

material should be examined in order to be able to describe the female and to get an idea of the variability of the characteristics. In Germany also *Lepismachilis notata* (STACH, 1919), *L. rozsyali* (KRATOCHVIL, 1945) and *Machilis tirolensis* (VERHOEFF, 1910) have been found but it is unclear if these species may also be expected in Belgium. *Atelura formicaria* (HEYDEN) is very common in Sweden (WYGOZINSKY, 1941) and has also been found in Austria and France. The species lives in nests of ants and can be found under stones. Despite intensive searching in the Netherlands (WYGOZINSKY, 1958) and Luxemburg (MEISCH, 1977) the species was not observed in these countries. *Thermobia domestica* (PACKARD 1873) can be found synantropically but is slightly more thermophilous situations than *L. saccharina*. *T. domestica* is probably firmly established in Western Europe and is often common in bakeries and warmer parts of buildings. *Acrotelsa collaris* (FABRICIUS, 1793) and *Gastrotheus sumatranus* (SILVESTRI, 1916) are much more thermophilous and were probably only temporary residents in the Netherlands.

It can be concluded that the present study already gives a first idea of the Thysanura occurring in Belgium. However, selective searching will probably add some more species to the Belgian fauna and further research is needed to get a better idea of the distribution and ecology of the Belgian Thysanura.

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## Checklist of the Belgian centipedes (Myriapoda Chilopoda)

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#### Abstract

A checklist of the centipedes (Chilopoda) of Belgium is presented. Thus far, 22 species had been cited for Belgium. In this contribution, *Lithobius piceus*, *L. tenebrosus*, *L. muticus*, *L. agilis*, *L. lapidicola*, *Lamyctes fulvicornis*, *Henia vesuviana*, *Strigamia maritima* and *Pachymerium ferrugineum* are reported for the first time for the Belgian fauna. This brings the total number of centipedes found in Belgium up to 31 species, belonging to 11 genera. If the current checklist is compared with those of the neighbouring countries, however, it can be assumed that still a dozen more species are to be expected in Belgium.

**Keywords :** Chilopoda, checklist, Belgium.

## Samenvatting

Een checklist van de Belgische duizendpoten (Chilopoda) wordt voorgesteld. Tot dusver werden 22 soorten gemeld voor België. In deze bijdrage worden *Lithobius piceus*, *L. tenebrosus*, *L. muticus*, *L. agilis*, *L. lapidicola*, *Lamyctes fulvicornis*, *Henia vesuviana*, *Strigamia maritima* en *Pachymerium ferrugineum* voor het eerst gerapporteerd voor de Belgische fauna. Het aantal duizendpoten in België stijgt hiermee tot 31 soorten die behoren tot 11 genera. Als de voorliggende soortenlijst wordt vergeleken met die van de buurlanden, kan echter worden verwacht dat nog meer soorten zullen worden gevonden in België.

## Résumé

Une liste des espèces de chilopodes (Chilopoda) de Belgique est présentée. Jusqu'à présent, 22 espèces ont été citées pour la Belgique. Dans cette contribution, *Lithobius piceus*, *L. tenebrosus*, *L. muticus*, *L. agilis*, *L. lapidicola*, *Lamyctes fulvicornis*, *Henia vesuviana*, *Strigamia maritima* et *Pachymerium ferrugineum* sont rapportées pour la première fois de Belgique, portant à 31 espèces, appartenant à 11 genres, le nombre de centipèdes pour ce pays. Si la liste présentée est comparée avec celles des pays adjacents, on peut supposer qu'il reste encore beaucoup d'espèces à découvrir en Belgique.

## Introduction

Chilopoda owe their name to the poisonous claws with which they practise their carnivorous life-style. Springtails are favoured by the lithobid species, whereas earthworms, enchytraeids and larvae of diptera are the main prey of geophilid species (POSER, 1988). Centipedes have been reported to exert a profound impact on their prey populations. For a beech forest in Germany it was estimated that the 10 species occurring there in a density of 187 individuals per square meter, accounted for 33% of the zoophagous consumption and the results of the field experiments suggested them to be food limited (POSER, 1988). Despite their importance as predators of invertebrates, this type of data is difficult to find for centipedes, due to the rarity of ecological studies on this group. Especially in Belgium, centipedes have hardly received any attention which is regrettable for soil ecology. Hopefully this situation will change in Belgium, with a checklist indicating which species can be found.

## Material and methods

The present checklist is based on literature data, old collections deposited in the Royal Belgian Institute for Natural Sciences in Brussels and the University of Liège, private collection from Desmond Kime and Alain Pauly and on recently collected material from the Latemse Meersen (LOCK & BONTE, unpublished data), the Flemish forests (LOCK *et al.*, unpublished data), the gravelbanks along the Meuse (LOCK & VA-

NACKER, unpublished data) and landdunes (LOCK & DEKONICK, unpublished data).

The systematics as far as the level of the superfamily is according to the insights of WÜRMLI (1972) and BORUCKI (1996). The phylogenetic relationship between the families, genera and species are far less clear. The classification of these lower taxonomic units is according to the presumed phylogenetic relationships presented by BRÖLEMAN (1930) which is usually followed. An exception is made for the family of the Lithobiidae for which the systematics according to EASON (1982) are used.

## Results

## Bibliography

The first author who wrote about the Belgian centipedes was PLATEAU (1872). He already reported twelve species for Belgium (Table 1). Most of his observations were done in the neighbourhood of Ghent, but he also reported some species from Laroche, Houffalise and Huy. LAMEERE (1895) listed 13 centipedes in his manual of the Belgium fauna of which four species had not been found by PLATEAU (1872). Later on, LAMEERE (1938) again wrote about the Belgian Chilopoda but he gave no additional information. SCHUBART (1936) identified the centipedes that were caught during the elaborate study considering about fifty caves in Belgium (LERUTH, 1939). Twelve species were reported of which five were new for the Belgian fauna. However, non of these species is restricted to caves. LE-

Table 1. Overview of the Belgian literature on centipedes.

	Plateau (1872)	Lameere (1895)	Lameere (1938)	Leruth (1939)	Leclercq (1945)	Delhez <i>et al.</i> (1973)	Hubart (1982)	Dall'Asta (1989)
<i>Brachygeophilus truncorum</i>				*				
<i>Cryptops anomalans</i>	*	*	*					
<i>Cryptops hortensis</i>	*	*	*	*		*		
<i>Cryptops parisi</i>	*			*				
<i>Geophilus carpophagus</i>	*			*	*			
<i>Geophilus electricus</i>	*	*	*					
<i>Geophilus proximus</i>							*	
<i>Haplophilus subterraneus</i>	*	*	*	*				
<i>Lithobius aeruginosus</i>				*	*			
<i>Lithobius calcaratus</i>	*	*						
<i>Lithobius crassipes</i>		*		*	*			
<i>Lithobius curtipes</i>	*							
<i>Lithobius dentatus</i>				*				
<i>Lithobius forficatus</i>	*	*	*					*
<i>Lithobius macilentus</i>				*				
<i>Lithobius melanops</i>		*			*			
<i>Lithobius microps</i>				*			*	
<i>Lithobius tricuspis</i>		*		*				
<i>Necrophlaeophagus flavus</i>	*	*	*					
<i>Schendyla nemorensis</i>	*	*	*		*			
<i>Strigamia acuminata</i>		*	*					
<i>Strigamia crassipes</i>	*	*	*	*				
<b>Number of species reported</b>	12	13	9	12	5	1	2	1
<b>Cumulative number of species</b>	12	16	16	21	21	21	22	22

Table 2. Checklist of the Belgian centipedes.

<b>Class CHILOPODA</b>	<b>Superfamily SCOLOPENDROMORPHA</b>
<b>ORDER PLEUROSTIGMOPHORA</b>	<b>Family Cryptopsidae</b>
<b>Superfamily LITHOBIOMORPHA</b>	<i>Cryptops anomalans</i> (NEWPORT, 1844)
<b>Family Lithobiidae</b>	<i>Cryptops hortensis</i> (LEACH, 1814)
<i>Lithobius forficatus</i> (LINNAEUS, 1758)	<i>Cryptops parisi</i> (BRÖLEMANN, 1920)
<i>Lithobius piceus</i> (KOCH, 1862)	<b>Superfamily GEOPHILOMORPHA</b>
<i>Lithobius dentatus</i> (KOCH, 1844)	<b>Family Himantariidae</b>
<i>Lithobius tenebrosus</i> (MEINERT, 1872)	<i>Haplophilus subterraneus</i> (SHAW, 1789)
<i>Lithobius macilentus</i> (KOCH, 1862)	<b>Family Schendylidae</b>
<i>Lithobius muticus</i> (KOCH, 1847)	<i>Schendyla nemorensis</i> (KOCH, 1837)
<i>Lithobius calcaratus</i> (KOCH, 1844)	<b>Family Geophilidae</b>
<i>Lithobius melanops</i> (NEWPORT, 1845)	<i>Henia vesuviana</i> (NEWPORT, 1845)
<i>Lithobius tricuspis</i> (MEINERT, 1872)	<i>Strigamia crassipes</i> (KOCH, 1835)
<i>Lithobius agilis</i> (KOCH, 1847)	<i>Strigamia acuminata</i> (LEACH, 1814)
<i>Lithobius lapidicola</i> (MEINERT, 1872)	<i>Strigamia maritima</i> (LEACH, 1817)
<i>Lithobius microps</i> (MEINERT, 1868)	<i>Pachymerium ferrugineum</i> (KOCH, 1847)
<i>Lithobius curtipes</i> (KOCH, 1847)	<i>Geophilus carpophagus</i> (LEACH, 1814)
<i>Lithobius crassipes</i> (KOCH, 1862)	<i>Geophilus electricus</i> (LINNAEUS, 1758)
<i>Lithobius aeruginosus</i> (KOCH, 1862)	<i>Geophilus proximus</i> (KOCH, 1847)
<b>Family Henicopidae</b>	<i>Necrophlaeophagus flavus</i> (DE GEER, 1778)
<i>Lamyctes fulvicornis</i> (MEINERT, 1868)	<i>Brachygeophilus truncorum</i> (BERGSOË & MEINERT, 1886)

CLERCQ (1945) reported five centipedes but no species were new for Belgium. DELHEZ *et al.*

(1973) studied the fauna of the cave of Ramioul but they found only one common species. A few years later, HUBART (1982) added two species to

the fauna of the cave of Ramioul, one of which was a new species for Belgium. DALL'ASTA (1989) reported one common species in pitfall traps from the woods of Drongengoed.

### Checklist

In the present study, all species cited in the literature could be confirmed for the Belgian fauna and in addition, nine species are reported for the first time in Belgium : *Lithobius piceus*, *L. tenebrosus*, *L. muticus*, *L. agilis*, *L. lapidicola*, *Lamyctes fulvicornis*, *Henia vesuviana*, *Strigamia maritima* and *Pachymerium ferrugineum*. This brings the total number of centipedes reported for Belgium up to 31 species (Table 2).

### Discussion

On the basis of the distribution of the Chilopoda in the neighbouring countries, SCHUBART (1939) estimated the number of centipedes to be expected in Belgium as 30 species. This is about the number of species that is reported in this checklist. However, in the mean time also the number of species found in the surrounding countries has increased. For the Netherlands (BERG, 1995; BERG, 1999) as well as for South-West Germany (SPELDA, 1991), 40 species are listed. Also in Luxembourg, some species are reported that have not been found in Belgium (REMY & HOFFMANN, 1960). These data indicate that still some more species are to be expected in Belgium. However, with the present checklist summarising the current knowledge of the Belgian species, a good start is given for the study of the centipedes in Belgium.

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