

## ***Cheilosia morio* (Zetterstedt, 1838) (Diptera: Syrphidae) new to the Belgian fauna**

Frank VAN DE MEUTTER<sup>1,2</sup>

<sup>1</sup> Achterheide 16, B-3980 Engsbergen, Belgium. (e-mail: Frank.VandeMeutter@gmail.com).

<sup>2</sup> Research Institute for Nature and Forest (INBO): Kliniekstraat 25, B-1070 Brussels, Belgium.  
(e-mail: Frank.Vandemeutter@inbo.be).

### **Abstract**

On 18 April a male and a female of *Cheilosia morio* (Zetterstedt, 1838) (type "A") were discovered on a flowering *Salix cinerea* near Membach, Belgium (province of Liège). This remarkable *Cheilosia* species inhabits resin outflows on spruce. Within Europe this is a boreomontane species, where large spruce forests are present. Possibly, this species is expanding recently towards Western-Europe, colonizing the large plantations of spruce planted since the end of the 19th century.

**Keywords:** *Cheilosia*, *Picea abies*, sapruns, spruce forest, resin outflow.

### **Résumé**

Deux syrphes, un mâle et une femelle, *Cheilosia morio* (Zetterstedt, 1838) type "A" sont signalés pour la première fois en Belgique le 18 avril 2011 à Membach (province de Liège). Ce *Cheilosia* exceptionnel vit dans des coulées de résine de l'épicéa. En Europe, il est principalement boréomontane, mais récemment, on observe une expansion vers l'ouest et le sud qui correspondrait aux plantations d'épicéas.

### **Samenvatting**

Op 18 april 2011 werden op een bloeiende grauwe wilg nabij Membach (België, prov. Luik) een man en een vrouw *Cheilosia morio* (Zetterstedt, 1838) (type A) verzameld. Dit buitenbeentje binnen de gewoonlijk minerende *Cheilosia* (NL: gitjes) verblijft als larve in harsstromen op fijnsparren *Picea abies*. De soort komt binnen Europa voor in het noorden en in gebergtes waar grote sparrenwouden voorkomen. Mogelijk heeft de soort zich vrij recent naar West-Europa uitgebreid.

### **Introduction**

Among European Syrphidae *Cheilosia* is the largest genus counting up to 175 species, although taxonomy is far from resolved (SPEIGHT, 2010). All *Cheilosia* of which larvae have been described so far appear to be phytophagous on forbs, often specialized on one specific plant genus or species. Likely the remarkable radiation of *Cheilosia* in the Palearctic goes hand in hand with this specialization to plant taxa (SPEIGHT, 2010); it may be no coincidence that the second largest genus in Europe (*Merodon*) is phytophagous as well (HURKMANS, 1993).

In terms of its ecology, *Cheilosia morio* (Zetterstedt, 1838) is a unique *Cheilosia*: it does not mine the leaves or stems of forbs, but

inhabits the resin outflows of spruce trees (*Picea abies*), possibly caused by scolytid beetles (HELLRIGL, 1992). As such it is intimately bound to mature spruce forest. Within Europe, its distribution indeed is mainly confined to areas where spruce forest occurs. Spruce has traveled back and forth through Europe during the glacials, but its natural distribution in Western-Europe reaches into the Harz (Germany) and the Vosges (France) (FARJON, 2008). *Cheilosia morio* is known to thrive in the taiga from Lapland to the east (Siberia, Mongolia) and at the Atlantic side of Europe it occurs southerly to northern Germany (e.g. it is common around Kassel, pers. comm. Franz Malec). It can be found also in montane areas more south in central Europe. In 2000, the species has been found in Rheinland-Pfalz near Friesenhagen

(350 m ASL) and near Wissen/Sieg (170 m ASL) in the Westerwald (both leg. Franz Malec), possibly marking a westward expansion. Both sites are at approximately 110 km from Belgium, but *Cheilosia morio* was not yet observed in the Benelux.

With its vast areas of uninhabited land and its elevation up to nearly 700 m ASL, the Hautes Fagnes houses a whole list of species that cannot be found elsewhere in Belgium. The area has been frequented for some decades by entomologists looking for Syrphidae, but visits were strongly concentrated between half May and September. Some regionally scarce, early-season species such as *Cheilosia frontalis* and *C. nebulosa* have been reported over the years, but often only once or twice, and their status remains unclear as they fly mainly before half May. It is assumed that other early-season species, not yet reported from Belgium, may occur here as well, including *Cheilosia morio*. This paper reports on the results of an early season visit to the Hautes Fagnes aimed to look for such species.

## Results

*Cheilosia morio*; Belgium: **Liège**: Membach, Croix Noire, 1 ♀, 1 ♂, 18.IV.2011

On 18 April 2011, the northern part of the Hautes Fagnes area was visited in search of Syrphidae. At this time, flowering *Salix* are the most rewarding places to search. Along the road from Eupen to the Mont Rigi (Croix Noire, N68) through the extensive spruce forests at 437 ASL, an abundantly flowering *Salix cinerea* was attended for one hour. The Syrphidae fauna was dominated by some *Eristalis* (*E. pertinax* and *E. picea*, more than 50 specimens of each), *Heringia pubescens* (50 <) and *Orthonevra geniculata* (20 <). Some remarkable species present were *Brachyopa testacea* and *B. vittata* (both very early records for this region) and some *Dasysyrphus lenensis*. Finally, a male and a female *Cheilosia* were caught that were suspected to be *Cheilosia morio*. This was confirmed using BARTSCH (2009). *Cheilosia morio* is generally accepted to be a complex of at least two species, but they have not been officially described as yet (SPEIGHT, 2010). Because of the large size and the absence of hairs on the face, the specimens collected here fit into the description of *C. morio* "A".



Fig.1: *Cheilosia morio*, male. 18.IV.2011, Membach, Belgium. View on the side. Notice the reflecting pilosity on the centre of the abdomen.



Fig. 2: *Cheilosia morio*, male. 18.IV.2011, Membach, Belgium. Frontal view. Notice the very broad, swollen face.



Fig. 3: *Cheilosia morio*, female. 18.IV.2011 Membach, Belgium.

## Description

**Male:** (see Figs 1, 2). *General appearance:* A large (10,5 mm), blackish, hairy *Cheilosia* with more or less uniformly darkened wings.

**Face:** Eyes with brownish, relatively long, dense hairs. Face exceptionally broad and swollen; without hairs. Antenna black, arista black and about 3 times the length of the third antennal segment. **Legs:** Dark, blackish with dark-yellow bases of the tibiae (somewhat less than 1/3th of tibia length). **Scutum:** with very long black hairs. **Scutellum:** With very long black hairs, no obvious bristles present. **Abdomen:** with very long, but not dense black hairs. The most striking feature is the very short whitish pilosity in the middle of tergites 2-5: this pilosity lights up conspicuously when the light approaches from a small angle. Sternites strongly dusted.

**Female:** (See Fig. 3). **General appearance:** A large (9 mm), dark-brownish, short-haired *Cheilosia*. **Face:** conspicuously broad, yet less than in the male. About two times the width of the eye at the height of the antennae. Eyes with short, sparse light-brown hairs. Third antennal segment large, red. Arista black, two times the length of the third antennal segment. **Legs:** largely dark, except light bases of all tibiae. **Scutum:** with short, erect, light-brown hairs with a fraction of black hairs intermixed. **Scutellum:** short, erect light brown hairs, six black bristles of about 2/3th of the scutellum length. **Abdomen:** with, short, erect greyish hairs, longer at the edges. Sternites dusted.

### Discussion

With the discovery of *Cheilosia morio*, 45 species of *Cheilosia* are known from Belgium, making it by far the largest genus here, as it is in Europe. The Belgian Syrphidae list now counts 339 species (VAN DE MEUTTER, submitted). We can only speculate on the history of the colonization of Belgium by *Cheilosia morio*. Evidently, the vast plantations of its host plant *Picea abies* that have been planted outside their native range since about 1800 have allowed this specialist species to extend its range further to the west and south. The Hautes Fagnes have been forested with spruce *Picea abies* mainly since 1870, but the colonization by *Picea* dependent fauna may still be ongoing. For example *Brachyopa vittata* (first observation in 1951) and *Sphegina sibirica* (first observation in 1983) have lagged behind almost 100 years on their host plant range expansion, and both have

further extended their ranges dramatically over the last two decades in Belgium. *Cheilosia morio* has been recently discovered in Rheinland-Pfalz, relatively near to Belgium, which fits into a recent expansion scenario of *C. morio* towards Western-Europe.

A very conspicuous feature of the male *C. morio* was the tomentose, light-reflecting dense white pilosity on the centre of the abdomen (see Figure 1). This is a unique character among Belgian *Cheilosia* species, and may help to recognize this species in the field.

Given the huge areas of mature spruce forest in the Hautes Fagnes, it is likely that *C. morio* occurs more widely over this area, or may expand further in the near future. I like to encourage entomologists to visit the Hautes Fagnes in early spring, and to pay special attention to this remarkable syrphid species.

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