

***Philoscia affinis* Verhoeff, 1908 new to Belgium**

(Isopoda: Philosciidae)

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Abstract

We report *Philoscia affinis* Verhoeff, 1908 as a new species for the Belgian fauna. *P. affinis* has been overlooked for a long time in Belgium due to its close resemblance to the very common species *Philoscia muscorum* (Scopoli, 1763). The first specimens were found in December 2014 in a forest near Poperinge (West Flanders) and since its discovery the species has been recorded in 39 squares of the UTM 10x10 km grid. Revision of 1187 specimens of *P. muscorum* from the collection of the Royal Belgian Institute of Natural Sciences revealed eight old records of *P. affinis* in Belgium, dating from 1938 till 1991. The identification, habitat preferences and the distribution in Belgium and the neighbouring countries of *P. affinis* are discussed in this article. We propose ‘Bleke mospissebed’ as Dutch name for *P. affinis*.

Keywords: *Philoscia affinis*, terrestrial isopods, woodlice, distribution

Samenvatting

Philoscia affinis Verhoeff, 1908 wordt hier voor het eerst gemeld in België. De eerste exemplaren werden in december 2014 gevonden in een bos nabij Poperinge (West-Vlaanderen) en sinds deze ontdekking werd de soort al in 39 hokken van het UTM 10x10 km-grid gevonden. Door de sterke gelijkenis met de erg algemene soort *Philoscia muscorum* (Scopoli, 1763) werd lange tijd over *P. affinis* heen gekeken in België. Nazicht van 1187 exemplaren van *P. muscorum* uit de collectie van het Koninklijk Belgisch Instituut voor Natuurwetenschappen (KBIN) resulteerde in 8 oude stalen van *P. affinis* in België, daterend van 1938 tot 1991. De herkenning, habitatvoorkeuren en de verspreiding in België en omgevende landen worden besproken in dit artikel. We stellen ‘Bleke mospissebed’ voor als Nederlands naam voor *P. affinis*.

Résumé

Philoscia affinis Verhoeff, 1908 est rapportée pour la première fois de Belgique. Les premiers exemplaires ont été trouvés dans une forêt proche de Poperinge (Flandre-Occidentale) et depuis, l'espèce a été trouvée dans 39 autres carrés UTM 10x10 km. Sa forte ressemblance avec l'espèce très commune *Philoscia muscorum* (Scopoli, 1763) explique probablement qu'elle ait été ignorée jusque-là. D'ailleurs, la révision des 1187 spécimens de *P. muscorum* de la collection de l'Institut royal des Sciences naturelles (RBINS) a fait ressortir 8 spécimens de *P. affinis* récoltés en Belgique entre 1938 et 1991. Dans cet article sont présentés ses critères d'identification, ses préférences d'habitat et sa répartition en Belgique et dans les pays voisins. Nous proposons le nom “Bleke mospissebed” comme nom vernaculaire néerlandais pour *Philoscia affinis*.



Fig. 1. *Philoscia muscorum*. Photo: Gert Arijs.



Fig. 2. *Philoscia affinis*. Photo: Gert Arijs.

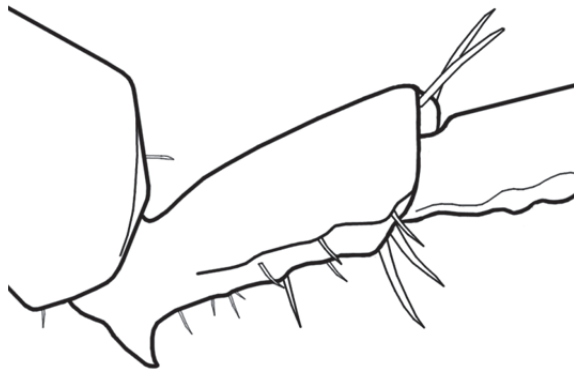


Fig. 3. Upstanding hook on the meros of the 7th leg of a male *Philoscia affinis*. Drawing: Stijn Segers.

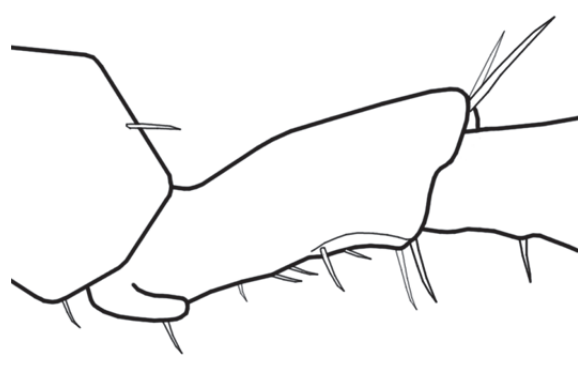


Fig. 4. Bowed down hook on the meros of the 7th leg of a male *Philoscia muscorum*. Drawing: Stijn Segers.

Introduction

The first record of *Porcellio monticola* Lereboullet, 1853 in Belgium (DE SMEDT *et al.*, 2015) and the following founding of ‘Spinicornis’, the Belgian terrestrial isopod group, renewed interest in the terrestrial isopod fauna in Belgium. The increased search efforts lead to the discovery of *Philoscia affinis* Verhoeff, 1908 in Belgium and a basic understanding of its distribution in the country. This isopod was expected to occur in Belgium because of its presence in France and Germany (DE SMEDT *et al.*, 2015). The first specimens were found on the 25th of December 2014 in Poperinge (West Flanders) and until August 2017 *P. affinis* has been recorded in 39 squares of the UTM 10x10km grid in Belgium, spread over eight out of ten provinces.

DE SMEDT *et al.* (2017) reported *Eluma caelatum* (Miers, 1877) as the 35th terrestrial isopod species with free living populations for the fauna of Belgium. With the discovery of *P. affinis* this number has risen to 36.

Identification

Philoscia affinis belongs to the family Philosciidae, with *Philoscia muscorum* (Scopoli, 1763) the only other species in Belgium belonging to that family. Both species are medium-sized (up to 11mm), have a stepped body outline, lack pleopodal lungs and have antennal flagella composed of three segments. Whereas *P. muscorum* (Fig. 1) has a distinctive black head with a small yellow spot on the rear of the head, the head of *P. affinis* (Fig. 2) is mottled brown, similar to the rest of the body. *P. affinis* also lacks the white and orange brown stripe on the epimeron, which *P. muscorum* typically has. However, the small white outline of the epimeron is more distinctive with *P. affinis* and there is a white spot in the front of the epimeron. Even though the colouration of the head and body gives a good indication, for sure identification the 7th leg of a male specimen needs to be examined. The species can be conclusively discerned by the small hook at the base of the meros. For *P. affinis* this hook stands up (Fig. 3) whereas for *P. muscorum* the hook on the meros is bowed down (Fig. 4). One has to be careful

tough whilst observing this feature since depending on the angle of view it can be deceitful. It is important to look straight at the side of the leg, only in this way it is possible to distinguish if the hook roughly lies down or stands up.

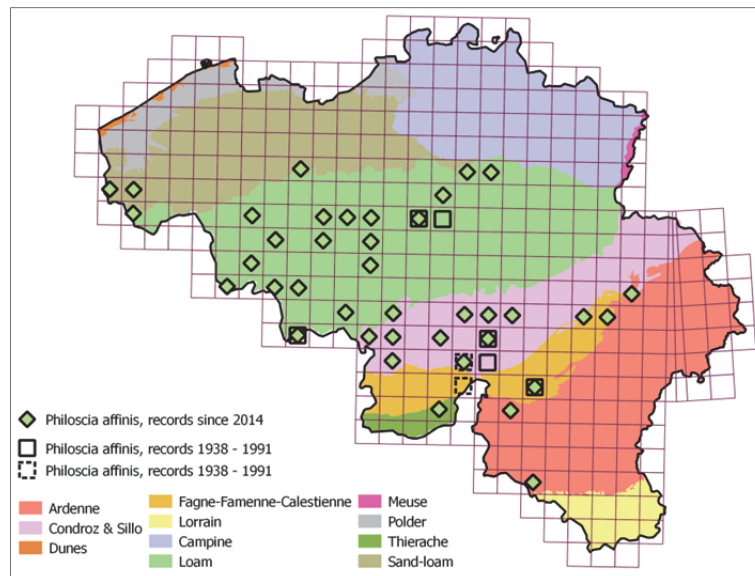


Fig. 5. Distribution of *Philoscia affinis* in Belgium, on the UTM 10x10km grid. Records since 2014 are indicated with diamonds. Records dating from 1938 until 1991 with boxes. The locality of one old record could not be determined precisely but lies within one of the two squares of the UTM 10x10km grid which are indicated by dotted lines.

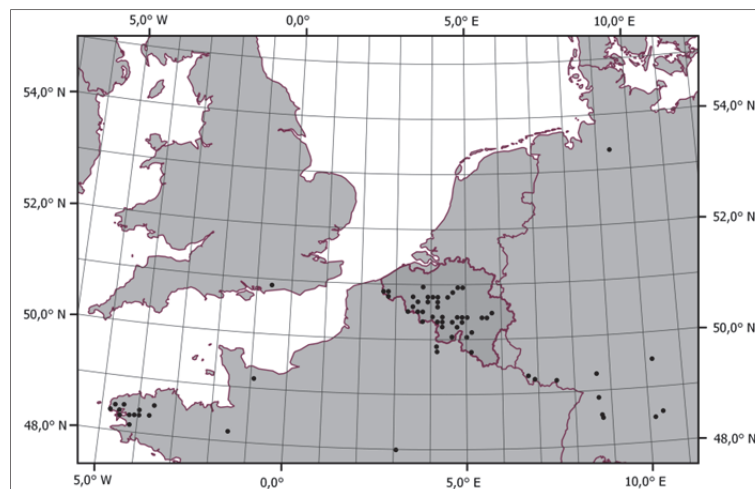


Fig. 6. Distribution of *Philoscia affinis* in Belgium and the neighbouring countries, records since 1999. Source for the French records: data set of INPN (Inventaire National du Patrimoine Naturel, <https://inpn.mnhn.fr/accueil/index?>). Source for the German records: Edaphobase database (<https://portal.edaphobase.org/>) and records provided by Pallieter De Smedt. Source for the record of the United Kingdom: SEGERS *et al.*, 2017.

Distribution

On a European scale, *P. affinis* has a widespread distribution, being reported in Northeastern Spain, France, Italy, Germany, Croatia, Northern Algeria (SCHMALFUSS, 2003), Slovenia (VILISICS & LAPANJE, 2005), Hungary (FARKAS & VILISICS, 2013), Austria (LEFEBVRE, 2012) and the United Kingdom (SEGERS *et al.*, 2017). The species is common to very common in Southwestern Europe but is only scarcely and localised found in Germany and Northern France (GRUNER, 1966; SÉCHET & NOËL, 2015).

Since the discovery of *P. affinis* in Belgium in December 2014, the species has been found in 39 squares of the UTM 10x10km grid in Belgium (Fig. 5), with validated observations in all provinces except Antwerp and Limburg. A full list of validated records can be obtained with the first author.

Since 1999, *P. affinis* has been observed at a lot more locations in Belgium compared to the neighbouring countries (Fig. 6).

Since the close resemblance between *P. muscorum* and *P. affinis* all specimens of *P. muscorum* in the collection of the Royal Belgian Institute of Natural Sciences (RBINS) were revised. Because of the preservative most specimens lost too much colour to discern both species by coloration of the head and epimera so only the males could be reidentified. For all males the hook on the meros of the 7th leg was checked. 307 samples from diverse sources (e.g. hand collection, pitfall trap), containing in total 1187 specimens, have been revised. 212 samples contained male specimens. 463 out of 479 male specimens belonged to *P. muscorum* and 16 specimens could be identified as *P. affinis*. Out of the 212 samples with males, 204 contained male specimens of *P. muscorum*, 5 contained male *P. affinis* and 3 samples contained males of both species. Consequently, females should not be identified based on the males present in the sample. This resulted in eight historic records of *P. affinis* in Belgium, dating from 1938 till 1991.

Overview of the records from the RBINS

Hainaut: Entre le ruisseau Valette et Grande Honnelle, 15.VI.1938, 1♂, leg. A. Capart, det. Pepijn Boeraeve; **Brussels Hoofdstedelijk Gewest:** Rouge-Cloître, 1941, 2♂, leg. A. Capart, det. Pepijn Boeraeve; Rouge-Cloître Etag. I, 12.V.1941, 1♂, leg. A. Capart, det. Pepijn Boeraeve; **Namur:** Hermeton, 21.XII.1942, 4♂, leg. A. Capart, det. Pepijn Boeraeve; Yvoir, 9.III.1943, 1♂, leg. A. Capart, det. Pepijn Boeraeve; Hastière, route de Beauraing, 21.VIII.1943, 2♂, leg. A. Capart, det. Pepijn Boeraeve; Villers, Lesse (K22), bois de Jawet, 2.XII.1975, 1♂, leg. J.M. Tavernier, det. Pepijn Boeraeve; **Vlaams-Brabant:** Oud-Heverlee, Meerdaalbos, FS 13, 088-166, 16.XI.1991, 4♂, leg. Boon, Lambrechts & Stuckens, det. Pepijn Boeraeve.

The historic records of *P. affinis* in Belgium are given in Fig. 5. For every old locality there is a recent record (since 2006) in the same or in a neighbouring square of the UTM 10x10km grid. When the review of the material from the RBINS collection was finalised, only for the record from Villers (Namur) there was not yet a recent observation of *P. affinis* in the same or in a neighbouring square of the UTM 10 x 10 grid. Therefore the old location was visited in June 2017 and the search led to the observation of *P. affinis*.

Habitat and accompanying species

According to VANDEL (1962) *P. affinis* can be found in forests, forested river banks and waterlogged wooded terrains. GRUNER (1966) mentions that the species can be found in wet, less or more shady forests. All known observations in Belgium were made in deciduous forest, with specimens being found under dead wood and in the litter layer. An overview of forest type by main tree species and the humidity of the soil is given in Table 1. The currently known locations for *P. affinis* show that the species is mainly found in oak forests and in oak-hornbeam/oak-beech forests with average soil humidity (86% of localities with data). The one observation in the alder swamp forest is also in accordance with the habitat described by VANDEL (1962).

An overview of the accompanying woodlice species (percentages by number of localities with data) is given in Table 2.

Table 1. Forest types of all validated observations of *Philoscia affinis* in Belgium since 2014, their humidity and the number of localities.

Dominating tree species	Humidity soil	# localities	
Beech (<i>Fagus sylvatica</i>)	medium	2	5 %
Oak (<i>Quercus spec.</i>)	very dry	1	2 %
Oak (<i>Quercus spec.</i>)	medium	6	15 %
Oak (<i>Quercus spec.</i>), Beech (<i>Fagus sylvatica</i>)	medium	14	34 %
Oak (<i>Quercus spec.</i>), Hornbeam (<i>Carpinus betulus</i>)	medium	10	24 %
Alder (<i>Alnus spec.</i>), Hornbeam (<i>Carpinus betulus</i>)	medium	1	2 %
Alder (<i>Alnus spec.</i>)	very wet (swamp forest)	1	2 %
No data	/	6	15 %
Total		41	

Table 2. Accompanying species of all validated observations of *Philoscia affinis* in Belgium since 2014. The percentages are by number of localities with data (38).

Species	# localities	
<i>Oniscus asellus</i> Linnaeus, 1758	36	95 %
<i>Philoscia muscorum</i> (Scopoli, 1763)	34	89 %
<i>Ligidium hypnorum</i> (Cuvier, 1792)	27	71 %
<i>Porcellio scaber</i> Latreille, 1802	26	68 %
No data	3	

Discussion

In the past three years, the only recently discovered *P. affinis* turned out to be rather common in Belgium, with 41 localities since 2014. The distribution is shown in Fig. 5. In the loam region and the Condroz and Sillo the species is quite common, with only in the east less observations. In this area, *P. affinis* may be under-recorded but its low presence is probably also due to the lack of suitable forests. For the regions Fagne-Famenne-Calestienne and Thierache the species is expected to appear in more places since it has plenty of forests with similar or better habitat conditions as in the Condroz region. *P. affinis* is mainly absent in four major regions. The Ardennes are dominated by peaty habitats and in the Campine region habitat conditions are also very acidic due to sandy soil types. In the sand-loam region, oak forests and oak-hornbeam/oak-beech forests are not scarce but soil type in this region appears also to be unfavourable for *P. affinis*, probably also due to rather acidic soil conditions. Only exception is the area around Ypres, where *P. affinis* has been observed frequently in different locations. The absence of the species in the Lorrain region is more of a mystery since the area has been quite thoroughly searched and despite the presence of seemingly suitable forests no observations could be made.

More data and further research is necessary to fully understand the habitat preferences of *P. affinis* in Belgium but the first conclusions can be made. *P. affinis* tends to avoid acidic habitat conditions and forests on sandy soil types. The species prefers oak forests and oak-hornbeam/oak-beech forests.

Revision of specimens in the RBINS collection shows that the species has been present in Belgium since 1938. Records up to 1945 give a distribution of the species in three different provinces in Belgium. It can therefore be assumed that *P. affinis* has been present in Belgium with the same widespread distribution for a long time. Thus, it seems probable that the species is also rather common in Northern France and Germany, where the low number of records is probably due to the low number of active observers visiting these areas.

Since the species has a paler appearance compared to *P. muscorum* - “Mospissebed” in Dutch - “Bleke mospissebed” is proposed as Dutch name for the species.

Philoscia affinis is the third medium large isopod discovered in the last three years, after *Porcellio monticola* Lereboullet, 1853 in 2014 (DE SMEDT *et al.*, 2015) and *Eluma caelatum* (Miers, 1877) in 2016 (DE SMEDT *et al.*, 2017). Consequently, we can expect that more medium-sized to large species can be discovered in Belgium when inventory efforts are kept high.

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