

## The millipede *Cylindroiulus britannicus* (Verhoeff, 1891) new for the Belgian fauna (Diplopoda: Julidae)

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### Abstract

Currently, 51 species of millipedes have been recorded for the Belgian fauna. Here, we report the finding of an additional species, *Cylindroiulus britannicus* (Verhoeff, 1891). The species was found in ancient broadleaf forest near a research facility in Gontrode (East-Flanders) and in a parc in the centre of Ghent. In the neighboring countries, the species has already been found in the Netherlands, Germany and the UK. Given the synanthropic nature of the species and the characteristics of the locations where it was found, it is presumed that the discovered population is not autochthonous.

**Keywords:** *Cylindroiulus britannicus*, millipede, Diplopoda, distribution, Belgium

### Samenvatting

Op dit moment zijn er 51 soorten miljoenpoten bekend uit België. Hier wordt de vondst van een nieuwe soort voor de Belgische fauna, *Cylindroiulus britannicus* (Verhoeff, 1891), vermeld. De soort werd gevonden in oud loofbos in de buurt van een onderzoeksinstituut in Gontrode (Oost-Vlaanderen) en in een park in het centrum van Gent (Oost-Vlaanderen). In de buurlanden was deze soort al gekend van Nederland, Duitsland en het Verenigd Koninkrijk. Gezien de synanthrope levenswijze van de soort en de aard van de vindplaatsen wordt vermoed dat de gevonden populatie niet autochtoon is.

### Résumé

Actuellement, 51 espèces de mille-pattes sont connues de Belgique. Ici, *Cylindroiulus britannicus* (Verhoeff, 1891) est mentionné comme nouveau pour la faune belge. L'espèce a été découverte dans une ancienne forêt décidue, à proximité d'un centre de recherche à Gontrode (Oost-Vlaanderen) et dans un parc dans le centre de Gand (Oost-Vlaanderen). Dans les pays voisins, cette espèce était déjà connue des Pays-Bas, d'Allemagne et du Royaume-Uni. Compte tenu de la nature synanthropique de l'espèce et des caractéristiques des milieux où elle a été observée, il est présumé que la population n'est pas indigène.

### Introduction

The Belgian millipede fauna has been thoroughly investigated by KIME (2004) who mentioned 50 species. Since then, one additional species, *Blaniulus dollfusi* (Brölemann, 1894) has been recorded in Belgium (ENGHOFF, 2010). *Cylindroiulus britannicus* (Verhoeff, 1891) was also mentioned for Belgium by BLOWER (1985) without any additional information, but no other reference is made, and no specimens are present in collections. Therefore, *C. britannicus* was removed from the Belgian species list by KIME (2004). This article confirms the species for the Belgian Fauna for the first time.



Fig. 1. General habitus of a male specimen photographed in Gontrode on 27.X.2015 (Photo: Pallieter De Smedt).



Fig. 2. Head of a male *C. britannicus* collected in Gontrode (Photo: Sam Van de Poel).



Fig. 3. Anal valves of a male *C. britannicus* collected in Gontrode (Photo: Sam Van de Poel).

### Locations

During a search for individuals of *Glomeris marginata* (Villers, 1789) for experimental use on 23 October 2015, one small, pale *Cylindroiulus* was collected (Fig. 1). After investigation of the gonopods, it was concluded that this individual belonged to *Cylindroiulus britannicus*. The individual was collected in forest litter in a 70 cm wide gutter next to the building of the Forest & Nature Lab (ForNaLab) of Ghent University, which is situated in the Aalmoezeneiebos in Gontrode (Oost-Vlaanderen). On 27 October 2015, one additional male and one female individual were easily found in more natural vegetation (forest floor litter and a pile of fire wood) close to the gutter, which implies that a larger population might be present.

Given the specific nature of the site, which is on the interface of a relatively natural habitat and an extremely synanthropic one, a very peculiar species composition of millipedes was found on this location. On the one hand, very synanthropic species were found here: *Nopoiulus kochii* (Gervais, 1847), *Blaniulus guttulatus* (Fabricius, 1798) and *Cylindroiulus vulnerarius* (Berlese, 1888), while on the other hand, also species from natural, relatively undisturbed habitats were present, such as *Glomeris marginata*, *G. intermedia* Latzel, 1884 and *Chordeuma sylvestris* C.L. Koch, 1847. Furthermore, the woodlice *Ligidium hypnorum* (Cuvier, 1792), *Porcellio scaber* Latreille, 1804, *Philoscia muscorum* (Scopoli, 1763) and *Oniscus asellus* Linnaeus, 1758 were found in large numbers on the location.

A second population was discovered in the Citadelpark in Ghent on 11 November 2015 during an excursion by the youth movement for nature and environment (JNM). The species was found in high numbers under dead wood and on the bark of plane trees (*Platanus spec.*), accompanied by a few specimens of *Blaniulus guttulatus* and *Cylindroiulus truncorum* (Silvestri, 1896). Seven males and ten females were collected and identified as *C. britannicus*.

## Description

*C. britannicus* is a brown species of the genus *Cylindroiulus* without a 'tail' (backward projection of the pre-anal ring) (Figs 2-3). The species reaches a length of  $\pm 1$  cm for the males, while the females are slightly bigger. Three pairs of hairs are present on the anal valves (Fig. 3). For Western-European species of this group, this is a characteristic shared only with *C. latestriatus*. The latter species can be distinguished by the structure of the male gonopods and the female bursa. Males of *C. britannicus* have a long projection on the opisthomerite (Fig. 4), which is absent in *C. britannicus*. The difference in females is more subtle and depends on the position of the hairs on the bursa, which are positioned in an even row in *C. latestriatus* and are more scattered in *C. britannicus*. Furthermore, the operculum is evenly rounded in *C. britannicus*, while it is slightly pointed in *C. latestriatus*. For further information on morphology and detailed drawings of the genitals of both species, we refer to BLOWER (1985) and ANDERSSON *et al.* (2005).



Fig. 4. Male gonopods of *C. britannicus*. Photo is taken from the same individual as in Fig. 1. The projection on the opisthomerite is indicated with a white asterisk (\*).

Additionally, the species differ ecologically: *C. latestriatus* is a species that commonly occurs on sandy soils, such as coastal dunes or the Campine region (KIME, 2004; own observations), while *C. britannicus* is a synanthropic species that is usually found on richer soils, and is often encountered in greenhouses (ANDERSSON *et al.*, 2005; BERG *et al.*, 2008).

## Ecology and biogeography

The species is very common on the British Isles but is relatively rare on the European mainland. Spanish (READ, 2007) and Portuguese records (KIME, 1999) suggest a strongly Atlantic distribution. The absence of records from France is probably owing to the lack of collecting in synanthropic sites and in the west of the country (KIME, pers. comm.). Furthermore, the species is known from scattered locations in the Netherlands (BERG *et al.*, 2008). In Scandinavia, the species is usually found in greenhouses, but the species is also observed outside, where it was found hibernating in compost heaps (RANTALA, 1985; ANDERSSON *et al.*, 2005). The species has also been introduced in South Africa, New Zealand and North America (BLOWER, 1985).

As the species was found near a lab that processes samples from various locations in northwestern Europe, the population in Gontrode might have been accidentally imported from elsewhere. As a larger population has probably been established, this introduction may have happened years or even decades ago and the species seems to cope with the site conditions. On the other hand, given the strongly atlantic distribution of the species, it might be native on this location (KIME, pers. comm.). The population in the Citadelpark is without any doubt introduced, given the synanthropic nature of the location and the ease at which the species gets transported by humans.

While the species is usually found in synanthropic habitats in continental Europe, it was observed in litter of ancient broadleaf forest in Gontrode. The location in the centre of Ghent, however, is a very typical habitat for *C. britannicus* in continental Europe. BERG *et al.* (2008) mentions the species from under dead wood in greenhouses, but also from free living populations on cemeteries on clay soils. BLOWER (1985) mentions that in the UK and Ireland the species is often encountered under the bark of trees or near dead wood, which corresponds to our observation of the female specimen in Gontrode, which we discovered in a pile of firewood, and with the large population that we encountered in Ghent. Furthermore, the species has been found in woods near rivers in Northwest Spain and England

(KIME, pers. comm.). Yet, the species is also strongly associated with more synanthropic sites on the British Isles (LEE, 2006).

### Conclusion

Here we reported the first record of *C. britannicus* in Belgium. As the species is hard to separate from the locally common *C. latestriatus* and as its typical, synanthropic, habitat is relatively undersampled in Belgium, it leaves no doubt that the species occurs at several other locations in the country. On locations with large amounts of transported soil or plant material, the chance of finding the species is probably the biggest. As the species seems to be very synanthropic and possibly introduced in the Northwest of continental Europe, it is doubtful whether the species can also be found further away from buildings, greenhouses and other human-dominated habitats. However, given the strongly atlantic distribution of the species and nature of the site in Gontrode, it might be possible that *C. britannicus* is native in Belgium.

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