beiträge](#)

Jahr/Year: 2020

Band/Volume: [0052_1](#)

Autor(en)/Author(s): Löbl Ivan

Artikel/Article: [Four new Taiwanese species of Scaphobaeocera CSIKI \(Coleoptera, Staphylinidae, Scaphidiinae\) 327-335](#)