# Chloropidae (Diptera, Muscomorpha) of the Swedish Lapland

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Abstract. A collection of Chloropidae from the Swedish Lapland (Messaure, Lule Lappmark, 66° 42' N, 20° 25' E, ca 20 km to the North of Arctic circle) was examined. Twenty four species of the family were found belonging to 16 genera, 19 species of Oscinellinae and five species of Chloropinae. Messaure is the most northern locality in Europe for six of the listed species. All of the species, except two undescribed ones, are widely distributed in the Palaearctic Region, they are boreal or polyzonal species and seven of them are Holarctic. The fauna of Chloropidae of Lule Lappmark is compared with the faunas of Torne Lappmark and Norrbotten (Sweden).

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There has been no special study of the Chloropidae of Lapland since the work of J.W. Zetterstedt in the 19th century. Zetterstedt described seven new species of Chloropidae in his "Insecta Lapponica" (1838). The species were revised by Andersson (1966): two species of the genus *Chlorops* Meigen, two species of the genus *Rhopalopterum* Duda, one species of the genus *Eribolus* Becker, and one from the genus *Thaumatomyia* Zenker are considered as valid names in current literature.

I had the opportunity to examine a collection of Chloropidae, collected in Messaure (Lule Lappmark, the Swedish Lapland), situated ca 20 km to the north of the Arctic circle (66° 42´ N, 20° 25´O) in the northern boreal forest region. The insects were collected by K. Müller, the director of the Messaure ecological station, using different traps. There is no mention on the labels of the Chloropidae to indicate which traps were used, but the following traps were listed in other publications on insects from Messaure: Barber, windows, light and suction traps (e.g. Mendl & Müller 1974). The insects collected in Messaure were identified by different taxonomists and the results were published in "Fauna Messaurensis" (Müller 1974). This journal contains lists of 18 Diptera families, published by different authors. Most of the families belong to the Nematocera and only three (Tabanidae, Sciomyzidae, Drosophilidae) to the Brachycera. Some new species of Diptera were described from Messaure (Mendl 1971, Plassmann 1975, Tjeder 1968).

The samples of Chloropidae are kept in alcohol in the Zoological Museum of the Lund University and were kindly loaned to me by Dr H. Andersson for research. The flies were collected in 1971, 1973 and most specimens in 1974 and labelled only Messaure without more exact localities. All specimens of Chloropidae were caught from second of May to 23 of September. The mean air temperature in Messaure in May was nearly +1° C, in September +8° C, and in July to +20º C on data from 1972 (Mendl & Müller 1974).

In the material, 24 species of Chloropidae are

represented. Two of them from the genus *Gaurax* Loew are left unnamed because only females are represented, while examination of the male genitalia is necessary for determination. Two species appear to be new (*Aphanotrigonum* sp. and *Conioscinella* sp.) and will be described at a later date. Only three species of the seven described by Zetterstedt from Lapland were found in the material examined: *Pseudopachychaeta ruficeps*, *Thaumatomyia trifasciata* and *Eribolus nana*. This may be due to the methods of collecting. In Zetterstedt's list four species belong to the subfamily Chloropinae and two to the Oscinellinae. The main body of species in the collection examined, 19 species, belong to the subfamily Oscinellinae and only five of the 24 species to the subfamily Chloropinae. Overall both subfamilies in the fauna of Chloropidae of Fennoscandia are represented in nearly equal numbers of species.

Messaure is the most northern locality in Europe for six of the recorded species. Most of the species are widely distributed in the Palaearctic Region, they are boreal or polyzonal species, and seven of them are Holarctic species. All of them, except the two undescribed species, are found in the southern parts of Sweden as well.

The Holarctic species, *Tricimba cincta* (Meigen) is the most abundant species in the collection. The larvae of this species develop in mushrooms and in rotting substrates of vegetable origin, possibly containing mycelium. Most of the other recorded species develop in different kinds of rotting plants or in fungi as well. Species of the genera *Gaurax* Loew and *Hapleginella* Duda are forest living species. Their larvae are saprophagous or necrophagous. Species of the genus *Gaurax* develop in rotting wood and bracket fungi. Larvae of the genus *Hapleginella* and some species of *Gaurax* ( e.g. *Gaurax strobilum* Karps) develop in coniferous cones infected by other insects. Larvae of *Thaumatomyia* Zenker are aphidivorous and live in the rhizomes of plants, and larvae of *Speccafrons halophila* (Duda) are carnivorous in egg sacs of spiders.

Only a few species are phytophagous. A decline of phytophagous species is one of the characteristic features of high latitude fauna and has been pointed out in different taxa of animals (Chernov, 1992). *Oscinella frit* (Linnaeus), *O. pusilla* (Meigen), *Conioscinella frontella* (Fallén), and *Meromyza saltatrix* Linnaeus develop in shoots of Poaceae, and *Pseudopachychaeta ruficeps* (Zetterstedt) develops in inflorescences of *Eriophorum vaginatum* and other species of the genus. The species diversity of the phytophagous species of Chloropidae in northern Eurasia is low. Contrary to the fauna at low latitudes, which contain many species associated with Poacae (grasses), the phytophagous species in high latitudes are associated predominantly with Cyperaceae (Nartshuk, 1999).

**Annotated list of the species.**

Subfamily Oscinellinae.

1. *Aphanotrigonum nigripes* (Zetterstedt, 1848). 25.05-05.08.1974, 4 F , 10 C . Widespread palaearctic species. Larvae saprophagous, in rotting shoots of Poaceae and Cyperaceae, often infested by primary pests. Hibernates as adult. Messaure is the most northern locality in Europe.

2. *Aphanotrigonum* sp. 01.07-12.08. 1974, 3 F , 1 C . This species found in Messaure and in province of Norrbotten as well.

3. *Aphanotrigonum trilineatum* (Meigen, 1830). 10-17.06.1974, 1 C . Widespread polyzonal palaearctic species. Larvae saprophagous, in rotting shoots of Poaceae and Cyperaceae, often infested by primary pests. Hibernates as adult.

4. *Conioscinella* sp. 17.06.- 15.08. 1974, 37 F , 56 C , most specimens caught in July. This species is rather abundant, the second most abundant in the collection, found nowhere else in Fennoscandia.

5. *Elachiptera* gr. *cornuta* (Fallén, 1820). 25.05-12.08. 1971 and 1974, 11 F , 14 C . *E. cornuta* is a widespread polyzonal palaearctic species. Larvae are saprophagous, in rotting shoots of Poaceae, Cyperaceae, and other plants, often infested by primary pests. Hibernates as adult.

All specimens found here have very thin arista, not flattened, but only densely pubescent, and partly black legs. They are probably a species separate from *E. cornuta*. Many specific names are listed in synonymy of *Elachiptera cornuta* (Fallén), therefore I refrain from description of a new species until this species complex is revised.

6. *Elachiptera scrobiculata* (Strobl, 1901). 8-15.07. 1974, 1 C . Widespread palaearctic species. Larvae develop in grass stems together with other species of the genus.

7. *Elachiptera tuberculifera* (Corti, 1909). 10-17.06. 1974, 1 C . Widespread polyzonal palaearctic species. Larvae saprophagous, in rotting shoots of Po-

aceae, Cyperaceae and other Liliaceae, often infested by primary pests. Hibernates as adult. Messaure is the most northern locality in Europe.

8. *Eribolus nana* (Zetterstedt, 1838). 08-15.07.1974, 1 ♀. Holarctic species, occurs on fens, bogs and other wetlands. Larvae are secondary invaders in shoots of *Carex*, infested by larvae of *Cordylura* (Scathophagidae). Messaure is the most northern locality in Europe.

9, 10. *Gaurax* spp. The genus is represented by two species, but only by females (18 specimens) and an exact determination is impossible. One species (five females, 22.06-02.09. 1971), has a yellow thorax with black stripes on the scutum, four black spots on the pleura and a reniform first flagellomere and is probably *G. maculipennis* (Zetterstedt, 1848). The second species (13 females, 22.06-02.09. 1971 and 1974) has an entirely black thorax without yellow marks. These females may be dark coloured females of *Gaurax borealis* Duda or a new species of the genus. Larvae live in bracket fungi, decaying wood with mycelium and in coniferous cones infested by other insects.

11. *Hapleginella laevifrons* (Loew, 1858). Uncertain data, 1971, 1 ♀. Widespread palaearctic species, larvae are saprophagous or necrophagous and develop in cones of coniferous trees infested by other insects (Gaidene & Nartshuk, 1963).

12. *Incertella albipalpis* (Meigen, 1830). 08.07-05.08. 1974, 1 ♀, 2 ♂. Widespread polyzonal palaearctic species. Larvae saprophagous, in rotting shoots of Poaceae, including cereals, often damaged by *Oscinella* spp. larvae.

13. *Oscinella frit* (Linnaeus, 1758). 17.06.-05.08. 1973 and 1974, 7 ♀, 19 ♂. Widely distributed species in Holarctic, Oriental and Afrotropical Regions. Larvae phytophagous, live in shoots of many species of Poaceae, including cereals and in unripe seeds of cereals. Well known pest of cereals.

14. *Oscinella pusilla* (Meigen, 1830). 10-17.06 and 05-12.08. 1974, 2 ♀. Distinctly more rare than preceding species. Widespread polyzonal palaearctic species. Larvae phytophagous, live in shoots of many species of Poaceae, including cereals. Well known pest of cereals.

15. *Oscinimorpha minutissima* (Strobl, 1900). 26.06. 1974, 1 ♂. Euro-mediterranean species.

16. *Siphonella oscinina* (Fallén, 1820). 26.06.1971, 1 ♂. Holarctic widely distributed species.

17. *Speccafrons halophila* (Duda, 1933). 15.07.-12.08. 1974, 2 ♀, 1 ♂. Widely distributed polyzonal palaearctic species. Larvae carnivorous, develop in egg sacs of spiders. Messaure is the most northern locality in Europe.

18. *Trachysiphonella scutellata* (von Roser, 1840). 01-08.07. 1974, 1 ♀, 2 ♂. Widespread polyzonal palaearctic species. Messaure is the most northern locality in Europe.

19. *Tricimba cincta* (Meigen, 1830). 04.06.-02.09. 1971, 1973 and 1974, 21 ♀, 160 ♂. The most abundant species in the collection. Holarctic widespread species, was develop in mushrooms and rotting shoots of Poaceae, infested by primary invaders.

The examined specimens are very variable in colour, some specimens have entirely grey scutellum, other have a yellow tip of scutellum. The length of the apical scutellar setae varies from short to long.

### Subfamily Chloropinae

20. *Meromyza saltatrix* (Linnaeus) 1761. 08-15.07 1974, 1 ♀. Widely distributed polyzonal Holarctic species. Larvae are phytophagous, in shoots of different Poaceae.

21. *Pseudopachychaeta ruficeps* (Zetterstedt, 1838). 21.05.-23.09. 1973 and 1974, 2 ♀, 3 ♂. Widely distributed palaearctic species. Larvae phytophagous, develop in inflorescences of *Eriophorum vaginatum* and other species of the genus. Hibernates as adult.

22. *Thaumatomyia glabra* (Meigen, 1830). 15-27.07.1974, 3 ♀, 2 ♂. Widely distributed polyzonal Holarctic species. Larvae carnivorous, in rhizome of plants, feed on root aphids.

23. *Thaumatomyia rufa* (Macquart, 1835). 05-12.08. 1974, 1 ♂. Widely distributed polyzonal palaearctic species. Larvae carnivorous, in rhizome of plants, feed on root aphids.

24. *Thaumatomyia trifasciata* (Zetterstedt, 1838). 02.05.-15.08. 1974, 5 ♀, 22 ♂. Widely distributed boreal Holarctic species. Larvae carnivorous, in rhizome of plants, feed on root aphids.

## Discussion

Besides the 24 species listed above an additional 11 species of Chloropidae are known in Lule Lappmark: four species of Oscinellinae: *Conioscinella frontella* (Fallén), *Gaurax dubius* (Macquart), *Oscinella nitidissima* (Meigen) and *Rhopalopterum atricilla* (Zetterstedt), and seven of Chloropinae : *Chlorops kirigaminensis* Kanmiya, *C. meigenii* Loew, *C. planifrons* Loew**,** *C. scalaris* Meigen, *C. speciosus* Meigen, *C. varsoviensis* Becker, and *Meromyza ornata* (Wiedemann). Thus, in total 35 species of Chloropidae are now recorded in Lule Lappmark: 23 of Oscinellinae and 12 of Chloropinae. In the more northern Torne Lappmark (mainly in Abisco) 25 species are known: 14 of Oscinellinae and 11 of Chloropinae. In Norrbotten 59 species are recor-

ded: 29 of Oscinellinae and 30 of Chloropinae. In spite of the insignificant difference in latitude between the two provinces the number of species in Norrbotten surpasses the number in Lule Lappmark by 68.5 %. One of the possible explanation of this phenomenon lies in the milder climate of Norrbotten, which is situated on the coast of the sea, on the Botnic Gulf, whereas Lule Lappmark is situated inland.

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