



## Three new species of the subfamily Nossidiinae (Coleoptera: Ptiliidae) from South Korea

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### Abstract

The subfamily Nossidiinae was established in 2019 and is comprised of five genera including one fossil genus. Among them, *Nossidium* Erichson and *Sindosium* Johnson share many morphological similarities. To this point, two extant *Nossidium*-species, *N. flachi* Ganglbauer and *N. pilosellum* (Marsham) have been recorded in the Palaearctic realm. In this paper, we describe three new species, *Nossidium koreanum* **sp. nov.**, *Sindosium longifilum* **sp. nov.** and *S. chungbukicum* **sp. nov.** from South Korea. These are the first Nossidiinae species described from Korea, as well as the first Palaearctic record of the genus *Sindosium*.

**Key words:** Nossidiinae, *Nossidium*, *Sindosium*, featherwing beetle, new species

### Introduction

The family Ptiliidae Erichson, 1845 (Coleoptera: Staphylinoidea) is one of the least known coleopteran families. They can be readily collected from leaf litter, fungi, mammal dung and deadwood (Hall 2000, 2005). They are distinguished from other coleopteran families based on their feather-like hindwings, flat and minute body (< 2 mm) and loosely clavate antenna with peculiar setae (Hall 2000, 2005; Hangay & Zborowski 2010). Approximately, 1,000 valid ptiliid species within some 100 genera are known worldwide (Bánki *et al.* 2022; Sörensson & Delgado 2019).

The genera *Nossidium* Erichson, 1845 and *Sindosium* Johnson, 2007 share many morphological similarities, such as brownish color, stout body, complete elytra, wide hindwing membrane, and elaborate aedeagus (Johnson 2007). These two genera were originally classified as belonging to the subfamily Ptiliinae but were later transferred to Nossidiinae, a new subfamily recently established by Sörensson and Delgado (2019). Additionally, four further Nossidiinae species (including one fossil genus and species) have been recorded by Darby (2020), Li *et al.* (2022) and Maté Nankervis (2020). Nineteen Nossidiinae species are currently known worldwide.

Two extant species, *Nossidium flachi* Ganglbauer, 1898 and *N. pilosellum* (Marsham, 1802), and one extinct species, *Crenossidium slipinskii* Li, Newton & Cai, 2022, have been recorded from the Palaearctic region (Li *et al.* 2022; Sörensson 2015), but there are further species known from Japan (Johnson 2007) and China (Polilov *et al.* 2019) awaiting description.

In this paper, we describe three new species, *Nossidium koreanum* **sp. nov.**, *Sindosium longifilum* **sp. nov.** and *Sindosium chungbukicum* **sp. nov.**, from South Korea, being the first Nossidiinae species recorded from this country. Illustrations of habitus, diagnostic characters, a distribution map, and a key to the Korean Nossidiinae species are provided.

## Material and methods

In total, 60 specimens were examined. All the holotype specimens described in this study are deposited in the National Institute of Biological Resources (NIBR), Incheon, Republic of Korea. The genitalia of the holotypes were dissected and mounted on plastic cards for further research. The paratypes were deposited in the Chungbuk National University Insect Collection (CBNUIC), Cheongju, Chungbuk Province, Republic of Korea. All the label data of type specimens were transcribed verbatim, except for the duplicated information. At least three dry specimens of each species (holotype, largest and smallest paratypes) were used for measurements of body length (from front of retracted head to elytral apex) and width (widest part of elytra). In total, fourteen permanent microscopic slides, at least one per each species, were prepared for detailed observation based on Hanley & Ashe (2003). The images were generated by a Sony ILCE-7RM3 mirrorless camera with a 10X/20X Mitutoyo Plan Apo Objectives and stacked using Zerene stacker 1.04. The map was modified from SimpleMappr (Shorthouse 2010) and marked to indicate the collection locations.

## Systematics

### Key to Korean Nossidiinae species

1. Pronotal and elytral lateral margin smooth, not serrate (fig. 2B, E). Pronotum widest in front of base, not tapering caudad (fig. 2B). Anterior petiolar margin of hindwing with several setae on distal two thirds (fig. 2D). Mesoventrite medially as long as metaventrite (fig. 2G). Spermatheca globular (fig. 2M) . . . . . *Nossidium koreanum* sp. nov.
- Pronotal and elytral lateral margin serrate. Pronotum widest slightly behind middle, distinctly tapering caudad. Anterior petiolar margin of hindwing with one distinct seta. Mesoventrite medially distinctly shorter than metaventrite. Spermatheca oval . . . . . 2
2. One seta on anterior serration of elytral lateral margin distinctly longer than other setae (fig. 3E). Petiolar posterior margin of hindwing setose on distal half (fig. 3D). Spermatheca slightly longer than broad; basal tip pointed (fig. 3M). . . . . *Sindosium longifilum* sp. nov.
- Setae on anterior serration of elytral lateral margin roughly equal in length (fig. 4E). Petiolar posterior margin of hindwing setose on distal third (fig. 4D). Spermatheca almost twice as long as broad; basal tip rounded (fig. 4J). . . . . *Sindosium chungbukicum* sp. nov.

### Subfamily Nossidiinae Sörensson & Delgado, 2019

Nossidiinae Sörensson & Delgado, 2019: 791; Polilov *et al.*, 2019: 451.

Type species: *Nossidium pilosellum* (Marsham, 1802) (= *Dermestes pilosellus* Marsham, 1802: 78).

### \*World Catalogue of Subfamily Nossidiinae Sörensson & Delgado, 2019 (Sep 2022)

\*Based on catalogue of Sörensson & Delgado (2019) and supplemented from subsequent literature; see list of references below.

Genus *Nossidium* Erichson, 1845: 17

*americanum* (Motschulsky, 1869: 191) (*Anisarthria*)

*amoenum* (Motschulsky, 1869: 192) (*Anisarthria*)

*flachi* Ganglbauer, 1898: 300

*harrietae* Darby, 2020: 3

*issyae* Darby, 2016: 42

*katyae* Darby, 2015: 438

*koreanum* sp. nov.

*pilosellum* (Marsham, 1802: 78) (*Dermestes*)

=*brunneum* (Marsham, 1802: 78) (*Dermestes*)

=*ferrarii* (Redtenbacher, 1847: 151) (*Ptilium*)

=*nitidulum* (Marsham, 1802: 79) (*Dermestes*)

*posthumum* Matthews, 1874: 298

- schuelkei* Darby, 2016: 44  
 Genus *Motschulskium* Matthews, 1872: 72  
*sinuatocolle* Matthews, 1872: 74  
 Genus *Sindosium* Johnson, 2007: 213  
*bacchusi* Darby, 2019b: 45  
*chungbukicum* **sp. nov.**  
*collinsi* Darby, 2019a: 4  
*foveatum* Johnson, 2007: 214  
*lamingtoni* Maté Nankervis, 2020: 533  
*longifilum* **sp. nov.**  
*opacipenne* Johnson, 2007: 216  
*queenslandicum* Maté Nankervis, 2020: 529  
 Genus *Bicavella* Johnson, 2007: 217  
*relicta* Johnson, 2007: 219  
*nossidioides* Johnson, 2007: 219  
 Genus †*Crenossidium* Li, Newton & Cai, 2022: 2  
 †*slipinskii* Li, Newton & Cai, 2022: 3

### Genus *Nossidium* Erichson, 1845

*Nossidium* Erichson, 1845: 17.

Type species: *Nossidium pilosellum* (Marsham, 1802) (= *Dermestes pilosellus* Marsham, 1802: 78).

#### *Nossidium koreanum* **sp. nov.**

(Figs 1A–B, 2, 5: circle)

**Diagnosis.** The adult of *Nossidium koreanum* is very similar to the western Palearctic *Nossidium pilosellum* (Marsham, 1802). It can be distinguished by the shape of the aedeagus (round apical tip, shorter paramere with less number of setae) and stout, globular spermatheca. It is also similar to the European *Nossidium flachi* Ganglbauer, 1898 but differs by being on average slightly smaller and with stouter, less elongate body form, and by its broader intermesocoxal process and more evenly curved metaventral lines (Fig. 2G). In addition, we compared *N. koreanum* to several Nearctic Nossidiine taxa, described as well as undescribed, without finding any correspondance.

**Description.** Body length 0.95–1.05 mm, width 0.52–0.56 mm; oval, convex; color brown, evenly punctuate with pale yellow pubescence. Antennomeres I–II light brown, III–XI dusky yellow (Figs. 1A–B).

**Head.** Broad, rounded; weakly and sparsely punctuate. Eyes large; distance between eyes in ventral view 0.22 mm. Antennal length 0.46 mm; antennomeres I–II large, stouter than others; III short, cone-shaped; IV–VIII long, distally weakly dilated; IX–XI clavate, basal half of seta darker; IX ovoid; X basally dilated by three fourths; XI ovoid (Fig. 2A).

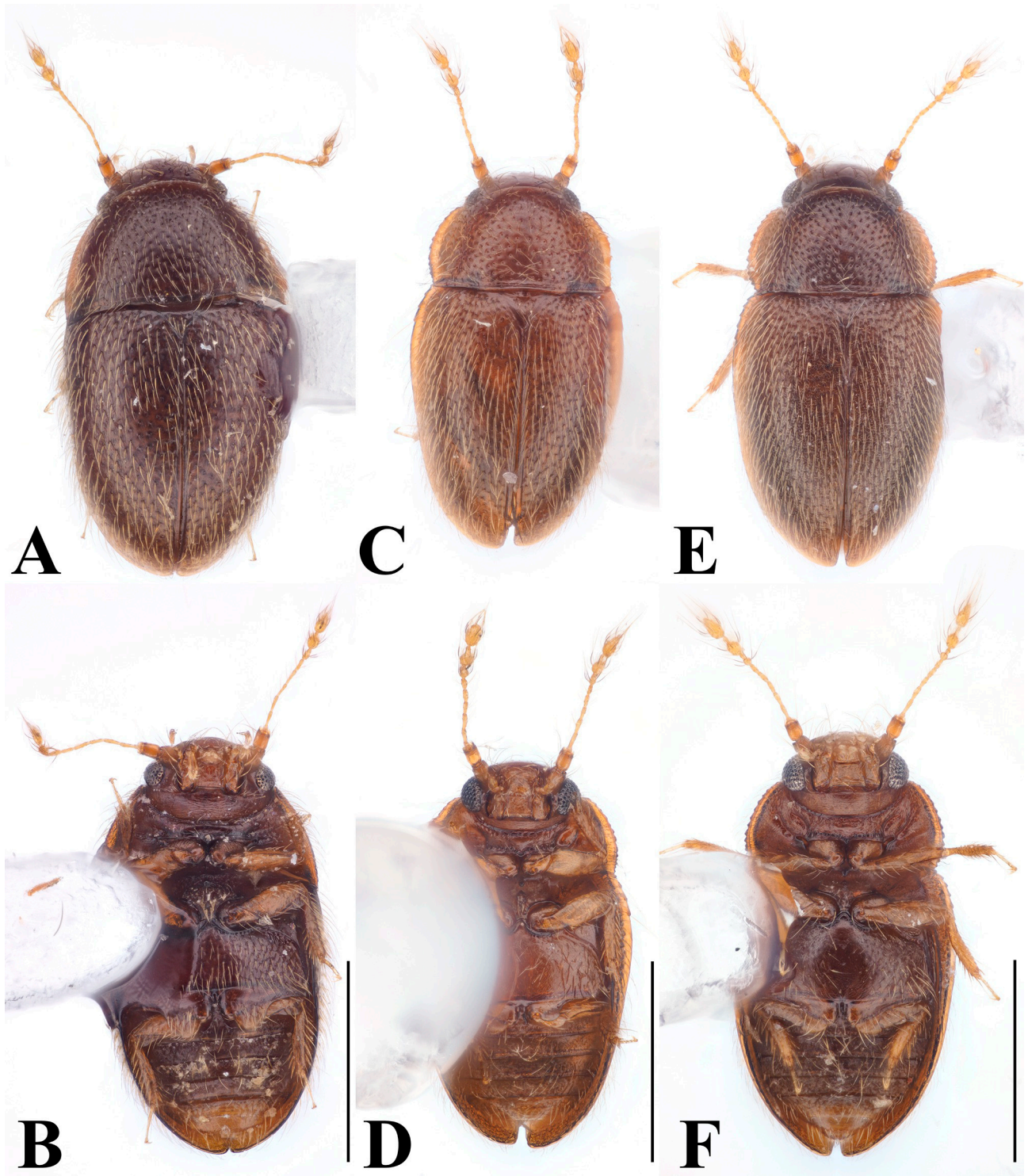
**Thorax.** Pronotum length 0.31 mm, width 0.55 mm; widest slightly in front of base; lateral margin smooth, not serrate; surface shining, rather weakly, evenly punctuate with pubescence; posterior margin sinuate (Fig. 2B). Scutellum small, triangular (Fig. 2C).

**Wings.** Elytral length 0.69 mm, long, complete; evenly punctuate with pubescence; lateral and posterior margin rounded (Fig. 2E). Hindwing blade wide, membranous; anterior petiolar margin setose on distal two thirds (Fig. 2D).

**Meso-, Metaventricle.** Mesoventrite anteriorly with collar and keel; medial collar extension and keel weakly developed; laterally of mesocoxae, mesopleural [anterior] suture rather straight, directed obliquely anterad, metaventral [posterior] line rather straight, distally gently curved posterad; mesoventrite medially as long as metaventricle (Fig. 2G).

**Abdomen.** Abdominal sternite I anteromedially with prominent knob fitting to metaventral [intermetacoxal] condyle (Figs. 2G, J–K). Male abdominal sternite VI rounded, female somewhat angled (Figs. 2J–K). Male tergite X smoothly triangular, female posterior margin sexdentate (Figs. 2H–I).



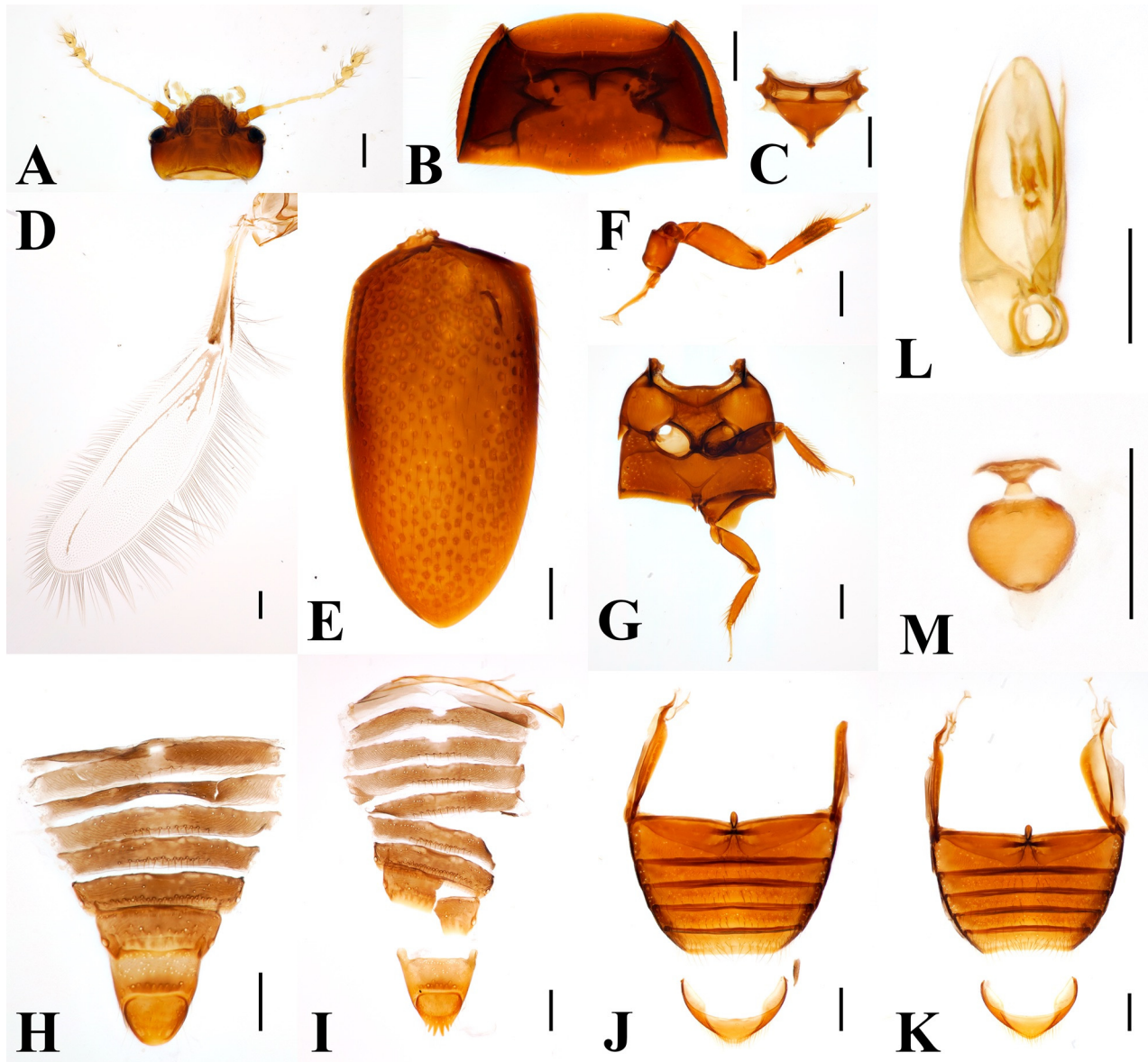


**FIGURE 1.** Habitus of Korean Nossidiinae species: A–B, *Nossidium koreanum* sp. nov.; C–D, *Sindosium longifilum* sp. nov.; E–F, *Sindosium chungbukicum* sp. nov.; A, C, E, dorsal view; B, D, F, ventral view. Scale bar: 0.5 mm.

*Legs.* Procoxae contiguous. Mesocoxae separated by broad process. Metacoxae short, wide, almost contiguous, only separated by an intermetacoxal condyle (Figs. 2B, G).

*Male genitalia.* Aedeagus elongate, somewhat flattened, slightly asymmetric, basal foramen skewed, apex obtusely rounded; parameres each with two setae, apical one longer (Fig. 2L).

*Female genitalia.* Spermatheca small, globular, mushroom-shaped part short and stout (Fig. 2M).



**FIGURE 2.** *Nossidium koreanum* sp. nov.: A, head; B, pronotum; C, scutellum; D, hindwing; E, right elytron; F, foreleg; G, meso- and metaventrite with mid- and hindleg; H–I, abdominal tergites; J–K; abdominal sternites; L, aedeagus; M, spermatheca; A–H, J, L, male; I, K, M, female; C–F, H–I, dorsal view; A–B, G, J–L, ventral view. Scale bar: 0.1 mm.

**Material examined** ( $n=20$ , 9♂♂11♀♀).

Holotype (deposited in NIBR), ♂ (dry), **Korea:** Gyeongbuk Prov. Seonghyeon-ri, Yongmun-myeon, Yecheon-gun, 04.V.2019, 36°40'48.0"N 128°25'09.0"E, 134 m, sifting leaf & soil litter, U.-J. Byeon.

Paratypes (deposited in CBNUIC), 1♂1♀ (1♂, slide; 1♀, dry), same data as in holotype; 2♂♂ (dry), **Korea:** Chungbuk Prov. 1061-29, Chopyeong-ro, Chopyeong-myeon, Jincheon-gun, 31.III.2021, 36°48'47.2"N 127°31'13.7"E, 92 m, sifting leaf & soil & deadwood debris, J.-I. Shin, J.-W. Kang; 1♂5♀♀ (4♀♀, dry; 1♂1♀, slide), **Korea:** Chungbuk Prov. 182, Dangdongjanghyeon-ro, Daegang-myeon, Danyang-gun, 19.III.2021, 36°55'39.0"N 128°22'30.0"E, 360 m, sifting leaf & soil litter, T.-Y. Jang, Y.-J. Choi, M.-H. Song; 1♂ (dry), **Korea:** Chungbuk Prov. Jagwangsa, Mt. Worak, 1560-35, Mireuksonggye-ro, Hansu-myeon, Jecheon-si, 28.V.2020, 36°52'52.0"N 128°05'05.0"E, 275 m, sifting leaf & soil litter, M.-H. Song, U.-J. Byeon; 1♀ (dry), same locality, 09.VI.2021, 36°52'52.0"N 128°05'10.0"E, 276 m, sifting leaf & soil & deadwood debris, J.-I. Shin, M.-H. Song; 1♀ (card mounted), same locality, 15.VII–29.VIII.2022, 36°52'53.3"N 128°05'13.8"E, 292 m, F.I.T., J.-I. Shin, U.-J. Hwang; 1♂1♀ (in 95% EtOH), **Korea:** Gangwon Prov. 535, Woran-gil, Anheung-myeon, Hoengseong-gun, 29.IV.2022, 37°23'01.7"N 128°09'44.3"E, 608 m, sifting leaf & soil litter, J.-I. Shin, M.-H. Song; 1♂1♀ (dry), **Korea:** Gyeongbuk Prov. 164,



Winneungnae-gil, Yongmun-myeon, Yecheon-gun, 20.IX.2021, 36°42'43.5"N 128°25'27.9"E, 355 m, sifting leaf & soil litter, U.-J. Byeon; 1♂ (dry), **Korea:** Gyeongbuk Prov. Cheongnye-ro, Unmun-myeon, Cheongdo-gun, 02.VII.2021, 35°45'18.9"N 128°56'41.5"E, 251 m, sifting leaf & soil litter, M.-H. Song, U.-J. Byeon, J.-I. Shin; 1♀ (dry), **Korea:** Jeonbuk Prov. Yeobang-ri, Seongsan-myeon, Gunsan-si, 03.VIII.2021, 36°00'38.1"N 126°47'00.9"E, 175 m, sifting leaf & soil litter, J.-W. Kang, J.-W. Kim.

**Distribution.** South Korea (Fig 5: circle).

**Etymology.** This species was named after the type locality: Korea.

## Genus *Sindosium* Johnson, 2007

*Sindosium* Johnson, 2007: 213.

Type species: *Sindosium foveatum* Johnson, 2007: 214.

### *Sindosium longifilum* sp. nov.

(Figs 1C–D, 3, 5: triangle)

**Diagnosis.** The adult of *Sindosium longifilum* can be distinguished from other *Sindosium* species by an unusually prolonged seta on the last anterior serration of the elytral humeri and oval spermatheca with pointed basal tip.

**Description.** Body length 0.95–1.00 mm, width 0.53–0.55 mm; oval, convex; color reddish brown, evenly punctuate with pale yellow pubescence. Antennomeres I–II light reddish brown, III–XI reddish yellow (Figs. 1C–D).

**Head.** Broad, rounded; weakly, finely, sparsely punctuate. Eyes large; distance between eyes in ventral view 0.19 mm. Antennal length 0.42 mm; Antennomeres I–II large, thicker than others; III short, cone-shaped; IV–VII long, weakly swollen distally; VIII slightly shorter; IX–XI clavate, basal half of seta darker; IX ovoid; X basal half swollen; XI ovoid (Fig. 3A).

**Thorax.** Pronotum length 0.30 mm, width 0.49 mm; widest slightly behind middle; lateral margin serrated, flattened, curved, and basally narrowed; surface shining, rather weakly, evenly punctuate with pubescence; posterior margin wider than anterior (Fig. 3B). Scutellum equilaterally triangular (Fig. 3C).

**Wings.** Elytral length 0.69 mm, long, complete; rather weakly, evenly punctuate with pubescence; lateral margin serrate anteriorly, with 4–5 denticles, each with long seta, posterior one conspicuously long; posterior margin rounded (Fig. 3E). Hindwing blade wide, membranous; anterior petiolar margin with one distinct seta, posterior margin setose on distal half (Fig. 3D).

**Meso-, Metaventrite.** Mesoventrite anteriorly with prominent collar and keel; keel wider than median extension of collar; laterally of mesocoxae, mesopleural [anterior] suture straight, directed obliquely anterad, metaventral [posterior] line rather straight, distally obtusely angled, directed posterad. Mesoventrite medially shorter than metaventrite (Fig. 3G).

**Abdomen.** Abdominal sternite I anteromedially with prominent knob fitting to metaventral [intermetacoxal] condyle (Figs. 3G, J–K). Tergite X small, in male trapezoid, in female semicircular (Figs. 3H–I).

**Legs.** Male foreleg with pubescence around tarsus (Fig. 3F). Procoxae contiguous. Mesocoxae separated by arrow-shaped process. Metacoxae short, wide, almost contiguous, only separated by an intermetacoxal condyle (Figs. 3B, G).

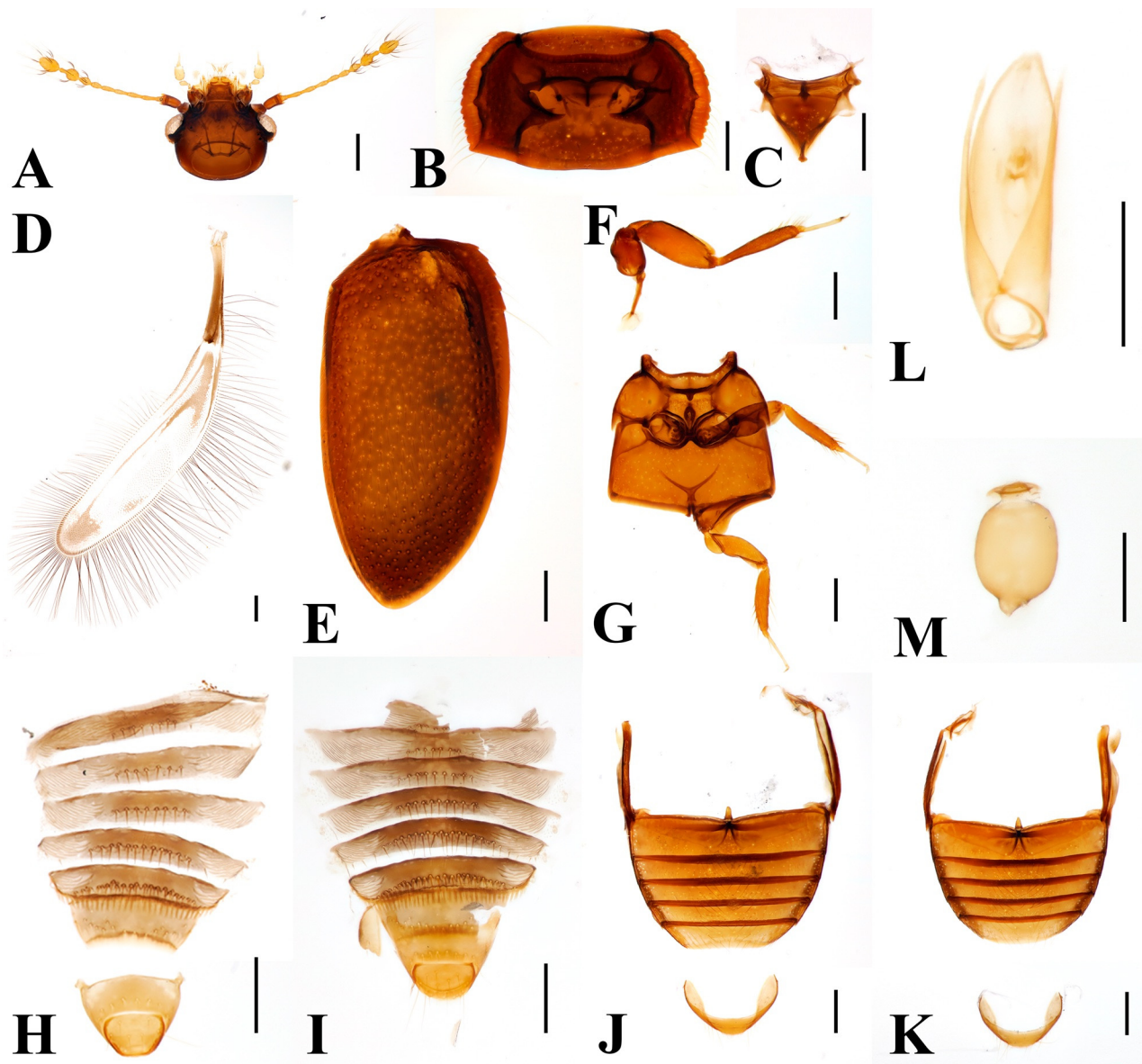
**Male genitalia.** Aedeagus elongate, flattened, slightly asymmetric, basal foramen skewed, apex angular. Each paramere with three setae, apical one longer (Fig. 3L).

**Female genitalia.** Spermatheca length 0.15 mm, width 0.087 mm; oval, slightly longer than broad, basal tip pointed with chord, mushroom-shaped part short and stout (Fig. 3M).

**Material examined** ( $n=36$ , 16♂♂20♀♀).

Holotype (deposited in NIBR), ♂ (dry), **Korea:** Gyeonggi Prov. Bogwangsa, 87, Bogwang-ro 474beon-gil, Gwangtan-myeon, Paju-si, 15.V.2021, 37°45'06"N 126°54'56"E, 190 m, sifting leaf & soil litter, J.-W. Seo.

Paratypes (deposited in CBNUIC), 1♂ (dry), same data as in holotype; 2♂♂2♀♀ (2♂♂, dry; 2♀♀, slide), **Korea:** Chungbuk Prov. Gaesin-dong, Heungdeok-gu, Cheongju-si, 01.IV.2020, 36°37'43.5"N 127°27'16.7"E, 75 m, sifting leaf & soil & deadwood debris, M.-S. Jang, J.-Y. Kang, Y.-J. Choi, T.-Y. Jang, U.-J. Byeon, J.-W. Kim; 1♀ (dry), **Korea:** Chungbuk Prov. Jagwangsa, Mt. Worak, 1560-35, Mireuksonggye-ro, Hansu-myeon, Jecheon-si,



**FIGURE 3.** *Sindosium longifilum* sp. nov.: A, head; B, pronotum; C, scutellum; D, hindwing; E, right elytron; F, foreleg; G, meso- and metaventrite with mid- and hindleg; H–I, abdominal tergites; J–K; abdominal sternites; L, aedeagus; M, spermatheca. A–H, J, L, male; I, K, M, female; C–F, H–I, dorsal view; A–B, G, J–L, ventral view. Scale bar: 0.1 mm.

28.V.2020, 36°52'52.0"N 128°05'10.0"E, 262 m, sifting leaf & soil litter, M.-H. Song, U.-J. Byeon; 3♀♀ (2♀♀, dry; 1♀, slide), **Korea:** same locality, date, method and collector, 36°52'53.0"N 128°05'08.0"E, 243 m; 1♀ (dry), same locality, 25.V.2021, 36°52'53.3"N 128°05'11.6"E, 270 m, sifting soil litter & flood debris, J.-W. Kang, Y.-J. Choi, M.-H. Song; 2♀♀ (dry), **Korea:** Chungbuk Prov. Simbok Valley, 95, Yeonpung-ro galgeum 3-gil, Yeonpung-myeon, Goesan-gun, 30.V.2021, 36°46'49.44"N 127°57'45.00"E, 270 m, sifting leaf & soil litter, J.-W. Seo; 1♂ (dry), **Korea:** Gangwon Prov. Joldeulu-gil, Bukpyeong-myeon, Jeongseon-gun, 27.X.2019, 37°26'54.6"N 128°38'21.0"E, 312 m, sifting leaf & soil litter near stream, M.-S. Jang, J.-W. Kang, U.-J. Byeon; 1♂ (dry), **Korea:** Gyeongbuk Prov. Seonghyeon-gil, Yongmun-myeon, Yecheon-gun, 04.V.2019, 36°40'48.0"N 128°25'09.0"E, 134 m, sifting leaf & soil litter, U.-J. Byeon; 1♂ (dry), **Korea:** Gyeonggi Prov. Hoguk-ro 550beon-gil, Jangheung-myeon, Yangju-si, 08.VII.2019, 37°42'38"N 126°58'55"E, 150 m, sifting leaf litter & deadwood debris, Y.-J. Choi, T.-Y. Jang; 4♂♂ (3♂♂, slide; 1♂, in 95% EtOH), **Korea:** Jeju Island. 137, Donnaeko-ro, Seogwipo-si, 26.IX.2021, 33°17'59.8"N 126°34'59.3"E, 263 m, sifting leaf & soil litter, J.-W. Kang, T.-Y. Jang; 2♀♀ (dry), same locality, date and method, J.-W. Kang, U.-J. Byeon; 1♂1♀ (in 95% EtOH), **Korea:** Jeju Island. 516-ro, Namwon-eup, Seogwipo-si, 26.VIII.2021, 33°19'57.9"N 126°36'25.2"E, 504 m, sifting soil & deadwood debris, J.-W. Kang, J.-W. Kim, J.-I.

Shin; 3♀ (dry), same locality, 26.IX.2021, 33°20'53.6"N 126°36'50.8"E, 601 m, sifting leaf & soil & deadwood debris, J.-W. Kang, T.-Y. Jang; 2♂♂ (slide), **Korea:** Jeju Island. Mt. Halla, 1100-ro, Aewol-eup, Jeju-si, 28.XI.2021, 33°22'37"N 126°28'06"E, 1012 m, sifting leaf & soil litter, J.-W. Kang, M.-H. Song, J.-I. Shin; 1♀ (dry), **Korea:** Jeonnam Prov. Mt. Doksil, Gageo island, Gageodo-gil, Heuksan-myeon, Sinan-gun, 07.VII.2020, 34°03'48.4"N 125°07'21.0"E, 366 m, sifting leaf & soil litter, M.-H. Song; 2♀♀ (dry), same locality, 08.VII.2020, 34°04'59.0"N 125°06'21.0"E, 474 m, sifting leaf & soil litter, T.-Y. Jang; 1♂1♀ (slide), same locality, 19.IV.2021, 34°05'13.3"N 125°06'17.1"E, 415 m, sifting leaf & soil litter near rock, J.-W. Kang; 1♀ (dry), **Korea:** Jeonnam Prov. Gogeu Island, 102, Cheonghakdong-gil, Gogeu-myeon, Wando-gun, 07.VII.2022, 34°25'18.6"N 126°48'19.5"E, 31 m, sifting leaf & soil litter, S.-H. Choi, J.-W. Seo, U.-J. Byeon; 1♂ (dry), **Korea:** Jeonnam Prov. Yaksan Island, 566, Yaksanilju-ro, Yaksan-myeon, Wando-gun, 07.VII.2022, 34°21'44.3"N 126°55'00.5"E, 109 m, sifting leaf & soil litter, S.-H. Choi, J.-W. Seo, U.-J. Byeon.

**Distribution.** South Korea (Fig 5: triangle).

**Etymology.** The Latin adjective stem “long-” (long) and noun “filum” (filament) refers to the longest seta on the elytra.

### ***Sindosium chungbukicum* sp. nov.**

(Figs 1E–F, 4, 5: square)

**Diagnosis.** Adult of *Sindosium chungbukicum* can be distinguished from other *Sindosium* species by weakly developed mesoventral process and long, oval, assymmetrically caved spermatheca with puffed out basal tip.

**Description.** Body length 0.97–0.99 mm, width 0.52–0.54 mm; oval, convex; color light brown, dorsum punctuate with pale yellow pubescence. Antennomeres I–II reddish brown, III–XI dusky yellow (Figs. 1E–F).

**Head.** Broad, rounded; weakly, finely, very sparsely punctuate. Eyes large; distance between eyes in ventral view 0.19 mm. Antennal length 0.40 mm; Antennomeres I–II large, thicker than others; III short, cone-shaped; IV–V long, weakly dilated distally; VI–VII lengthy oval; VIII oval, short, stout; IX–XI clavate, basal half of seta darker; IX ovoid, basal half swollen; X basal two thirds swollen; XI ovoid (Fig. 4A).

**Thorax.** Pronotum length 0.26 mm, width 0.45 mm; widest slightly behind middle, basally narrowed; lateral margin curved, flattened and serrate; surface shining, evenly punctuate except for a small central patch; posterior margin almost straight, somewhat wider than anterior margin. Scutellum equilaterally triangular (Figs. 4B–C).

**Wings.** Elytra length 0.64 mm, long, complete; evenly punctuate with pubescence; lateral margin anteriorly with 4–5 denticles, each with seta; posterior margin rounded (Fig. 4E). Hindwing blade wide, membranous; anterior petiolar margin with one distinct seta, posterior margin setose on distal third (Fig. 4D).

**Meso-, Metaventrite.** Mesoventrite with anterior collar and keel; keel somewhat slender; laterally of mesocoxae, mesopleural [anterior] suture straight, directed obliquely anterad, metaventral [posterior] line slightly cave, distally obtusely angled, directed posterad. Mesoventrite medially shorter than metaventrite (Fig. 4G).

**Abdomen.** Abdominal sternite I anteromedially with prominent knob fitting to metaventral [intermetacoxal] condyle (Figs. 4G, I). Female tergite X small, semicircular (Fig. 4H).

**Legs.** Procoxae contiguous. Mesocoxae separated by faint process. Metacoxae short, wide, almost contiguous; separated only by an intermetacoxal condyle (Figs. 4B, G).

**Male genitalia.** unknown.

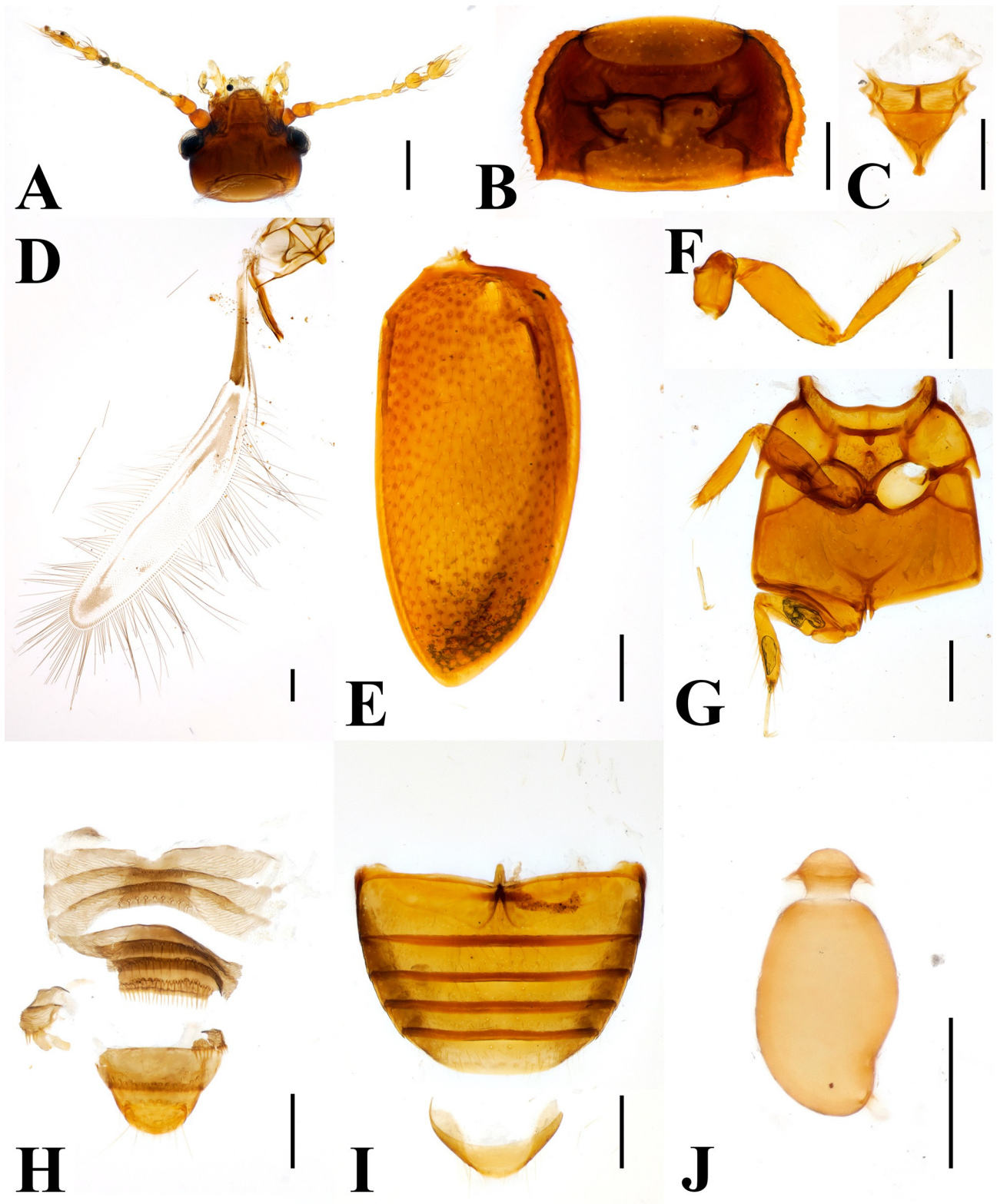
**Female genitalia.** Spermatheca length 0.17 mm, width 0.091 mm; ovaly elongate, almost two times longer than wide, invaginated basally; short chord proximally of invagination; base rounded, mushroom-shaped part short and stout, apex puffed out (Fig. 4J).

**Material examined** ( $n=4$ , 4♀♀).

Holotype (deposited in NIBR), ♀ (dry), **Korea:** Chungbuk Prov. Jagwangsa, Mt. Worak, 1560-35, Mireuksonggye-ro, Hansu-myeon, Jecheon-si, 28.V.2020, 36°52'52.7"N 128°05'11.0"E, 277 m, sifting leaf & soil litter, J.-Y. Kang, T.-Y. Jang.

Paratypes (deposited in CBNUIC), 1♀ (dry), **Korea:** Chungbuk Prov. 182, Dangdongjanghyeon-ro, Daegang-myeon, Danyang-gun, 22.V.2020, 36°55'38.9"N 128°22'30.9"E, 348 m, sifting leaf & soil litter, M.-S. Jang, J.-W. Kim; 1♀ (slide), same locality, date and method, T.-Y. Jang, Y.-J. Choi; 1♀ (dry), **Korea:** Chungbuk Prov. Jagwangsa, Mt. Worak, 1560-35, Mireuksonggye-ro, Hansu-myeon, Jecheon-si, 25.V.2021, 36°52'52.4"N 128°05'05.5"E, 241 m, sifting leaf & soil litter, J.-W. Kang, Y.-J. Choi, M.-H. Song.

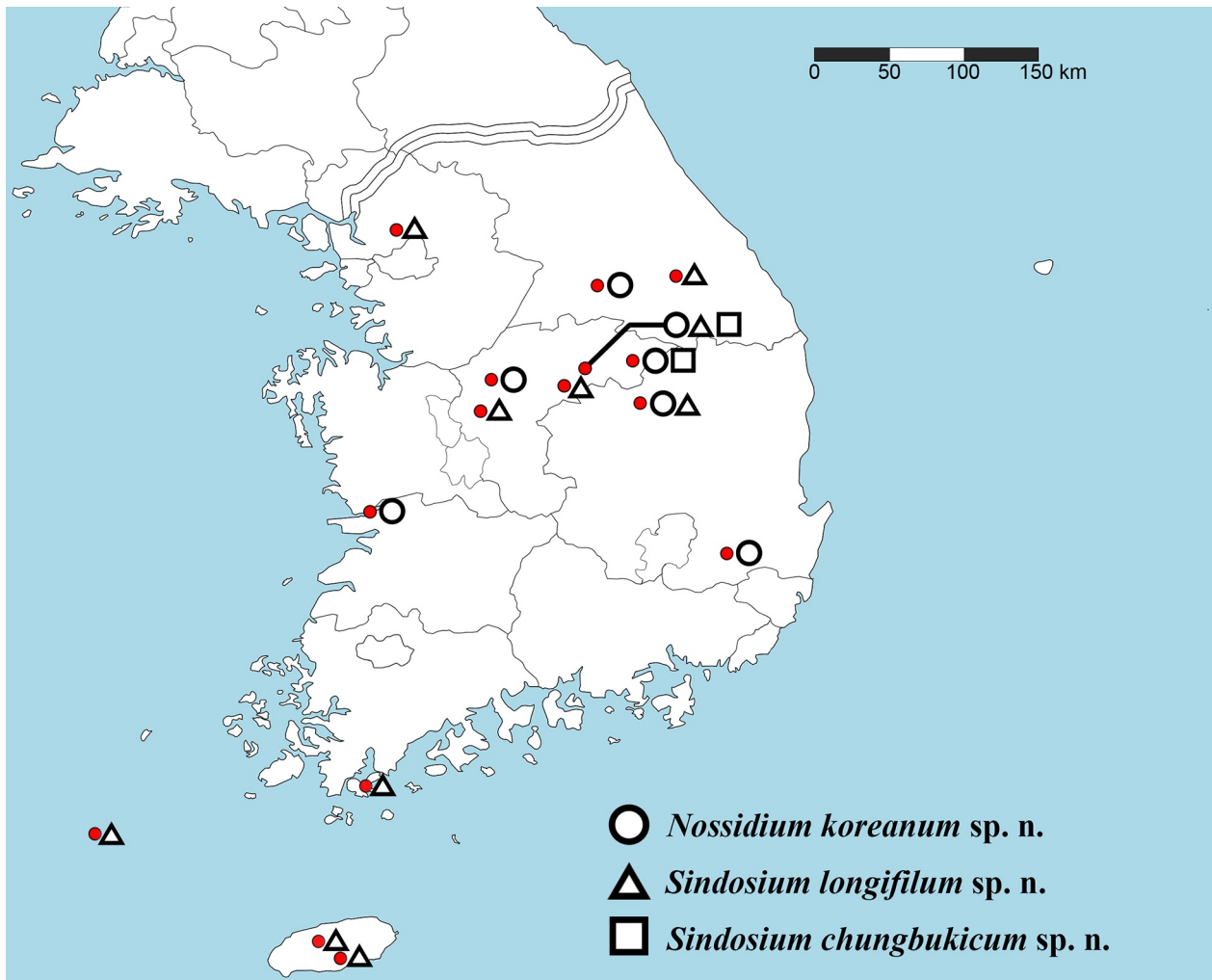




**FIGURE 4.** *Sindosium chungbukicum* sp. nov.: A, head; B, pronotum; C, scutellum; D, hindwing; E, right elytron; F, foreleg; G, meso- and metaventrite with mid- and hindleg; H, abdominal tergites; I, abdominal sternites; J, spermatheca; C–F, H, dorsal view; A–B, G, I, ventral view. Scale bar: 0.1 mm.

**Distribution.** South Korea (Fig 5: square).

**Etymology.** This species was named after the type locality: Chungbuk province of South Korea.



**FIGURE 5.** Collection localities of Korean Nossidiinae species: circle, *Nossidium koreanum* sp. nov.; triangle, *Sindosium longifilum* sp. nov.; square, *Sindosium chungbukicum* sp. nov.

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