



Three new records of the genus *Boletina* Staeger (Diptera: Mycetophilidae: Gnoristinae) from the Korean Peninsula

Dongho Lee^P and Yeon Jae Bae^C



Department of Environmental Science & Ecological Engineering, Korea University, Seoul 02841

Correspondence E-mail : yjbae@korea.ac.kr

Introduction

The fungus gnat genus *Boletina* Staeger, 1840 is one of the largest genera in the family Mycetophilidae. The genus includes 167 species worldwide with 63 Palearctic species but has not been recorded from the Korean Peninsula. In this study, we report three new record species *Boletina nasuta* Haliday, 1839, *Boletina nitida* Grzegorzek, 1885 and *Boletina takagii* Sasakawa & Kimura, 1974 for the first time from Korea. Adult specimens were collected from a well-preserved forest nearby a water stream, using a Malaise trap. These species can be distinguished from other congeners by the characterized shape of gonocoxites, gonostylus, and the number of cerci spin. Illustrations and photographs of adult male diagnostic characters are provided.

Materials and Methods

Adult fungus gnats were collected from a well-preserved forest nearby a water stream, using a Malaise trap. (Fig. 1). and specimens were preserved in 80% ethanol. Male and female genitalia were dissected and placed overnight in 10% KOH to clear and remove the tissues. After that, cleared genitalia were mounted slide glass with glycerol and examined under the dissecting microscope (Olympus SZX10, Japan). Photographs of the species were taken with a digital camera Nikon Z7 through Nikon AF Micro NIKKOR 105mm F2.8D. All specimens examined in this study were deposited in the Korea University Entomological Museum, Seoul, South Korea (KU).

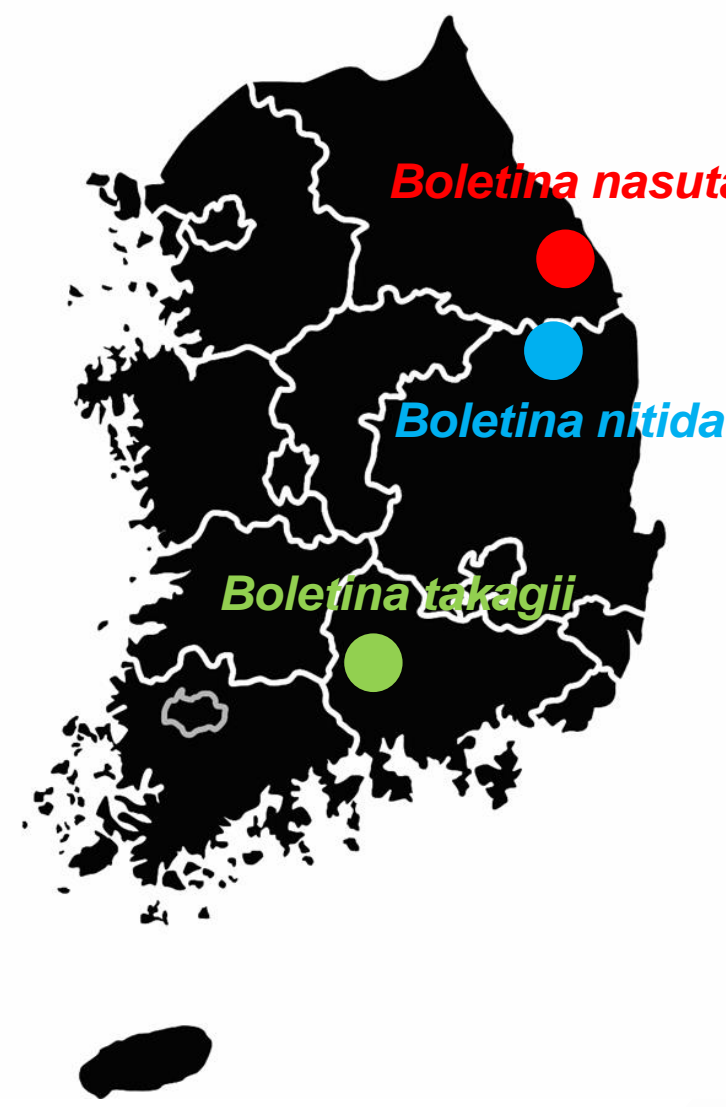


Fig. 1A Study site of *Boletina nasuta*



Fig. 1B Study site of *Boletina nitida*



Fig. 1C Study site of *Boletina takagii*

Taxonomic account

Material examined

Boletina nasuta Haliday, 1839, 1♂, (in ethanol), Mugun-ri, Dogye-eup, Samcheok-si, Gangwon-do, Republic of Korea, 37°15'30.54"N 129°06'35.64"E, 28-V ~21-VII-2022, Malaise trap, Coll. YJB, DHL, JSK.

Boletina nitida Grzegorzek, 1885, 1♂, (in ethanol), Mugun-ri, Dogye-eup, Samcheok-si, Gangwon-do, Republic of Korea, 35°21'03.11"N 127°40'42.24"E, 30-IX~10-IX-2021, Malaise trap, Coll. YJB, DHL, JSK.

Boletina takagii Sasakawa & Kimura, 1974, 1♂, (in ethanol), Seokpo-ri, Seokpo-myeon, Bonghwa-gun, Gyeongsangbuk-do, Republic of Korea, 37°03'29.60"N 129°09'24.97"E, 22-V ~04-VII-2022, Malaise trap, Coll. YJB, DHL, JSK.

Genus *Boletina*

Diagnosis

Medium sized fungus gnats; Antennae 2+14 segmented, palpus 4-segmented. Thorax dark brown, laterotergite with three long seta, metapleuron hairy on posterior half or bare. Wing with vein C usually extending apex of vein R₅, subcostal ending in C, Sc₂ absent or situated at middle of cell R, R₄ absent, forking point of cubitus mostly at or slightly beyond base of stem of media. Hind tibia with two or four rows of short bristles.

Order Diptera

Family Mycetophilidae

Subfamily Gnoristinae

Genus *Boletina*

Boletina nasuta Haliday, 1839

Boletina nitida Grzegorzek, 1885

Boletina takagii Sasakawa & Kimura, 1974

Description

Boletina nasuta Haliday, 1839

Head black. Three ocelli. Scape and pedicel yellow. Antenna with 14 flagellomeres; first flagellomere yellow at base; remaining flagellomeres brown. Palpus yellow. **Thorax** dark brown. Mediotergite black and bare. Laterotergite with three long seta. **Legs** entirely yellow with black setae. **Wing** H present. C extending beyond of R₅. Sc complete; reaching C distance to Rs. R₁ longer than r-m at less 4 times. Rs present. M₁ and M₂ forked at Rs. A₁ present. **Abdomen** Tergites 1–5 brown; tergites 6–8 dark brown. **Terminalia** Tergite 9 with two cerci. Cerci with pectinate seta. Inner structure similar shape with tergite 9. Gonocoxites twice shorter than tergite 9; sternal submedian appendages long. Gonostylus long and setos; with narrow ending. Two pincers like appendage structure nearby gonostylus.

Boletina nitida Grzegorzek, 1885

Head black. Three ocelli. Scape and pedicel dark brown. Antenna with 14 flagellomeres; first flagellomere brown at base; remaining flagellomeres dark brown. Palpus yellow. **Thorax** black. Mediotergite black and bare. Laterotergite with three long seta. **Legs** entirely yellow with black setae. **Wing** H present. C extending beyond of R₅. Sc complete; reaching C distance to Rs. R₁ longer than r-m at less 4 times. Rs present. M₁ and M₂ forked at Rs. A₁ present. **Abdomen** Tergites 2–4 brown and yellow; tergites 5–8 black. **Terminalia** Tergite 9 with two cerci. Cerci with long pectinate seta. Gonocoxites wide than tergite 9; sternal submedian appendages short. Gonostylus club shape and setos; inner side with three strong seta.

Boletina takagii Sasakawa & Kimura, 1974

Head black. Three ocelli. Scape and pedicel yellow. Antenna with 14 flagellomeres; first flagellomere brown at base; remaining flagellomeres dark brown. Palpus yellow. **Thorax** black. Mediotergite black and bare. Laterotergite with three long seta. **Legs** entirely yellow with black setae. **Wing** H present. C extending beyond of R₅. Sc complete; reaching C distance to Rs. R₁ longer than r-m at less 4 times. Rs present. M₁ and M₂ forked at Rs. **Abdomen** Tergites 1–3 light brown; tergites 4–8 black. **Terminalia** Tergite 9 long as three time as width; with two small cerci. Gonocoxites long as twice as width; sternal submedian appendages long. Gonostylus small and setos; with two strong seta. Parameres extremely long and extend outside.

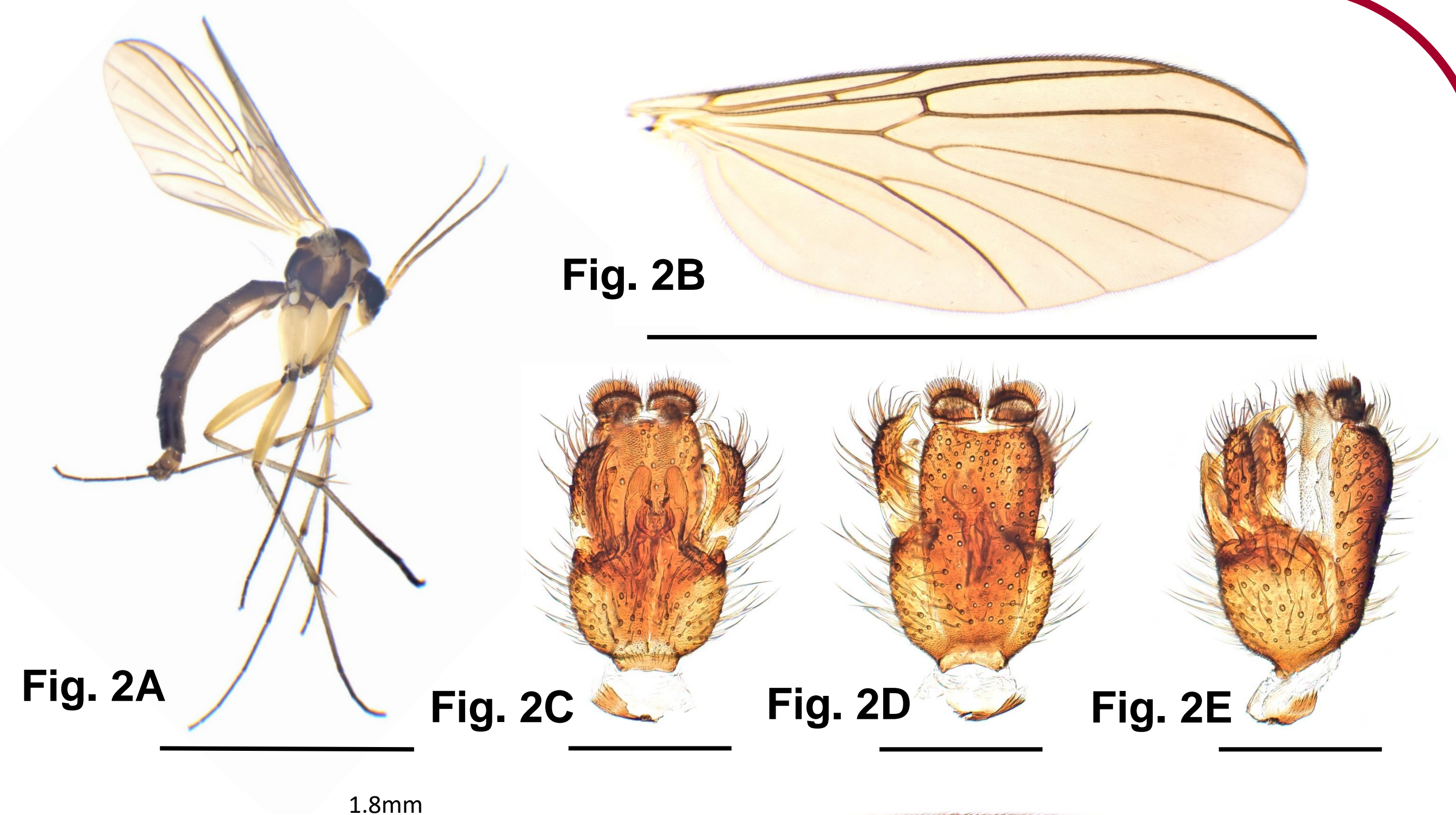


Fig. 2B

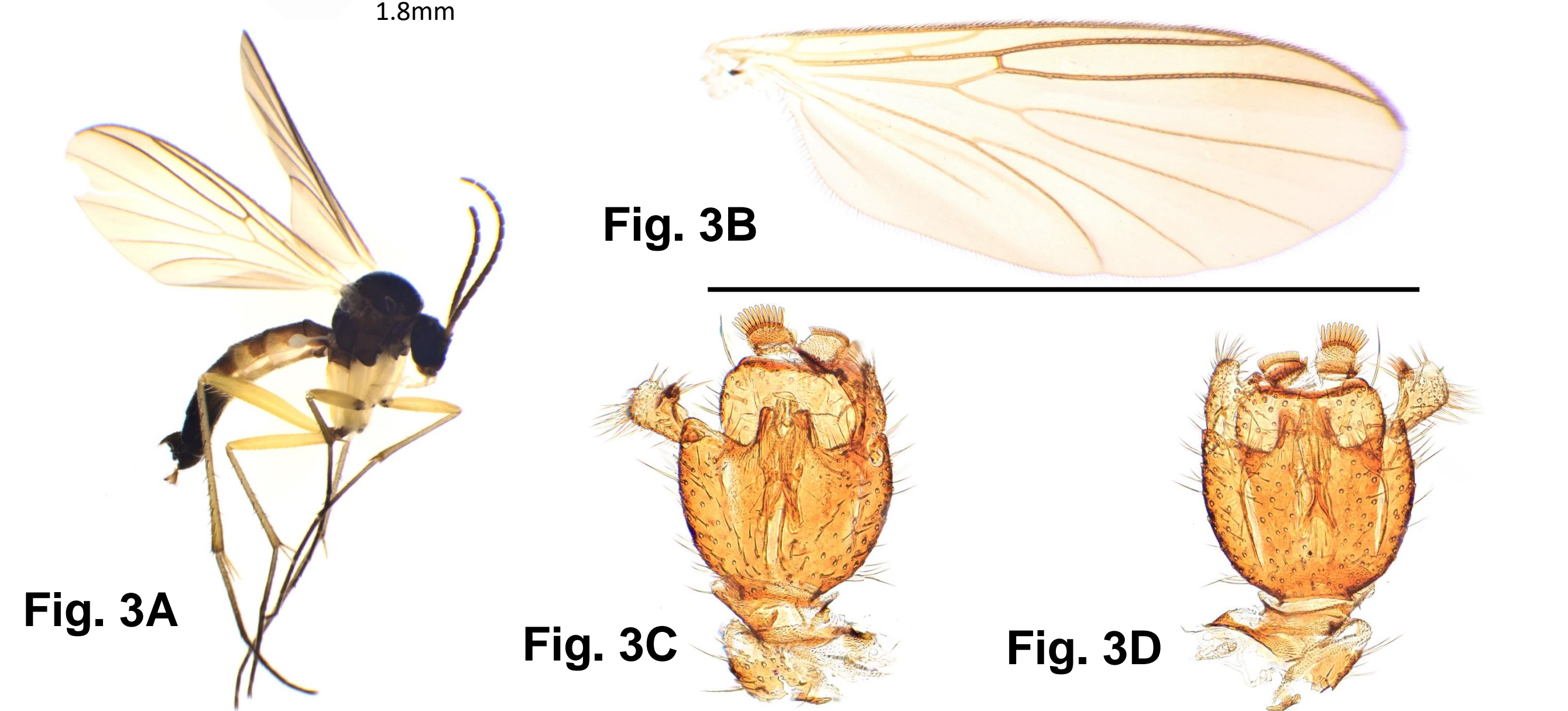


Fig. 3B

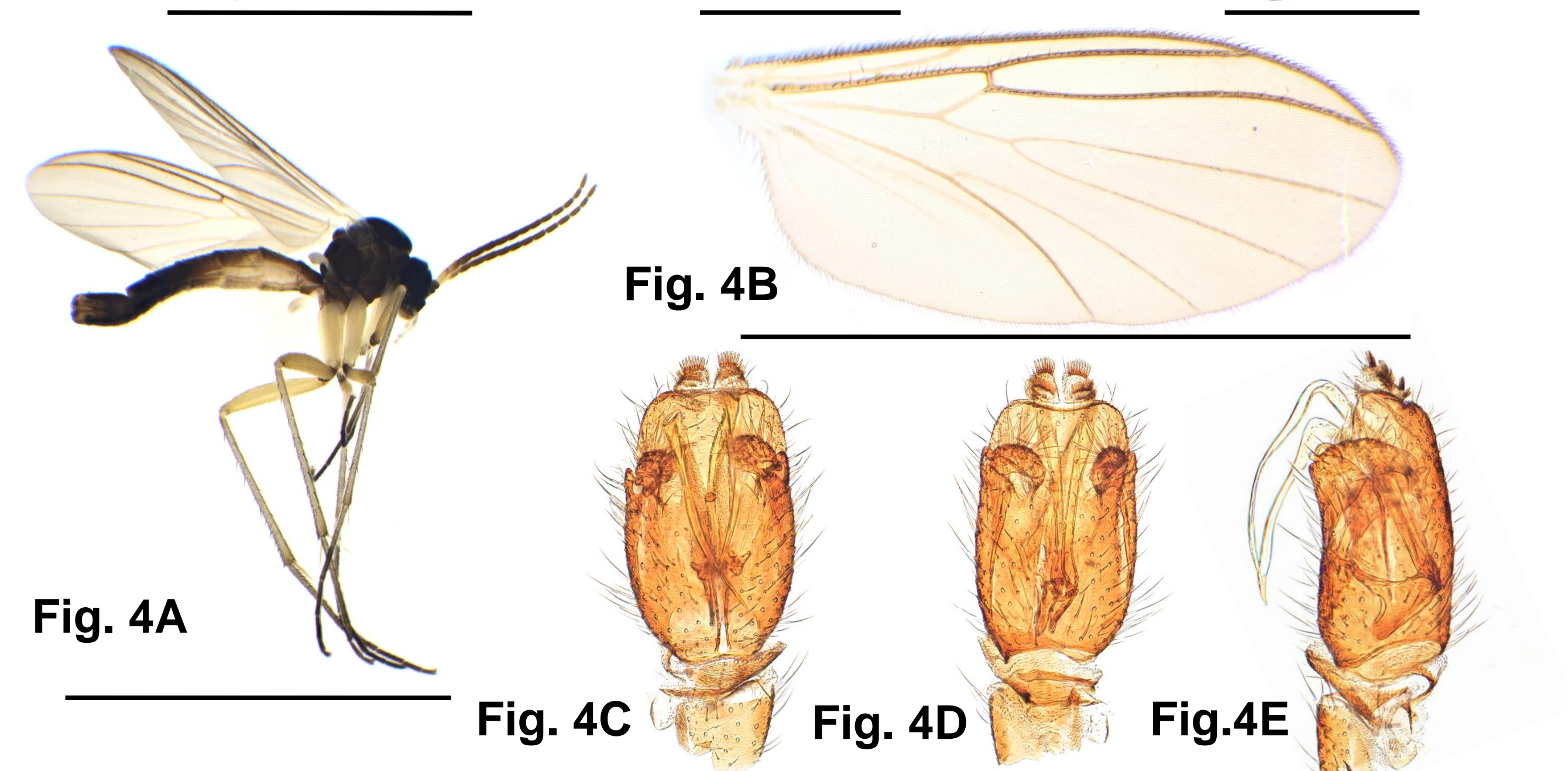


Fig. 4B

Fig. 2. *Boletina nasuta* Haliday, 1839

A: male, B: wing, C: male terminalia; dorsal view, D: male terminalia; ventral view, E: male terminalia; lateral view

Fig. 3. *Boletina nitida* Grzegorzek, 1885

A: male, B: wing, C: male terminalia; dorsal view, D: male terminalia; ventral view

Fig. 4. *Boletina takagii* Sasakawa & Kimura, 1974

A: male, B: wing, C: male terminalia; dorsal view, D: male terminalia; ventral view, E: male terminalia; lateral view

Acknowledgements

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