

The First Record of the Genus *Leptodromiella* (Diptera: Hybotidae) from Korea

Young-Kun Kim¹, Sang Jae Suh^{1,2,*}

¹School of Applied Biosciences, Kyungpook National University, Daegu 41566, Korea

²Institute of Plant Medicine, Kyungpook National University, Daegu 41566, Korea

ABSTRACT

A rare genus *Leptodromiella* Tuomikoski, 1936, which belongs to the subfamily Ocydromiinae in the family Hybotidae contains only one recorded species, *L. crassiseta* (Tuomikoski, 1932). Until now, there is still no known ecological information about this genus, and its distribution was restricted to only in central and northern Europe, such as Finland, Sweden and Russia. In Korea, only one species, *Bicellaria koreana* Barták, Plant & Kubík, 2013, was recorded in the family Hybotidae from Mt. Baekdusan so far. Herein, the second genus *Leptodromiella* is newly recorded along with the nominate species, *L. crassiseta* (Tuomikoski, 1932) in Korean fauna. Re-description and illustrations of external features and male genitalia of the newly recorded species are provided in this paper.

Keywords: taxonomy, Insecta, Hybotidae, Ocydromiinae, dance fly

INTRODUCTION

The genus *Leptodromiella* Tuomikoski, 1936, which belongs to the subfamily Ocydromiinae in the family Hybotidae, contains only one recorded species, *L. crassiseta* (Tuomikoski, 1932) in the world (Shamshev et al., 2017). Originally this species was described as a new species under *Oropezella* by Tuomikoski (1932). However, Tuomikoski (1936) established the genus *Leptodromiella* using *O. crassiseta* as a type species based on the following morphological differences with the related genera such as *Oropezella* Collin, 1926, *Hoplopeza* Bezzi, 1909, and *Leptopeza* Macquart, 1827: frons as wide as length of scape in both sexes; arista-like stylus with dense setulae; wing base weakly developed; apical spine of hind tibia absent. The genus name *Leptodromiella* was based on the names of two genera, *Leptopeza* and *Tachydromia* (Tuomikoski, 1936). Until now, this species has been recorded only in central and northern Europe, such as Finland, Sweden and Russia, and it considered as rare species (Shamshev et al., 2017), and nothing is known about its ecology.

Only one species, *Bicellaria koreana* Barták, Plant & Kubík, 2013, was recorded in the family Hybotidae from Mt.

Baekdusan in Korea. In this paper, the second hybotid fly, genus *Leptodromiella* Tuomikoski, 1936, is reported for the first time from Korean fauna along with the nominate species, *L. crassiseta* (Tuomikoski, 1932). Descriptions and illustrations of external features including male genitalia of the first recorded in Korea are provided here.

External features including male genitalia were photographed by using Olympus SZX 16 stereo microscope (Olympus, Tokyo, Japan), Olympus BX50 compound microscope (Olympus) and Michrome 16 CMOS camera (Tucsen, Fujian, China). All specimens examined in the present study were deposited in the collection of the School of Applied Biosciences at Kyungpook National University, Daegu, Korea. Morphological terms followed Cumming and Wood (2017).

SYSTEMATIC ACCOUNTS

Order Diptera Linnaeus, 1758

Superfamily Empidoidea Latreille, 1809

¹*Family Hybotidae Meigen, 1820

Korean name: ¹*춤파리붙이과(신칭)

© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

*To whom correspondence should be addressed

Tel: 82-53-950-7767, Fax: 82-53-950-6758

E-mail: sjsuh@knu.ac.kr

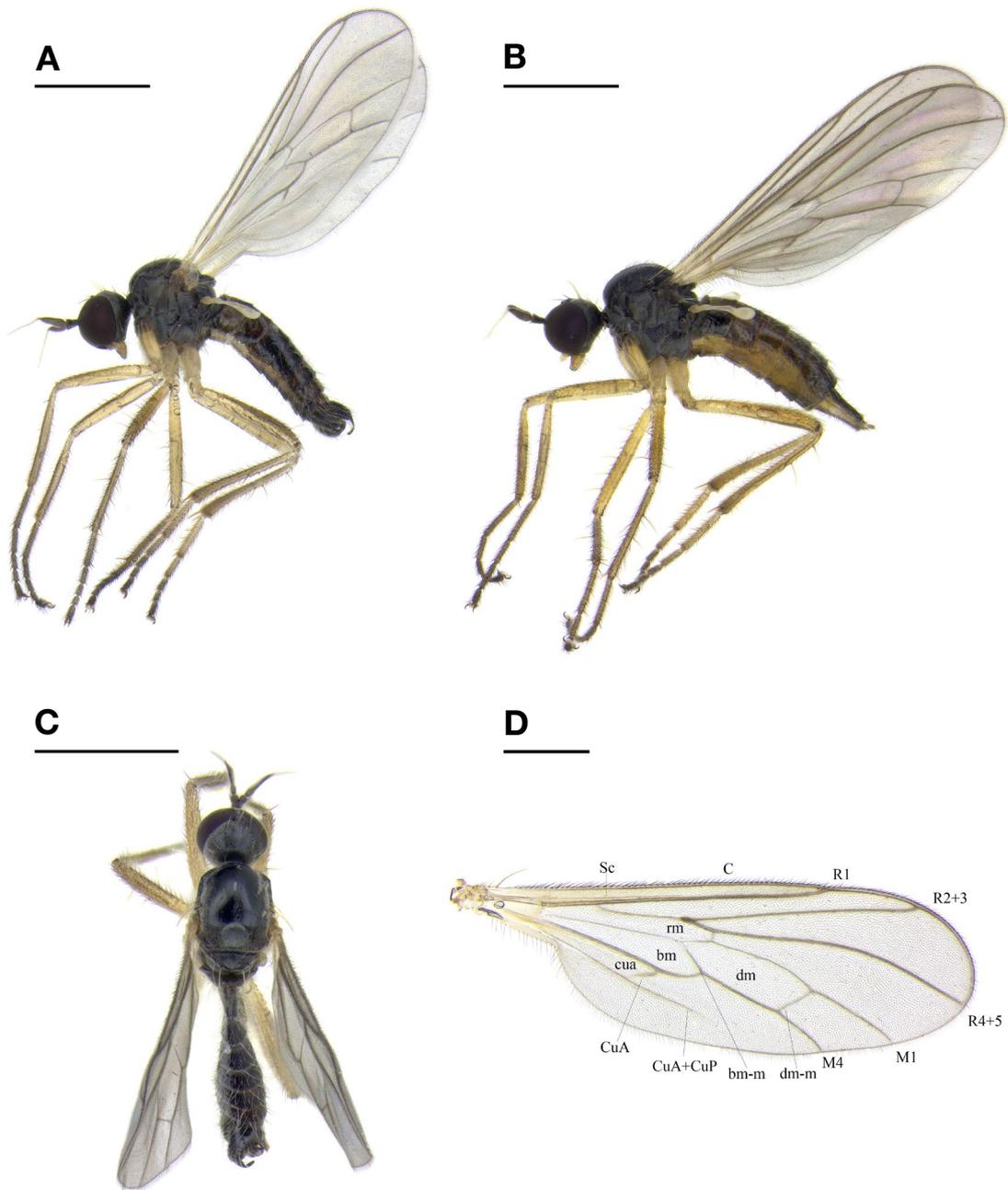


Fig. 1. *Leptodromiella crassiseti* (Tuomikoski, 1932). A, Male; B, Female; C, Male, dorsal view; D, Male wing. bm, basal medial cell; bm-m, basal medial crossvein; C, costal vein; CuA, anterior branch of cubital vein; cua, anterior cubital cell; CuA+CuP, anterior branch of cubital vein + posterior branch of cubital; dm, discal medial vein; dm-m, discal medial crossvein; M, medial vein; R, radial vein; r-m, radial-medial crossvein; Sc, subcostal vein. Scale bars: A-C=1 mm, D=0.5 mm.

¹*Genus *Leptodromiella* Tuomikoski, 1936

Leptodromiella Tuomikoski, 1936: 187. Type species: *Orophezella crassiseti* Tuomikoski, 1932.

Diagnosis. Frons as wide as length of scape in both sexes; arista-like stylus with dense setulae; wing base weakly developed; apical spine of hind tibia absent (Tuomikoski, 1936).

Korean name: ¹*흰수염춤파리붙이속 (신칭)

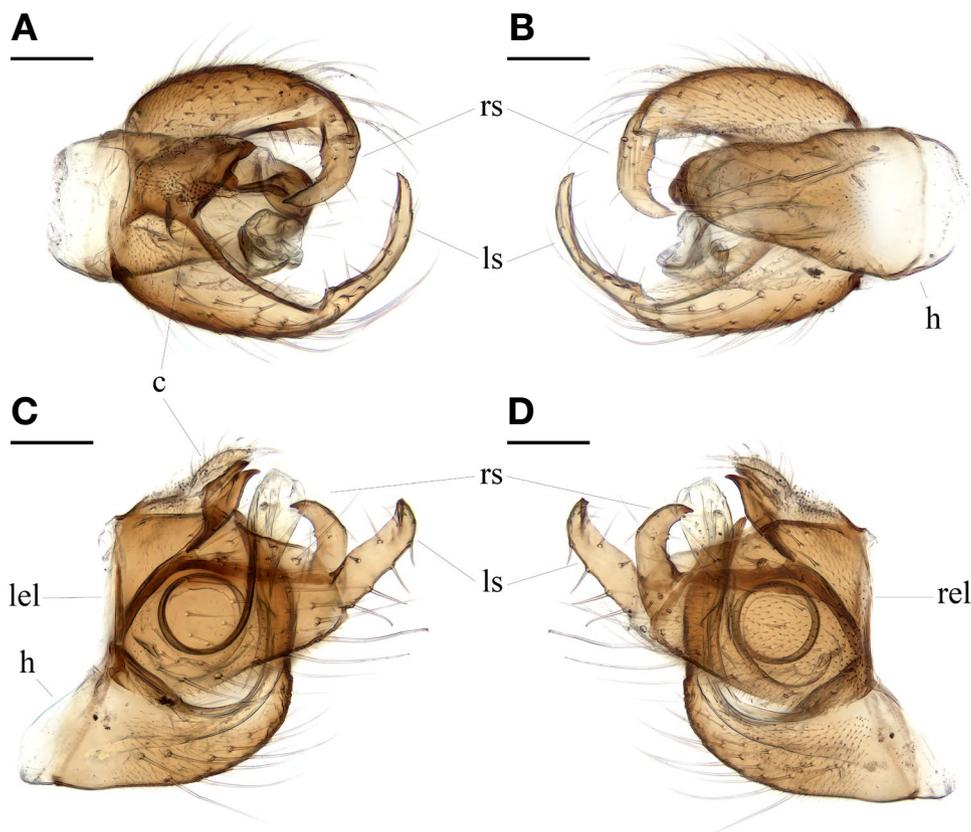


Fig. 2. *Leptodromiella crassiseta* (Tuomikoski, 1932), male. A, Genitalia, dorsal view; B, Same, ventral view; C, Same, left lateral view; D, Same, right lateral view. c, cercus; h, hypandrium; lel, left epandrial lamella; ls, left surstylus; rel, right epandrial lamella; rs, right surstylus. Scale bars: A–D=0.1 mm.

¹**Leptodromiella crassiseta* (Tuomikoski, 1932)

Oropezella crassiseta Tuomikoski, 1932: 49. Type locality: Vesijako, Padasjoki, Päijänne Tavastia, Finland.

Material examined. Korea: 2♂ 3♀, Incheon: Jung-gu, Muui-dong, Isl. Muuido, 28 Apr 2022, S. J. Suh coll.; 4♂ 8♀, Gwangju: Buk-gu, Seokgok-dong, Mt. Mudeungsan, 5 May 2022, S. J. Suh coll.; 4♂ 5♀, Ulsan: Ulju-gun, Samdong-myeon, Joil-ri, Mujechin-eup, 15 May 2022, S. J. Suh coll.; 3♀, Jeollanam-do: Damyang-gun, Gasamunhak-myeon, Jeonggok-ri, Mt. Mudeungsan, 1 Jun 2022, S. J. Suh coll.

Distribution. Korea (new record), Finland, Russia (Amurskaya and Moskovskaya Provinces, Karelia), Sweden.

Diagnosis. Black to dark brown except yellow legs, covered with pale setulae, setae and tomentum; frons as wide as length of scape in both sexes; arista-like stylus with dense setulae; wing base weakly developed; apical spine of hind tibia absent (Tuomikoski, 1936).

Re-description. Male (Figs. 1A, C, D, 2). *Head* sphere-shaped, black with pale setulae and setae, covered with pale

tomentum; vertex convex; ocellar triangle convex; ocellar seta proclinate, divergent, twice as long as distance between ocelli; postocellar seta about 0.7 times as long as ocellar seta; inner vertical seta proclinate, convergent, as long as postocellar seta; frons upper half narrowed toward downward and lower half subparallel; face narrow and parallel; compound eye bare; upper postocular setae in a single row; lower postocular setae combined with occipital setae; upper occiput concave with some setae; lower occiput almost flat with some setae; antennal socket expanded wedge-shaped to compound eye; antenna black except pale arista-like stylus; scape bare; pedicel setose at apical margin, as long as scape; postpedicel spear-shaped and three times as long as wide; arista-like stylus with pale and dense setulae; palpus yellow with setae and setulae; proboscis yellow with setulae (Fig. 1A, C).

Thorax black to dark brown with pale setae and setulae, covered with pale tomentum; mesonotum glossy at dorsocentral lines; 7–10 short acrostichal setae; 11 short anterior and 1 strong rearmost dorsocentral setae; 4–5 short postpronotal setae; 1 postsutural supra-alar seta; 1 notopleural seta; 1

Korean name: ¹*흰수염춤파리붙이 (신칭)

strong and 1–2 tiny postalar setae; scutellum approximately 0.3 times shorter than width, apically round; 2 scutellar setae present, lateral seta as long as width of scutellum, median seta about two times as long as lateral seta; 1 proepisternal seta; anepisternum, katepisternum, anepimeron, katepimeron, meron and laterotergite bare (Fig. 1A, C).

Legs yellow with pale setae and setulae; fore coxa with some setae and setulae; mid coxa with 1 strong anterodorsal seta, and several small setae and setulae; hind coxa with 1 strong posterodorsal seta, and several small setae and setulae; all trochanter with some setae and darkened rim; fore femur with a row of anterolateral and 1 middle posterolateral setae; mid femur with a row of anterolateral and 1–3 posterolateral setae; hind femur with a row of anterolateral, 1 apical dorsal and 1–2 posterolateral setae; fore tibia with 1 anterodorsal seta at base; mid tibia with 2 anterodorsal, 2 posterodorsal, 1 middle posterolateral and apical ring of setae; hind tibia with 2 anterodorsal and 2 posterodorsal and apical ring of setae; all tarsus yellow and gradually darkened toward apex; fore tarsomere 1 with 1 ventral seta at base; mid tarsomere 1 with 1 posteroventral seta at base; hind tarsomere 1 with several short ventral setae; all tarsal ratio, 4 : 2 : 1.25 : 1 : 1.25; all claws yellow with darkened apex, about half as long as tarsomeres 5; all empodia pale, narrow, curved slightly upward; all pulvilli pale gray (Fig. 1A).

Wing hyaline with yellowish gray vein; C extended to R4 + 5 with long seta at base; Sc combined to middle of R1; R1 and R2 + 3 almost straight then slightly bent to anterior at apex; radical sector relatively weaker than other veins; R4 + 5 bent to posterior at middle; br almost 0.6 times shorter than R1 vein; r-m straight; M1 and M4 almost straight then slightly bent to posterior at apex; bm almost same length to br; bm-m straight; dm almost 0.75 times shorter than bm; dm-m straight; CuA slightly S shape; CuA + CuP not reached to wing apex; cua almost 0.75 times shorter than bm; alula reduced; calypter yellow with pale setae; halter yellow (Fig. 1D).

Abdomen cylinder-shaped, black to dark brown with pale setae and setulae (Fig. 1A, C); genitalia black, asymmetrical and slightly rotated; right and left surstyli hook-shaped; left surstylus slightly longer than right surstylus (Fig. 2A, B); cercus long triangle-shaped (Fig. 2A); right and left ependrial lamella pentagon-shaped; hypandrium hook-shaped (Fig. 2C, D).

Length: Body, 2.9–3.1 mm; antenna, 0.6–0.7 mm; wing, 3.0–3.1 mm.

Female (Fig. 1B). Almost identical to male, except for the following characteristics: tergite 8 and sternite 8 corn-shaped, long and slender; tergite 9 and sternite 9 corn-shaped, approximately 0.25 times shorter than tergite 8 and sternite 8; cercus oval shape, as long as half of sternite 9 (Fig. 1B).

Length: Body, 3.1–3.2 mm; antenna, 0.6–0.7 mm; wing, 3.1–3.2 mm.

DISCUSSION

Shamshev et al. (2017) reported this genus as rare one, but in Korea, it can be quite easily captured if we get appropriate site and period as the water flowing mountain during spring to early summer. This species can be usually observed on the surface of rock or plant leaf. It seems to prefer crawling rather than flying.

ORCID

Young-Kun Kim: <https://orcid.org/0000-0002-0896-4379>

Sang Jae Suh: <https://orcid.org/0000-0002-7489-3193>

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

ACKNOWLEDGMENTS

This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR202231206).

REFERENCES

- Barták M, Plant A, Kubík Š, 2013. Species of *Bicellaria* (Diptera: Hybotidae) from Asia. *Zootaxa*, 3710:233–256. <https://doi.org/10.11646/zootaxa.3710.3.3>
- Cumming JM, Wood DM, 2017. Adult morphology and terminology. Chapter 3. In: *Manual of Afrotropical Diptera*. Vol. 1. Introductory chapters and keys to Diptera families (Eds., Kirk-Spriggs AH, Sinclair BJ). South African National Biodiversity Institute, Pretoria, pp. 89–133.
- Shamshev IV, Wahlberg E, Soltész Z, 2017. New data on the genera *Allanthalia* Melander, *Chvalaea* Papp & Földvári and *Leptodromiella* Tuomikoski (Diptera: Hybotidae) from the Palaearctic. *Russian Entomological Journal*, 26:161–168.
- Tuomikoski R, 1932. Zwei neue Empididen aus Finnland. *Notulae Entomologicae*, 12:46–50.
- Tuomikoski R, 1936. Mitteilungen über die Empididen (Dipt.) Finnlands III. Die Gattung *Leptodromiella* n. gen. *Suomen Hyönteistieteellinen Aikakauskirja*, 2:187–190.

Received September 22, 2022
Revised October 10, 2022
Accepted October 17, 2022