

The First Record of the Genus *Dichaeta* Meigen (Diptera: Ephydriidae) from Korea

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ABSTRACT

The genus *Dichaeta* Meigen is a small group of acalypterae flies belonging to the subfamily Notiphilinae in the family Ephydriidae. Up to now, six species are recorded only in the Northern Hemisphere. Adults are small flies and typically found in the sedge and grass around lentic and lotic aquatic systems, and larvae feed on saprophytic microorganisms. Adults are readily recognized with the following peculiar morphology of the male abdomen: fourth abdominal tergite with some markedly long setae along its posterior margin, and these setae sometimes extend beyond the length of the posterior apex of the abdomen; modified fifth abdominal tergite produced posteriorly, either forming a slender and elongated tube with two to three larger and elongated terminal setae. This genus is recorded for the first time in the Korean fauna based on the discovery of a nominated species, *Dichaeta caudata* (Fallén, 1813). Diagnoses and figures about the firstly recorded species are provided herein.

Keywords: *Dichaeta caudata*, Ephydriidae, Diptera, Insecta, taxonomy

INTRODUCTION

The genus *Dichaeta* Meigen, 1830 is a very small group of which only six species are known worldwide belonging to the subfamily Notiphilinae in the family Ephydriidae, and only recorded in the Northern Hemisphere. The adults are mainly found in the sedge and grass around lentic and lotic aquatic systems (Mathis and Zatwarnicki, 2007), and larvae feed on saprophytic microorganisms (Easton and Foote, 1971; Mathis and Zatwarnicki, 2007).

This genus, *Dichaeta* was established by Meigen (1830) with the type species, *Notiphila caudata*. But, Mathis (1979) treated as a species group of the genus *Notiphila*, and then Mathis and Zatwarnicki (1995) proposed as a subgenus based on cladistic relationships. However, Krivosheina (1986, 1993) treated as a separate genus based on mainly larval characteristics. Later, Mathis and Zatwarnicki (2007) also identified this genus as a sister group of *Noiphila* sensu lato and accorded it the status of a genus.

This genus was discovered for the first time in Korean fauna, with a nominated species, *D. caudata* (Fallén, 1813). In this paper, diagnosis and illustration of external features and male

genitalia of the previously unrecorded species are provided.

MATERIALS AND METHODS

The samples used in this taxonomic study are presently stored in the School of Applied Biosciences, Kyungpook National University, Daegu, Korea. The basic morphological features of the specimens were examined under a stereoscopic microscope (Olympus SZX 16, Tokyo, Japan). The dissected abdominal segments were immersed and macerated in the 10% potassium hydroxide (KOH) tube, mounted on glycerin, and examined using compound microscopes (Olympus BX51) to investigate the male genital complex.

The morphological terminology used herein is consistent with Cumming and Wood (2017), and Mathis and Zatwarnicki (2007) for adult morphology.

SYSTEMATIC ACCOUNTS

Order Diptera Linnaeus, 1758

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Superfamily Ephydroidea Hendel, 1922
Family Ephydriidae Zetterstedt, 1837
Subfamily Hydreliinae Robineau-Desvoidy, 1830
Tribe Notiphilini Bigot, 1853

¹*Genus *Dichaeta* Meigen, 1830

Dichaeta Meigen, 1830: 61. Type species: *Notiphila caudata* Fallén, 1813.

Diagnosis. General body coloration dark brown to black; anterior proclinate fronto-orbital seta well developed; face with 2–3 long setae arranged on 1/2–1/3 of ventral surface; costal vein reaching R4 + 5; 4th abdominal tergite with 6–16 markedly long setae along posterior margin, and these setae sometimes extend beyond the length of the posterior apex of the abdomen; modified 5th abdominal tergite forming a slender or elongated tube with 2–3 long terminal setae (Mathis and Zatwarnicki, 2007; Krivosheina 2012).

²Dichaeta caudata* (Fallén, 1813) (Fig. 1)**

Notiphila caudata Fallén, 1813: 249 (type locality: Skåne, Sweden).

Dichaeta brevicauda Loew, 1860: 5.

Dichaeta tibialis Brullé, 1832: 318.

Dichaeta choui Fan, 2000: 160.

Diagnosis. Frons with U-shaped black line; posterior notopleural seta slightly weaker than the anterior; male tergite 4 with 12 markedly long setae along posterior margin; male tergite 5 forming elongated tube with 2 long stylus terminal setae.

Material examined. Korea: 2♂. Gunwi-gun, Hyoryeong-myeon, Hwagye-ri, 36.110473, 128.640322, 15 May 2015, Suh SJ (KNU).

Distribution. Palearctic: Korea (new record: South), China (Manchuria, Shaanxi), Japan (Hokkaido, Honshu), Afghanistan, Austria, Belgium, Croatia, Czech Republic. Denmark, Estonia, Finland, France, Germany. Greece, Great Britain, Hungary, Israel, Italy, Kazakhstan, Kirghizia, Latvia, Netherlands, Norway, Poland, Romania, Russia, Serbia, Slovakia, Spain, Sweden, Switzerland; Nearctic: Canada, United States.

Description. Male. General color black with brownish black dust (Fig. 1A). Head dichoptic; vertex, frons, face, epistoma and gena covered with brownish black dust; occiput covered with grey dust. Inner and outer vertical setae well developed, outer vertical seta about two times as long as paravertical one.

Mesofrons differentiated from parafrons, generally paler in color, concolorous with prono-orbits; frons with a dull brown median vitta and U pattern along the parafrons; 1 strong reclinate fronto-orbital seta, well developed, subequal to outer vertical seta; 5 proclinate fronto-orbital setae getting smaller from anterior to posterior ones (Fig. 1B). Antenna entirely blackish brown; pedicel with 2 large setae along anterior surface, apical seta more stoutly developed, several smaller setulae; first flagellomere with densely microtomentose; arista pectinate form bearing 11 long dorsal rays. Face generally concolorous with frons except bright grey dusted upper part; longitudinal vitta narrow; 3 well developed and some fine facial setae. Gena generally short, gena-to-eye ratio 0.2–0.3; bearing a prominent genal seta. Palpus prominent, brownish black (Fig. 1A, B).

Thorax generally covered with brownish black dust. Mesonotum with grey sublateral and lateral vittae; numerous acrostichal setulae; dorsocentral setae 3 (1 + 2); supra-alar setae 2 (1 + 1); notopleural setae 2, posterior slightly weaker than anterior. Scutellum pentagon-like with numerous short setulae spread evenly. Anepisternum and apex of katepisternum with numerous setulae evenly; katepisternum with 1 forward-curved seta (Fig. 1A, B). All femora and tibiae black with slightly brown dust except knees and apical margin of each tibiae; all tarsi yellow with dense yellow velvet on ventral surface; mid femur with 5 anteroventral setae on apical half; mid tibia with 3 strong dorsal setae; hind femur with a series of slender anteroventral setae on apical half. Wings infusate, especially dm-cu vein slightly yellow; costal vein extended to R4 + 5. Halter yellow, basal part darkish yellow (Fig. 1A). Abdomen blackish brown with gray median vitta; tergites 1–4 with gray dusts on each apical margin; tergite 4 with 12 markedly long setae along posterior margin, and these setae extend beyond the length of the posterior apex of the abdomen; tergite 5 forming elongated tube with 2 long stylus terminal setae (Fig. 1A). Epandrium and fused presurstylar plate in a single plane in lateral view (Fig. 1C), nearly straight; conspicuously higher than wide and more or less parallel sided in posterior view (Fig. 1D). Presurstylus broadly rounded with ventral projection in lateral view (Fig. 1C); anterior projection short and subquadrate in posterior view (Fig. 1D). Postsurstylus narrowly rounded basally with a short robust setula. Hypandrial arm (Fig. 1E) narrowed and curved on apical half with apex sharply recurved and sclerotized in lateral view. Sternite 5 with 3 anterior projections (Fig. 1F).

Body length: 3.2–3.5 mm. Wing length: 3.5–3.9 mm.

Korean name: ¹*꼬리물가파리속 (신칭), ²*꼬리물가파리 (신칭)

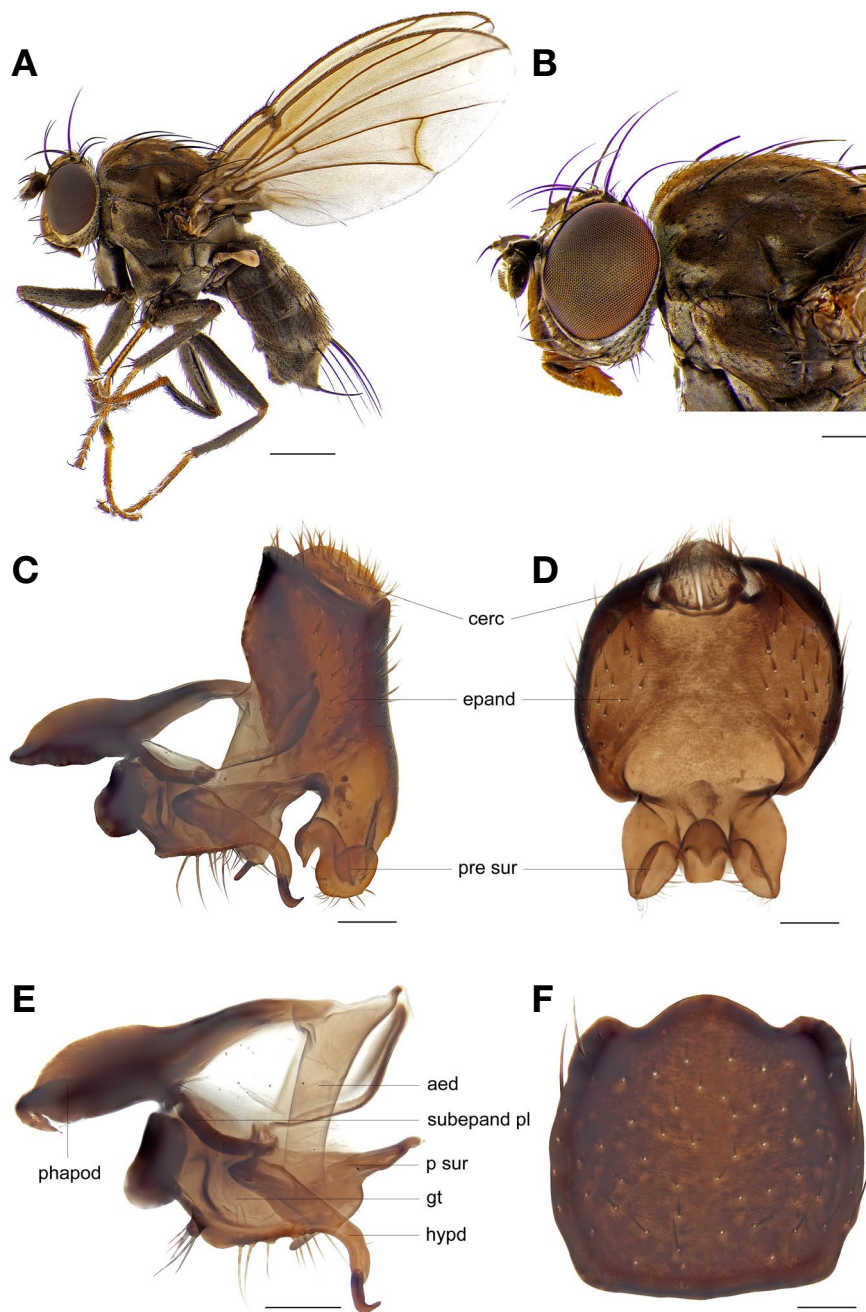


Fig. 1. *Dichaeta caudata* (Fallén, 1813), male. A, Habitus; B, Head; C, Genitalia, left lateral view; D, Ephantidium, cerci and presurstylus, posterior view; E, Internal genitalic structures, lateral view; F, Fifth sternite, posterior view. Aed, aedeagus; cerc, cerci; epand, ephantidium; hypd, hyphantidium; gt, gonite; p sur, postsurstylus; phapod, phallapodeme; pre sur, presurstylus; subepand pl, subepandrial plate. Scale bars: A=1 mm, B=0.5 mm, C-F=0.1 mm.

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CONFLICTS OF INTEREST

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

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