



A taxonomic study of the genus *Frontina* Meigen (Diptera: Tachinidae) in Korea

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ABSTRACT

Korean species of the genus *Frontina* (Diptera: Tachinidae) are reviewed. This Palaearctic genus currently includes five nominal species, of which three occur in Korea (*Frontina femorata*, *F. laeta* and *F. tricolor*). We found that the only Korean record of this genus was *F. laeta*, but examination of the voucher specimens revealed that they actually were *F. femorata*. We provide a key, descriptions and illustrations of the three Korean species.

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Introduction

Meigen (1838) erected the genus *Frontina*, and Macquart (1850) subsequently designated the type-species, *Tachina laeta* (Meigen). Shima (1988) described *Frontina femorata* and *F. tricolor*, and provided a key to the four Japanese species. This genus currently includes five Palaearctic species, of which *F. adusta* (Walker) extends its distribution to Oriental region (widespread from western China to India). The remaining four species occur in East Asia but *F. laeta* extends its distribution to Europe.

Frontina is currently placed in the tribe Goniini, which may be characterized by their completely incubated microtype eggs that hatch, only after having been swallowed, inside the host's mesenteron (Wood, 1987). Tschorsnig (1985) divided the Goniini into four groups based on their male genitalic structures, and, according to this classification, the genera *Frontina*, *Hebia*, *Thelymorpha*, and *Baumhaueria* belong to the *Hebia* group. They share the following morphological characteristics (Tschorsnig, 1985): 1) inner base of surstyli in shape of a very narrow process tapering toward inner base of cerci; and 2) denticles between apical portion of cerci very indistinct.

Host is only known for *F. laeta*. Herting (1960) indicated that it is a gregarious larval parasitoid of *Smerinthus ocellata* (Linnaeus, 1758), *Laothoe populi* (Linnaeus, 1758) and *Sphinx ligustri* (Linnaeus, 1758) (Lepidoptera: Sphingidae) in Europe. We here provide a key, descriptions and illustrations of the three Korean species.

Materials and methods

Terminology and morphological interpretations follow the glossary of Merz and Haenni (2000), but those of male terminalia follow Sinclair (2000). In addition, we used the following 12 ratios modified from Han and Norrbom (2005): vertex-head ratio (vertex width/head width); eye-vertex ratio (eye width/vertex width); eye ratio (shortest eye diameter/longest eye diameter); frons-head ratio (narrowest width of frons in dorsal view/width of head); gena-eye ratio (genal height/longest eye diameter)—genal height is the distance between the ventral eye margin and the ventral genal margin anterior to the genal seta; gena-parafacialia ratio (genal height/parafacialia width); flagellomere 1–pedicel ratio (length of flagellomere 1/length of pedicel); arista-antenna ratio (length of arista/length of antenna excluding arista); vein R_{4+5} ratio (distance along vein R_{4+5} between crossvein R–M and vein R_{4+5} apex/distance between crossvein R–M and basal node of vein R_{4+5}); vein M ratio (distance along vein M between crossveins R–M and DM–Cu/distance between crossveins R–M and BM–Cu); subcosta–costa ratio (length of pterostigma/length of costal cell, both measured along vein C); and wing–thorax ratio (wing length/thorax length).

All the Korean specimens are deposited in the Division of Biological Science and Technology, Yonsei University, Wonju Campus, Korea (YSUW). Acronyms of the other institutions mentioned in this paper are as follows: Biological Laboratory, College of General Education, Kyushu University, Fukuoka, Japan (BLKU); United States National Museum of Natural History, United States National Entomological Collection, Washington, DC, USA (USNM).

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Genus *Frontina* Meigen, 1838 (geum-teol-gi-saeng-pa-ri-sok)

Frontina Meigen, 1838: 247 (type-species: *Tachina laeta* Meigen, 1824; subsequently designated by Macquart, 1850: 433).

Diagnosis. The genus *Frontina* can be distinguished from any other genera of Goniini by the combination of the following characteristics (modified from Belanovskii, 1953; Shima, 1968): 1) with golden setulae on gena, pleuron and venter of abdomen; 2) with strong setae on facial ridge; 3) basal 3/4 of third arisal segment thickened; and 4) first flagellomere 7–10 times longer than pedicel.

Key to the Korean species of the *Frontina* Meigen

1. Ocellar triangle with black and yellow brown setulae mixed; frontal vitta with yellow brown setulae; lateral marginal seta on tergite 3 located in black area (Fig. 3E)..... *F. tricolor*
- Ocellar triangle with only black setulae; frontal vitta with black and yellow brown setulae mixed; lateral marginal seta on tergite 3 located in yellow brown area..... 2

2. Femur yellow brown in ground color with apical half ventrally darkened (Figs. 2A, E); flagellomere 1 bicolor in both sexes (basal half orange brown, apical half dark brown) (Figs. 2A, D–E, H)..... *F. laeta*
- Femur dark brown in ground color without any pattern (Figs. 1A, E); flagellomere 1 almost entirely dark brown in male and bicolor in female (Figs. 1A, D–E, H)..... *F. femorata*

Description of Korean *Frontina*. Body yellow brown in ground color with some dark brown or blackish areas; some areas covered with golden pruinosity; setae black; setulae black or yellow brown to golden. Head yellow brown with golden pruinosity except for dark brown frontal vitta; eye bare; lunule bare; arista dark brown, bare; parafacialia bare; face slightly concave; vibrissa well developed, arising above level of lower facial margin; 1–2 strong supravibrissal setae; genal dilation well developed; postocular setae extend 3/4 distance from upper eye margin to lower eye margin; occiput densely with relatively long, yellow brown setulae; mouthparts with yellow brown palpus slightly clavate with short black setulae and long golden ventral setulae; prementum dark brown with posterior golden

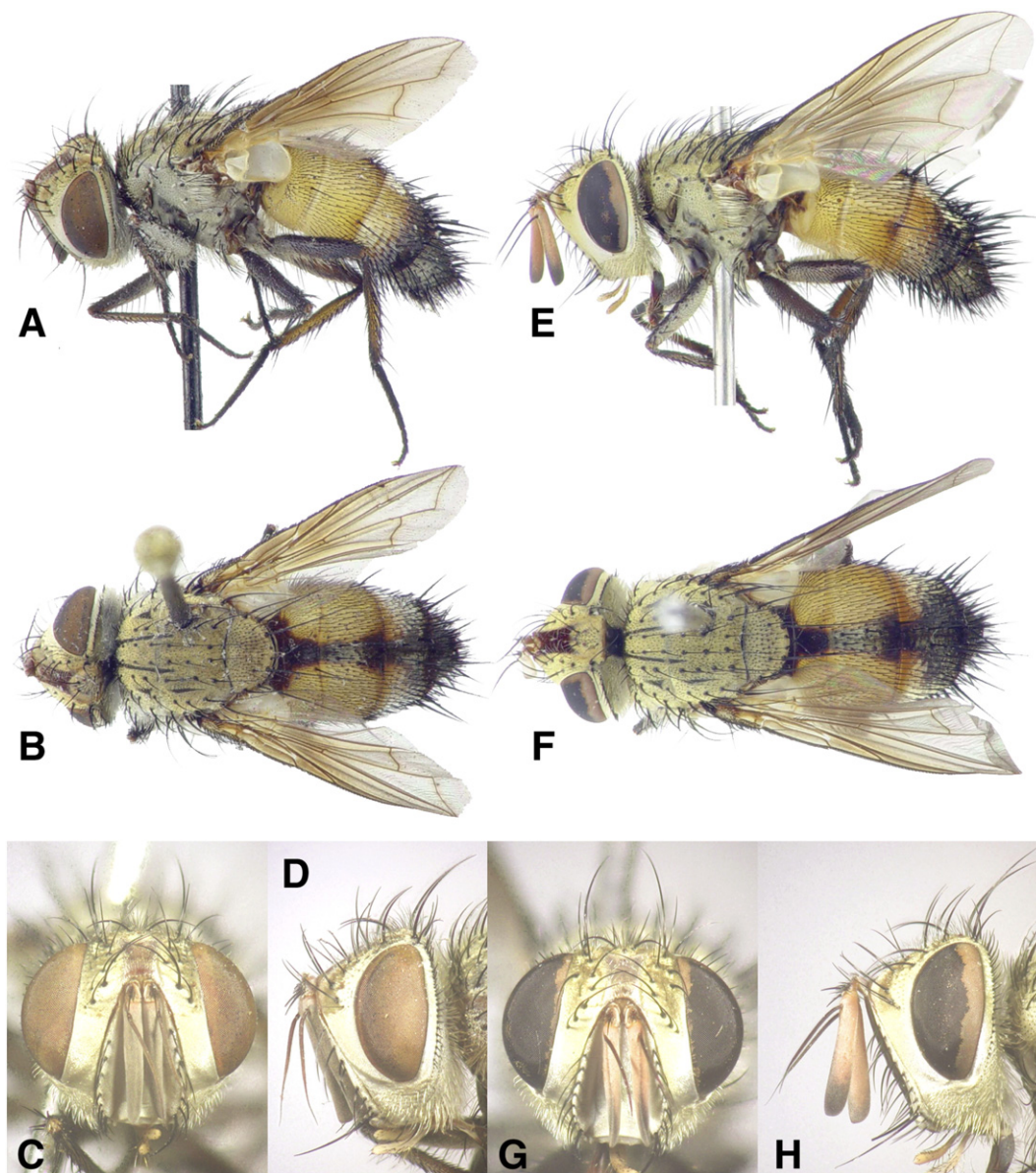


Fig. 1. *Frontina femorata* Shima. A–D, male; E–H, female.

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