

# A new European species in the genus *Melangyna* Verrall, 1901 (Diptera: Syrphidae)

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*Melangyna pavlovskyi* (Violovitsh, 1956) has been found breeding in Denmark. The species is recorded from four localities on Zealand, and it is established on at least one of these. It is new to the European fauna.

A redescription of *M. pavlovskyi* based on the external characters and an updated key to the NW European species of *Melangyna* are presented.

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## Introduction

The faunistics of Danish hoverflies has been well studied (Torp, 1984; 1994, Bygebjerg, 2001; 2004), and the detailed distributional maps on Danish Syrphidae are rather unique within faunistics on Danish Diptera. The recording scheme in 1984-1993 was organised by Ernst Torp. He identified all the material himself, and only collected specimens were included. This high quality of data is in great contrast to the maps with recent data on Danish Syrphidae published on the Internet ([www.fugleognatur.dk/wildaboutdenmark](http://www.fugleognatur.dk/wildaboutdenmark)). The amount of misidentifications and doubtful records on this private Internet-site is large at least with the present concept. The results of the recording scheme (Torp, 1994) in general give a good basis for analyses of recent changes in the distribution of the species. However in comparison with other species the knowledge of the distribution of univoltine species with flight period in the very early spring is not quite as good. The reason to this is mainly a rather low collecting activity in the period with relatively few active species. With the aim to try to improve on the knowledge on the earliest occurring species I have for some years visited as many Danish localities as possible in the springtime. In April 2005 several localities in NE Zealand were visited, and on two localities some rather different looking specimens of *Melangyna* were collected. Later these specimens were studied more closely, and after having checked descriptions of other European species in the genus the conclusion is that they are identical to the present concept of the species *Melangyna pavlovskyi* (Violovitsh, 1956) known from the Eastern Palaearctic. Danish material was compared with material from Japan and Russia, including paratypes on loan from Mr. Tore R. Nielsen, Norway. He also confirmed the identity of Danish material of *M. pavlovskyi*. In the period 2007-2011 one of the localities in NE Zealand was visited several times and further specimens of the new European species were collected. In 2010 a female specimen was found on a locality in South Zealand, and Bent Haagen Petersen collected a specimen in 2007.

In NW Europe 11 species in *Melangyna* Verrall, 1901 have now been recorded: *M. arctica* (Zetterstedt, 1838), *M. barbifrons* (Fallén, 1817), *M. coei* Nielsen, 1971, *M. compositarum*

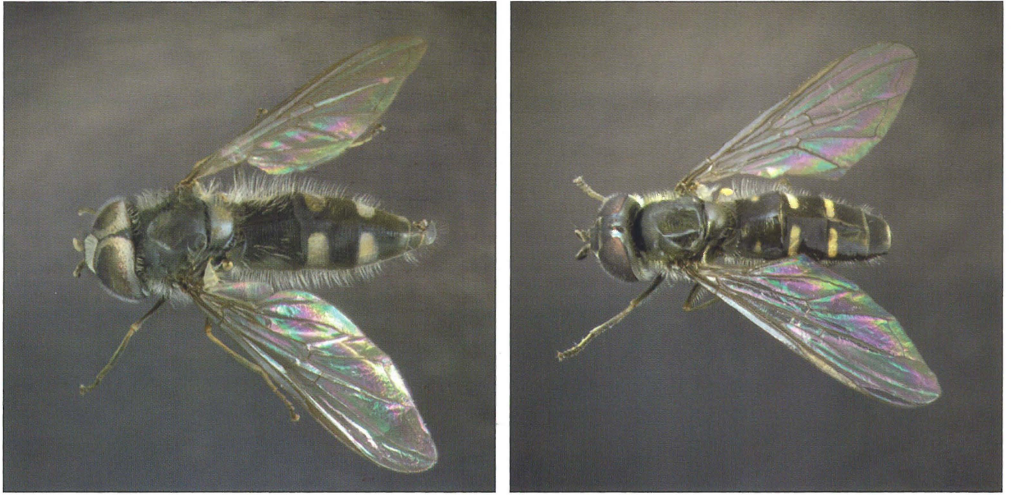


Fig. 1. Male and female of *Melangyna pavlovskyi*, Jægerspris Nordskov. (Photo: Christoffer Fägerström).

(Verrall, 1873), *M. ericarum* (Collin, 1946), *M. labiatarum* (Verrall, 1901), *M. lasiophthalma* (Zetterstedt, 1843), *M. lucifera* Nielsen, 1980, *M. pavlovskyi* (Violovitsh, 1956), *M. quadrimaculata* (Verrall, 1873) and *M. umbellatarum* (Fabricius, 1794).

*Meligamma* Frey, 1946 and *Fagisyrrhus* Dusek & Laska, 1967 is by several authors included as subgenera in *Melangyna*, but this is not followed here. The validity of taxonomic distinction between *M. labiatarum* and *M. compositarum* is still unsolved (Stubbs and Falk, 2002; Bartsch et al., 2009).

In the Palaearctic region Peck (1988) mentions 21 species in the genus. Additional three species have been described from the far east of Russia (Mutin, 1986; 1998a & 1998b) and 3 species from China (Huo & Ren, 2006; 2007).

#### Records of *Melangyna pavlovskyi* in Denmark

NEZ: Jægerspris Nordskov, PH80 & PG89: 1 ♂ 4 ♀ 17.iv. 2005, 1 ♂ 18.iv. 2005, 1 ♀ 24.iv. 2005, 1 ♀ 12.v. 2005, 1 ♂ 7 ♀ 14.iv. 2007, 1 ♂ 1 ♀ 24.iv. 2007, 1 ♀ 19.iv. 2008, 4 ♀ 22.iv. 2008, 2 ♀ 27.vi. 2008, 1 ♂ 1.iv. 2009, 2 ♂ 2 ♀ 3.iv. 2009, 15 ♂ 25.iii. 2010, 2 ♀ 10.iv. 2011 (all leg. R. Bygebjerg). Tisvilde, UC11: 1 ♀ 13.iv. 2007 (leg. B. Haagen Petersen). Jægersborg Dyrehave, UB48: 1 ♀ 12.v. 2005 (leg. R. Bygebjerg). SZ: Søholm, Magleby Skov, UB33: 1 ♀ 10.iv. 2010 (leg. R. Bygebjerg).

#### Diagnosis

The males of *M. pavlovskyi* superficially have a slight resemblance to *M. quadrimaculata* but can be distinguished from this species by the white hairs on the margins of tergite 2, the shape of spots on tergite 3 and 4 and the pruinose frons. Males of *M. barbifrons* also have some resemblance, but they have bare eyes and dark hairs on thorax and scutellum. Some specimens of *M. arctica* have entirely dark face, but they have bare eyes. The studied material of males *M. pavlovskyi* show a rather broad variation in size in comparison with males of other early spring *Melangyna* species, and also there is the variation in colouration; some specimens are without yellow spots on tergite 2, while others have distinct small rounded spots. Larger male specimens of *M. pavlovskyi* with spots on tergite 2 have some resemblance to males of *M. lucifera*, but the yellow face, broader frons angel and the shape of the marks on tergite 3 and 4 can be used to identify the later.

The female is superficially somewhat close to *M. lasiophthalma*. It is separable from *M. lasiophthalma* by the long eye hairs, black mouth edge, second basal cell covered in microtrichia and the small yellow spots on tergite 2. The most typical specimens have very small yellow spots, and are easily identified, but specimens with larger yellow spots are more like *M. lasiophthalma*.

Fig. 1 shows typical specimens of *M. pavlovskyi*. Other species in the genus with hairy eyes are: *M. lucifera*, *M. lasiophthalma*, *M. coei*, *M. quadrimaculata* and *M. olsufjevi* (Violovitsh, 1956).

### **Description of external characters**

#### **Male:**

**HEAD:** Eyes covered with long, whitish hairs (except on narrow areas near the frons and eye margin). Lengths of the hairs are almost as long as the length of ocellar triangle. Frons angle approximately 90°. Frons evenly dusted with rather dense greyish dusting and with black hairs. Lunula black with a dark brownish area mid at the lower margin. Ocellar triangle slightly longer than wide. Face entirely black and covered with a rather dense greyish dusting except on the area medially on the central prominence. Mouth-edge black. Facial hairs black. Antennae black. Third antennal segment rounded and relatively small (only slightly longer than wide). Aristae black and rather short. The broadened basal part of aristae long (longer than the thin apical part).

**THORAX:** Mesonotum and pleurae shining black or bluish-black with greyish dusting. (Lower parts of katepisternum and meron only slightly dusted and with a bluish shine). Scutellum yellowish or dark brown on central part with basal corners and posterior rim darkened. White hairs on most of the scutellum and some dark hairs at the posterior margin. Squama white with yellowish-white rim. Halteres brownish and yellow. Legs predominantly black or dark brown with yellowish areas on basal parts of tibiae and distal parts of femora. Front and mid tibiae with approximately basal 1/3 yellowish. Front and mid femora with approximately distal 1/7 yellowish. Hind legs only narrowly pale at the knees. Wings hyaline with brown veins. Stigma greyish brown. Second basal cell covered in microtrichia.

**ABDOMEN:** Tergite 1 black with grey dusting at margins. Tergite 2 black with areas near the side margins greyish dusted. Some specimens have two very small and weak, barely visible yellowish spots on tergite 2. Tergite 3 and 4 black and each with a pair of small, yellowish spots. The shape of the spots on tergite 3 and 4 are rounded but almost rectangular. The spots are slightly whitish dusted. The spots on tergite 3 are slightly oblique with the outer front corners close to the front margin of the tergite. Spots on tergite 4 are placed close to the anterior margin of the tergite, and almost parallel to the front margin of the segment. The side margin of tergite 3 and 4 are greyish dusted on the area from the spots and outwards. Tergite 4 with the posterior rim narrowly yellowish. Tergite 5 black with very narrow yellowish posterior rim. Side-margins of all tergites predominantly with white hairs (but with some black hairs at posterior corners). Sternites predominantly black with greyish dusting. (Yellowish areas near the front margins barely visible). Pregenital segment black with greyish dusting and black hairs. Length: 7-10 mm.

#### **Female:**

**HEAD:** Eyes hairy like in the male (covered with long, whitish hairs except on narrow areas near the frons and eye margin). Length of the hairs are almost as long as the length of ocellar triangle. Frons with a pair of narrow dust spots often connected in the middle forming an oblique band. Hairs on frons black. Lunula black or dark brown with a dark yellowish area at the lower parts. Ocellar triangle almost equilateral. Face entirely covered

with a rather dense greyish dusting except on the central prominence. Colouration of the face on most individuals yellowish and black with a very broad, black middle stripe and black areas between the antennae and the eye margin. Some individuals have an entirely black face. Mouth-edge black. Face with both black and white hairs. Antenna including arista black. Third antennal segment rounded and relatively small (only slightly longer than wide). Aristae black and rather short. The broadened basal part of aristae long (longer than the thin apical part).

**THORAX:** Mesonotum and pleurae shining black or bluish-black with greyish dusting. (Lower parts of katepisternum and meron only slightly dusted and with a bluish shine). Scutellum yellowish or dark brown on central part with basal corners and posterior rim darkened. Hairs on scutellum white (some individuals have a few dark hairs at the posterior margin). Squama white with yellowish-white rim. Halteres yellowish or brownish. Legs predominantly black or dark brown with yellowish areas on basal parts of tibiae and distal parts of femora. Front and mid tibiae with approximately basal 1/3 yellowish. Front and mid femora with approximately distal 1/7 yellowish. Hind legs only narrowly yellowish at the knees. Wings hyaline with brown veins. Stigma greyish brown. Second basal cell covered in microtrichia.

**ABDOMEN:** Tergite 1 black with greyish dusting at margins. Tergite 2 black with a pair of very small yellow spots placed near the side margins. The distance between the two spots on tergite 2 is larger than the length of first tarsomer on hind legs. Tergite 3 and 4 black and each with a pair of narrow, yellow spots that do not reach the side margins. The shape of the spots on tergite 3 and 4 are elongate and almost rectangular. The spots are slightly whitish dusted. Tergite 5 and 6 are both black with a narrow yellowish posterior rim. Side-margins of all tergites predominantly with white hairs (but with some black hairs at posterior corners). Sternites predominantly black with greyish dusting. (Yellowish areas near the front margins barely visible). Length: 7-10 mm.

### Key to *Melangyna*-species in NW Europe

#### *Males*

- 1 Face black without yellow areas (but often with gray dusting) ..... 2
  - Face partly yellow (the yellow areas sometimes reduced to only a small spot on each side) ..... 5
- 2 Eyes bare ..... 3
  - Eyes distinctly hairy ..... 4
- 3 Tergite 2 black without yellow spots. Margins of tergite 2 with distinct black hairs. Tergite 3 and 4 with rather small yellow spots somewhat triangular and tapering towards centre of body.....*barbifrons*
  - Tergite 2 black with yellow spots (sometimes very small). Margins of tergite 2 with predominantly grey or white hairs. Tergite 3 and 4 with somewhat rectangular yellow spots. The distance between these yellow spots are most often less than the length of the single spot..... *arctica*
- 4 Margins of tergite 2 with distinct black hairs. Tergite 2 black without yellow spots. Tergite 3 and 4 with rather small yellow spots somewhat triangular and tapering towards centre of body. .... *quadrifasciata*

- Margins of tergite 2 predominantly with pale hairs. Tergite 2 either without yellow spots or with very small round yellow dots. Tergite 3 and 4 with somewhat rectangular yellow spots. The distance between these yellow spots are most often less than the length of the single spot..... *pavlovskyi*
- 5 Scutellum with a round, black spot at each front corner ..... 6
- Scutellum with black, wedge-shaped lateral spots ..... 8
- 6 Thoracic dorsum with pale hairs. Face with short black mid-stripe ..... 7
- Thoracic dorsum with some black hairs; at least in posterior half several black hairs. Face with longer black mid-stripe..... *coei*
- 7 Wings with second basal cell partly bare. Eyes bare ..... *umbellatarum*
- Wings with second basal cell entirely covered with microtrichia. Eyes most often with sparse hairs (sometimes the hairs are barely visible) ..... *compositarum/ labiatarum*
- 8 Eyes hairy. Thoracic dorsum with pale hairs ..... 9
- Eyes bare. Thoracic dorsum with some black hairs; at least in posterior half several black hairs..... 10
- 9 Frons angle blunt (110 -120°). Tergite 2 with small, round yellow spots. Tergite 3 and particularly tergite 4 with yellow spots that typically are tapering towards midline of body. Yellow spots on tergite 3 and 4 with a faint silvery dusting ..... *lucifera*
- Frons angle acute or right. Tergite 2 most often with larger yellow spots (they are never reduced to round spots). Tergite 3 and 4 with yellow spots that are not tapering towards midline of body..... *lasiophthalma*
- 10 Wings with second basal cell partly bare..... *ericarum*
- Wings with second basal cell completely covered with microtrichia..... *arctica*

**Females**

- 1 Frons without dust spots (or rarely with very faint dust spots) ..... 2
- Frons with distinct dust spots..... 3
- 2 Abdomen with distinct yellow spots ..... *barbifrons*
- Abdomen entirely black, without yellow spots (very rarely faint traces of small yellowish spots are visible) ..... *quadrimaculata*
- 3 Scutellum with a round, black spot at each front corner ..... 4
- Scutellum with black, wedge-shaped lateral spots ..... 6
- 4 Mouth edge distinctly black. Cheeks partly black. Eyes hairy..... *coei*
- Mouth edge predominantly yellow. Cheeks yellow. Eyes bare (or almost bare) ..... 5
- 5 Wings with second basal cell partly bare..... *umbellatarum*
- Wings with second basal cell entirely covered with microtrichia ..... *compositarum/ labiatarum*
- 6 Frons with a narrow dust band that is often interrupted in the middle. Eyes hairy.. 7
- Frons with a broad uninterrupted dust band. Eyes bare ..... 9



Fig. 2. One of the localities where *Melangyna pavlovskyi* occurs; Jægerspris Nordskov (Photo, April 2008). Females of the species often visit catkins (*Salix* spp.).

- 7 Mid tibia entirely yellow. Tergite 3 and particularly tergite 4 with yellow spots that typically are tapering towards midline of body. Yellow spots on tergite 3 and 4 with a faint silvery dusting..... *lucifera*  
 – Mid tibia partly black. Tergite 3 and 4 not tapering towards midline of body ..... 8
- 8 Eye hairs long (almost as long as ocellar triangle). Yellow spots on tergite 2 round and small. Wings with second basal cell entirely covered with microtrichia. Mouth edge black ..... *pavlovskyi*  
 – Eye hairs shorter. Yellow spots on tergite 2 larger. Wings with second basal cell partly bare. Mouth edge partly yellow ..... *lasiophthalma*
- 9 Wings with second basal cell partly bare ..... *ericarum*  
 – Wings with second basal cell entirely covered with microtrichia ..... *arctica*

The key is constructed based mainly on material from the Nordic countries, and parts of it have earlier been published in the key by Bartsch et al. (2009). Other recent keys have been published by van Veen (2004) and Stubbs & Falk (2002). In most keys to genera there are difficulties with some of the *Melangyna* specimens that might key out with *Melanostoma* or *Platycheirus* because of the black face and relatively dark scutellum; this is the case with specimens of *M. pavlovskyi*, *M. quadrimaculata*, *M. arctica* (partly) and with males of *M. barbifrons*. In Bartsch et al. (2009) e.g. the three first mentioned species will key out correctly because of the hairy eyes, but males of *M. barbifrons* have bare eyes.

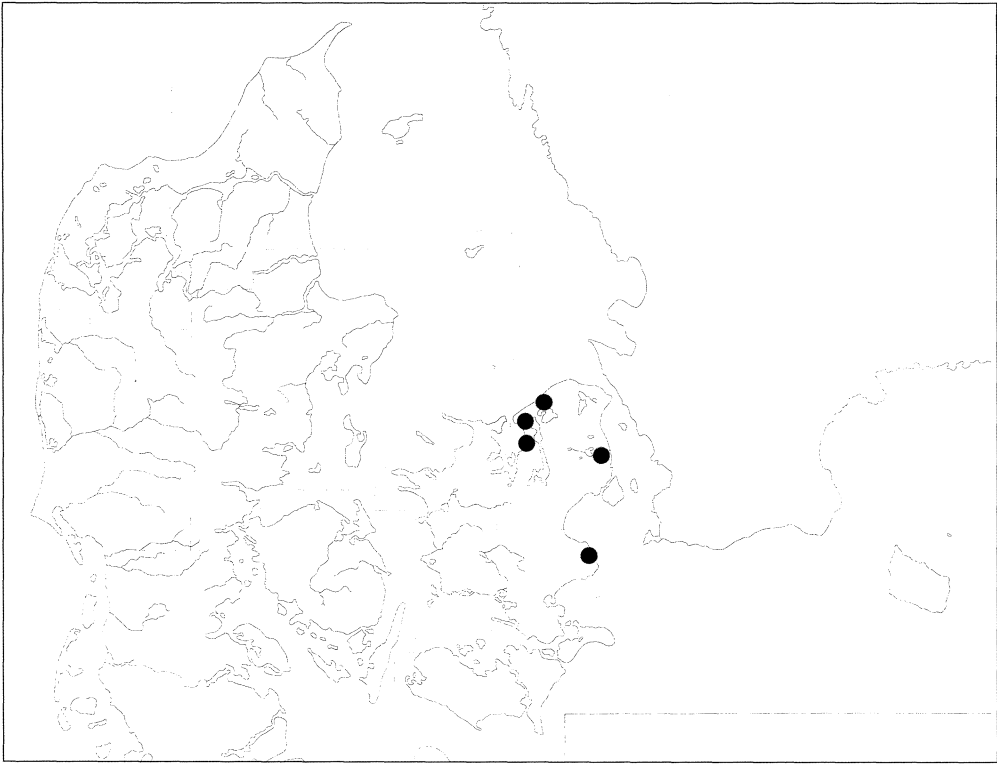


Fig. 3. Records of *Melangyna pavlovskyi* in Denmark (10x10 km UTM-squares).

### Biology

The locality for *M. pavlovskyi* in Jægerspris Nordskov is forest with a mixture of deciduous trees and areas with coniferous trees (fig. 2). In the genus *Melangyna* four other species have been recorded from the same locality; *M. barbifrons*, *M. lasiophthalma*, *M. lucifera* and *M. quadrimaculata*. It is also noteworthy that *Syrphus nitidifrons* Becker, 1921 has been found there (Bygebjerg & Petersen, 2009) and *Platycheirus discimanus* (Loew, 1871) is rather common on the locality, this species is otherwise rather rare and locally occurring in Denmark. All the mentioned species are active in April together with *M. pavlovskyi*.

The two specimens from Jægersborg Dyrehave and Magleby Skov respectively were also collected in biotopes with forest, the first mentioned locality is a well known site just north of Copenhagen. It is today rather park-like but contains some valuable old trees. Several rare insect species have been recorded there, and the site has in the past frequently been visited by insect collectors.

Most of the Danish specimens of *M. pavlovskyi* were found on catkins (*Salix* spp.). The specimen from Jægersborg Dyrehave was found on flowering *Prunus* sp. Some of the specimens collected in 2009 and 2010 were caught on sugar baits.

The recorded flight period is from late March to early May (25.iii.-12.v.). The flight period is varying from year to year due to weather conditions, a phenomenon seen with most of the very early spring species. The earliest emerging specimens of *M. pavlovskyi* and *M. quadrimaculata* have in Denmark been observed together, and they are the very earliest occurring spring hoverflies.

The larvae of members of the genus *Melangyna* are aphidophagous and have been recorded from both coniferous and deciduous trees. The larvae of *M. umbellatarum* are found among aphids on *Heracleum sphondylium* and *Angelica sylvestris*.

## Discussion

The known distribution of *M. pavlovskyi* in Denmark is at the present time restricted to a few localities on Zealand. Fig. 3 shows the records on a map in 10x10 km squares as is traditionally used in faunistics on Danish hoverflies (Torp, 1994).

It is somewhat surprising to find a species of hoverflies new to Europe in an area where the hoverfly fauna is well investigated. The very early spring species have also in the past been collected in large numbers in the area. As an example of this it could be mentioned that the number of Danish specimens of *M. quadrimaculata* in the collection in Zoologisk Museum in Copenhagen exceeds 600, and the main part of these were collected on localities on NE Zealand. It is considered rather unlikely that *M. pavlovskyi* has occurred in the area for many years back. The most likely scenario is that the species somehow has been introduced from another region and has been able to establish a population in the area, and that it is now expanding its distribution. In comparison with other hoverflies the species with flight period in the very early spring probably have a relatively weak ability to disperse and colonise new localities.

During the process of finishing the manuscript for this paper I noticed on the Internet some photos indicating that specimens of the same species are found in Slovakia and Poland (<http://www.diptera.info>).

## Acknowledgments

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### Dansk sammendrag

#### En ny europæisk art i slægten *Melangyna* Verrall, 1901 (Diptera: Syrphidae).

*Melangyna pavlovskyi* (Violovitsh, 1956) er fundet i Danmark. Arten er fanget på fire lokaliteter på Sjælland, og den er etableret på mindst en af disse. Den er ny for den europæiske fauna.

En nybeskrivelse af eksterne karakterer hos *M. pavlovskyi* samt en opdateret nøgle til de NV europæiske arter i slægten *Melangyna* præsenteres.