

Platycheirus complicatus* (BECKER, 1889) (Diptera: Syrphidae)*new to the Belgian fauna**

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A new species for the Belgian fauna, *Platycheirus complicatus* (Becker, 1889), has been found in the Hautes Fagnes, near the German border. This species belongs to the group of forest dwelling species and has been found in forest glades and along forest tracks in Beech and spruce forest. *Platycheirus complicatus* has up to three closely related and extremely similar species within Europe and North America, and it remains to be solved whether they are all valid species. This species is not always easily identified with current keys and some additional differential diagnosis characters are provided.

Keywords: forest species, hover flies, taxonomy, flower visits

Samenvatting

Het fragiel platvoetje (*Platycheirus complicatus* (Becker, 1889)), een nieuwe soort voor de Belgische fauna, is aangetroffen in de Hoge Venen nabij de Duitse grens. Deze soort behoort tot de groep van bosbewonende soorten en is aangetroffen op open plekken en langs bospaden in beuken- en sparrenbossen. *Platycheirus complicatus* heeft tot drie nauw verwante en sterk gelijkende soorten in Europa en Noord-Amerika, en nader onderzoek is nodig om uit te maken of dit allemaal aparte soorten zijn. Deze soort is niet altijd gemakkelijk te identificeren met de huidige sleutels en er worden enkele aanvullende differentiële diagnose kenmerken gegeven.

Résumé

Une nouvelle espèce pour la faune belge, *Platycheirus complicatus* (Becker, 1889), a été découverte dans les Hautes Fagnes, près de la frontière allemande. Cette espèce appartient au groupe des espèces forestières et a été trouvée dans les clairières et le long des pistes dans les forêts de hêtres et d'épicéas. *Platycheirus complicatus* a jusqu'à trois espèces étroitement apparentées et extrêmement similaires en Europe et en Amérique du Nord, et il reste à déterminer si elles sont toutes de bonnes espèces. Cette espèce n'étant pas toujours facile à identifier avec les clés actuelles, quelques caractères supplémentaires de diagnostic différentiel sont fournis.

Introduction

Platycheirus Lepeletier & Serville, 1828 is a species-rich genus with 63 species in Europe that generally prefer cold, damp environments and of which the vast majority occurs in northern areas and mountains (SPEIGHT, 2020). Only seventeen species have their distribution completely south of Scandinavia and among these is *Platycheirus complicatus*, a species found in Central-European forests and alpine meadows. Its status however is rather complicated (sic), because several extremely similar species exist in Europe (*P. latimanus* (Wahlberg, 1844), *P. kittilaensis* Dusek & Láska, 1982) and in North-America (*P. flabella* Hull, 1944) of which it is

repeatedly suggested that they may not all be different species (NIELSEN & BARKALOV, 2017; SPEIGHT, 2020). Awaiting ongoing genetic research, I follow the broadly accepted consensus on the taxonomic status of this species complex.

Platycheirus complicatus (Fig. 1) was discovered among material of *P. tarsalis* (Schummel, 1836) collected at high elevation (above 500m asl) in the Hautes Fagnes (Dutch: Hoge Venen, EN: High Fens), an area which is unique in Belgium harboring many unique species to our fauna (e.g. *Orthonevra stackelbergi* Thompson & Torp, 1982, *Platycheirus amplus* (Curran, 1927), *Sphaerophoria bankowskiae* Goeldlin de Tiefenau, 1989) that have generally a more northern or mountainous distribution within Europe. Below I give an overview of all records, provide some ecological information on its behaviour and flower resources and discuss its distribution in Europe.



Fig. 1: *Platycheirus complicatus* (Becker, 1889), ♀, Rocherath 5 June 2015.

MATERIAL EXAMINED. 10.V.2006, 1♂, Eupen, Ternell, 50.5848N, 6.1251E, leg. & det. Frank Van de Meutter; 5.V.2009, 1♂, Rocherath, 50.4414N, 6.3452E, leg. & det. Frank Van de Meutter; 5.VI.2015, 6♀♀, Rocherath, 50.4899N, 6.3154E, leg. & det. Frank Van de Meutter.

The collected males were caught in the forest edge. The male of 10 May 2006 was sitting on a leaf of a beech tree in a small sunlit clearing along a seasonal rivulet. The other male was caught at the edge of a grassy clearing within a mixed beech-spruce forest. The females were all caught on the flowers of *Geum rivale*, along a dark forest path in spruce forest. All specimens were found in sheltered places, often small sunny spots in otherwise damp, shaded surroundings. This is also evident from other species present at these locations, for example many *Rhingia borealis* Ringdahl, 1928 and *Sphegina clunipes* (Fallén, 1816) also feeding on the *Geum rivale*. A map of the distribution of *P. complicatus* in Belgium can be seen in Fig. 2. All material is kept in the private collection of the author.

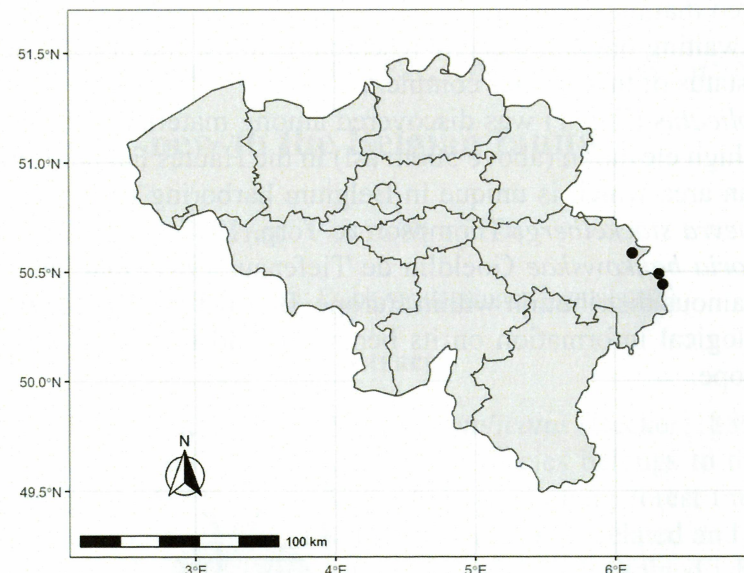


Fig. 2: *Platycheirus complicatus* (Becker, 1889). Map of Belgian distribution.

Identification

The Belgian *Platycheirus complicatus* were confounded with *P. tarsalis*, a similar species of the *P. manicatus* (Meigen, 1822) group (NIELSEN & BARKALOV, 2017). Males of the *P. manicatus* group share the fore tibia not being modified, but the first, second and sometimes third tarsal segment of leg 1 being flattened and widened, often with clear marks on the inside. Still, males of both species are easily told apart by VAN VEEN (2004) and BOT & VAN DE MEUTTER (2019). *Platycheirus tarsalis* has a conspicuous hair tuft on the outside of the middle of tibia 3, and the broadened tarsomere 1 and 2 of leg 1 are much broader than in *P. complicatus*. Furthermore it differs from the somewhat similar *P. manicatus* because it is not extensively dusted on the head and the thorax. In a European context it is, however, much more complicated to identify males of *P. complicatus*. NIELSEN & BARKALOV (2017) in their key of the *P. manicatus* group in the Holarctic and Oriental region, consider *P. complicatus*, *P. kittilaensis* and *P. flabella* indistinguishable with current knowledge. In the same couplet they discriminate the above three species from *P. latimanus* on the basis of the width of the basitarsus of the foreleg, which is much smaller in *P. latimanus*. However, even within the single two Belgian males, one individual has a basitarsus very similar to *P. latimanus*, whereas the other one has a clearly broader basitarsus typical of *P. complicatus* (Fig. 3). *P. latimanus* has never been officially reported from Central Europe, and it is rather unlikely that it would now be found in Belgium together with *P. complicatus*, so the most reasonable interpretation at this stage is that they are variations within *P. complicatus*, which may suggest that also *P. latimanus* is not another species than *P. complicatus*.

Discriminating *P. complicatus* and *P. tarsalis* is more difficult in the female than in the male. According to VAN VEEN (2004), females of *P. complicatus* have a reddish ventral side of the third antennal segment, whereas in *P. tarsalis* this is black, which makes that they end up in very different places in his key. Even with the limited material available in my collection, this character does not work. In the series of *P. complicatus* females from Rocherath, most have (nearly) completely black antennae, while others have a clear but small dark reddish spot at the ventral side near the base. Likewise in some of my Belgian *P. tarsalis* females, the third antennal segment is narrowly but clearly reddish at the ventral side near its base, while in all others it is black. Females of *P. complicatus* with a black antenna end up in a couplet with *P. tarsalis* and can be identified with BOT & VAN DE MEUTTER (2019). The best characters to

discriminate both species in Belgium are the smaller spots on tergite 2 (Fig. 1), not clearly longer than wide as in *P. tarsalis*, and hairs on the scutum shorter and often somewhat darker. Females with a reddish ventral side of the third antennal segment may be confused with several other species. From species of the *P. peltatus* group (*P. amplus*, *P. peltatus* (Meigen, 1822), *P. nielsenii* Vockeroth, 1990) they differ by the rectangular spots on the tergites 3 and 4 (trapezoid in *P. peltatus* group species), from the *P. scutatus* group species (*P. aurolateralis* Stubbs, 2002, *P. splendidus* Rotheray, 1998, *P. scutatus* (Meigen, 1822)) they differ by the protruding face, and from the very similar *P. parmatum* Rondani, 1857 they differ by a smaller size and less broad abdomen, less extensive orange on the ventral side of the third antennal segment, and less dense and shorter hairs on the katapisternum (in *P. parmatum* these hairs are as long as the basitarsus of leg 1).



Fig. 3: *Platycheirus complicatus* (Becker, 1889), ♂, left: Eupen, 10 May 2006, right: Rocherath, 5 May 2009. Fore tibia and tarsus.

Discussion

The discovery of *P. complicatus* raises the total number of *Platycheirus* in Belgium to 21 species, while another species has been added more recently (*P. immaculatus* Ôhara, 1980, not published). All 21 species have been seen recently and are still present in Belgium. After *Cheilosia* (47 species) it is the second largest genus in our country. Our *Platycheirus* fauna can be roughly divided in a group of species that is related to marshlands and wet seepages, and a group related to forests and trees, with *P. complicatus* considered to be part of the second group. RÖDER (1990) categorizes *P. complicatus* together with *P. sticticus* (Meigen, 1822) and *P. tarsalis* as species typical of damp European beech forest. According to SPEIGHT (2020) it also occurs in montane and submontane meadows. In the Hautes Fagnes, *P. complicatus* and the similar *P. tarsalis* do not occur together. *Platycheirus tarsalis* has only been seen in the Hautes Fagnes in a deep, shaded river valley at a somewhat lower altitude (410m), and in combination with a somewhat different syrphid community (e.g. *Cheilosia nigripes* (Meigen, 1822)) which occurs nowhere else in the Hautes Fagnes, but occurs together with *P. tarsalis* in other locations, often on base-rich soil.

It appears that *P. complicatus* is nowhere a common species in its European range. According to the Syrph the Net (StN) species accounts it occurs in France, the Netherlands, Germany, the Czech Republic, Switzerland and northern Italy (Apennines) (SPEIGHT, 2020). The reference to the Netherlands is obviously incorrect and likely comes from a misinterpretation after communicating the Belgian records to Martin Speight, the principal editor of StN. It has also been reported from Poland recently (ZORALSKI *et al.*, 2017) and the old checklist of Bohemoslovakia (JEZEK, 1987) indicates the species was found in both Bohemia, Moravia (including Silesia) and Slovakia, which means it is also seen in contemporary Slovakia. In France, *P. complicatus* is only known from a few singletons in the Haute-Savoie (SPEIGHT *et al.*, 2018) and the Hautes-Alpes (VERLINDEN, 2020). In Germany, it is considered Endangered, but without a precise threat category due to the lack of data (SSYMANK *et al.*, 2011). At the level of states, it is reported from Bayern, Hessen, Niedersachsen & Bremen, Rheinland-Pfalz and Sachsen-Anhalt and is considered not endangered in Bayern and Niedersachsen & Bremen. In the last state, it is restricted to the Harz where it is regularly recorded (STUKE *et al.*, 1998; MALEC *et al.*, 1999; VON DER DUNK *et al.*, 2003; MALEC & MANSFELD, 2007; SAURE *et al.*, 2020). In Switzerland 12 years of intensive collecting at the Col de Bretolet resulted in eight records of this species (for reference, 3658 *P. albimanus* were caught in the same period) (AUBERT *et al.*, 1976). The general picture that emerges from the above summary is that of a Central-European species with the center of its distribution east of Western Europe and often near mountains. The population in the Hautes Fagnes is at the westernmost margin of this distribution. It is possibly an extension of a population in Rheinland-Pfalz on the other side of the German border, but details on where it has been seen there are lacking (MALEC & MANSFELD, 2007). The Hautes Fagnes are an intensively investigated area and only three recent records have emerged so far, from two disjunct areas, indicating it is either very difficult to find or occurs in very low densities. The reported flower visits by SPEIGHT (2020) are concordant with what can be expected of a species of the forest interior of Central-European Beech forests and submontane to montane meadows: *Allium ursinum*, *Caltha*, *Geranium sylvaticum*, *Lamium album*, *Meum athamanticum*, *Ranunculus*, *Rhododendron aureum*, *Salix*, *Sorbus aucuparia* and *Tussilago*. This study now adds *Geum rivale* to this list.

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