

Description of Fungus Gnat, *Lycoriella mali* Fitch (Diptera: Sciaridae) from Korea

버섯해충 *Lycoriella mali* (긴수염버섯파리: 신칭)에 관한 보고

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Abstract - A species of fungus gnat collected from mushroom house was identified as *Lycoriella mali* Fitch. Morphological characters of this species are described and briefly compared with other associated species infesting mushrooms.

Key Words - *Lycoriella mali* Fitch, Sciaridae, Mushroom-infesting fly, Mushroom, *Pleurotus ostratus*, Morphological characters.

초 록 - 느타리버섯 재배시 발생하여 피해를 일으키는 버섯해충류에 대한 조사중 *Lycoriella mali* (신칭: 긴수염버섯파리)가 동정되었다. 이 종에 대한 형태적 특징에 대하여 보고하는 바이다.

검색어 - 긴수염버섯파리, 검정날개버섯파리과, 느타리, 버섯, 분류

Sciarid flies, darkwinged fungus gnats, are small gnat-like flies characterized by two long segmented antennae, large compound eyes, a black head and thorax and a yellow segmented abdomen. Females can be distinguished by a long, swollen abdomen ending in an ovipositor and males by a narrow abdomen ending in a distinct clasper. They are extremely widespread family with members adapted to a wide variety of climates and common faunal elements in nearly all regions of the world. Their uniformity of structure and small size make taxonomic treatment very difficult. Larvae of sciarid flies have pale body and shiny black head-capsule. They are commonly found in rotting vegetable matter, rotten wood, highly organic soils, under bark of fallen trees and in other kinds of decaying plant materials. Some species feed on fungi (Scheepmaker *et al.*, 1996), the other species feed on living plant tissue, causing economical damage,

especially in greenhouse (Gardiner, 1990; Jarvis, 1993; Sasakawa, 1994; Park *et al.*, 1999) and cultivated mushrooms (Binns, 1975; Clift, 1979; White, 1986; Goltapeh, 1991; Ishitani, 1993; Keil, 1995; Al-Amidi, 1995; White, 1997).

The mushroom fly, *Lycoriella mali* is a serious pest in commercial mushroom growing, which is capable of damaging the crop directly since it possesses well-developed chewing mouthparts (White, 1986), and causing yield reduction of 17% or more (Cantelo, 1979).

Freeman (1987) added four new species and three species of *Corynoptera* to the British list. In Japan, four species such as *L. mali*, *L. auripila*, *Bradysia paupera* and *B. agrestis* were recorded from mushroom houses (Ishitani, 1993, 1994, 1995, 1997). Also *B. fungicola* and *B. morio* were added to Japanese fauna by Sasakawa (1993).

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In Korea, 6 species of mushroom infesting flies have been reported so far including *L. mali* and *Bradysia* sp. (Kim and Hwang, 1996; Choi *et al.*, 1997; Kim *et al.*, 1999; Lee, 1999). Eventhough many researchers have studied *Lycoriella mali*, as mentioned above, no taxonomical description have made up to the present as far as we know. In this paper, a description and illustration of the *Lycoriella mali* are presented to help identification of this species in Korea.

Adult sciarids reared from infested mushroom beds were preserved in alcohol (75%) and were subsequently mounted on slides in polyvinyl alcohol (PVA) and examined under fluophot microscope (Nikon No. 84053).

Family Sciaridae 검정날개버섯파리과

Genus *Lycoriella* (신칭 : 긴수염파리속)

LYCORIELLA Frey, 1942: 22 (Type species: *Sciara vivida* Winnertz, misidentified, =*Sciara auripila* Winnertz, 1867)

Lycoriella mali FITCH. 1856 긴수염버섯파리 (신칭) (Fig. 1)

Molobrus mali Fitch, 1856: 486

Lycoriella mali Fitch : Steffan, 1965: 290

Lycoriella mali Fitch : Freeman, 1987: 201

Sciara solani Winnertz, 1871: 855

Lycoriella solani Winn. Tuomikoski, 1960: 84

Bradysia mycorum Frey, 1948: 59

Psilosciara flammulinae Sasakawa, 1983: 321

Description : Thorax greyish balck, abdomen dark brown having 14 segments of its long antennae with elongated abdomen and dark yellowish long legs; length of the male (2.44~3.10 mm) was comparatively smaller than that of the female (3.40~3.77 mm) but antennae length of the male about 1.50 mm long; female about 1.30 mm long; eye-bridge 2~3 facets wide; palpi three segmented, segment 2 and 3 subequal, segment 1 rather longer; antennae segments about twice as long as wide, necks of segment like truncated cons; body hairs short and weak, usually pale; posterior pronotum without setae.

Wing length, male 1.82~2.16 mm long, female 2.76~3.00 mm long; wing with anal lobe well developed; Radial veins was thick and r-m in line with apical portion of Rs; R1 ending at level of CuA₂. R₄₊₅ also rather longer, ending basal to level of M₂; M₃₊₄ arising near base of wing; the stem of the median vein was faint with thin median veins forking towards the apical margin, cupical

veins also thin, both veins without macrotrichia.

Setae at apex of anterior tibia forming a close set triangular patch, tibial spurs well formed and posterial tibial spurs hardly longer than width of apex of tibia; claws untoothed.; Male abdomen was slender and terminates in calspers whereas female it was swollen and terminates in a pointed ovipositor; male stylus narrow with whip-lash hair on inner sides; genitalia with group of about 12~20 strong hairs on well formed lobe between coxites.

Material examined : 10 ♂ 10 ♀, Sachun, Prov., Kyeong-nam, 10. VI. 1997 (H. S. Lee) on *Pleurotus ostreatus*; 10 ♂ 10 ♀, Sanchung, Prov., Kyeongnam, 22. VII. 1997 (H. S. Lee) on *Pleurotus sajor-caju*.

Distribution : Europe, North America, Asia, Japan, Korea

Host : Mushrooms (especially *Pleurotus ostreatus*, *Agriacus bistocus*, *Lentinus edodes*), rotten wood, decaying potato, rotting vegetable matter etc.

Remark : This species has worldwide distribution and although several Korean authors mentioned about this species (Kim and Hwang, 1996; Choi *et al.*, 1997; Kim *et al.*, 1999; Lee, 1999), but taxonomical report on this species has not been found in Korea. This species was named as *Bradysia* sp. by external features by Lee *et al.* (1998). However it was identified as *Lycoriella mali* again based on Dr. Sasakawa's report (1993) and his assistance. *L. mali* shows somewhat wide range of size according to host and environmental condition. And their small size, external shape similar to the other fungus gnat species such as *Corynoptera* and *Bradysia* (Park *et al.*, 1999), many workers often mis-identified it as *corynoptera* and *Bradysia* sp. It can be distinguished from other species by the armature of the anterior tibia. *Lycoriella* sp. does not have the *Bradysia* type of comb at the apex of the anterior tibia with true inner comb consisting of a single transverse row of subequal setae. *L. mali* differs from *Corynoptera* by the short tibial spurs which are hardly longer than width of tibiae, and by the male genital structure in which the styles are simpler. *L. auripila* is another main pest of mushrooms. It has a comparatively reduced anal area and short wings than that of *L. mali* and styles wider, male lobe between coxites not developed, although hair tuft present (Sasakawa, 1993).

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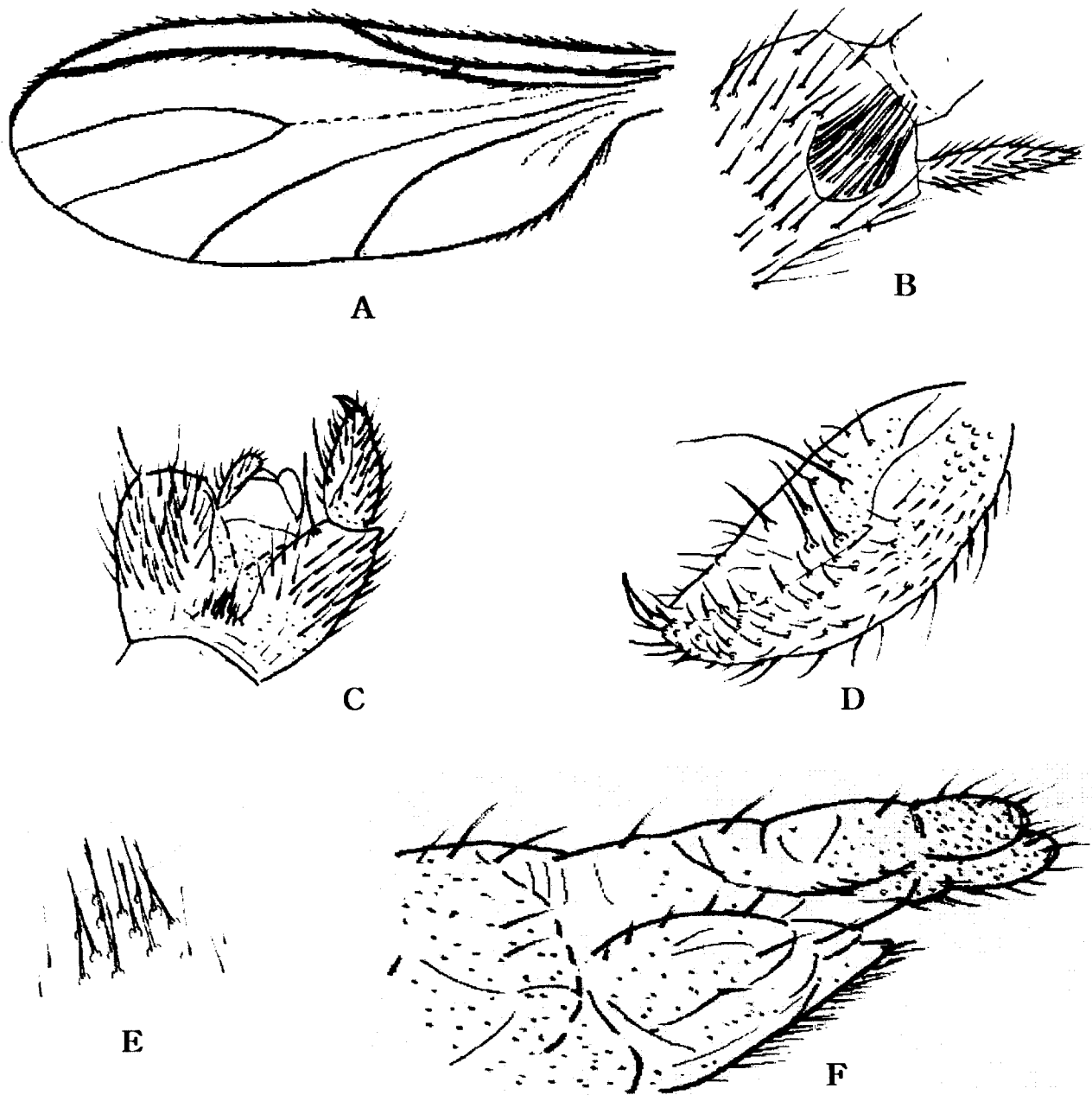


Fig. 1. *Lycoriella mali* Fitch A, Wing (female); B, apex of fore tibia; C, male genitalia (ventral view); D, style; E, hair tuft on lobe; F, female genitalia.

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