

## First observations of *Psilota atra* (FALLÉN, 1817) in Belgium (Diptera: Syrphidae)

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### Abstract

A saproxylic hoverfly is added to the Belgian fauna: *Psilota atra*. This species has been claimed here before, however, new knowledge on the identification of *Psilota* sp. has shown the previous records were erroneous. In this article we give an overview of the first records of *P. atra* in Belgium, provide information on how it can be recognized and discuss its ecology.

**Keywords:** sap run, saproxylic, *Pinus*, Campine area

### Samenvatting

De Dennenspitsbek *Psilota atra*, een saproxyle zweefvlieg, is voor het eerst met zekerheid vastgesteld in België. Eerdere waarnemingen bleken te berusten op verwarring met andere soorten, zo bleek nadat recent betere kenmerken beschikbaar kwamen om spitsbekken onderling te onderscheiden. In dit artikel bespreken we de nieuwe waarnemingen, hoe de inheemse spitsbekken *Psilota* sp. herkend kunnen worden en bediscussiëren we de ecologie van de Dennenspitsbek.

### Résumé

Le syrphe saproxylitique *Psilota atra* a été observé pour la première fois en Belgique. Les mentions précédentes de cette espèce en Belgique étaient erronées, l'espèce ayant été confondue avec d'autres *Psilota* par manque de critères de détermination. Cet article fournit des détails sur ces premières observations, décrit les caractères utiles pour identifier les *Psilota* de Belgique et discute l'écologie de l'espèce.

### Introduction

*Psilota* is a peculiar genus of Syrphidae that, because of their sluggish movements and their looks, resemble shining blue or black Lauxaniidae or Muscidae. The exact systematic position of *Psilota* within Syrphidae is as yet undecided, because they have a distinct genitalia shape unlike any other genus and do not have a *vena spuria*. It is also a genus of rare species, but they have a strong preference for flowering bushes (*Crataegus*, *Rhamnus*, *Salix*) and umbellifers (mainly *Anthriscus*) which helps to find them. Probably all species live as larvae in tree microhabitats, such as small crevices and sap runs.

It was not before 2004 that the first *Psilota* sp. was observed in Belgium. Remarkably, within five years, another two species were discovered (VAN DE MEUTTER & REEMER, 2012). Soon after the publication of these findings, however, doubt was raised on the identity of some of the specimens. Taxonomy of European *Psilota* sp. has long remained poorly clarified, with the presence of overlooked as well as ill-defined species. Especially the identification of females remains difficult up to now (SMIT & ZEEGERS, 2005; SMIT & VUJIĆ, 2007). Hence, the presence of *P. exilistyla* SMIT & VUJIĆ, 2008 has been overlooked in Northern Europa (VAN DE MEUTTER & REEMER, 2012; SMIT & VAN STEENIS, 2015; ZORALSKI, 2018), which has, together with considerable morphological variation in all other species present, led to confusion. Only after good discriminating characters for females of *P. exilistyla* in comparison with *P. anthracina* Meigen, 1822 and *P. atra* (Fallén, 1817) were found

(see BOT & VAN DE MEUTTER, 2019), a good overview of the distribution of all three species in Belgium became available. This knowledge has only recently been made available (BOT & VAN DE MEUTTER, 2019). The main conclusion is that many of the previously published records of *P. anthracina* (including the pictured female in VAN DE MEUTTER & REEMER, 2012) and all *P. atra* in fact were *P. exilistyla*.

Since 2016, several female *P. atra* have been discovered in the Campine area in northern Belgium, and recently in 2019 in the west of Flanders. These are the first confirmed records of this species in Belgium. We hereafter give an account of these observations, and discuss the ecology and probable habitat prerequisites of the species.

### Observations

(1) 5.VI.2016, 1♀, Genk, Schemmersberg, on *Rhamnus frangula*, Latitude: 50.9806 Longitude: 5.4595, leg. & det. Wout Opdekamp; (2) 13.V.2017, 1♀, Engsbergen (Tessenderlo), Achterheide, on *Anthriscus sylvestris*, Latitude: 51.0299, Longitude: 5.0171, leg. & det. Frank Van de Meutter; (3) 15.V.2018, 1♀, Genk, Opglabbekerzavel, on *Rhamnus frangula*, Latitude: 51.00803, Longitude: 5.530844, leg. & det. Frank Van de Meutter; (4) 27.V.2018, 1♀, Kalmthout, Kalmthoutse Heide parking zuid, on *Rhamnus frangula*, Latitude: 51.40210678, Longitude: 4.44521645, leg. & det. Wout Opdekamp.



Fig. 1. Map of Belgium with the ecoregions showing the localities (dots in the centre of UTM 5x5 squares) where *P. atra* has been found.

The first, second and fourth observation all occurred in a similar habitat: *Rhamnus frangula* shrub on the transition from dry sandy heathland to mature *Pinus*-woodland. The third observation was in a garden on *Anthriscus sylvestris*, but likewise in the vicinity of large *Pinus* woods and heathland. No other *Psilota* sp. have been observed together with *P. atra*, but in the garden at Tessenderlo, over the years 13 *P. exilistyla* have been seen. The first specimen was seen and confirmed by John Smit and Leendert-Jan Van der Ent; later specimens were compared to a series of Dutch specimens identified by Leendert-Jan Van der Ent.

### Recognition

Identification of *Psilota* sp. is best achieved by studying the male terminalia. Male *Psilota* have a uniquely shaped, forked surstylus which together with the shape of the epandrium is a straightforward clue to the species (see BOT & VAN DE MEUTTER, 2019). The combination of short surstyli and an elongated epandrium easily leads to *P. atra* in the male. More subtle characters need to be studied to identify females. *P. atra* (both males and females) has white hairs on the posterior anepisternum (black in the other species) and femur three is strongly swollen (sex-dependent, best compare by sex) with a pronounced ridge near the top (less so in other species).

The couplet to key to *P. atra* (see BOT & VAN DE MEUTTER, 2019) is:

- Femur three in the middle maximally 1.5 times as broad a femur 2. Males: epandrium not elongated, approximately as long as wide. Females: posterior anepisternum black haired .....  
.....*Psilota anthracina* & *P. exilistyla*
- Femur three conspicuously swollen, in the middle 2-3 times as broad as femur 2. Males: epandrium elongated, 1.5 times as long as wide. Females: posterior anepisternum white haired .....*Psilota atra*

Other characters often used include the length of the postpedicellus, but this is rather variable and often confusing in our experience. More details on how to recognize *P. atra* and photographs of the discriminating characters can be found in BOT & VAN DE MEUTTER (2019).

### Discussion

Knowing the Dutch distribution and abundance of *Psilota* sp., it comes as a surprise that these are the first *P. atra* seen in Belgium (SMIT & ZEEGERS, 2005; SMIT & VAN STEENIS, 2015). In the Netherlands, *P. atra* at this moment probably is the commonest of all three *Psilota* sp. and is found at numerous localities near the center of its distribution at the Veluwe, the Utrechtse Heuvelrug and the stuwwallen, but also further to the north, east and south near the border with Belgium. If an explanation was to be given why there are so few observations in Belgium, one could argue that the places and habitats it has been found in Belgium are rarely visited in spring time. Monotonous *Pinus* coniferous woodland and the bordering heathlands are poor in flowers before summer, densities and richness of syrphids are comparatively low here, and they generally lack the typical *Crataegus* or *Prunus* to attract otherwise rather elusive *Psilota*. Under such circumstances, one needs to be on the lookout for *Rhamnus frangula*, an underappreciated and less conspicuous but effective attractor of syrphids. Apart from *P. atra*, a person spending time looking for syrphids in such places may be rewarded with other rarities such as *Ceriana conopsoidea* (Linnaeus, 1758), *Doros conopseus* (Fabricius, 1775) or *Chrysotoxum octamaculatum* Curtis, 1831, as was the case with the first and third observation of *P. atra*. Another possibility is that *P. atra* was lacking in Belgium and is currently colonizing. Recent new records (spring 2019, not included here) in the west of Flanders may be indicative of an expansion.

We have as yet little direct evidence of the breeding habitat of the different species of *Psilota* sp., but the strong association with *Pinus* woodland observed in Belgium matches the findings for *P. atra* in the Netherlands (SMIT & ZEEGERS, 2005; SMIT & VAN STEENIS, 2015). With such a low number of observations of *P. atra*, and *Pinus* tree species often occurring in mixed stands, it is hard to tell whether all *Pinus* species are equally valued by *P. atra*. Yet, as with some other species (e.g. *Melangyna barbifrons* (Fallén, 1817)) the perception is that *P. sylvestris* could be more interesting than *P. nigra* or other *Pinus*. *Psilota atra* has not yet been found in the many large *Picea* forested areas in Belgium (where *P. exilistyla* may be common, BOT & VAN DE MEUTTER, 2019), suggesting *Picea* is not a host conifer tree for *P. atra*. It takes some imagination to believe that *P. atra* would occur as well in thermophilous *Quercus* forests, as is mentioned by SPEIGHT (2015). As it is not clear where this information comes from it is difficult to judge if other species could be involved. The arrival of *Psilota* sp. in Belgium is part of a broader phenomenon over the last few decades of increasing richness in saproxylic species in Belgium and Western Europe (REEMER, 2005). This is commonly related to forest ageing and especially a changed, more ecological attitude towards forest management. The latter, however, often involves the turnover of *Pinus* woodland to deciduous forest as well, whereas associated communities of the former are getting more and more diverse. These are the dilemmas faced by modern conservationists and for which hopefully all arguments - pro and con - are thoughtfully balanced.

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