

## ***Melangyna pavlovskyi* (Violovitsh, 1956): first observations in Belgium of a rapidly expanding species (Diptera: Syrphidae)**

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### **Summary**

This paper reports the first observations of *Melangyna pavlovskyi* (Violovitsh, 1956) in Belgium. This species has recently colonized Europe and now rapidly expands. It is to be found in early spring, close to coniferous or mixed woodland with *Pinus*.

**Keywords:** range expansion, coniferous woodland, *Pinus*, *Melangyna*, Sachalin-elfje

### **Samenvatting**

In dit artikel rapporteren we de eerste waarnemingen van het Sachalin-elfje *Melangyna pavlovskyi* (Violovitsh, 1956) in België. Deze zweefvlieg is pas recent in Europa vastgesteld en breidt zich nu aan een hoog tempo uit. *M. pavlovskyi* is een vroege voorjaarssoort, die vooral te vinden is in en bij gemengd naaldbos met dennen.

### **Résumé**

Le syrphe *Melangyna pavlovskyi* (Violovitsh, 1956) est mentionné pour la première fois de Belgique. Il a été trouvé au début du printemps et semble associé aux forêts de conifères ou aux forêts mixtes contenant des *Pinus*. Cette espèce se répand depuis peu en Europe et semble en très forte expansion.

### **Introduction**

*Melangyna* are fragile, slender-build Syrphini, which owes to their Dutch name “elfjes” (EN: elves). Their larvae are aphid predators in shrub- and woodland (SPEIGHT, 2010). The majority of *Melangyna* species in Belgium are early spring species that dominate the spring syrphid community. Until 2012, five species of *Melangyna* have been recorded in Belgium: *Melangyna barbifrons* (Fallén, 1817), *M. labiatarum* (Verrall, 1901), *M. lasiophthalma* (Zetterstedt, 1843), *M. quadrimaculata* (Verrall, 1873) and *M. umbellatarum* (Fabricius, 1794). In 2013, a sixth species was discovered: *M. lucifera* Nielsen, 1980 (DE BREE *et al.*, 2014). Two years later a seventh species can be added: *M. pavlovskyi* (Violovitsh, 1956).

The history of *Melangyna pavlovskyi* in Europe is surprising. The first European observations are from 2005 from Denmark (BYGEBJERG, 2011). Around the same time, the species was also observed in Poland (MIELCZAREK, 2011). Since *M. pavlovskyi* was not covered in West-Palearctic literature at that time, it took sometime before it was recognized. In both countries, the species has been observed in number but collection material has not revealed a single individual predated the reported observations. *M. pavlovskyi* was described from the Russian Far East and there are no reported records near to Europe. BYGEBJERG (2011) therefore postulates that *M. pavlovskyi* probably has been introduced in Denmark. The idea of a local introduction seems, however, contradicted by the simultaneous observations of *M. pavlovskyi* in Poland and Slovakia. What is clear is that *M. pavlovskyi* is undergoing a tremendous range shift. In 2014 it was first observed in the Netherlands at two locations (SMIT & DE BREE, 2014), several hundreds of kilometers from Denmark. Only one year later, it is observed in Belgium, at three different locations.

## Results

### Overview of the records

**Prov. Antwerpen:** Veerle-Heide, Averbode bos en heide, FS35B, 12.III.2015, 1♀, leg. Frank Van de Meutter; coll. Frank Van de Meutter; **prov. Limburg:** Engsbergen, Achterheide, FS45A, 31.III.2015, 2♂, leg. Frank Van de Meutter; coll. Frank Van de Meutter; **prov. Luik:** Recht, vallée du Rechterbach, KA88D, 10.IV.2015, 3♀, leg. Jonas Mortelmans & Elias de Bree, coll. Jonas Mortelmans & Elias de Bree. A distribution map based on the above records at the UTM5x5km level is given in Figure 1.

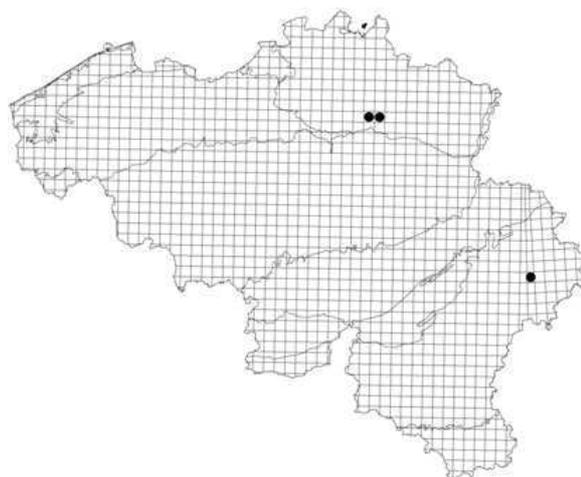


Fig. 1. Map of Belgium with UTM 5x5 km grid, indicating the grid squares where *M. pavlovskyi* has been discovered in 2015. Lines within the contours of Belgium delimitate ecoregions.

Identification of *M. pavlovskyi* was based on BYGEBJERG (2011) who presents a complete key for European *Melangyna*. Illustrations of the male *M. pavlovskyi* from Engsbergen and the female of Veerle-Heide are given in Figure 2.

## Discussion

The arrival and spread of *Melangyna pavlovskyi* in Europe is a fascinating story. Whereas this fly is on the wing when air-temperature is commonly low, it succeeds in spreading across Europe at a dramatic pace. At its locations of discovery in Denmark and Poland, in a few years time, *M. pavlovskyi* has become one of the commonest spring species (pers. communication R. Ahlburg; SMIT & DE BREE, 2014). It is noteworthy that the three locations where *M. pavlovskyi* was found in Belgium, constitute some of the best surveyed localities in spring time for several years. The synchronous discovery of *M. pavlovskyi* at all three locations, following the discovery of this species in the Netherlands, underlines in our view that the colonization of Belgium is recent and has occurred over a very short timescale. It seems reasonable that also in Belgium *M. pavlovskyi* may soon become more common. In the Netherlands, the number of observations and observations sites has already increased in the second year, and up to seven individuals were caught in one day at one place (data obtained through waarneming.nl).

In Belgium and the Netherlands, *M. pavlovskyi* typically is found near mixed or coniferous woodland with *Pinus*, where also good numbers of other *Melangyna* species *M. quadrimaculata* and *M. barbifrons* may occur. This accords to the habitat where it was found in Denmark, although subsequent reports also come from parks (BYGEBJERG, 2011) of which the tree species are not reported, whereas in Poland it is reported to occur now at “different types of woodland” (SMIT & DE BREE, 2014). It is not uncommon in aphid predating syrphids to have a specialization in either coniferous or deciduous forest specialized aphids, apparently related to an adaptation to crawl on needles (ROTHERAY, 1993). *Melangyna barbifrons*, for example, appears strict relation to large forests with *Pinus (sylvestris)* in Belgium, and probably forages on an aphid species that lives on *Pinus* only. *M. pavlovskyi* appears to have similar affinities to *Pinus* woodland, but based on foreign reports may use a broader palette of (coniferous?) tree species. The habitat preference of *M. pavlovskyi* in Belgium hopefully will become clearer in the following years.

*Melangyna pavlovskyi* is an early-spring species, that in Denmark starts to fly together with *M. quadrimaculata* (pers. communication R. Ahlburg); the earliest syrphid species in Western-Europe. Belgian observations are in line with this, with the first observation on 12 March together in flight with a large number (100+) of *Melangyna quadrimaculata* on flowering hazel (*Corylus avellana*). However, also later observations have been recorded, after most *M. quadrimaculata* had disappeared, suggesting *M. pavlovskyi* may have a comparably longer flight period. The precise life-history of *M. pavlovskyi* in Belgium remains to be assessed in the coming years.

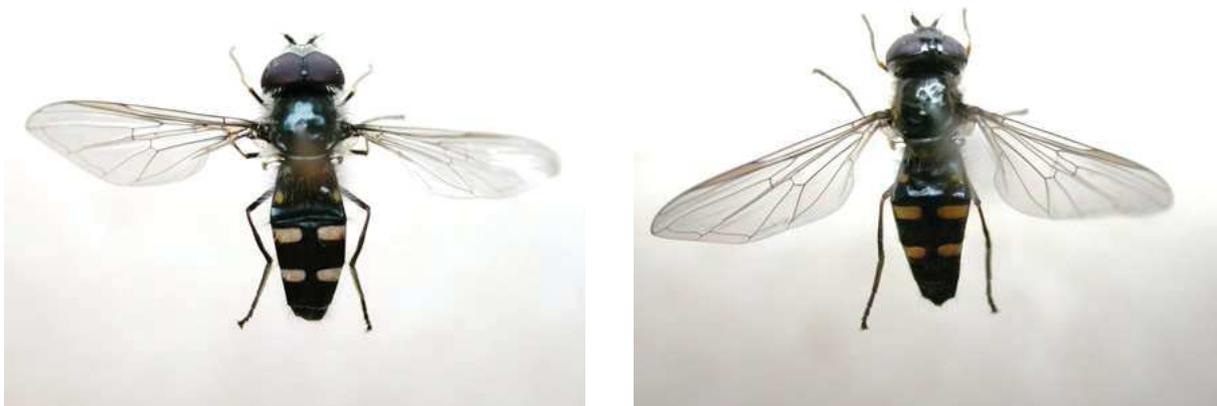


Fig. 2. Dorsal photographs of a male (Engsbergen, 31.III.2015) (left) and female (Veerle-Heide, 12.III.2015) (right) *M. pavlovskyi*.

#### Acknowledgements

I like to thank Wouter Van Steenis for sharing with me the details of his observations of *M. pavlovskyi* in the Netherlands.

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