Palloptera scutellata (Diptera: Pallopteridae) in The Netherlands

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TREFWOORDEN
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Examination of Diptera material collected in 2003 revealed female specimens of an up to then unrecorded species of Pallopteridae for The Netherlands, *Palloptera scutellata* (Macquart). The flies were captured in the centre of The Netherlands near Nunspeet, Gelderland. Collecting at the same site in 2004 and 2005 resulted in the capture of a total of 36 females between the beginning of April and the end of May, and one female in the second decade of November. An additional female was captured about 30 kilometres SSW of Nunspeet in early December 2004. The unique wing pattern and of the tip of the ovipositor of *P. scutellata* are depicted. Considering the exclusive presence of females, it is suggested that thes species reproduces parthenogenetically in The Netherlands.

Introduction

As in previous years, BvA surveyed the entomofauna of the estate 'De Vennen' near Nunspeet, Gelderland, in 2003, using Malaise-traps. Among the captures, a series of remarkable picture-winged flies drew special attention. Examination showed them to be *Palloptera scutellata* (Macquart) (Diptera: Pallopteridae), a species previously unrecorded for The Netherlands. In 2004 and 2005 more material of *P. scutellata* was collected at the same locality. Prompted by BvA, the species has been listed as new to the fauna of The Netherlands by Simon Thomas & Ellis (2006). Including *P. scutellata*, ten species of Pallopteridae are now recorded from The Netherlands (*cf.* Van Zuijlen & Van Aartsen 2002). More details on the occurrence of *P. scutellata* in The Netherlands are given in the present paper.

In May 2003, seven females were captured on 'De Vennen', with the dates 6 May (1 specimen), 10 (1), 13 (1), and 28 (4 specimens). Running a Malaise-trap on the same site near Nunspeet in 2004 resulted in the further capture of 27 female specimens in the period between the beginning of April and the end of May. In 2005 only three female specimens were captured, two of them during the first half of May, the third one on 12 November. Although a Malaise-trap was used on the same locality during 2006, no additional captures were made. The specimens were collected in a open area lying amidst extensive mixed woods. The Malaise-trap was placed in grassland near a very large fen with broad, boggy margins covered with rushes (*Juncus*).

Using a Malaise-trap, J.H. Huijbregts collected a female specimen on 7 December 2004 in the Imbosch, a nature reserve approximately 30 km SSW of the collecting site near Nunspeet. Both collecting localities lie within the Veluwe, the largest coherently wooded area of The Netherlands.

The specimens captured in 2003-2005 by BvA are deposited in his private collection, in the Zoological Museum of the University of Amsterdam (ZMA), and in the private collection of Bernhard Merz (Geneva). The specimen collected by J.H. Huijbregts is deposited in the National Museum of Natural History Naturalis in Leiden.

Recognition

Palloptera scutellata has a densely greyish dusted thorax, yellowish brown legs, and a light brown abdomen, which is partly covered with greyish dust (figure 1). The species can be recognized by its unique wing pattern, with a dark spot between the tips of veins Sc and R1, the presence of a dark spot in front of the wing apex, extending from the tip of vein R2+3 and across vein R4+5 into cell r5, and darkened crossveins r-m and dm-cu (figure 2). The wing pattern of the Dutch specimens agrees with the pattern illustrated by Séguy (1934) from French material and that of British specimens illustrated by Morge (1974) and Stubbs (in Clements 1997). Shape and the chaetotaxy of the ovipositor of the Dutch specimens (figure 3) agree with that of the British specimen illustrated by Morge (1974, figure 4). As already noted by Colyer & Hammond (1968), *P. scutellata*, with its 5.5-6 mm body length, is 'a rather larger species' of Pallopteridae. Illustrations of this species were published by Séguy (1934, as *P. neutra*), Morge (1974), and Stubbs in Clements (1997).

Figure 1. *Palloptera scutellata*, ♀, 2004, Nunspeet. Foto: John Smit
Palloptera scutellata, ♀, *2004, Nunspeet, Gelderland.*

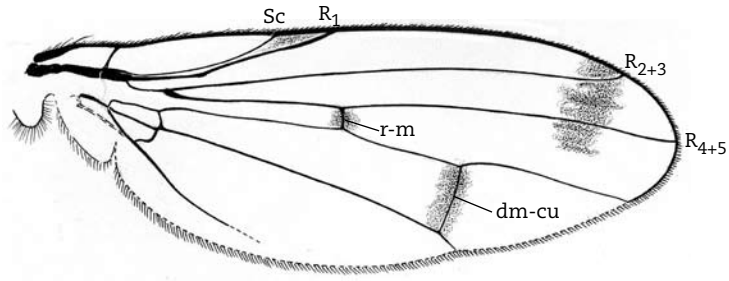

Figure 2. *Palloptera scutellata*, right wing. Tekening: Herman de Jong
Palloptera scutellata, *rechtervleugel*.

Distribution

Macquart (1835) described the species from Bordeaux (Gironde, France). Pandellé (1902) described the same species, as Palloptera neutra, from Tarbes (Hautes-Pyrénées, France). Parmenter (1950) first recorded it from Great Britain (as *P. neutra*) and a suite of papers dealing with British captures has been published since (summarized in Stubbs 1969 and Clements 1997). In Great Britain, the species occurs in the Southern parts of England and Wales (Clements 1997). Morge (1984) listed the species from Great Britain, France and Spain. Chandler (1998) registered the species from Great Britain and Ireland. Recently, the species has also been recorded from Germany (Stuke & Merz 2005); these authors also mention *P. scutellata* from Cyprus and Israel. The then-known distribution of this species is summarized on the website of the Fauna Europaea organisation (Merz 2004, www.faunaeur.org).

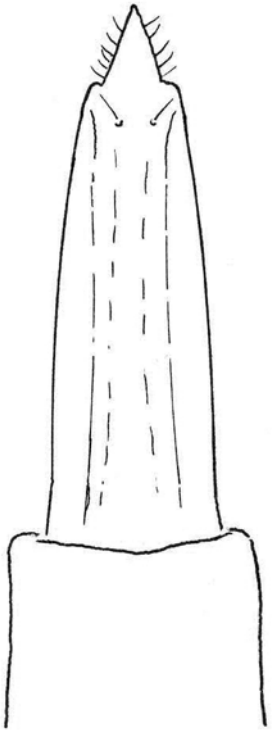

Figure 3. *Palloptera scutellata*, ovipositor, dorsal view. Tekening: Herman de Jong
Palloptera scutellata, *ovipositor, bovenaanzicht*.

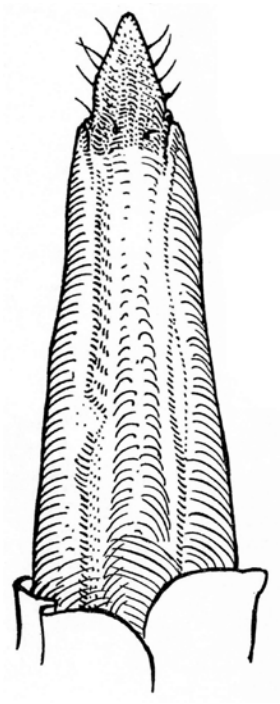

Figure 4. *Palloptera scutellata*, ovipositor, dorsal view (after Morge 1974).
Palloptera scutellata, *ovipositor, bovenaanzicht (naar Morge 1974)*.

Biology

Little is known about the biology of *P. scutellata*. Adults have been recorded from late March to July and from October to December in France and Great Britain (Pandellé 1902, Stubbs 1969). The species probably emerges in October and the females hibernate and reappear in the spring of the next year (Collin 1951, Stubbs 1969, Clements 1997). Adults were reported from wetlands (Stubbs 1969, Clements 1997, Stuke & Merz 2005). Stubbs (1969) suggested an association with *Juncus effusus*. This was later substantiated by Clements (1997), who reported the larvae from stem bases of rushes, including *J. effusus*. Stubbs (1969) expressed that it is strange that *P. scutellata* is so rarely recorded if it is truly associated with *Juncus*-species. It remains unknown whether the larvae are phytophagous or predatory. The immature stages of *P. scutellata* have not yet been described.

It is remarkable that all specimens captured in The Netherlands are females, which is in accordance with most observations made in Great Britain (Stubbs 1969 and the literature referred to therein) and Germany (Stuke & Merz 2005). The scarcity of males could be an effect of the longevity of the female specimens, which are known to hibernate, and the presence of males in different environments from the female (Stubbs 1969). However, another explanation of the recorded scarcity of the males could be that most populations are parthenogenetic. Parthenogenesis occurs only rarely in the Diptera, but is known from several families throughout the order (Ashburner 2000). Further study should confirm or refute this hypothesis.

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We kindly thank Terko Simon Thomas for allowing BvA to operate the Malaise-trap on his property near Nunspeet, Jan Willem van Zuijlen (Waalwijk, The Netherlands) for additional information on Pallopteridae in The Netherlands, Hans Huijbregts (Leiden, The Netherlands) for permitting to incorporate his record of *P. scutellata* in this paper, Bernhard Merz (Genève, Switzerland) for checking the identification and providing us with information on the distribution of *P. scutellata*, John Smit for making the photograph (with Olympus motorized stereomicroscope SZX 12 with AnalySIS Extended Focal Imaging Software) and an anonymous referee for further information on the species.

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Samenvatting
Palloptera scutellata (Diptera: Pallopteridae) in Nederland

Bestudering van in 2003 verzamelde Diptera resulteerde in de ontdekking van vrouwelijke exemplaren van een tot dan toe nog niet bekende soort voor de Nederlandse fauna, *Palloptera scutellata* (Macquart). De vliegen waren met een malaiseval verzameld op het landgoed 'De Vennen' bij Nunspeet, Gelderland. Verzamelactiviteiten op dezelfde locatie in 2004 en 2005 leverden met die van 2003 een totaal op van 36 vrouwtjes die tussen het begin van april en het eind van mei werden verzameld plus een vrouwelijk exemplaar dat in de tweede decade van november werd gevangen. Hoewel er in 2006 op dezelfde plek en met dezelfde methode werd verzameld, werden er geen exemplaren van *P. scutellata* meer aangetroffen. In de Imbosch verzamelde Hans Huijbregts een vrouwelijk exemplaar van dezelfde soort in begin december 2004. *Palloptera scutellata* is goed te herkennen en het kenmerkende vleugelpatroon en de vorm van de ovipositor worden afgebeeld. Behalve uit Nederland is de soort nu bekend uit Ierland, Groot Brittannië, Duitsland, Frankrijk, Spanje, Cyprus en Israel.

Opvallend is dat er in Nederland alleen vrouwelijke exemplaren van deze soort bekend zijn. Dit komt overeen met waarnemingen in de ons omringende landen waar, voorzover dat genoteerd is, eveneens haast uitsluitend vrouwtjes worden waargenomen. Dit kan te maken hebben met een langere levensduur en de overwintering van de vrouwtjes van deze relatief onbekende soort en/of het op andere locaties voorkomen van de mannetjes. Het kan echter ook zijn dat populaties van *P. scutellata* zich parthenogenetisch voortplanten en mannetjes domweg afwezig zijn. Nader onderzoek zal moeten uitwijzen of deze soort zich daadwerkelijk parthenogenetisch voortplant.

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