Spilomyia species (Diptera: Syrphidae) in Dutch collections, with notes on their European distribution

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BARENDREGT, A., J. VAN STEENIS & W. VAN STEENIS, 2000. *SPILOMYIA* SPECIES (DIPTERA: SYRPHIDAE) IN DUTCH COLLECTIONS, WITH NOTES ON THEIR EUROPEAN DISTRIBUTION. – *ENT. BER., AMST.* 60 (3): 41-45.

Abstract: The identity of the specimens of the genus *Spilomyia* in Dutch collections was checked. All published observations of *S. saltuum* from The Netherlands appear to refer to *S. manicata*. This species was never reported for the Dutch fauna before. However, *S. saltuum* remains on the Dutch check list with two hitherto unpublished specimens. An updated key to the four species known from Central and Western Europe is added. Specimens in Dutch collections show that *S. digitata* has a strictly Mediterranean distribution and *S. diophthalma* has its optimum in the boreo-alpine region. *Spilomyia manicata* is widely distributed in Europe, whereas *S. saltuum* has its main distribution area in Southern Europe.

Keywords: *Spilomyia*, mis-identification, key, distribution, ecology.

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Introduction

Flies of the genus *Spilomyia* Meigen are rare throughout Europe (Speight, 1988) and occur most frequently in the Mediterranean region. Also from The Netherlands there are only a few records available (Barendregt, 1994) and *Spilomyia saltuum* (Fabricius) is the only species reported from our country. The species is already mentioned in Van der Wulp & De Meijere (1898). Since it was the only species known from The Netherlands, Belgium and Denmark (Van der Goot, 1981; Verlinden, 1991; Torp, 1994) all *Spilomyia* specimens were initially identified as *S. saltuum*.

Given attention by a remark of Theo Zeegers about the presence of *Spilomyia manicata* Rondani in Poland and the possible dispersion in this species, we decided to check the identity of all specimens of this genus in the Dutch collections. A number of 117 specimens were studied from the following collections: Naturalis (Leiden), Instituut voor Taxonomische Zoölogie (Amsterdam), Sectie Entomologie Landbouwuniversiteit (Wageningen) and the private collections of J. A. W. Lucas (Rotterdam), W. Renema (Leiden), M. van Veen (Zeist), J. Smit (Velp), J. van Steenis (Uppsala, Sweden) and W. van Steenis (Utrecht).

The larvae of *Spilomyia* inhabit damp rotten timber in hollow trees and decaying heartwood of deciduous trees (Stackelberg, 1958; Rotheray, 1993). Adult *Spilomyia* are large hoverflies (12 - 17 mm) showing a striking resemblance with social wasps. Observations in behaviour indicate that they also imitate wasps: the front legs are used to wave and thus resemble long antennae. Specimens of *S. diophthalma* (Linnaeus) were observed in Sweden vibrating their wings while crawling about on flowers, imitating the folded wings of vespids. When captured in the net they buzz loudly and crawl about, stopping very frequently to press down the tip of the abdomen as though they would sting (Curran, 1951). It is supposed that the adults fly high in the tree canopy and come down only to drink or feed, especially on late flowering umbellifers like *Cicuta virosa* L., *Pastinaca sativa* L., *Angelica sylvestris* L. and *Heracleum sphondylium* L. (Speight, 1988; Nielsen, 1990). However,

other observations do not support this. In Sweden we observed males of *S. diophthalma* flying rapidly from flower to flower, searching for females, and sometimes even chasing social wasps. This behaviour has also been observed in North America (Waldbauer & Ghent, 1984). Moreover, the last author observed a male *S. saltuum* in the Dordogne (France) in a *Populus*-plantation flying from tree to tree, each time resting for a moment on a trunk or on *Populus*-leaves near the trunk about one metre above surface.

Identification

The genus *Spilomyia* can be distinguished from the related genera *Milesia* Latreille and *Temnostoma* Lepeletier & Serville by the following combination of characteristics: wing cel I open (also in some *Milesia*, in all *Temnostoma*), the strongly oblique vein r-m (also in some *Milesia*), the apico-ventral prolateral spur on the hind femur (also in some *Milesia*) and an obvious brown/yellow colour pattern on the eyes in living specimens (Hippa, 1990). The scutum has a characteristic V-shaped drawing in front of the scutellum.

During the last century there has been confusion about the identity of European *Spilomyia* species. Sack (1910) treats four species presently known from Central and Western Europe: *Spilomyia saltuum*, *S. manicata*, *S. diophthalma* and *S. digitata* Rondani. Kuntze (1913) only refers to *S. saltuum* in describing the new species *S. integra* Kuntze. In Sack (1930) only *S. diophthalma* and *S. saltuum* are keyed out. In his next key (Sack, 1932) *S. integra* is included, but *S. digitata* is synonymized with *S. manicata*. Moreover, Sack (1932) does not use the obvious characteristic erect hairs in *S. manicata* as a key characteristic. Stackelberg (1958) considers *S. digitata* and *S. manicata* as separate species, and *S. integra* as a synonym of *S. manicata*. A number of authors (Séguy, 1961; Bankowska, 1963; Van der Goot, 1981) produced keys based on the one presented by Stackelberg (1958). Below we present a key to the four Central and Western European species of *Spilomyia*, which is based on Stackleberg's key, but in with some additional characters are used.

Key to the Central and Western European species of *Spilomyia*

1 Pleura black with three yellow spots (fig. 1). Posterior margin of the scutellum orange red. Hairs on mesonotum, scutellum, and pleura long and erect. Legs yellow-brown to red. Abdomen predominantly black, with narrow yellow bands (fig. 2) ... . *S. diophthalma*

– Pleura black with more than three yellow spots (fig. 3, 5 and 7). Posterior margin of the scutellum yellow. Hairs on mesonotum, scutellum, and pleura ranging from medium lenght to short and adpressed. Legs yellow-brown and black. 2

2 Mesonotum with fairly long, erect hairs. Pleura with five yellow spots (fig. 3). Front tarsus totally black, front tibia black over more than its apical half. Abdomen with the anterior yellow band on tergites II and III not interrupted, or at most very small interrupted in the middle (fig. 4) ... *S. manicata*

– Mesonotum with short adpressed hairs. Pleura with four or five yellow spots (fig. 5 and 7). Front tarsus black, at least the last tarsomere yellow, front tibia black over less than its apical half. Abdomen with the anterior yellow band on tergites II and III mostly interrupted (fig. 6 and 8) 3

3 Pleura with four yellow spots (fig. 5). Front tarsus black, the fifth tarsomere yellow. Abdomen with the anterior yellow band on tergites II and III widely interrupted, dominating colour yellow (fig. 6) .... *S. digitata*

– Pleura with five yellow spots (fig. 7). Front tarsus black, the fourth and fifth tarsomeres yellow, sometimes whole tarsus yellow. Abdomen with the anterior yellow band on tergites II and III less widely interrupted, dominating colour black (fig. 8) .... *S. saltuum*

Spilomyia specimens in Dutch collections

Using the above key, we identified all Euro-

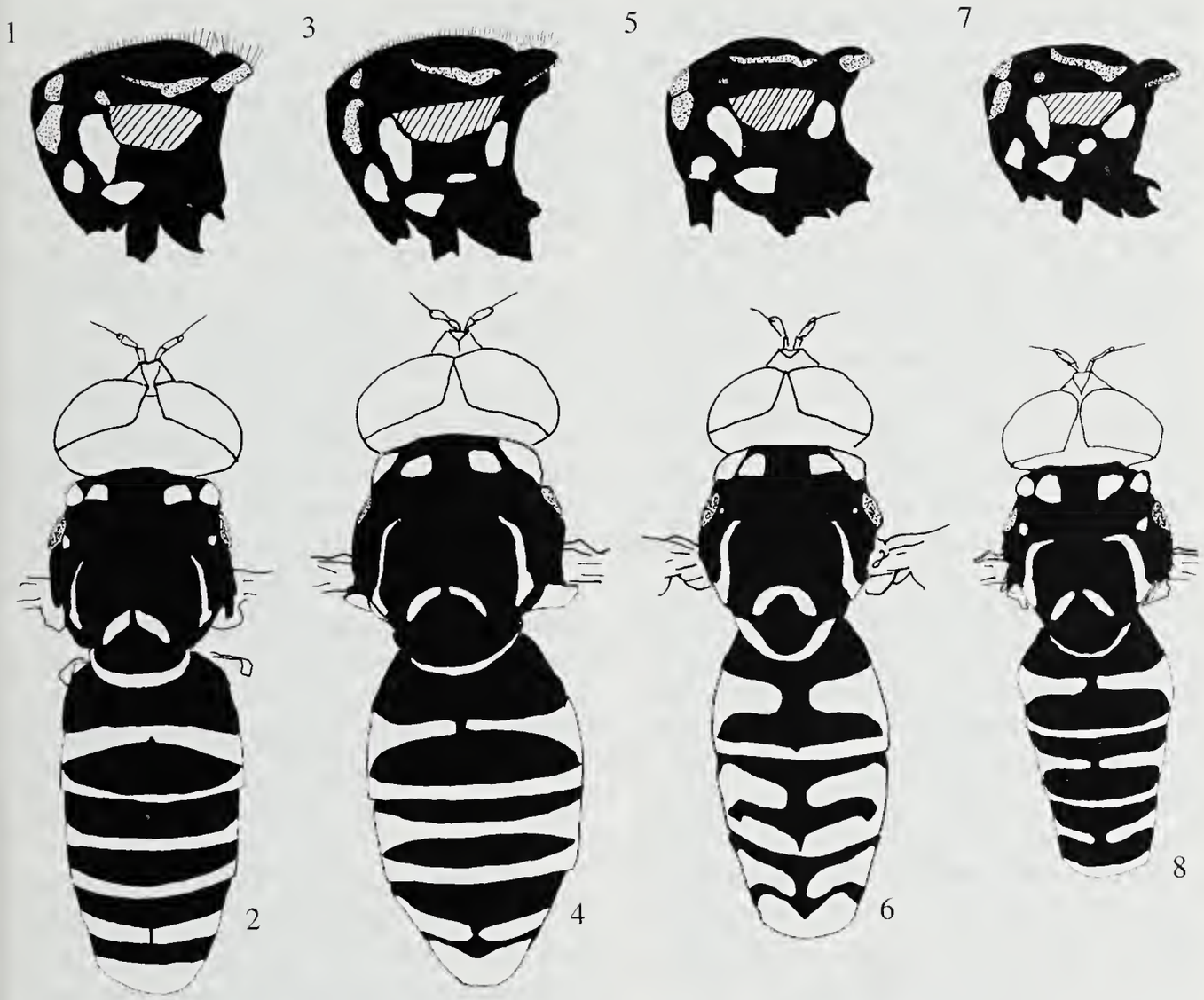

Fig. 1-8. Thorax and abdomen of male *Spilomyia* species. 1-2, *S. diophthalma* (Switzerland); 3-4, *S. manicata* (France); 5-6, *S. digitata* (Italy); 7-8, *S. saltuum* (Greece).

pean *Spilomyia*'s present in the Dutch collections. All specimens were collected in summer and the beginning of autumn (mostly July and August); differentiation in flight period between the species cannot be indicated. In contrast, the distribution of the represented specimens of the four species is quite different.

Spilomyia digitata - This species is represented by 26 specimens, all originating from Southern Europe, with specimens from Greece, Macedonia, Italy (including Sicily), the extreme South of France (including Corsica) and Spain. Only some very old specimens from Eastern Austria (lower parts) and Central Germany are not from the Mediterranean region. It is also recorded from Switzerland (Maibach et al., 1992), Portugal (Gomes, 1980) and Romania (Peck, 1988).

Spilomyia diophthalma - This species is represented by 22 specimens. All specimens originate from locations in Central and Northern Europe. Most specimens in the collections are from the Swiss, Italian and Austrian Alps, from locations with an altitude of above 1000 m, where other *Spilomyia* species seldom are collected. Next to that, specimens from Norway, Sweden and Finland are well represented. We have seen two old specimens from non-boreo-alpine areas in Germany. Specimens from non-mountainous locations in Eastern Europe (Poland and Russia) are in line with this distribution. Bankowska (1959) adds more observations from Poland. Bulgaria is mentioned in Peck (1988).

Spilomyia manicata - This species is represented with 31 specimens. All specimens from The Netherlands published as *S. saltuum* turned out to be *S. manicata*, a species not repor-

ted for the Dutch fauna before. *Spilomyia manicata* is known from Driebergen (1 ♀, circa 1890; Van der Wulp & De Meijere, 1898), Huizerheide-Gooi (1 ♀, 24.viii.1915; De Meijere, 1916) and Helmond (1 ♀, 21.viii. 1954; Van der Zanden, 1959). A specimen from Echt, De Doort (1 ♀, between 1950 and 1960; Geurts, 1961) has been lost. However, from the illustration in Geurts (1961) it can be concluded that it is *S. manicata* and not *S. saltuum*, since the anterior bands on tergites II and III are not interrupted. *Spilomyia saltuum* has not yet been reported from Denmark, Sweden and Norway; all specimens seen by the second author from Scandinavia appeared to belong to *S. manicata.* Also in Switzerland *S. manicata* has been misidentified as *S. saltuum* (Maibach et al., 1992) and the single specimen from Belgium also appeared to be *S. manicata* (L. Verlinden, personal communication). Our data suggest that *S. manicata* is a widespread (but very rare) species in large parts of Europe, known from Poland, Central Germany, Scandinavia, The Netherlands, Belgium, France (many locations all over the country, including Corsica), Spain, Italy, Croatia, Macedonia and Greece.

Spilomyia saltuum - This species is represented with 38 specimens. Only two (unpublished) specimens of *S. saltuum* are known from The Netherlands: one from Bussum (1 ♂, 20.vii.1944, leg. Kabos, coll. J. A. W. Lucas) and a recent one from Limburg, Eysderbos (1 ♀, 5.vii.1991, leg. & coll. W. Renema). *Spilomyia saltuum* was reputed to occur in a large area (see above). We identified *S. saltuum* from Eastern Spain, Southern France (many specimens), Austria (lower parts), Italy, Croatia, Macedonia, Greece, Romania, Germany and The Netherlands. The species is also known from Poland (Bankowska, 1963), Switzerland (Maibach et al., 1992), Romania and Bulgaria (Peck, 1988). It thus seems that this species has its main distribution area in Mediterranean countries but also occasionally may be found in Central and Western Europe. Our data indicate that it is absent in the boreo-alpine region.

Discussion

We should be careful when accepting the identification of other authors without checking the specimens with the latest opinions in taxonomy. We ourselves are an example since after a century it turned out that the four published Dutch specimens of *Spilomyia saltuum* were in reality *S. manicata*. One aspect in the misidentification arose from the confusing literature. Moreover, the identification was not discussed by others acquainted with this very characteristic genus. We should always remain alert, and not only when identifying small and obscure species. A parallel can be drawn with the genera *Callicera* Panzer, *Temnostoma* and *Leucozona* Schiner. These large and characteristic hoverflies are mostly scarce too, and recently it was demonstrated that more species can be identified from Western Europe than previously supposed (Speight, 1991; Doczkal, 1996, Doczkal, 1998).

In the past specimens of *Spilomyia manicata* were erroneously identified as *S. saltuum*. As a result of this, *S. manicata* must be added to the list of Dutch Diptera. However, *Spilomyia saltuum* should not be removed as we discovered two specimens of *S. saltuum* among unpublished collection material. Due to the limited number of observations in The Netherlands, the question arises whether these two species are really native, i.e. whether they reproduce here. It is unlikely that these wonderful flies were overlooked in the past. Not only dipterologists would have caught *Spilomyia*; in fact many observations of these wasp-imitators would also have been done by hymenopterologists. Moreover, most locations where the specimens were collected (Het Gooi, Helmond, southern parts of Limburg) were well investigated during last decades. Therefore, it seems likely that the species are scarce immigrants from Southern or Eastern regions.

Acknowledgments

The illustrations were drawn by Bastiaan Wakkie after

specimens from the collection of J. A. W. Lucas. Jan Hermans helped us by trying to locate the specimen from Echt in the Natuurhistorisch Museum Maastricht. We thank the owners and curators of the collections mentioned for their assistance, Lucien Verlinden for his valuable remarks, M. A. Marcos-Garcia for the search for literature and Theo Zeegers for his critical remark.

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Accepted 14.xii.1999.