Faune de Belgique / Fauna van België

Bulletin S.R.B.E./K.B.V.E., 138 (2002) : 129-132

Atypus piceus (Sulzer, 1776): a new and second mygalomorph spider for Belgium

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Summary

During determination of spiders of a calcareous grassland in Nismes, we discovered the presence of *Atypus piceus* (Sulzer, 1776). Because the species is not on the list of Belgian spiders, it is considered as new for the Belgian fauna and is hereby added to the list of Belgian spiders.

Keywords: *Atypus piceus*, Belgium, spiders, Mygalomorphae

Samenvatting

Bij het determineren van spinnen van een kalkgrasland te Nismes werd de aanwezigheid van *Atypus piceus* (Sulzer, 1776) opgemerkt. Doordat deze soort niet vermeld staat in de soortenlijst van Belgische spinnen wordt ze hierbij bestempeld als zijnde nieuw voor de Belgische fauna en wordt alsmede bijgevoegd aan de bestaande soortenlijst.

Résumé

Pendant l'inventaire des araignées d'une pelouse calcaire de Nismes, la présence de *Atypus piceus* (Sulzer, 1776) a été remarquée. Etant donné que, jusqu'à présent, cette espèce n'était pas mentionnée de Belgique, nous la citons comme nouvelle pour la faune belge et l'ajoutons à la liste des araignées de Belgique.

Introduction

Examination of the spiders of a large sampling campaign in the southeastern part of Belgium, conducted by MARC DUFRÊNE in 1987 and 1988, led to the discovery of *Atypus piceus*. As it is neither mentioned in the list of the Belgian spider species (BOSMANS & MAELFAIT 1986; MAELFAIT *et al.* 1998), nor in the Catalogue of the Belgian spiders (RANSY & BAERT 1987), this species may be claimed as new for Belgium.

Besides *Atypus affinis* EICHWALD 1830, no other mygalomorph spider species is known to occur in Belgium. The 6 males of *Atypus piceus* originated from a pitfall sample from the nature reserve Tienne Breumont, Nismes, Viroinval, Namur, Belgium (UTM FR105485) in 1987.

Description of the species

In Europe, three species of *Atypus* are known, being *A. affinis* EICHWALD 1830, *A. piceus* (SULZER 1776) and *A. muralis* BERTKAU 1890. The specimens of *A. piceus* present in our sample were obviously larger when compared to those of *A. affinis*, which also were captured in the same pitfall traps. The posterior lateral spinnerets of *A. piceus* showed an unpigmented groove only on the dorsal part of the distal segment. When viewed dorsally, these spinnerets appear to consist of four segments, in contrast

with the three segmented last pair of spinnerets of *A. affinis*. The segment of the posterior spinnerets was furthermore twice as long as the preceding segment, when measured ventrally (Fig. 1). According to KRAUS & BAUR (1974) and HEIMER & NENTWIG (1991), these are the most distinct features by which to distinguish *A. piceus* from *A. affinis* and *A. muralis*.

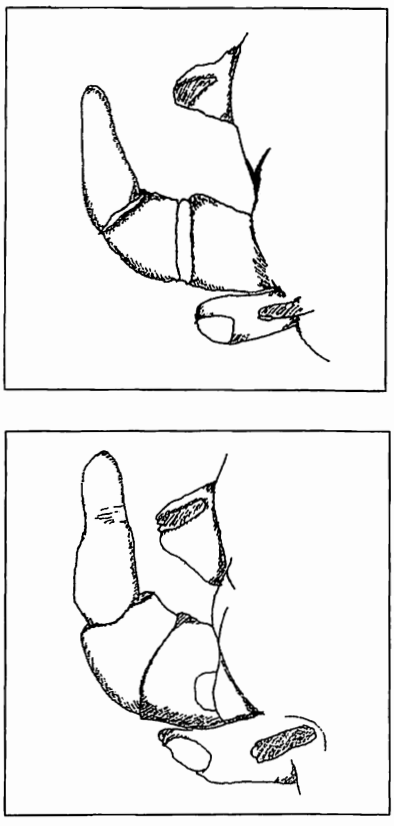

Fig. 1. Spinnerets of *Atypus affinis* (upper graph) and *Atypus piceus* (lower graph) showing a difference in length (drawings by Annelies Goffin).

Additional diagnostic traits were the presence of a distinct ridge at the inner part of the palpal femur and the distance between the anterior sigilla and the edge of the sternum, being about once the diameter of the sigilla (Figure 2, KRAUS & BAUR 1974; SCHWENDINGER 1990).

Figure 3 shows the difference in palp morphology between the two species.

Distribution

The species *Atypus piceus* can be considered as a central European spider. Its distribution is restricted to the Netherlands and northern Germany in the north, west-Poland, Hungary, Rumania to Slovakia in the east; Greece, northern Italy and southern France in the south

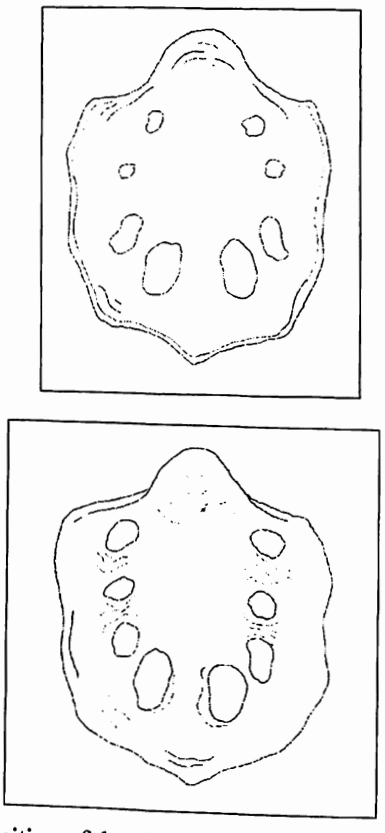

Fig. 2. Position of the sigillae on the sternum of *Atypus affinis* (upper graph) and *Atypus piceus* (lower graph) (drawings by Annelies Goffin).

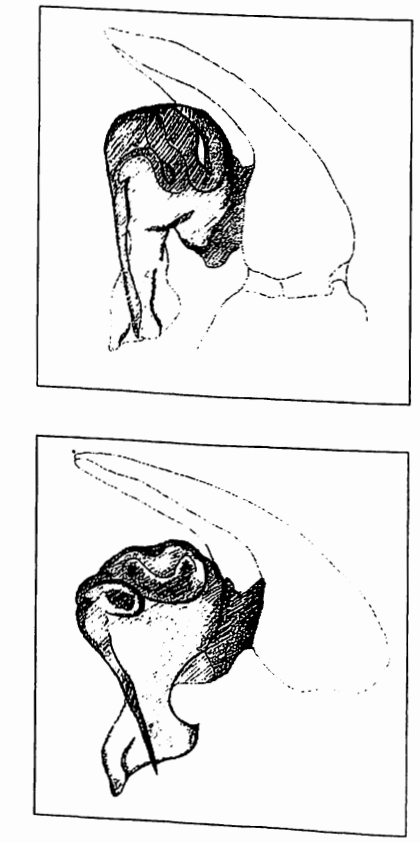

Fig. 3. Palpal morphology of both *Atypus affinis* (upper graph) and *Atypus piceus* (lower graph) (drawings by Annelies Goffin).

and eastern France, Luxemburg and Belgium in the west (DAHL 1953; KRAUS & BAUR 1974; SCHWENDINGER 1990; WÜNDERLICH 1991; HERMANN 1998). Outside this distribution pattern, there are also two exceptional records from Moldavia in the former USSR (MIKHAILOV 1997) and one record from Iran (SCHWENDINGER 1990). The fact that the species is absent from the British Isles and Western France supports the fact that the population of *Atypus piceus* in Belgium is at its western edge of its distribution pattern.

Ecology

The sample originated from one of the most interesting chalk grasslands of Belgium. It is a well developed Xerobrometum with typical herb species like *Sesleria caerulea*, *Bromus erectus* and many orchid species. Stones and rocks may be found all over the area covering the ground surface at some places for more than 50%. The presence of some other rare and endangered spider species in the sample such as *Pardosa bifasciata*, *Alopecosa trabalis*, *Xysticus erraticus*, *X. bifasciatus* and *Thanatus formicinus* support the fact that it is a quite unique habitat for Belgium.

Reviewing the literature revealed that *A. piceus* is a typical thermophilous spider (Table 1). Its preferential habitat is exposed to the south, in dry open pine and to a lesser extent spruce, oak and beech stands on chalk soils (KARAFIAT 1970; MAURER 1975; THALER 1985; BAUCHHENNS *et al.* 1987; STEIN *et al.* 1992), although it may also be present on a sandy soil (STEIN *et al.* 1992). The preference of the species for limestone is probably more due to the xerothermic properties of those soils than its affection for the chemical properties of chalk. Besides this most reported habitat, the species might also be found on chalk grasslands (meso- and xerobromions), often with shrubs or in the vicinity of bushes and/or forests (BÜCHAR & ZDAREK 1960; MAURER 1975; BUCHAR 1979; GONSETH 1985; THALER 1985; HÖFER 1989; THALER *et al.*, 1990; WAITZBAUER 1994; HERMANN 1998; ROBERTS 1998).

Country	Habitat description	Soil characteristics	Reference
Austria	Meadow on a slope	-	THALER et al. (1990)
Austria	Xerothermic slopes	-	WAITZBAUER (1994)
Germany	Xerothermic chalk grassland with *Juniperus communis* shrubs	Chalk	HÖFER (1989)
Germany	SW exposed open pine forest on chalk with rocky outcrops	Chalk (Jura)	BAUCHHENNS (1987)
Germany	Open, xerothermic pine forest with a mesobromion undergrowth	Chalk	KARAFIAT (1970)
Germany	Edges of Pine, Oak, Beech and Spruce forest, and/or shrubs always southernly exposed and xerothermic	Chalk, Sandstone, Sand	STEIN ET AL. (1992)
Netherlands	Chalk grassland (Mesobromion)	Chalk	ROBERTS (1998)
Slovakia	Forest steppe in the vicinity of oak forest (*Quercus pubescens*)	Chalk	BUCHAR & ZDAREK (1960)
Slovakia	Dense shrubs on steppe in the vicinity of oak forest (*Quercus pubescens*)	-	BUCHAR & ZDAREK (1960)
Slovakia	Southernly exposed stony steppe in the vicinity of an oak forest	-	BUCHAR (1979)
Switzerland	Abandonned mesobromion, slope 24-34%, presence of shrubs	Chalk (Jura)	GONSETH (1985)
Switzerland	SSE exposed *Juncus inflexus* stand along a brook with transition to meso dry meadow.	-	MAURER (1975)
Switzerland	SSE exposed secondary pine forest with *Brachypodium* vegetation	-	MAURER (1975)
Switzerland	SSW exposed well developed dry grassland, mown yearly in summer	-	MAURER (1975)
Luxemburg	Dry grasslands (mesoxerothermic) in the vicinity of a thermophilic woodland edge	-	HERMANN (1998)
Luxemburg	Dry grasslands (mesoxerothermic), dense afforestation of shrubs	-	HERMANN (1998)
Luxemburg	Dry grasslands (mesoxerothermic), grazed by cattle, presence of schrubs	-	HERMANN (1998)
Luxemburg	Dry grasslands (mesoxerothermic) on an old chalk quarry, presence of shrubs	Chalk	HERMANN (1998)

Revision of *Atypus affinis* in Belgium

Based on the difficulties of distinguishing *A.piceus* from *A. affinis*, specimens of *A. affinis* of the Royal Belgian Institute of Natural Sciences were revised. None of the investigated specimens showed the characters typical for *A. piceus*. Up to the present, the nature reserve Tienne Breumont is the only known locality where the species is found in Belgium.

Acknowledgements

We would like to thank Dr. L. Baert of the Royal Belgian Institute of Natural Sciences for putting the collection of *Atypus affinis* at our disposal. Furthermore, Dr. Theo Blick (Germany) and Aurel Vandewalle (RBINSc, Brussels) assisted in providing literature.

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