

956

Three new species of the *Allodia lugens* group from Northern Europe (Dipt., Mycetophilidae)

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In the article 3 species of *Allodia* (s.str.) are described: *A. tuomikoskii* and *septentrionalis* from Northern Fennoscandia and *A. embla* from Iceland.

The *Allodia* (s. str.) *lugens* group includes 5 species previously known from Northern Europe: *A. anglofennica* Edwards, *lugens* (Wiedeman), *lundstroemi* Edwards, *ornaticollis* (Meigen) and *truncata* Edwards. In the male sex these species are easy to distinguish by characters of the genitalia that are visible without dissection in specimens preserved in alcohol. Identification of the females of this group as to species has not yet been possible. At most the females of *A. lugens* can be separated from the other species by a not wholly reliable colour character (dark propleura).

Among very large numbers of *Allodia* (not all investigated yet) collected in the years 1962–65 in various parts of Finland, mainly by Prof. Risto Tuomikoski and myself, there are two apparently new species of the *lugens* group from northern Finland. These two species were also found among old mounted museum material from Finnish Lapland and the Kola Peninsula, the specimens had been identified by G. Lundström as "*A. lugens* var.". A collection of fungus gnats from northern Norway (leg. R. Tuomikoski 1965) also contained both species. These two new species and a third from Iceland are described below.

Allodia (sensu str.) *tuomikoskii* sp. n.

♂ — Body length about 4 mm, wing length 3.1–3.4 mm. Head dark brown. Antennae normal for *Allodia* as restricted by TUOMIKOSKI 1966. Two basal joints and basal half of the first flagellar joint pale yellow, all further joints brown. Mouthparts and palpi as in *lugens*. Mesonotum medially greyish brown (in alcoholic material more red-brown), laterally yellow (the usual pattern in the group). No distinct discal bristles on scutum. Scutellum with a pair of long apical bristles and a few small bristles on the disc. Propleura yellow and with two bristles, of which the anterior is stronger and darker. Other parts of the pleurum dark brownish. Wings as in *lugens*. The cu fork (branching point) sometimes in a line below the m fork, usually not reaching so far. Coxae yellow. Legs yellowish, gradually darkening towards the tarsi. Leg ratio: (basitarsus: tibia, first leg I, second leg II, third leg III) I: 0.96–1.0, II: 0.85–0.90, III: 0.65–0.75. Third tibia with an anterodorsal row of 6–7 short bristles and a posterodorsal row of 6–7 somewhat longer bristles. Abdomen brown; 2nd, 3rd and 4th tergites laterally pale in some specimens. Hypopygium yellow, but the strongly sclerotized external stylomere dark brown. Terminalia in Figs. 9–12.



Figs. 1 - 4. *Allodia septentrionalis* sp. n., male genitalia — 1, right half of hypopygium from above; 2, left half from below; 3, side view of hypopygium; 4, stylus from the inner side. Figs. 5 - 8. *A. lugens* (Wiedem.), male genitalia — 5, right half of hypopygium from above; 6, left half from below; 7, side view; 8, stylus from the inner side. Figs. 9 - 12. *A. tuomikoskii* sp. n., male genitalia — 9, right half of hypopygium from above; 10, left half from below; side view; 12, stylus from the inner side. — Orig.

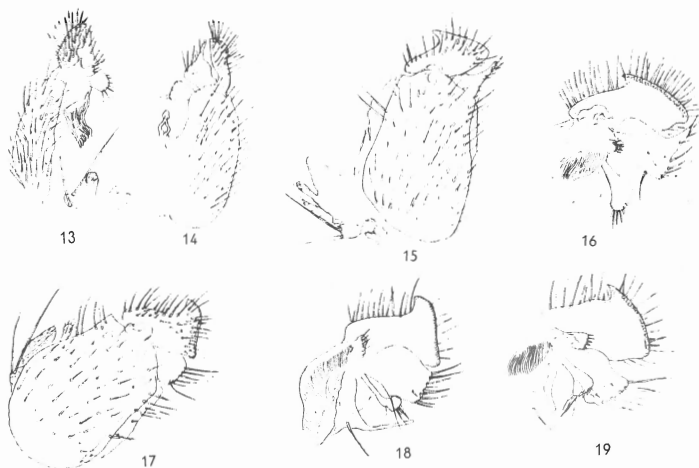
A. tuomikoskii resembles *A. lundstroemi* Edw. (Figs. 17–18) in the shape of the external stylomere, but the median stylomere is entirely different in shape from that of *lundstroemi*, which is provided with a long point as in *lugens* (Figs. 5–8). It also differs in other details of the hypopygium from the other species of the group.

In some samples there are females which possibly belong to *A. tuomikoskii*, but I prefer to defer a decision on this point.

Holotype: ♂ (no. 14213), Finland: Utsjoki: Kevo 774: 50 (uniform grid) 17. VI. 1962 (W. Hackman). Paratypes: Finland: Kuusamo, Kiutaköngäs, 737: 58, 10. VII. 1965, 3 ♂♂ (R. Tuomikoski), Muonio, 754: 36 1 ♂ leg. (J. Sahlberg), Ivalo 761: 52, 14. VI. 1962, 3 ♂♂ (W. Hackman), Utsjoki Ailigas 775: 50, 6 ♂♂ leg. (K. Mikkola) and numerous ♀♀ taken together with the holotype near the Kevo Biological Station (774: 50). Norway: Finnmark: Børselv, Silfarfossen 20. VII. 1965, 1 ♂ (R. Tuomikoski). USSR: Kola Peninsula: Kantalahti, 1 ♂ (R. Frey), Bjälöguba, 3 ♂♂ (R. Frey), Kusomen, 1 ♂ (R. Frey).

Allodia (s. str.) *septentrionalis* sp. n.

♂ — Body length about 4 mm, wing length 3.5 mm. Head dark brown. Antennae as in *lugens* and the preceding species. Mouthparts as in *lugens*. Mesonotum with the same pattern as in *ornaticollis* Meigen. No true discal bristles on the scutum; some longer proclinate hairs may occur on the disc. Colour and chaetotaxy of the pleura as in *tuomikoskii* and other species of the *lugens* group. The propleura as a rule pale yellow. Wings of the type usual in the group fork of media slightly distad of the cu fork. Coxae yellow. Legs yellow, darkening towards the tarsi; leg ratio: I 0.95–1.0, II: 0.90–1.0, III: 0.75–0.80; third tibia with an anterodorsal and a posterodorsal row of 6–7 spines. Abdomen brown; distinct yellow patterns on 2nd, 3rd and 4th tergites. On these tergites there are yellow triangular lateral areas, narrow in front but broadening towards the hind margin. In dark specimens this pattern is less distinct. Hypopygium yellow, external stylomere



Figs. 13–16. *Allodia embla* sp.n., male genitalia — 13, right half of hypopygium from above; 14, left half from below; 15, side view; 16, stylus from the inner side. Figs. 17–18. *A. lundstroemi* Edw. — 17, male hypopygium in side view; 18, stylus from the inner side. Fig. 19. *A. anglofennica* Edw., stylus from the inner side. — Orig.

brown. In the male genitalia (Figs. 1-4) the species differs distinctly from *lugens* (Figs. 5-8) and the other species of the group. The almost bifurcate external stylomere is characteristic. The median stylomere resembles that of *anglofennica* Edwards. LUNDSTRÖM (1909, Figs. 15-16) depicts the male genitalia of *A. septentrionalis* as a variety of *A. lugens* without giving a name.

Some female specimens in the samples from Lapland may belong to *septentrionalis* but I have felt it wiser not to include them in the description.

Holotype, ♂ (no. 14214): Finland: Utsjoki: Kevo, 761: 52, 15. VI. 1962 (W. Hackman). Paratypes: Finland: Kuusamo, Kiutaköngäs, 737: 58, 10. VII. 1965, 2 ♂♂ (R. Tuomikoski & K. Mikkola leg.), Muonio, 754: 36, 1 ♂ (R. Frey), Ivalo, 761: 52, 6 ♂♂ 14. VI. 1962, 1 ♂ 19. VI. 1962 (W. Hackman), Utsjoki, Ailigas, 775: 50, 9 ♂♂ 14. VI. 1965 (K. Mikkola) and Kevo, 761: 52, 15-16. VI. 1962, 30 ♂♂ (W. Hackman). Norway: Finnmark: Børselv, Silfarfossen 20. VII. 1965, 4 ♂♂ (R. Tuomikoski), Leirbotn, Lakselv 23. VII. 1965, 1 ♂ (R. Tuomikoski). USSR: Kola Peninsula: Kusomen, 1 ♂ (R. Frey), Kantalahti 1 ♂ (R. Frey).

Obviously, both *A. tuomikoskii* and *septentrionalis* are widely distributed in the northern parts of Fennoscandia and not rare. The most abundant species of the *lugens* group in samples obtained by sweeping in suitable moist situations (brook valleys, *Salix* shrubs, between rocks) in Lapland is *A. lugens*, but the two new species seem to be more abundant there than *ornaticollis* and *anglofennica*. *A. lundstroemi* and *A. truncata* do not seem to extend so far north.

Allodia (s. str.) *embla* sp. n.

Among fungus gnats collected by the Lund University Expedition to Iceland in 1962, there are four specimens which belong to an apparently undescribed species very close to *Allodia anglofennica* Edwards. Two of them are damaged (terminal parts of abdomen lost) but the other two, males, are well preserved and differ distinctly from *A. anglofennica* Edw. in the shape of the median stylomere. The latter species has not yet been recorded from Iceland, and it is possible that the differences found

only warrant the separation of the two taxa at subspecific level. However, I have preferred to describe the new taxon as a species. The name *embla* was taken from Nordic mythology.

♂ — Body length about 4 mm, wing length 3.5-3.7 mm. Head dark brown. First basal joint of the antenna brown, second basal joint yellow. First flagellar joint pale in the basal half; distal half and further segments of the flagellum dark. Mouthparts brown. Mesonotum and pleura entirely dark brown, their chaetotaxy as in *anglofennica*. Wings as in *anglofennica*. Fork of media distad of the cu fork. Coxae and legs yellow-brown. Leg ratio: I: 1.00-1.05, II: 0.90-1.0, III: 0.70-0.75. Chaetotaxy of legs as in *anglofennica*. Abdomen entirely dark brown. Hypopygium yellow brown. The male genitalia (Figs. 13-16) differ from those of *anglofennica* in the shape of the median stylomere, the dorsal corner of which is drawn out to a point (Fig. 16). In *anglofennica* (Fig. 19) the median stylomere has a blunt or slightly angulated dorsal corner but this corner is never drawn out to a point (material examined from various parts of Finland, also from the north). There also seems to be a slight difference in the shape of the external stylomere and there are some minor differences in the inner parts of the hypopygium.

Female unknown.

Holotype, ♂: Iceland: Skaftafell 22. VII. 1962 (Lund Univ. Exp.). Paratypes: 3 ♂♂ from Skaftafell 20-23. VII. 1962 (Lund Univ. Exp.).

Allodia anglofennica Edw. is recorded not only from Europe but also from Canada (Nova Scotia) by LAFFOON 1965 in the catalogue of the Diptera of North America. I have not seen Nearctic material of this species and an investigation of Nova Scotian specimens would possibly throw more light on the relation between *A. anglofennica* and *A. embla*. *A. unicolor* Lundbeck from Greenland may possibly belong to the *lugens* group but has been described from a single female (LUNDBECK 1898). Until the male of this species is known, it will not

be possible to decide whether *unicolor* has anything to do with *A. embla*.

The types of *Allodia tuomikoskii* n. sp. and *A. septentrionalis* n. sp. are preserved in the

Zoological Museum of Helsinki University, the type of *Allodia embla* n. sp. belongs to the Zoological Institute of the University in Lund, Sweden.

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Sex ratio in *Ips typographus* L. (Col., Scolytidae)

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The sex ratio of *Ips typographus* L. was studied in 1968–1970 in southern and northern Finland. A balanced sex ratio was found in the brood galleries just prior to emergence. The average proportion of males was reduced during the time between emergence of the brood and attack on the host tree. The factors causing this shift in the sex ratio are discussed.

Introduction

During a study of the development and voltinism of *Ips typographus* L., a balanced sex ratio was recorded among callow adults (ANNILA 1969). Similar observations have previously been reported by SEITNER (1923), MERKER & WILD (1954) and KOIZUMI & YAMAGUCHI (1967). But in the brood galleries the proportion of females to males ranges from one to four (even to seven)

ESCHERICH 1923, KOIZUMI & YAMAGUCHI 1967, SCHWERTFEGER 1970). The purpose of the present study was to discover the factors which cause the shift in the sex ratio during the time from eclosion of the adults to attack on the host tree.

Material and methods

Ips typographus cannot be sexed by inspection of external markings, although some morphological differences have been detected between the sexes (e.g. MERKER & WILD 1954, KOIZUMI & YAMAGUCHI 1967). Therefore the sex of the beetles was determined by dissection of the genitalia. Beetles emerging from brood logs were trapped in wire mesh funnels (cf. ANNILA 1969). Overwintering beetles were collected by taking soil samples from around the brood trees. The area of a sample was about 20 × 20 cm and the depth about 30 cm. During the flight period beetles were collected in window traps (cf. CHAPMAN & KINGHORN 1955). About two