

Contributions to the taxonomy and distribution of some rare and new centipedes and millipedes (Myriapoda: Chilopoda, Diplopoda) in Germany

PETER DECKER^{*1}, E. NORMAN LINDNER¹, HANS S. REIP¹, JÖRG SPELDA¹ & KARIN VOIGTLÄNDER¹

¹ Senckenberg Museum of Natural History Görlitz, Am Museum 1, 02826 Görlitz, Germany

* Corresponding author: Peter Decker (decker@myriapoden-info.de)

Received: 26 June 2025. Accepted: 28 September 2025

Abstract. Since the first survey of the rare chilopods and diplopods for Germany (REIP et al. 2012), a more intensive sampling of these species has resulted in a gain in knowledge, which made a new compilation and assessment of their current status necessary. A total of 81 species are discussed, of which 27 are Chilopoda and 54 Diplopoda. Among these are six species that are new to Germany: *Schendyla peyerimhoffi* Brölemann & Ribaut, 1911, *Brachyiulus jawlowskii* Lohmander, 1928, *Hirudisoma pallidum* Fanzago, 1875, *Haplogona oculodistincta* (Verhoeff, 1893), *Listrocheiritium septentrionale* Gulička, 1965, and *Melogona broelemanni* (Verhoeff, 1897). The status as ‘rare’ of 18 species must be denied due to more recent records. Historic records of the species *Clinopodes flavidus* Attems, 1895, *Strigamia maritima* (Leach, 1817), *Eupolybothrus grossipes* (Fanzago, 1874), and *Lithobius schuleri* Verhoeff, 1925 in Germany were confirmed after a long time. However, there are also a number of species (5 Chilopoda, 24 Diplopoda) for which no new records could be provided. Comments on the taxonomy are given for *Lithobius chiemensis* Verhoeff, 1935 stat. nov. (= *L. glacialis* Verhoeff, 1937 syn. nov.), *Lithobius punctulatus* C. L. Koch, 1847, *Lithobius schuleri* Verhoeff, 1925, *Geophilus austriacus* (Latzel, 1880) stat. nov., *Ommatoiulus vilmensis* (Jawłowski, 1925), *Acanthotarsius* (*Serradium* syn. nov.) und *Acanthotarsius edentulus* (C. L. Koch, 1847) comb. nov. The potential for additional species from adjacent countries to be discovered in Germany is discussed.

Zusammenfassung. Beiträge zur Taxonomie und Verbreitung einiger seltener und neuer Hundert- und Doppelfüßer (Myriapoda: Chilopoda, Diplopoda) in Deutschland. Seit der ersten Zusammenstellung der für Deutschland seltenen Diplopoden und Chilopoden (Reip et al. 2012) erbrachte eine seitdem intensiv betriebene Erfassung dieser Arten einen Kenntniserfolg, der eine neuerliche Zusammenstellung und Einschätzung des gegenwärtigen Status vieler Arten notwendig macht. Insgesamt werden 81 Arten diskutiert, davon 27 Chilopoda und 54 Diplopoda. Unter diesen befinden sich sechs für Deutschland neue Arten: *Schendyla peyerimhoffi* Brölemann & Ribaut, 1911, *Brachyiulus jawlowskii* Lohmander, 1928, *Hirudisoma pallidum* Fanzago, 1875, *Haplogona oculodistincta* (Verhoeff, 1893), *Listrocheiritium septentrionale* Gulička, 1965 und *Melogona broelemanni* (Verhoeff, 1897). Aufgrund neuerer Nachweise muss 18 Arten der Status „selten“ abgesprochen werden. Historische Nachweise der Arten *Clinopodes flavidus* Attems, 1895, *Strigamia maritima* (Leach, 1817), *Eupolybothrus grossipes* (Fanzago, 1874) und *Lithobius schuleri* Verhoeff, 1925 in Deutschland wurden nach langer Zeit bestätigt. Es gibt aber auch eine Reihe von Arten (5 Chilopoda, 24 Diplopoda), für die keine neuen Nachweise erbracht werden konnten. Kommentare zum taxonomischen Status werden für *Lithobius chiemensis* Verhoeff, 1935 stat. nov. (= *L. glacialis* Verhoeff, 1937 syn. nov.), *Lithobius punctulatus* C. L. Koch, 1847, *Lithobius schuleri* Verhoeff, 1925, *Geophilus austriacus* (Latzel, 1880) stat. nov., *Ommatoiulus vilmensis* (Jawłowski, 1925), *Acanthotarsius* (*Serradium* syn. nov.) und *Acanthotarsius edentulus* (C. L. Koch, 1847) stat. nov. gegeben. Für eine Reihe weiterer Arten, die aus den Nachbarländern bekannt sind, wird die Möglichkeit des Vorkommens auch in Deutschland erörtert.

Keywords. Central Europe, alps, Bavarian forest, faunistic, first records.

1 Introduction

The fauna of centipedes and millipedes in Germany is one of the best studied worldwide. For almost all species, data on distribution as well as habitat preferences, and for some even behaviour, and phenology are available. Since the first mentions of centipedes and millipedes by KOCH (1835) and SCHNUR (1857), there are now more than 98,000 observations from at least 11,000 locations and 570 literature sources, and thousands of collection objects. Most of this data is available online in the GBIF information system for soil zoology Edaphobase (www.edaphobase.org, BURKHARDT et al. 2014).

Despite its size of about 357,588 km², the German myriapod fauna is relatively well-mapped and the general distribution and distribution boundaries of many taxa are known. Only the north and south-east of Germany and the majority of Hesse and Lower Saxony have so far been poorly studied, whereas western, south-western, central, and eastern Germany have been very well studied compared to other groups of soil animals. Also, the Alpine region, with a very small-scale distribution of species, is still insufficiently mapped. In addition, the urban fauna has undergone a change in recent decades due to increasing human activity and increasing globalized exchange of goods, such as seedlings and soil material.

Many important works and fauna lists for Germany and individual federal states have been published in the last two decades (DECKER & HANNIG 2011, DECKER et al. 2014, 2015, HAUSER & VOIGTLÄNDER 2009a, b, 2019, LINDNER et al. 2020, REIP & VOIGTLÄNDER 2009, SPELDA 2004, 2005a, VOIGTLÄNDER 2004a, b, 2016, VOIGTLÄNDER et al. 2018, 2020). With ongoing collecting activity or taxonomic revisions, new taxa are being recorded for Germany or regions within Germany. The Red Lists of endangered centipedes and millipedes in Germany (DECKER et al. 2016, REIP et al. 2016) and the overview of rare species by REIP et al. (2012) provide the last major summary of species for the whole of Germany. Since this time, however, further species have been recorded in Germany for the first time, e.g. *Cryptops umbricus* Verhoeff, 1931 in WESENER et al. (2016) and *Lamyctes africanus* (Porath, 1871) in DECKER et al. (2017).

This contribution gives an overview of important records of rare to extremely rare species in Germany, notes on the taxonomy of selected species, and some taxonomic revisions.

2 Material and methods

The major part of the results is based on the evaluation of material of several field trips as well as collection material. The material is mainly deposited in the collections of the Senckenberg Museum of Natural History Görlitz (SMNG), Zoologische Staatssammlung München (ZSM), and the Museum für Naturkunde Berlin (ZMB), and furthermore the private collections of Jörg Spelda (JS), and Norman Lindner (NL).

Coordinates are provided in WGS84 decimal degrees. For Geophilomorpha, the number of legpairs (= lp) are provided in parentheses.

Most of the mentioned data from (private) collections and literature is available online in the data warehouse Edaphobase (www.edaphobase.org, BURKHARDT et al. 2014).

Only records not yet listed by REIP et al. (2012) are given in this contribution. For taxa with more than 12 new records in most cases only a summary of new areas or places are provided in the remarks. Only

in cases of species new to the German fauna all records are given. Specimens were collected by hand, unless otherwise stated.

Species are categorized as rare, if there are max. 30 records after 1990, following REIP et al. (2012).

The distribution map (Fig. 1) was generated with QGIS Desktop 3.22 with base map ESRI-Topo.

The main collectors are abbreviated as follows:

DW = D. Weber

HR = Hans Reip

JS = Jörg Spelda

KV = Karin Voigtländer

LM = Leif Moritz

NL = Norman Lindner

PD = Peter Decker

NPV-BGD = Team of the Berchtesgaden National Park

3 Results

3.1 Changes and status of rare species, nomenclatorial changes and species new for Germany

After the comprehensive list of rare species of chilopods and diplopods by REIP et al. (2012) considerable progress was made, resulting in the discovery of additional species in Germany and the change of status by increased frequencies of occurrences. Additionally, taxonomic revisions lead to new insights of taxon identity and validity of Central European species.

Six species of centipedes (Tab. 1) and six taxa of millipedes (Tab. 2) were recorded after REIP et al. (2012) for Germany for the first time (Fig. 1): The two chilopod species *Geophilus austriacus* (Latzel, 1880) and *Schendyla peyerimhoffi* Brölemann & Ribaut, 1911 and the five millipede taxa *Haplogona oculodistincta* (Verhoeff, 1893), *Listrocheiritium septentrionale* Gulička, 1965, *Melogona broelemanni* (Verhoeff, 1897), *Brachyiulus jawlowskii* Lohmander, 1928, and *Hirudisoma pallidum* Fanzago, 1875 (see remarks on these species below).

For some species, targeted or intensive sampling in their distribution areas has provided new insights into their distribution patterns, boundaries, and frequencies. Since more than 30 findings have been recorded for these species since 1990, they are no longer considered rare. This includes the five chilopod species *Lithobius pygmaeus* Latzel, 1880 (Tab. 1), *Geophilus carpophagus* Leach 1815, *Henia vesuviana* (Newport, 1845), *Pachymerium ferrugineum* (C. L. Koch 1835) (see remarks on these species below), *Strigamia crassipes* C. L. Koch, 1847 (see remarks below), and 13 millipede species (Tab. 2), including *Propolydesmus germanicus* (Verhoeff, 1896), *Archiboreoiulus pallidus* (Brade-Birks, 1920), *Leptoiulus saltuvagus* (Verhoeff, 1898), and *Ophiulus major* Bigler & Verhoeff, 1920 (see remarks on these species below).

Even through additional records since REIP (2012), several species still can be classified as rare. This includes 11 species of centipedes (Tab. 1) and 36 taxa of millipedes (Tab. 2).

The current status of occurrence of 32 taxa is unknown as there are no more records after REIP et al. (2012). The five centipede species *Cryptops umbricus* Verhoeff, *Geophilus osquidatum* Brölemann, 1909, *G. proximus* (C. L. Koch, 1847), *G. rhenanus* Verhoeff, 1895, and *G. studeri* Rothenbühler, 1899 (see remarks on these species below), and 27 millipede species (Tab. 2) can be therefore regarded as lost.

In contrast, for five centipede and two millipede taxa that were regarded for decades as lost or with dubious records in Germany, new records confirm their presence in Germany (Tabs 1, 2). The centipede

Strigamia maritima (Leach, 1817) was recorded after more than 50 years (OEYEN et al. 2021 and records below), *Clinopodes flavidus* Attems, 1895 from several sites after 73 years, and *Eupolybothrus grossipes* (Fanzago, 1874) after 160 years (see remarks on these species below). *Lithobius schuleri* Verhoeff, 1925 was confirmed for Germany after 90 years, but this species was regarded for many decades as subspecies of *L. erythrocephalus* C. L. Koch, 1847 (see remarks below). The historic record of the millipede subspecies *Megaphyllum projectum projectum* Verhoeff, 1894 (LAZÁNYI & KORSÓS 2011) was confirmed from several sites. *Acanthotarsius edentulus* (C. L. Koch, 1847) was found after 96 years and the record by VERHOEFF (1929) was regarded even as doubtful before (see remarks below).

Additional data on distribution, morphology or molecular markers lead to taxonomical revisions and new status of taxon identities or synonymies since REIP et al. (2012). For centipedes this led to changes in synonymy and accepted taxon name of *Lithobius schuleri* Verhoeff, 1927, *Strigamia carniolensis* (Verhoeff, 1895) and herewith in *L. chiemensis* Verhoeff, 1935 stat. nov. as well as *Geophilus austriacus* (Latzel, 1880) stat. nov. (see remarks on these species below). In millipedes the taxa *Haasea cyanopida* (Attems, 1903) as well as *Stygiulus seewaldi* (Strasser, 1967), and herewith *Acanthotarsius edentulus* (C. L. Koch, 1847) comb. nov. were subject to nomenclatorial changes.

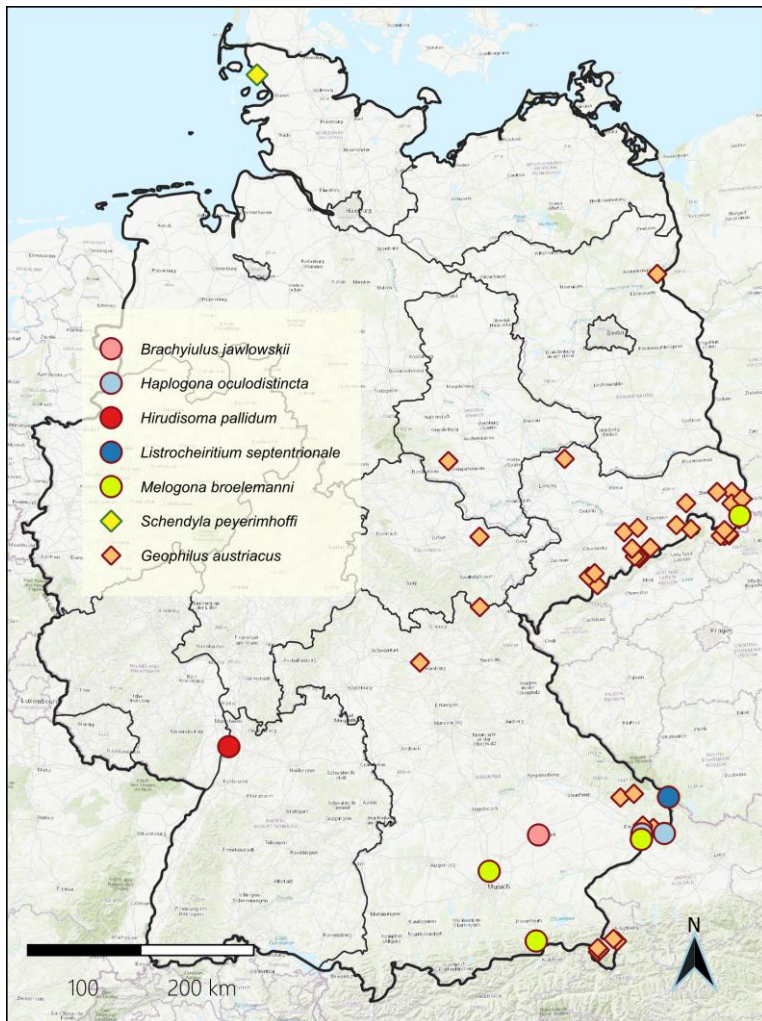


Figure 1: Distribution of new records of centipede and millipede species for Germany presented in this publication. Source base map: ESRI-Topo.

Table 1: Overview of changes of Chilopoda species in Germany before and after REIP et al. 2012. N = new record for Germany, T = taxonomical change, + = not listed as rare anymore, = = still rare, † = lost species, Re = rediscovered species (previously considered lost until REIP et al. 2012).

Taxon	Before REIP et al. 2012	After REIP et al. 2012	Status
Class Chilopoda			
<i>Lamyctes africanus</i> (Porath, 1871)		X	N
<i>Cryptops umbricus</i> Verhoeff, 1931		X	
<i>Geophilus austriacus</i> (Latzel, 1880)		X	
<i>Geophilus ribauti</i> Brölemann, 1908		X	
<i>Henia brevis</i> (Silvestri, 1896)		X	
<i>Schendyla peyerimhoffi</i> (Brölemann & Ribaut, 1911)		X	
<i>Lithobius pygmaeus</i> Latzel, 1880,	X	X	+
<i>Geophilus carpophagus</i> Leach, 1815	X	X	
<i>Henia vesuviana</i> (Newport, 1845),	X	X	
<i>Pachymerium ferrugineum</i> (C. L. Koch, 1835)	X	X	
<i>Strigamia crassipes</i> C. L. Koch, 1847	X	X	
<i>Scutigera coleoptrata</i> (Linnaeus, 1758)	X	X	=
<i>Harpolithobius anodus</i> (Latzel, 1880)	X	X	
<i>Lithobius lapidicola</i> Meinert, 1872	X	X	
<i>Lithobius latro</i> Meinert, 1872	X	X	
<i>Lithobius lucifugus</i> L. Koch, 1862	X	X	
<i>Lithobius punctulatus</i> C. L. Koch, 1847	X	X	
<i>Lithobius pygmaeus</i> Latzel, 1880	X	X	
<i>Lithobius subtilis</i> Latzel, 1880	X	X	
<i>Lithobius valesiacus</i> Verhoeff, 1935	X	X	
<i>Cryptops anomalans</i> Newport, 1844	X	X	
<i>Geophilus oligopus</i> (Attems, 1895)	X	X	
<i>Geophilus osquidatum</i> Brölemann, 1909	X		†
<i>Geophilus proximus</i> (C. L. Koch, 1847)	X		
<i>Geophilus rhenanus</i> Verhoeff, 1895	X		
<i>Geophilus studeri</i> Rothenbühler, 1899	X		
<i>Eupolybothrus grossipes</i> (Fanzago, 1874)	X	X	Re
<i>Clinopodes flavidus</i> Attems, 1895	X	X	
<i>Strigamia maritima</i> (Leach, 1817)	X	X	
<i>Lithobius chiemensis</i> Verhoeff, 1935 [<i>Lithobius glacialis</i> Verhoeff, 1937]	X	X	T
<i>Lithobius schuleri</i> Verhoeff, 1927 [<i>Lithobius erythrocephalus schuleri</i> Verhoeff, 1927]	X	X	
<i>Strigamia carniolensis</i> (Verhoeff, 1895) [partim <i>Strigamia crassipes</i> C. L. Koch, 1847]	X	X	
<i>Strigamia crassipes</i> C. L. Koch, 1847 [<i>Strigamia transsilvanica</i> (Verhoeff, 1928)]	X	X	

Table 2: Overview of changes of Diplopoda species in Germany before and after REIP et al. 2012. N = new record for Germany, T = taxonomical change, + = not listed as rare anymore, = = still rare, † = lost species, Re = rediscovered species (previously considered lost until REIP et al. 2012).

Taxon	Before REIP et al. 2012	After REIP et al. 2012	Status
Class Diplopoda			
<i>Haplogona oculodistincta</i> (Verhoeff, 1893)		X	N
<i>Listrocheiritium septentrionale</i> Gulička, 1965		X	
<i>Melogona broelemanni</i> (Verhoeff, 1897)		X	
<i>Brachyiulus jawlowskii</i> Lohmander, 1928		X	
<i>Megaphyllum projectum projectum</i> Verhoeff, 1894		X	
<i>Hirudisoma pallidum</i> Fanzago, 1875		X	
<i>Glomeris connexa</i> C. L. Koch, 1847	X	X	+
<i>Craspedosoma rawlinsii alsaticum</i> Verhoeff, 1910	X	X	
<i>Haasea flavescens</i> (Latzel, 1884)	X	X	
<i>Haasea germanica</i> (Verhoeff, 1901)	X	X	
<i>Haploporatia eremita</i> (Verhoeff, 1909)	X	X	
<i>Pseudocraspedosoma grypischium</i> (Verhoeff, 1910)	X	X	
<i>Propolydesmus germanicus</i> (Verhoeff, 1896)	X	X	
<i>Allajulus groedensis</i> (Attems, 1899)	X	X	
<i>Archiboreoiulus pallidus</i> (Brade-Birks, 1920)	X	X	
<i>Cylindroiulus zinalensis</i> (Faes, 1902)	X	X	
<i>Leptoiulus saltuvagus</i> (Verhoeff, 1898)	X	X	
<i>Leptoiulus trilobatus</i> (Verhoeff, 1894)	X	X	
<i>Ophiulus major</i> Bigler & Verhoeff, 1920	X	X	
<i>Geoglomeris subterranea</i> Verhoeff, 1908	X	X	=
<i>Glomeridella minima</i> (Latzel, 1884)	X	X	
<i>Glomeris helvetica</i> (Verhoeff, 1894)	X	X	
<i>Glomeris ornata</i> C. L. Koch, 1847	X	X	
<i>Glomeris transalpina</i> C. L. Koch, 1836	X	X	
<i>Trachysphaera gibbula</i> (Latzel, 1884)	X	X	
<i>Trachysphaera schmidtii</i> Heller, 1858	X	X	
<i>Atractosoma meridionale</i> Fanzago, 1876	X	X	
<i>Bergamosoma canestrinii</i> (Fedrizzi, 1877)	X	X	
<i>Brachychaeteuma bradeae</i> (Brölemann, H. K. Brade-Birks & S. G. Brade-Birks, 1917)	X	X	
<i>Dendromoneron oribates</i> (Latzel, 1884)	X	X	
<i>Haasea cyanopida</i> (Attems, 1903)	X	X	
<i>Iulogona tirolensis</i> (Verhoeff, 1894)	X	X	
<i>Listrocheiritium cervinum</i> Verhoeff, 1925	X	X	
<i>Melogona transsylvanica</i> (Verhoeff, 1897)	X	X	
<i>Nanogona polydesmoides</i> (Leach, 1816)	X	X	
<i>Ochogona brentana</i> (Verhoeff, 1927)	X	X	

<i>Ochogona regalis</i> (Verhoeff, 1913)	X	X	=
<i>Orthochordeumella fulva</i> (Rothenbühler, 1899)	X	X	
<i>Ophiodesmus albonanus</i> (Latzel, 1895)	X	X	
<i>Polydesmus monticola</i> Latzel, 1884	X	X	
<i>Propolydesmus helveticus</i> (Verhoeff, 1894)	X	X	
<i>Boreoiulus tenuis</i> (Bigler, 1913)	X	X	
<i>Cylindroiulus boleti</i> (C. L. Koch, 1847)	X	X	
<i>Cylindroiulus fulviceps</i> (Latzel, 1884)	X	X	
<i>Cylindroiulus luridus</i> (C. L. Koch, 1847)	X	X	
<i>Hypsoiulus alpivagus</i> (Verhoeff, 1897)	X	X	
<i>Julus terrestris</i> Linnaeus, 1758	X	X	
<i>Leptoiulus alemannicus</i> (Verhoeff, 1892)	X	X	
<i>Leptoiulus marcomannius</i> Verhoeff, 1913	X	X	
<i>Leptoiulus montivagus</i> (Latzel, 1884)	X	X	
<i>Leptoiulus noricus</i> Verhoeff, 1913	X	X	
<i>Ommatoiulus vilmensis</i> Jawlowski, 1925	X	X	
<i>Ophiulus nigrofuscus</i> (Verhoeff, 1894)	X	X	
<i>Pachypodoiulus eurypus</i> (Attems, 1895)	X	X	
<i>Pteridoiulus aspidiorum</i> Verhoeff, 1913	X	X	
<i>Xestoiulus laeticollis</i> (Porat, 1889)	X	X	
<i>Trachysphaera costata</i> (Waga, 1857)	X		†
<i>Brachychaeteuma bagnalli</i> Verhoeff, 1911	X		
<i>Craspedosoma taurinorum</i> Silvestri, 1898	X		
<i>Halleinosoma noricum</i> Verhoeff, 1913	X		
<i>Mastigophorophyllum saxonicum</i> Verhoeff, 1910	X		
<i>Orthochordeumella fulva</i> (Rothenbühler, 1899)	X		
<i>Pyrgocyphosoma titianum</i> Verhoeff, 1910	X		
<i>Rhymogona montivaga alemannica</i> (Verhoeff, 1910)	X		
<i>Rhymogona serrata</i> (Bigler, 1912)	X		
<i>Rhymogona verhoeffi</i> (Bigler, 1913)	X		
<i>Rhymogona wehrana</i> (Verhoeff, 1910)	X		
<i>Xylophageuma vomrathi</i> Verhoeff, 1911	X		
<i>Macrosternodesmus palicola</i> Brölemann, 1908,	X		
<i>Polydesmus susatensis</i> Verhoeff, 1934	X		
<i>Stosatea italica</i> (Latzel, 1886)	X		
<i>Brachyiulus lusitanus</i> Verhoeff, 1898	X		
<i>Cylindroiulus arborum</i> Verhoeff, 1928	X		
<i>Cylindroiulus parisiorum</i> (Brölemann & Verhoeff, 1896)	X		
<i>Cylindroiulus salicivorus</i> Verhoeff 1907	X		
<i>Cylindroiulus truncorum</i> Verhoeff, 1907	X		
<i>Leptoiulus bertkaui</i> (Verhoeff, 1896),	X		
<i>Leptoiulus cibdellus</i> (Chamberlin, 1921)	X		

<i>Leptoiulus kervillei</i> (Brölemann, 1897)	X		†
<i>Megaphyllum sjaelandicum</i> (Meinert, 1868)	X		
<i>Ommatoiulus rutilans</i> (C. L. Koch, 1847)	X		
<i>Ophiulus germanicus</i> (Verhoeff, 1896)	X		
<i>Stygiulus seewaldi</i> (Strasser, 1967)	X		
<i>Acanthotarsius edentulus</i> (C. L. Koch, 1847)	X	X	Re
<i>Haasea cyanopida</i> (Attems, 1903)	X	X	T
[<i>Haasea norica</i> (Verhoeff, 1913)]			
<i>Acanthotarsius edentulus</i> (C. L. Koch, 1847)	X	X	
[<i>Polydesmus edentulus</i> C. L. Koch, 1847]			
<i>Stygiulus seewaldi</i> (Strasser, 1967)	X	X	
[<i>Typhloiulus seewaldi</i> (Strasser, 1967)]			
<i>Acanthotarsius edentulus</i> (C. L. Koch, 1847)	X	X	
[<i>Polydesmus edentulus</i> C. L. Koch, 1847]			

3.2 Species-specific comments

Class Chilopoda

Order Lithobiomorpha

Eupolybothrus grossipes (Fanzago, 1874)

Records: Bavaria: Beistallaine 2 km WNW Untergrainau, 7 km W Garmisch-Partenkirchen, loose mixed forest (*Picea abies*), partly grassy with *Erica carnea* and *Rhododendron hirsutum*, 840-880 m, 47.4855°N, 10.9931°E, 10.X.2023, leg. JS, 2 ♂♂, 1 ♀; Saarland: Train tunnel (Varus-tunnel) near Tholey, 380-390 m, 49.4886°N, 7.0505°E, 21.VI.2014, leg. C. Locke & DW, 2 ♀♀; Tunnel at custom clearing railway station Homburg, 220-250 m, 49.3185°N, 7.3043°E, 25.V.-01.VII.2006, leg. DW, 2 ♂♂.

Remarks: The occurrence around Garmisch-Partenkirchen (KOCH 1862) based on its synonym *Lithobius festivus* L. Koch, 1862 is now confirmed after more than 160 years. *E. grossipes* seems to have strong ecological demands that have to be fulfilled. It is a very thermophilous species and reaches its northern distribution limit here, extending from the southern Alps via the Brenner Pass and Innsbruck to Garmisch-Partenkirchen (JANTESCHEK 1948). It needs habitats with sufficient exposure to sunlight, protected from severe frosts. An altitude of 900 to 1,200 m seems to be favoured, where there is little shading from surrounding mountains. This might be the reason, why it has taken so long to rediscover it. The discovery in a railway tunnel in Saarland currently raises questions as to whether this is a case of displacement (rail freight, tunnel construction) or a very isolated natural occurrence.

***Harpolithobius anodus* (Latzel, 1880)**

Records: Bavaria: W slope of Lercheck, 1 km NW Unterau, 5 km NE Berchtesgaden, mixed forest, 640-650 m, 47.6599°N, 13.0509°E, 10.X.2018, sieving, leg. JS, 1 ♀; Reiteralm, Eisbergalm 12 km WNW Berchtesgaden, 1,080-1,260 m, 47.63°N, 12.84°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♂; Koppenwand 6 km SW Berchtesgaden, 720-890 m, 47.60°N, 12.93°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♀; Fischunkel 12 km S Berchtesgaden, 650-840 m, 47.51°N, 13.00°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♂; Tiefenbachtal 1.5 km SSE Marktschellenberg, 1 km E Schneefelden, mixed forest, 615 m, 47.684°N, 13.055°E, 18.VIII.2012, sieving, leg. NL, 1 ♂.

Remarks: Since its description by LATZEL (1880), this species has been stated as very rare. The recent German records confirm this, as only single specimens have been found at different elevations in the Berchtesgadener Land. For that reason, it was not yet possible to identify ecological preferences, although there seems to be a preference for open forest areas. The locality Lercheck (SPELDA 2005b) was recently confirmed.

***Lamyctes africanus* Porat, 1871**

Records: Brandenburg: Blankenfeld-Mahlow, sandy dry meadow, 210 m, 52.33962°N, 13.38178°E, 24.IV.-01.X.2017, pitfall traps, leg. Institute for Ecology, TU Berlin, 1 ♀; Stahnsdorf, Priesterweg, sandy dry meadow, 100 m, 52.36926°N, 13.17791°E, 24.IV.-01.X.2017, pitfall traps, leg. Institute for Ecology, TU Berlin, 1 ♀.

Remarks: This species of the family Henicopidae from the southern hemisphere was first recorded in Germany by DECKER et al. (2017) at various sites in Saxony, Saxony-Anhalt and North Rhine-Westphalia in meadows, a military training area, orchards, often near rivers and sometimes even directly on the banks. The two new records are from sandy grasslands near Berlin.

L. africanus has also been recorded in Europe. In France it was found in a garden (IORIO 2016) and in Denmark along abandoned railway lines (ENGHOFF et al. 2013a). From Great Britain (GREGORY & GARNHAM 2022) and the Czech Republic (DÁNYI & TUF 2016) it is only known from greenhouses.

Due to its spread by flooding, military vehicles and along railway lines, it can be assumed that it has become established and even spread further, despite the few records to date.

***Lithobius chiemensis* Verhoeff, 1935 – stat. nov.**

Lithobius mutabilis chiemensis – Verhoeff, 1935: 193, figs 18, 19

Lithobius glacialis – Verhoeff, 1937: 208, 227-228, figs 44, 45 – **syn. nov.**

Remarks: Since the publication of EASON (1982) the list of accepted Central European Lithobiomorpha was dramatically reduced, as many species and subspecies of Lithobiomorpha, described by Verhoeff and Attems, were simply ignored. But it was already pointed out by SPELDA (1999) and confirmed by PILZ et al. (2008) that the alpine populations assigned to *L. mutabilis* in former times, represent a near allied but separate species. This species was identified as *L. glacialis* using the key of VERHOEFF (1937). The species was furthermore confirmed by DNA barcoding (SPELDA et al. 2011). During recent literature review it was noticed that the alpine species had already been described two years earlier (VERHOEFF 1935) as a subspecies of *L. mutabilis* (*L. mutabilis chiemensis*). It can be assumed that Verhoeff submitted the paper with the *Lithobius* key (VERHOEFF 1937) at first, but the later submitted manuscript

on Chilopoda from southern Germany and Switzerland was published earlier (VERHOEFF 1935). This can be deduced from a parenthesis in VERHOEFF (1937: 207): “(Inzwischen habe ich an anderer Stelle noch mehrere Unterarten des *mutabilis* bekannt gemacht.)”. Obviously, Verhoeff did not recognise the congruence in the description of the taxa *glacialis* and *chiemensis*. An explanation might be, that he had no male material of *L. glacialis* and the chilopod fauna of southern Germany was not so well known as it is today. The “alpine *mutabilis*” is unique in having wrinkled tergites in combination with a plectrotaxy typical for *mutabilis*. Thus, in combination with barcoding results there is no doubt that *glacialis* and *chiemensis* represent the same species. This was also confirmed by a check of the type material deposited in the collection of the ZSM. According to the International Code of Zoological Nomenclature the older name *chiemensis* has to be used and the taxon is therefore upgraded to species level. A redescription of this species, under the name *L. glacialis*, with all relevant figures for identification and comparison to *L. mutabilis* is given in PILZ et al. (2008).

L. chiemensis is a common species in the alpine and prealpine region of Bavaria.

***Lithobius lapidicola* Meinert, 1872**

Records: Bavaria: Spitzschlag- und Tiefentalgraben NE Ettal, 8 km N Garmisch-Partenkirchen, mixed forest, 920-980 m, 47.5721°N, 11.1013°E, 24.IX.2023, leg. JS, 1 ♂, 2 ♀♀; N Großkargraben 2 km W Ettal, 9 km NNW Garmisch-Partenkirchen, mixed forest, 840-860 m, 47.5697°N, 11.0616°E, 24.IX.2023, leg. JS, 1 ♂, 3 ♀♀; N Wallgau, 10 km NNE Mittenwald, mixed forest (*Fagus*, also *Picea*, few *Acer*), 890-910 m, 47.5332°N, 11.2844°E, 26.IX.2023, leg. JS, 2 ♂♂, 1 ♀; SE Galgenwurfköpf (N of P6), 3 km WSW Vorderriß, 8 km ENE Wallgau, mixed forest (*Fagus*, *Acer*, *Picea*), S slope, 800-840 m, 47.5509°N, 11.3902°E, 25.X.2023, sieving, leg. JS, 1 juv. ♂; W Stuhlbachklamm (parking area Stuhlbach), 2 km S Vorderriß, 11 km E Wallgau, mixed forest (*Picea*, *Fagus*, *Acer*), W slope, 800-840 m, 47.5336°N, 11.4419°E, 25.X.2023, sieving, leg. JS, 3 ♀♀; Mittereisalm 16 km SW Berchtesgaden, 1,320-1,330 m, 47.56°N, 12.81°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♂, 1 ♀; Krautkaseralm 4 km SE Berchtesgaden, 1,430-1,440 m, 47.59°N, 13.03°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♂; Steinrilglwald N Eibsee, 3 km WSW Grainau, 9 km WSW Garmisch-Partenkirchen, mixed forest (*Picea*, also *Fagus*, *Acer*), 980-1,000 m, 47.4621°N, 10.9738°E, 25.IX.2023, leg. JS, 1 ♀; WNW Herrgottsschrofen W Breitenau, 2 km W Garmisch-Partenkirchen, deciduous forest, (*Corylus*, *Fagus*), 720-740 m, 47.4837°N, 11.0422°E, 25.X.2023, sieving, leg. ZSM team, 2 ♂♂, 1 ♀; Osterfelderkopf 1 km N Alpspitze, 7 km SSW Garmisch-Partenkirchen, 2,040-2,150 m, 47.4365°N, 11.0498°E, 16.VII.2014, leg. ZSM team, 1 ♂; E of Seinsalm, 4 km NNE Mittenwald, mixed forest (*Picea* dominance, *Fagus*, *Acer*, *Populus*), 880-940 m, 47.4751°N, 11.2847°E, 20.IX.2023, leg. R. Melzer & JS, 1 ♂, 1 ♀; Above Seinsbachklamm, 4 km NNE Mittenwald, mixed forest, (*Picea* dominance, *Fagus*, *Acer*), 1,000-1,120 m, 47.4731°N, 11.2971°E, 20.IX.2023, leg. R. Melzer & JS, 1 ♂, 1 ♀♀; W Ochsenalm, 5 km NNE Mittenwald, mixed forest (*Picea* dominance, *Fagus*, *Acer*), 1,100-1,170 m, 47.4754°N, 11.3096°E, 20.IX.2023, leg. R. Melzer & JS, 2 ♂, 1 juv. ♂; Ochsenboden 1 km NNW Dammkarhütte, E slope, 3 km NEE Mittenwald, subalpine forest with *Fagus*, *Acer*, *Picea*, 1,200-1,300 m, 47.4454°N, 11.2989°E, 04.X.2023, sieving, leg. JS, 1 ♂, 3 ♀♀; Burgberg, Leutascher Str., NE slope, E Mittenwald, mixed forest (*Fagus*, *Acer*, *Picea*, *Corylus*), 930-950 m, 47.4349°N, 11.2577°E, 04.X.2023, sieving, leg. JS, 1 ♂; 1 km NW Schottmalhorn, 1 km SE Funtensee, 17 km SW Berchtesgaden, subalpine forest (*Larix*, *Pinus*) with pastures, 1,650-1,750 m, 47.4854°N, 12.9442°E, 01.VII.2014, leg. S. Friedrich & JS, 1 ♂; Riedberg, 1 km NW Scharnitz, 4 km SSW Mittenwald, mixed forest (*Picea*, *Fagus*, *Acer*, *Pinus*), 930-970 m, 47.3992°N, 11.2521°E, 25.IX.2023, leg. JS, 1 ♂.

Remarks: The problematic taxonomy and diagnosis of this species have been discussed for a long time (EASON 1964, SPELDA 1999). *L. lapidicola* is difficult to distinguish from the very similar species *L. valesiacus* and sometimes from *L. subtilis*. Reliably identified specimens have only been found in the Alpine region in rather open, high montane to subalpine altitudes.

Other (provisional) records of *L. lapidicola* in other parts of Germany must be currently excluded until material has been restudied (DECKER & HANNIG 2011, EICHLER 1952, JEEKELE 1964, REIP et al. 2012, SPELDA & RAHMANN 1995, SPELDA 1999, 2005a, VOIGTLÄNDER & LINDNER 2010).

***Lithobius latro* Meinert, 1872**

Records: Bavaria: Spitzschlag- und Tiefentalgraben NE Ettal, 8 km N Garmisch-Partenkirchen, mixed forest, 920-980 m, 47.5721°N, 11.1013°E, 24.IX.2023, leg. JS, 1 ♂; Alpspitz-Ferrata N Alpspitze, 8 km SSW Garmisch-Partenkirchen, alpine pasture, rocks, 1,700-2,100 m, 47.4338°N, 11.0495°E, 16.VII.2014, leg. JS, 2 ♀♀; S Osterfelderkopf 1 km N Alpspitze, 7 km SSW Garmisch-Partenkirchen, 2,040-2,150 m, 47.4365°N, 11.0498°E, 16.VII.2014, leg. ZSM team, 1 ♀; Gottesacker-Alpe-Gottesackerloch, 2 km ENE Hoher Ifen, 6 km WNW Riezlern, deep ravine with stony alpine pastures and shrubbery, 1,780-1,830 m, 47.3707°N, 10.1145°E, 02.X.2021, leg. JS, 2 ♀♀; Gottesackerplateau WSW Gottesackerscharte, margin of doline, 1,850 m, 47.3728°N, 10.1123°E, 04.IX.2023, leg. A. Karle-Fendt, 2 ♂♂; Kanzelwand, N-slope, 3 km SE Riezlern, 10 km SW Oberstdorf, stony alpine pastures and shrubbery, 1,700-1,800 m, 47.3372°N, 10.2113°E, 01.X.2021, leg. JS, 1 ♀; Einödsberg-Alpe, 1 km ENE Einödsbach, 10 km S Oberstdorf, Nardetum with *Pinus mugo*, 1,476 m, 47.2709°N, 10.2325°E, 18.VI.-27.IX.2005, pitfall traps, leg. I. Harry, 1 ♂.

Remarks: During investigations in and around the Berchtesgaden National Park in 2021, the species has been recorded from 11 sites. *L. latro* is a moderately common species in this area in elevations of 900 to 2,150 m in alpine pastures and habitats.

***Lithobius lucifugus* L. Koch, 1862**

Records: Bavaria: S-slope of Weißenstephaner Berg, Freising-Weißenstephan, 450-480 m, 48.3943°N, 11.7277°E, 13.II.2024, leg. JS, 1 ♀.

Remarks: This species was recorded in the last years from more than 30 localities by J. Spelda and N. Lindner in the Harz in Lower Saxony, the Ore mountains in Saxony, and Upper Franconia as well as the Bavarian Alps in Bavaria. In the Alps *L. lucifugus* mainly inhabits high alpine biotopes, like alpine pastures above the timberline. The species is usually found under stones, in crevices and damp scree (HNATEWYTSCH 1929). Especially in karstic areas it also occurs in subalpine shrubbery and in caves. In humidity preference tests, the species avoids areas of low humidity (20-40%), with a slight preference for (70 to) 100% (ROSSOLIMO & RYBALOV 1979). In lower mountains, the species is usually found in caves, tunnels, cellars or adits. Presumably *L. lucifugus* was spread through human activity.

The findings in several deep cellars in the town of Bautzen (Saxony, Upper Lusatia) in the 1990s are remarkable. The species is the dominant chilopod here and colonizes all cellars with stable populations (the life cycle is completely realized in the cellar habitats) with the exception of the warmest cellar in summer and winter with temperatures up to 17 °C in summer up to 11 °C in winter (STRZELCZYK 1994).

The record of *L. lucifugus* at Weihestephan mountain is only a few hundred metres away from the Bavarian State Brewery of Weihestephan, a large and one of the oldest breweries in Germany with numerous large beer cellars. This species could also find suitable conditions there, as in the cellars of Bautzen, and maybe inhabits the outside area only during the cold season, as it was observed in February.

***Lithobius punctulatus* C. L. Koch, 1847**

Remarks: *L. punctulatus* was found in 15 new localities in forests at different elevations from 290 up to 2,260 m in the Bavarian Alps east of the Inn Valley, the Bavarian Forest, and the Danube Valley within the last 13 years. EASON (1972, 1974), NEGREA (2010), and BONATO et al. (2016) considered the name *L. punctulatus* as a nomen dubium and proposed *Lithobius validus* Meinert, 1872 as the valid name. However, KOCH's (1847) description is unambiguous, and he clearly distinguishes *E. grossipes* from *Lithobius forficatus* (Linnaeus, 1758): the 4th main tergite ("Haupttergit" = 7th tergite) with projections; the four posterior subtergites ("Nebentergite" = 6, 9, 11, 13) also with projections; the head shield is punctate; the terminal legs are thinner than in *L. forficatus*; and the body (dorsally, uniformly) is rust-red in colour. The type locality of *L. punctulatus* is Trieste. The only other lithobiids with projections on tergites six and seven which occur around Trieste are two species of the genus *Eupolybothrus* (*E. grossipes* and *E. tridentinus*) with a different colour pattern on the tergites, one of them (*Lithobius grossipes*) described in the same paper. *L. punctulatus* was later redescribed by KOCH (1862) and illustrated on his plate 30 in comparison with *E. grossipes*. There is therefore no doubt about the identity of *L. punctulatus*.

***Lithobius schuleri* Verhoeff, 1927, Figs 2, 3**

Remarks on taxonomy: *Lithobius schuleri* was described as a subspecies of *L. erythrocephalus* by VERHOEFF (1927a) and elevated to species status by ZAPPAROLI (1994).

Because the journal's nominal year is 1925, this year has been cited by all subsequent authors (BONATO et al. 2016, EASON 1982, KOREN 1992, MATIC 1966, ZAPPAROLI 1994). However, the volume was actually published in 1927 (MAUERMAYER 1962). For that reason, the year of description is in fact 1927.

In his original description VERHOEFF (1927a) gives two important characters to distinguish males of the subsp. *L. e. schuleri* from *L. e. erythrocephalus*: the absence of dorsal flattening of tibia lp 15 and the presence of small posterior projections (Fig. 2) on tergite 13. Both characters are not reliable (EASON 1972). For females (Fig. 3) the shape of the gonopod spurs (3.7 to 5 times longer than wide; *L. e. erythrocephalus*: up to 3 times longer than wide) and the size of the dorsolateral setae on the second article of the female gonopods (dorsolateral setae more slender than general setae; *L. e. erythrocephalus*: dorsolateral setae as stout as or stouter than general setae) are essential (EASON 1982). Nevertheless, diverse investigations (e.g. EASON 1972, MATIC 1966, FOLKMANOVA 1947, 1954, LOKSA 1955, VERHOEFF 1935) suggest that the ranges of *L. erythrocephalus* and *L. schuleri* may overlap and EASON (1982) concludes, if the difference between them is indeed clear-cut with no intermediate forms, they may belong to two closely related but distinct species (EASON 1982). The best way to separate both species and also to re-interpret old records is the difference of their ecological requirements: *L. schuleri* is an alpine species only occurring in the subalpine and alpine level while *L. erythrocephalus* is a lowland species occurring mainly in the neighbourhood of big streams or rivers.

Another source for confusion of *L. schuleri* with other species might be that the VaC-spine is sometimes missing. Such specimens will formally key out as *L. lapidicola*. Nevertheless, they show a plectrotaxy of the last legs that resembles *L. chiemensis*, but male *L. chiemensis* can be easily distinguished by their leg markups (furrows with associated setae) and females by the shape of the gonopod spurs. In other words: female *L. schuleri* are distinctly separable from all other high alpine *Lithobius* species irrespective of the plectrotaxy.

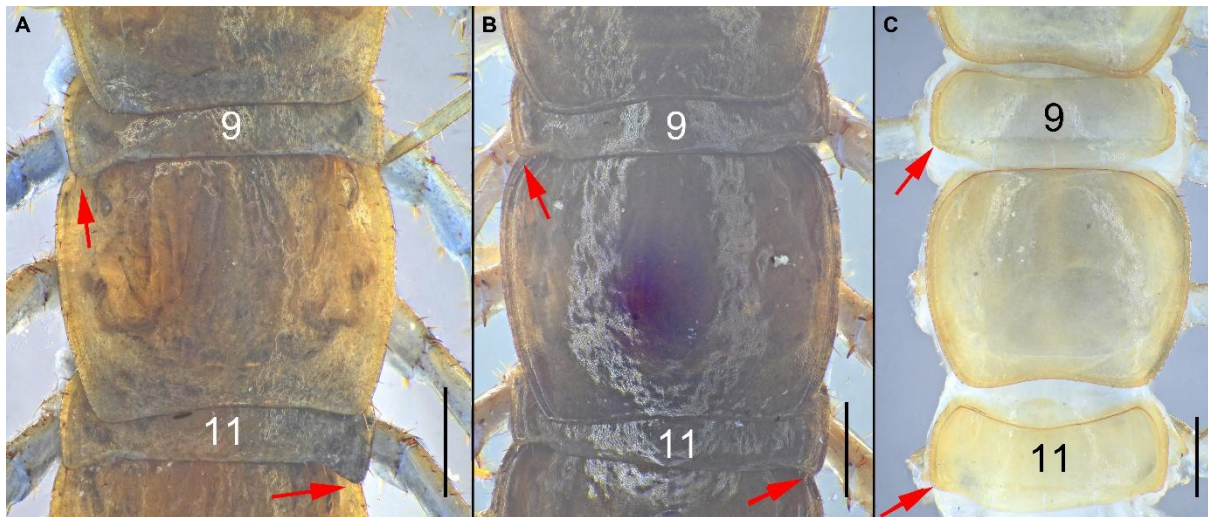


Figure 2: Tergites 9 to 11 of the species of the *Lithobius erythrocephalus* group. **A:** *L. agilis*, female, Bavaria, Geisenfeld, with distinct posterior projection on Tergites 9 and 11. **B:** *L. schuleri*, female, Bavaria, Mittenwald, with feeble projections **C:** *L. erythrocephalus*, female, Brandenburg, Chorin, without posterior projections. Scale bar = 500 μ m.

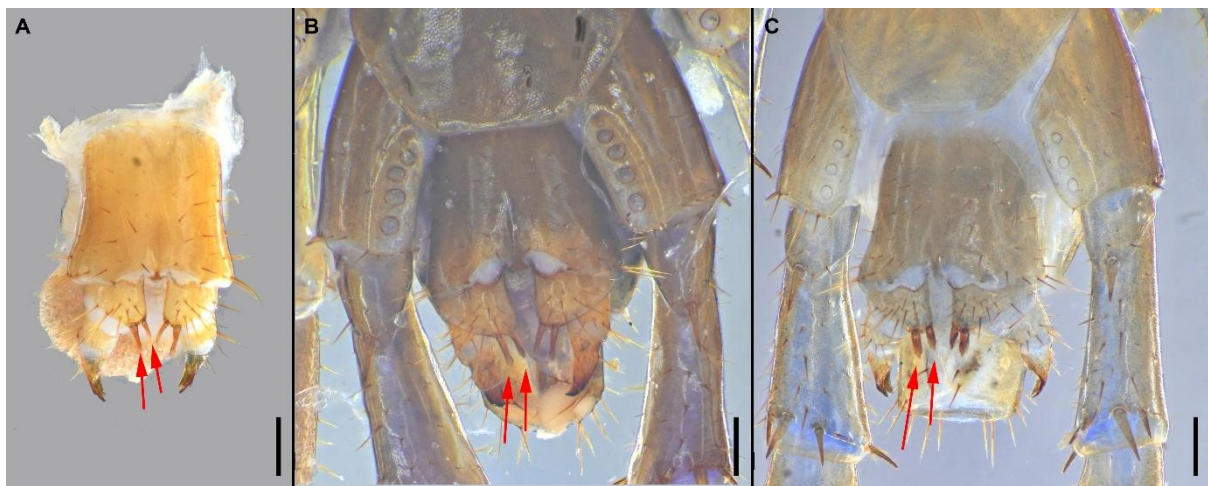


Figure 3: Female gonopods of the species of the *Lithobius erythrocephalus* group. Same specimens as in Fig. 2C. **A:** *L. agilis*, with the inner gonopod spur smaller and shorter than the outer, the outer spur constricted in the middle, length-width-ratio of outer spur 4(-5). **B:** *L. schuleri*, with the inner gonopod spur only slightly shorter, both gonopod spurs distally expanded, length-width-ratio of outer spur 4-5. **C:** *L. erythrocephalus* with gonopod spurs not expanded distally, inner gonopod spur shorter but not smaller, length-width-ratio of outer spur about 3. Gonopod spurs marked with arrows. Scale bar = 200 μ m.

Remarks on distribution: *L. schuleri* was originally described by VERHOEFF (1927a) from several localities in Romania, and later (VERHOEFF 1935: 201) recorded for Germany in the Chiemgau Alps (Kampenwand). It is also remarkable that VERHOEFF (1935) cited *L. erythrocephalus* from Hochgern, another mountain of the Chiemgau Alps. According to the present knowledge of the ecological requirements of both species it is undoubtful that this record in fact refers to *L. schuleri*. Verhoeff confused chilopod species several times, e.g. *L. mutabilis* and *L. chiemensis* (see above). In respect of the separating characters the question raised why VERHOEFF (1935) cited the male from the Kampenwand as *L. schuleri*, while he cited the material from Hochgern, which contained both males and females, as *L. erythrocephalus*.

The species was recorded from several dozen localities in the Bavarian Alps from 800 up to 2,000 m in (sub-)alpine mixed forests, shrubberies, and alpine pastures.

Records outside the alpine area (a.o. Thuringia, Ore mountains, Zittau mountains – VOIGTLÄNDER & HAUSER 2005, Saxon Switzerland – HAUSER & VOIGTLÄNDER 2008, southern Upper Lusatia) still need to be confirmed by DNA barcoding.

***Lithobius subtilis* Latzel, 1880**

Records: Baden-Württemberg: Langes Tal 1.5 km SSE Machtolsheim, 4 km ESE Laichingen, 690-710 m, 48.4807°N, 9.7561°E, 25.VI.2011, leg. JS, 1 ♂; SE Allerheiligen, mountain heath, 48.5236°N, 8.2161°E, 21.IX.2021, pitfall traps, leg. Black Forest National Park, 1 ♂; E Liebach, wood pasture, 48.4992°N, 8.2332°E, 21.IX.2021, pitfall traps, leg. Black Forest National Park, 1 ♂.

Remarks: The determination based on morphology of the specimen from Machtolsheim is also supported by the unique COI DNA barcode. The species *L. lapidicola*, *L. pygmaeus*, *L. subtilis*, and *L. valesiacus* are more or less similar, especially the first and the last, and might have been confused several times (particularly if juveniles are concerned; as well as females some decades ago, before the criterion of the dorsomedial setae of the gonopods was described). For that reason, we only give records where adult males are included. Unfortunately, such records of males are extremely rare. There could therefore also be a bias as a result of an underestimation of the actual frequency of occurrence. In any case, older records should be critically examined to see whether a correct determination was made here. To improve the identification of *L. subtilis* and *L. pygmaeus* vs. both other species, it is suggested to use the descriptions of EASON (1980, 1982) and the key of IORIO & JACQUEMIN (2025) which include all these species with revised criteria and relevant images.

***Lithobius valesiacus* Verhoeff, 1935**

Records: Baden-Württemberg: 2 km WNW Enzberg, 1 km E Kieselbronn, 7 km NE Pforzheim, mixed deciduous forest, 300-320 m, 48.9372°N, 8.7685°E, 29.IX.2013, leg. JS, 1 ♂, 1 ♀; 1 km SE Bissingen, 4 km NW Niederstotzingen, edge of forest near dry meadow, 48.5617°N, 10.1903°E, 26.IX.2010, leg. JS, 1 ♂*; St. Johann-Fohlenhof, 4 km WSW Bad Urach, forest, meadow (grazing land), 720-830 m, 48.4896°N, 9.3429°E, 13.IV.2012, leg. JS, 1 ♀*; Langes Tal 1.5 km SSE Machtolsheim, 4 km ESE Laichingen, 690-710 m, 48.4807°N, 9.7561°E, 25.VI.2011, leg. JS, 1 ♂*; Bavaria: Ravine W Bärnstein, 2 km SW Grafenau, mixed forest, boulder area, 540-560 m, 48.8501°N, 13.3761°E, 07.IX.2013, sieving, leg. JS, 1 ♂; Scheyernforst (Hofgut Scheyern), 2 km SW Scheyern, 6 km SW Pfaffenhofen, mixed forest,

460-500 m, 48.4914°N, 1.4426°E, 17.X.2009, leg. JS, 1 ♀*; Hochries, summit, 3 km SE Grainbach, 8 km E Nußdorf, subalpine pastures with *Pinus mugo* and dolines, 1,300-1,500 m, 47.7484°N, 12.2521°E, 08.X.2014, leg. JS, 1 juv. ♂*; Steinrieglwald N Eibsee, 3 km WSW Grainau, 9 km WSW Garmisch-Partenkirchen, mixed forest (*Picea*, also *Fagus*, *Acer*), 980-1,000 m, 47.4621°N, 10.9738°E, 25.IX.2023, leg. JS, 4 ♂♂, 3 ♀♀.

Remarks: Juveniles and even adults of both sexes are difficult to determine and distinguish from *L. lapidicola* and *L. valesiacus* (see remark above). Molecular marker (e.g. partial COI) are very useful for determination. The specimens marked with an asterisk have been successfully used for DNA barcoding and are genetically confirmed.

Order Scolopendromorpha

Cryptops anomalans Newport, 1844

Records: Baden-Württemberg: Hummelgraben, Kornwestheim, garden, 280-290 m, 48.8415°N, 9.1787°E, 12.VIII.2013, leg. JS, 1 specimen; Ailenberg SE Stuttgart-Obertürkheim, 1 km WSW Esslingen-Rüdern, vineyard, 240-330 m, 48.7623°N, 9.2727°E, 31.X.2014, leg. JS, 1 specimen.

Remarks: This species is originally distributed in the Mediterranean, but has already been introduced to several other countries in Europe as well as North America (BONATO et al. 2016). The few records in Germany to date are restricted to greenhouses and cities, such as Stuttgart, Bonn, Gera, Dresden, and Leipzig (VOIGTLÄNDER 1988, LINDNER 2010, DECKER & HANNIG 2011). The two new records here are from cities in the southwest of Germany. This species is probably more widespread in gardens and parks in other German cities. Lacking recent records from cities are due to a change of investigation focus from cities to more natural habitats.

Cryptops umbricus Verhoeff, 1931

Remarks: Since its first record in Germany from a quarry near Solnhofen (see REIP et al. 2012), formerly listed as *C. anomalans* Newport, 1844, no further specimens were found in Germany. The specimen of *C. umbricus* was primarily identified as *C. anomalans* Newport, 1844 (SPELDA et al. 2011, REIP et al. 2012), but with additional partial COI sequences of *C. anomalans* it got obvious that this specimen from Solnhofen, Bavaria represents another species (WESENER et al. 2016). With the key of VERHOEFF (1931) it was identified as *C. umbricus* due to the long antennal articles.

As it remained the only specimen obtained from collections within the Altmühl Valley with its numerous quarries it is very probable that the occurrence of this species was a matter of displacement. Nevertheless, due to the preference of subterranean habitats (IORIO 2014, IORIO & JACQUEMIN 2025) and the occurrence in a natural habitat it is possible, that the lack of further specimens is only due to insufficient sampling.

Order Geophilomorpha

Clinopodes flavidus Attems, 1895

Records: Bavaria: Niederleuthner Steig S Veste Oberhaus N Passau, open mixed deciduous forest (mainly *Carpinus*, *Quercus*) on steep slope, 300-400 m, 48.5777°N, 13.4665°E, 22.III.2023, leg. JS, 1 ♂ (67 lp), 3 ♀♀ (71 lp); Bergfriedbachtal (Oberhausleitenstiege) SW Veste Oberhaus N Passau, open mixed deciduous forest (*Carpinus*, *Quercus*), 300-400 m, 48.5788°N, 13.4613°E, 22.III.2023, leg. JS, 1 ♂ (69 lp), 1 ♀ (71 lp); Passau, Innstadt, E and SE Mariahilf, mixed forest, 320-350 m, 48.5694°N, 13.4713°E, 17.IV.2023, leg. JS, 1 ♂ (69 lp), 1 ♀ (71 lp), 1 juv. ♀ (71 lp); NE Neufelser, 1 km N Neuburg am Inn, 4 km SSW Passau, 300-320 m, 48.5286°N, 13.4429°E, 13.III.2023, leg. JS, 2 ♀♀ (71 lp); Passau-Ingling, 2 km SW Passau, 300-320 m, 48.5464°N, 13.4385°E, mixed forest, 17.IV.2023, leg. JS, 1 ♂ (67 lp), 3 ♀♀ (71 lp); Donauleiten near closed trailway NE Erlau, 9 km E Passau, partly open mixed deciduous forest (*Carpinus*, *Quercus*) with *Scilla bifolia*, 310-320 m, 48.5693°N, 13.5855°E, 22.III.2023, leg. JS, 1 ♂ (67 lp), 1 ♀ (69 lp); N Jochenstein, 6 km SE Obernzell, mixed deciduous forest (*Fagus*, *Carpinus*, *Quercus*), 300-350 m, 48.5208°N, 13.7125°E, 05.XI.2021, leg. JS, 1 juv. ♀ (69 lp); Saxony: Tscherntsche Teiche, Milkel, Bautzen, 51.2860°N, 14.4504°E, 18.XI.1964, leg. R. Ibsch, 1 ♀ (74 lp).

Remarks: A long period after an unspecific record “im östlichen Süd- und Mitteldeutschland” [eastern South and Central Germany] (VERHOEFF 1934) and a record from Erlangen (POSTNER 1952), this ground-dwelling species has been found in the Danube and Inn Valley near Passau in the year 2023. A review of previously undetermined collection material from the SMNG yielded also a record from 1964 for Saxony, far from the main distribution area of the species. The closest known records of this southeastern European species are located in Bohemia (Czechia), region Ústí nad Labem, about 100 km away (LAŠKA 2004) and in Silesia (Poland) in the Oder forest near Ohlau (today Oława) (HAASE 1881 as *Geophilus flavidus* var. *carinthiacus* Latzel, 1880) about 200 km away.

The record from Assling in the ZSM collection, erroneously referred to a city in Bavaria (REIP et al. 2012), has to be referred to Assling in Slovenia. The old report from Erlangen (POSTNER 1952) could be based on an introduction.

Geophilus austriacus Latzel, 1880 - stat. nov.

Geophilus longicornis var. *austriacus* Latzel, 1880: 182

Taxonomic remarks: Based on genetic differences in COI barcoding as well as meristic and morphometric traits, the taxon *Geophilus longicornis* var. *austriacus* Latzel, 1880, originally described as a subspecies and later treated as a junior synonym of *Geophilus flavus* (De Geer, 1778), should be elevated to species rank.

The best diagnostic feature to distinguish *G. flavus* from *G. austriacus* in Germany and adjacent countries, aside from significant p-distances in COI, is the sex-specific number of legpairs: 43-47 in males and 45-49 in females of *G. austriacus* compared to 49-57 in males and 51-57 (59?) in females of *G. flavus*. Additionally, both species differ in maximum body length: *G. austriacus* reaches up to 27 mm, compared to a maximum body length of 50 mm in *G. flavus*. Furthermore, in *G. austriacus* the antennae are shorter relative to body length than in *G. flavus*.

The taxon *austriacus* has likely been (re)described multiple times under different taxon names (*Geophilus carnicus* Verhoeff, 1928, *Pachymerium flavum* Folkmanova, 1949, *Schizotaenia folkmanovae*

Dobroruka, 1966), which are therefore probably junior synonyms of *G. austriacus*. Due to limited knowledge of infra- and interspecific morphological variability, and the lack of reliable characters, the circumscription of taxa within the *G. flavus*-group has been subject to change, including in the most recent overview of European Geophilomorpha (BONATO & MINELLI 2014), where many taxa were synonymised under *G. flavus*.

The taxonomic history, diagnostic characteristics, molecular phylogenetic and morphometric analysis, as well as potential synonymy will be treated in LINDNER et al. (in prep.).

Distribution: *Geophilus austriacus* was recorded from Germany, Austria, Poland, Czechia, Romania, Slovakia, Hungary and Croatia after examination of collection material (SMNG, ZSM, coll. NL, coll. JS) and review of literature (e.g. FOLKMANOVA 1949, KACZMAREK 1979, ORSZÁGH 2001, WÜRMLI 1972). In Germany, the species is mainly recorded from south-eastern Saxony and south-eastern Bavaria (Fig. 1). With only one record each, the species has also been recorded in Saxony-Anhalt (Harz Mountains), Brandenburg (Lower Oder Valley National Park), and Thuringia (Jena). The revision of *G. flavus* specimens in collections (e.g. SMNG) for *G. austriacus* is not yet complete. As a species is considered rare only if recorded from a maximum of 30 sites (REIP et al. 2012), the number of records for this taxon will probably exceed that threshold soon.

A detailed list of all records, present known distribution in Germany and Europe will be provided in LINDNER et al. (in prep.).

***Geophilus oligopus* (Attems, 1895)**

Records: Bavaria: NSG Schneeberggipfel, 4 km E Bischofsgrün, 10 km W Wunsiedel, forest, 1,025 m, 50.0524°N, 11.8566°E, 21.IX.-29.X.2009, leg. T. Blick, 1 ♂ (39 lp); Lusen, 3 km ENE Waldhäuser, 1,100-1,380 m, 48.9331°N, 13.5015°E, 03.IX.1995, leg. JS, 1 ♀ (41 lp); Saußbachleite 1 km S Waldkirchen, mixed forest (*Picea abies*), scree, soil sample, 550-580 m, 48.7139°N, 13.6061°E, 30.IX.2021, leg. JS, 2 ♀♀ (39 lp); Dolines ESE Hochries, 3 km SE Grainbach, 8 km E Nußdorf, loose forest (*Picea abies*, *Acer pseudoplatanus*, *Sorbus aucuparia*) with dolines, alpine pastures, 1,300-1,400 m, 47.7505°N, 12.2615°E, 30.IX.2021, leg. R. Melzer & JS, 1 ♀ (37 lp); NE Sonnenalm, 4 km SE Aschau, 21 km SE Rosenheim, NW-slope, alpine pastures, scree, subalpine forest with clearings (*Picea abies*, including stumps), 1,420-1,510 m, 47.7549°N, 12.3542°E, 17.X.2016, leg. JS, 1 ♀ (37 lp); Untersberg, Salzburger Hochthron, 2 km SW Grödig, 10 km SW Salzburg, *Pinus mugo* shrubbery, 1,750-1,850 m, 47.7153°N, 13.0034°E, 10.X.2018, leg. JS, 1 ♂ (37 lp), 1 ♀ (37 lp).

Remarks: *G. oligopus* was recorded for Germany the first times in Freyung in the Bavarian Forest, close to the border of Czechia and Austria, and Lenggries in the Bavarian Alps (LINDNER & SPELDA 2008). Within the last few years, it was found in the Bavarian Forest, Chiemgau Alps and Berchtesgaden Alps. The species is restricted to mixed (conifer) forests.

***Geophilus osquidatum* Brölemann, 1909**

Remarks: This atlantic species originates from the eastern Pyrenees and is more abundant in the western part than the eastern part of France, but has also been reported from several other regions in Europe (EASON 1964). In Germany, there has been only one single record of a female in the urban area of Bonn-Bad Godesberg (FRÜND 1989). However, targeted searches have failed to locate this species there again (pers. comm. T. Wesener). However, the species can be expected to occur in cities and parks in Germany.

***Geophilus proximus* (C. L. Koch, 1847)**

Remarks: Species previously identified as *G. proximus* are not identical to the *G. proximus* originally described by Koch (1847) from Bavaria. Based on thorough faunistic research of the areas studied by Koch in Bavaria, it appears that *G. alpinus* Meinert, 1870 and *G. proximus* are synonymous. Therefore, in strict terms, the name *G. proximus* should be transferred to *G. alpinus* as the valid name, and a new name should be sought for the species previously referred to as *G. proximus* (= *G. proximus* auct.), which occurs only in northern eastern Germany and in eastern Europe as far as Russia. BONATO et al. (2014) can be referred to here. The authors list *G. ganonotus* Attems, 1901 and *G. eremophilus* Lignau, 1933 as synonyms of *G. proximus*. Since *G. ganonotus* Attems, 1901 is the oldest available name for *G. proximus* auct., this should be chosen. Since no material could be examined at present, the old taxonomy will be retained for the time being.

***Geophilus rhenanus* Verhoeff, 1895**

Remarks: The distinction between this species and *Geophilus alpinus* requires thorough morphological and genetic examination, as it is considered by some to be a separate species (SPELDA 2005a) and by others to be a synonym (BONATO & MINELLI 2014) of *G. alpinus*. The species is currently only known from the type locality in the Rhine Valley at Oberkassel in Germany (VERHOEFF 1895) and a specimen from Kehl (REIP et al. 2012), but its occurrence is also assumed in France, although it is likely that this species has not been differentiated from the very similar species *G. alpinus* in France.

***Geophilus ribauti* Brölemann, 1908**

Remarks: The taxon *G. ribauti*, which in the past was mostly considered a subspecies of *Geophilus truncorum* Bergsøe & Meinert, 1866, was elevated to species status due to morphological and eco-geographical differences (BONATO & MINELLI 2014). *G. truncorum* occurs in Germany mainly in the North German lowlands and has only 2 large pores on the coxae of the last leg pair and 37-39 (♂♂) or 39-41 (♀♀) pairs of legs. In North Rhine-Westphalia, this species is already known from numerous locations and habitat types (e.g., moors, swamp forests, and deciduous forests) and is also sometimes found epigeically in the upper horizons of leaf litter (DECKER et al. 2015). *G. ribauti*, on the other hand, only occurs in the low mountain ranges of central, western, and southwestern Germany, has 4 pores on the coxae of last legpair and 33-35 (♂♂) or 33-37 (♀♀) pairs of legs. This species is restricted to cool and humid forests with a probably more endogeic lifestyle. But the discovery of *G. truncorum* on the Hellerberg (340-360 m above sea level) in the Siegerland region (DECKER & HANNIG 2008) shows that this species can also occur sporadically in the low mountain ranges, probably by human dispersal. However, for *G. ribauti* several dozen records exist and it is therefore not classified as rare.

***Geophilus studeri* Rothenbühler, 1899**

Remarks: It was not possible to record any new specimens since 1998 (REIP et al. 2012). *G. studeri* has so far only been recorded in montane forests in southwest Germany (SPELDA 1999). During the two barcoding projects “Barcoding Fauna Bavarica” and “German Barcoding of Life,” one of the authors (J. Spelda) conducted an intensive search for *G. studeri* between 2008 and 2022. Although the species had been found on several occasions in the 1990s in its German distribution area in the montane forests of the Palatinate Forest, Black Forest, and Swabian Alb, it has not been detected since 1998. Since targeted searches have been unsuccessful, it must be assumed that there has been a real decline in the population, for which no explanation is yet available.

***Henia brevis* (Silvestri, 1896) sensu lato**

Records: Baden-Württemberg: Stuttgart-Hofen, Burgruine to Scillawald, mixed forest, shrubbery, 210-230 m, 48.8383°N, 9.2288°E, 11.VIII.2013, leg. JS, 1 ♀ (47 lp); Esslingen-Weil, Wannenrain, mixed, mainly deciduous forest with *Allium ursinum*, 240-250 m, 48.7378°N, 9.2678°E, 14.IV.2015, leg. JS, 1 ♂ (45 lp).

Remarks: This species originates from southern Europe. It has also been cited from synanthropic habitats in England and Ireland, like parks, gardens, and churchyards (BARBER 2022), but these records probably belong to a different species.

BARBER (2009a) stated 53-57 legpairs for *H. brevis*, while EASON (1964) had only males with 55 legpairs at his disposal, which he cited under *H. montana oblongocribellata*. With a first view, this is in contrast with the original description of both, *H. brevis* and *H. montana oblongocribellata* (the second synonymised with the first by BONATO & MINELLI 2014), for which only 43-47 legpairs were recorded by several authors, as ATTEMS (1929) and later MINELLI (1982) pointed out. However, the situation is more difficult since a continuum between the lowest and the highest values of legpairs numbers in specimens corresponding to *H. brevis* in the other main criteria has been observed, with intermediate values (49-51 and more) found in Corsica and in Sardinia (IORIO & QUINDROIT 2018). Possibly *H. brevis* constitutes a species group but it cannot be confirmed without a dedicated study. With the present knowledge, the best criterion to separate *H. brevis* in the wide sense from *H. montana* is the presence (*H. brevis*) or the absence (*H. montana*) of a pore-field on sternite of the first leg bearing segment; and secondarily, the numbers of legpairs (*H. brevis*: ♂♂ 43-55 lp, ♀♀ 45-57 lp; *H. montana*: ♂♂ 55-59 lp, ♀♀ 57-61 lp) except 55 for the males and 57 for the females (IORIO & JACQUEMIN 2025). The German specimens fit well with the types of *H. brevis*, but a revision of *H. brevis* s. l. would be necessary.

Together with the two new records presented here, *H. brevis* has so far only been recorded from five sites in a narrowly defined area in southwest Germany in the Stuttgart region. It was probably introduced in the course of viticulture and was able to establish itself and spread there.

***Pachymerium ferrugineum* (C. L. Koch 1835)**

Remarks: This species, which is scattered throughout Germany, shows a clear preference for moors, but also occurs with less consistency in dry grasslands, swamp forests, and floodplain forests. The distribution and frequency of *P. ferrugineum* therefore correlates with the occurrence of these rare and endangered to critically endangered biotope types. More than 120 records are now known from Germany. With its inland distribution and legpair numbers of 41 to 43 in males (n = 9) and 41 to 45 in females (n=34), only the “short form” of *Pachymerium ferrugineum* (BARBER et al. 2020) was recorded so far, but the presence of the “long form” with 57 legpairs on the North Sea can not be excluded.

***Schendyla peyerimhoffi* (Brölemann & Ribaut, 1911)**

Record: Schleswig-Holstein: Dagebüll, S Speicherbecken Süd, North Sea shore, 54.6582°N, 8.8055°E, 16.V.2021, leg. U. Burkhardt, H. Hauser, HR & KV, 1 ♂ (39 lp).

Distribution: The species was described from Morocco (Brölemann & Ribaut, 1911). Subsequently, it was found in Portugal, Ireland, Canary Islands, Great Britain, Sicily, and France (see BARBER 1987, 2006, BLOWER 1987, IORIO & LABROCHE 2015, IORIO et al. 2022, LEWIS 1961, 1962, MACHADO 1952, RACINE & IORIO

2017). *Sch. peyerimhoffi* is widespread around the south and west coasts of Britain (BARBER 2022) and occurs also on the Channel Islands (Guernsey) near the coast of France (BARBER 2006). In France, it was found only in Finistère, in Manche and in Calvados (North-West France at the tip of the Breton Peninsula and in Normandy). Our record is therefore the only record along the eastern coastline of the North Sea. It is to be expected that *Sch. peyerimhoffi* can be found in some other parts of these coastal sections with intensive and targeted searching.

Diagnostic features: The species can easily be confused with the very similar *Schendyla nemorensis* (C. L. Koch, 1837). It differs from the latter by a crenulate concavity on the poison claws (4-5 flattened teeth) and the appearance of ultimate legs (a very short metatarsus in comparison to the tarsus).

Figures: LEWIS (1961, figs 1-7), EASON (1964, figs 70-74), JONES (1998, figs 1-13), BARBER (2009a, figs 46, 83A-D after EASON 1964), IORIO & LABROCHE (2015, figs 178, 180), IORIO et al. (2022, figs 222, 232, 234).

Habitat: The species is almost exclusively known from littoral, maritime habitats, such as coastal brackish water areas, estuaries and coastal grassland above salt marshes, where it lives under flat, smallish stones on mud around high water and in rock crevices (BARBER 1987, 2009a, 2022, IORIO & LABROCHE 2015, RACINE & IORIO 2017). The species was found during the present investigation under loose stones lying on the silty soil. *Sch. peyerimhoffi* is a strictly halophilic species at least in NW Europe. One inland locality has been published (MACHADO 1952), but it would require verification. The figures of MACHADO (1952: figs 1-4 p. 72, figs 1-4 p. 73) suggest that it could perhaps be another species: the fig. 4 p. 73 of MACHADO (1952) shows 8 distinct narrower teeth vs. usually 4-5 larger in United Kingdom and France. Also, the last legs of the specimens of MACHADO (1952) seems thinner than those of the typical *Sch. peyerimhoffi* and the last article of these legs seems longer: approx. 5.5 times longer than the penultimate in MACHADO's (1952) fig. 4 p. 72 vs. 3 to 5 times longer, usually 3-4 times (cf. BRÖLEMANN & RIBAUT 1912; BARBER 2009a: p. 60-61; IORIO et al. 2022: p. 68-69; JONES 1998).

Threats: Almost all former rocky coastal sections of the German North Sea are more or less completely concreted, and there are only a few loose stones lying on the silt that provide suitable habitat for the maritime species (such as *Strigamia maritima*). In France, *Sch. peyerimhoffi* has been stated as LC (= "least concern") in the recent IUCN Red List of centipedes of this country (IORIO et al. 2025), because there are numerous suitable and well-preserved habitats in the Finistère, with fairly numerous recent data of this species. Elsewhere on the Atlantic coast of France, the sufficiently preserved and suitable habitats for this species are more localised, with more human pressure and artificialisation of the coast, thus more sensitive (A. Racine, D. Desmots & E. Iorio, unpublished). Thus, in Germany where the species reach its northern distribution limit, it seems to have a high conservation value because of its ecological requirements and the human concretisation of the seashore, inducing possibly a narrow and fragmented distribution.

Schendyla tyrolensis (Meinert, 1879)

Records: Bavaria: Wolfsschlucht SW Fischbach am Inn, 4 km SEE Brannenburg, mainly *Fagus* forest, partly with *Phyllitis scolopendrium*, *Hepatica nobilis*, *Dentaria*, *Acer pseudoplatanus*, pebbles with humus in between, deep crevices, 500-580 m, 47.7079°N, 12.1401°E, 10.X.2018, leg. JS, 1 ♀; Saxony: approx. 10 km E Bad Schandau, Saxon Switzerland National Park, Großer Zschand, ravine forest

fragment in a spruce forest, approx. 220 m, 50.922°N, 14.286°E, 10.X.2021, leg. NL, 1 ♂; Hohnstein, Saxon Switzerland National Park, Polenztal, stream forest area opposite Polenztalwächter, 50.957°N, 14.104°E, 24.X.2021, leg. NL, 1 ♂, 1 ♀.

Remarks: This forest species was recorded for the first time in Germany in 2003 by SPELDA et al. (2005) from southern Bavaria in the Mangfall Mountains, which was confirmed by additional records in this area (REIP et al. 2012). The new record from Saxony extends the known distribution range, and it can be expected that this mountain species is also more widespread in the Bavarian Forest and Upper Palatine Forest.

Strigamia crassipes C. L. Koch, 1847

Remarks: Specimens were listed as *S. transsilvanica* (Verhoeff, 1928) in REIP et al. (2012), but *S. transsilvanica* was synonymised by BONATO et al. (2023) with *S. crassipes*. Specimens formerly listed as *S. crassipes* needs to be verified and now belong to either *S. carniolensis* (Verhoeff, 1895) or *S. crassipes*. However, most of the specimens verified so far from Baden-Württemberg, Bavaria, Hesse, Northrhine-Westphalia, Thuringia, Saxony, and Saxony-Anhalt belong to *S. crassipes*.

Strigamia maritima (Leach, 1817)

Records: Schleswig-Holstein: Island of Sylt, Rantum, pier at the former harbour, 54.85572°N, 8.30772°E, 15.VIII.2019, leg. L. Podsiadlowski, numerous specimens; Island of Sylt, Rantum, seashore with rubble, above flood water level (sublittoral), under stones on muddy ground, 54.8558°N, 8.3058°E, 15.V.2021, leg. U. Burkhardt, H. Hauser, HR & KV, 29 specimens; Dagebüll, ferry harbour, northern dyke, 54.7309°N, 8.6952°E, 16.V.2021, leg. U. Burkhardt, H. Hauser, HR & KV, 15 specimens; Dagebüll, North Sea shore, S-eastern end of shore path, sublittoral, 54.7238°N, 8.7091°E, 16.V.2021, leg. U. Burkhardt, H. Hauser, HR & KV, 6 specimens.

Distribution: *S. maritima* represents a species distributed along the coasts of north and western Europe: with a record in Portugal (CHERPITEL & FILIPE 2024), another in Northern Spain (CABANILLAS 2020) and many records from France (Aquitaine, Pays de la Loire, Brittany, Normandy, Nord-Pas-de-Calais; but fairly rare outside Brittany and Normandy), Belgium, Netherlands, Denmark, Norway, Sweden (including the Baltic isles Gotland and Öland), the British Isles and the Faroes (BARBER 2022, CHERPITEL et al. 2019, IORIO 2014, QUINDROIT 2021, RACINE et al. 2023). A supposed occurrence in Poland as mentioned in BONATO et al. (2016) or by CABANILLAS (2020) is a misinterpretation of a work by LESNIEWSKA et al. (2009) where she compared her investigation of high numbers of *Stigmatogaster subterranea* (= *Haplophilus subterranea*) from Poland with the investigation of high numbers of *S. maritima* and other geophilomorphs (but not from Poland). *S. maritima* was reported by LATZEL (1894) for the first time in Germany. Later it was exclusively recorded from Heligoland (HENNING 1903, JEEKEL 1964, RÜPPELL 1967, SCHUBART 1929). Until the year 2000, it was also regularly found on Heligoland in the supralittoral behind the 'Lange Anna', where the animals were sometimes found in large numbers on sand under larger stones (OEYEN et al. 2021). Since then, the species was considered to be lost for Germany (DECKER et al. 2016); it was not found again despite intensive searches on Heligoland. In 2019 a new record was made, surprisingly from the island of Sylt (OEYEN et al. 2021) with numerous specimens. Two individuals were determined and subsequently deposited as vouchers in the ZFMK collection (ZFMK MYR8795). The species was confirmed again at the same location in 2021. In the same year, two further records were made, this time from the mainland.

Diagnostic features: *Strigamia maritima* differs from other *Strigamia* species in the pleurites of the last trunk segment, which are separated from the adjacent pretergite, and the presence of 47-51 legpairs.

Habitat: Mostly in the supralitoral and intertidal zone of the Northern Sea, under loose stones lying on a moist, sandy substrate. On Heligoland in rubble, in sand and also in dry parts of the beach together with the spider *Halorates reprobus* (RÜPPELL 1967). At Rantum/Sylt and at Dagebüll, the species was always found together with the isopod *Ligia oceanica* (Linnaeus, 1767).

Class Diplopoda

Order Glomerida

Geoglomeris subterranea Verhoeff, 1908

Records: Baden-Württemberg: Lonetal 2 km NNE Bernstadt, 7 km NE Langenau, edge of mixed deciduous forest (*Alnus*, *Corylus*), E-slope, red soil, 510-530 m, 48.5196°N, 10.0385°E, 04.VIII.2015, soil sample, leg. JS, 1 ♀, 1 juv. ♀; Bavaria: Schwarzhölzl (Bachdreieck 2), 2 km NE Karlsfeld, 4 km SE Dachau, a humose place in the mixed forest with dark soil and cover of mainly *Acer pseudoplatanus* litter, 490-510 m, 48.2403°N, 11.4913°E, 08.VI.2013, sieving, leg. JS, 1 ♀.

Remarks: In addition to the two new records in southern Germany above, this rare species was also recorded by WESENER et al. (2019) from Berlese samples in a forest in Königswinter/Quirrenbach, in North Rhine-Westphalia. *G. subterranea* is difficult to sample due to its small size, very patchy distribution within a habitat, and presumably a ground-dwelling lifestyle.

Glomeridella minima Latzel, 1884

Records: Bavaria: Kohlbachtal N Kohlbachmühle, 2 km SE Obernzell, mixed mainly deciduous forest (*Fagus*, *Carpinus*, *Quercus*), *Cyclamen purpurescens*, *Leucojum vernalis*, 300-320 m, 48.5464°N, 13.4385°E, 22.III.2023, sieving, leg. JS, 1 ♂, 3 ♀♀; N Jochenstein, 6 km SE Obernzell, mixed mainly deciduous forest (*Fagus*, *Carpinus*, *Quercus*), 300-350 m, 48.5201°N, 13.7128°E, 05.XI.2021, sieving, leg. JS, 1 juv. ♀; same locality, 22.III.2023, sieving, 1 ♀; W ruin Falkenstein, 1 km S Flintsbach/Inn, 3 km SE Brannenburg, mixed forest with *Acer pseudoplatanus* and *Phyllitis scolopendrium*, scree with humus in between, 490-510 m, 47.7172°N, 12.1275°E, 20.IV.2016, sieving, leg. JS, 1 ♀; Wolfsschlucht SW Fischbach am Inn, 4 km SEE Brannenburg, mainly *Fagus sylvatica* forest, partly with *Phyllitis scolopendrium*, *Hepatica nobilis*, *Dentaria*, *Acer pseudoplatanus*, gravel with humus and deep crevices in between, 500-580 m, 47.7079°N, 12.1401°E, 17.III.2017, sieving, leg. JS, 1 ♀; Stiegler-Alm between Waldparkplatz and Wagner-Alm, 4 km ESE Nußdorf/Inn, 15 km SE Rosenheim, mixed forest (*Picea abies*, *Fagus sylvatica*), 850-1,050 m, 47.7484°N, 12.2521°E, 03.IV.2014, leg. JS, 1 ♀; Mühlenweg E Nußdorf/Inn, 13 km SSE Rosenheim, mixed forest (*Picea abies*, *Fagus sylvatica*), 490-540 m, 47.7411°N, 12.1693°E, 03.IV.2014, leg. JS, 1 ♂; Kiefersfelden, Buchberg, N-slope near summit, 3 km NE Kufstein, open mixed forest with grassy humous layer, 580-600 m, 47.7292°N, 12.2136°E, 27.X.2015, soil sample, leg. JS, 1 juv. ♀; W slope of Lercheck, 1 km NW Unterau, 5 km NE Berchtesgaden, mixed forest, 640-650 m, 47.6599°N, 13.0509°E, 10.X.2018, sieving, leg. JS, 1 ad.; Wimbachklamm 2 km SE Ramsau, 7 km SW Berchtesgaden, loose mixed forest (*Picea abies*, *Acer pseudoplatanus*, *Fagus sylvatica*), 630-740 m, 47.5961°N, 12.9199°E, 22.IX.2014, soil sample, leg. JS, 1 ad., 1 juv. ♀.

Remarks: During investigations in and around the Berchtesgaden Land in the Bavarian Alps, the species was recorded from several dozen sites from 300 m up to 1,050 m in mixed deciduous forests. Unexpectedly, there were also records from the Bavarian Forest near Jochenstein and Kohlbachtal. The species has been confirmed by DNA barcoding.

***Glomeris helvetica* Verhoeff, 1894**

Records: Bavaria: Karlstadt, direction Eußenheim, Grainberg-Kalbenstein and Saupurzel, near aerodrome, dry meadow with spots of shrubbery, under dead wood on meadow, 200-250 m, 49.9717°N, 9.7885°E, 30.IV.2018, leg. HR, 27 specimens; Ravensburg castle, 1 km N Veitshöchheim, 9 km NW Würzburg, dry meadow to open limestone area with *Sesleria*, under flat limestones, 180-270 m, 49.8517°N, 9.8651°E, 01.V.2018, leg. HR, 1 ♂.

Remarks: The original record of VERHOEFF (1937) is labelled “Ravensberg bei Veitshöchheim, leg. Stadler”. In fact, two nearby statements of place might fit: Ravensburg castle for the ruin and Rabensberg for the slope NW of it. Both sites are now protected within the “NSG Blaugrashalden” nature reserve, together with other similar areas—e.g. “NSG Höhfeldplatte and Scharlachberg,” located near the locality documented by JS in 1998. The presence of *G. helvetica* in the Main Valley between Veitshöchheim and Thüngersheim has been continuously confirmed. It represents one of only two known populations of this highly isolated and endangered species in Germany. The second population, near Engen in southwestern Germany (VERHOEFF 1936), lies closer to the main distribution range in the Western Alps of Switzerland but has not been reported again since VERHOEFF’s record in 1936. The origin of the isolated population in the Main Valley remains enigmatic. VERHOEFF (1937) already emphasized the distinctly different ecological conditions of the Swiss and Main Valley populations. Further genetic analyses may elucidate the phylogeographic relationships between these populations. In the Main Valley, *G. helvetica* is a markedly thermophilous species confined to open, sun-exposed habitats, predominantly occupying xerothermic grasslands with sparse vegetation cover. During dry periods, a vertical movement within the middle Triassic limestone scree material into deeper layers is assumed.

***Glomeris ornata* C. L. Koch, 1847**

Record: Bavaria: Osterberg NE Pfünz, 6 km E Eichstätt, N-slope, 400-430 m, 48.8912°N, 11.2706°E, 21.IV.2017, sieving, leg. JS, 3 ♂♂, 1 ♀.

Remarks: While *G. ornata* is known from a few localities within the Swabian Alb, the species had been recorded only from two localities in the Altmühl Valley previously. Now a third record within this sub-area is published.

***Glomeris transalpina* C. L. Koch, 1836**

Records: Bavaria: Mahdtal-Alm 4 km NW Riezlern, 11 km WSW Oberstdorf, alpine shrubbery, soil sample, 1,600-1,700 m, 47.3799°N, 10.1353°E, 23.X.2018, leg. JS, 2 ♀♀, 1 juv.; Gatterschwand N Spitzwand, quarry, 1 km S Rohrmoos, 8 km W Oberstdorf, scree, subalpine mixed forest (*Pinus mugo*, *Picea abies*), 1,200-1,330 m, 47.3927°N, 10.1583°E, 29.IX.2021, leg. JS & HR, 1 ♀; Gottesacker, 1 km ENE Hoher Ifen, 6 km WNW Riezlern, stony alpine pastures and shrubbery, 1,830-1,940 m, 47.3664°N, 10.1092°E, 02.X.2021, leg. JS, 1 ♂, 1 ♀, 2 juv. ♀♀; Gottesackeralpe-Gottesackerloch, 2 km ENE Hoher

Ifen, 6 km WNW Riezlern, deep ravine with stony alpine pastures and shrubbery, 1,780-1,830 m, 47.3707°N, 10.1145°E, 02.X.2021, leg. JS, 3 ♀♀; Kanzelwand, N-slope, 3 km SE Riezlern, 10 km SW Oberstdorf, stony alpine pastures and shrubbery, 1,700-1,800 m, 47.3372°N, 10.2113°E, 01.X.2021, leg. JS, 1 ♂, 4 ♀♀.

Remarks: The record from Gatterschwand represents the lowest and northernmost occurrence of this high alpine species.

Trachysphaera costata (Waga, 1857)

Remarks: The eastern European species *T. costata* has so far only been recorded from Saxony in the Ore mountains (especially in the eastern part), in the Weiße Elster Valley and the wider surroundings of Dresden, e.g. Dohna, Müglitztal near Weesenstein (VERHOEFF 1910, 1917, BÜTTNER 1963, RICHTER 1967). The most recent records are from Richter in 1965/66. REIP et al. (2012) erroneously mention *T. costata* for Saxon Switzerland, where it has not been found despite intensive searches (HAUSER & VOIGTLÄNDER 2008). Also, other recent searches for the species (Dohna, Weesenstein, Rabenauer Grund) have not been successful.

All species of the genus *Trachysphaera* are very small (2-5 mm) and are only found punctually in appropriate (calcareous) deciduous forest sites with a loose humus layer. Their small size and whitish colouring suggest an euedaphic way of life. When rolled up, the animals are difficult to distinguish from empty snail shells or white stones due to their grainy, light-coloured surface. They can therefore be easily overlooked when collected by hand and hardly be recorded with pitfall traps. Their discovery is often a matter of chance. Maybe extraction of soil samples (e.g. Berlese, Kempson, MacFadyen) could be a suitable method.

Trachysphaera gibbula (Latzel, 1884)

Records: Bavaria: NW ruin Falkenstein, 1 km SSE Flintsbach/Inn, 3 km SE Brannenburg, mixed forest with *Acer pseudoplatanus* and *Phyllitis scolopendrium*, scree with humus in between, 490-510 m, 47.7173°N, 12.1281°E, 27.X.2015, soil sample, leg. JS, 1 juv.; N Wagnerberg, 1 km S Flintsbach/Inn, 3 km SE Brannenburg, mixed forest with *Acer pseudoplatanus* and *Phyllitis scolopendrium*, scree with humus in between, 550-620 m, 47.7158°N, 12.1206°E, 20.IV.2016, sieving, leg. JS, 1 ♀; Schmiedelberg-Alm near Sudelfeld, 2 km NE Bayrischzell, 13 km NW Kiefersfelden, subalpine *Fagus-Picea*-forest, 1,040-1,050 m, 47.6828°N, 12.0424°E, 20.IV.2016, sieving, leg. JS, 1 juv.

Remarks: Records within the region near Kiefersfelden were expected, as *T. gibbula* was already known from adjacent places in Austria (see e.g. SCHUBART 1934).

Trachysphaera schmidtii Heller, 1858

Record: Bavaria: S Mayerhofen, 2 km S Laufen, 390-400 m, 47.9176°N, 12.9419°E, 03.XI.2024, sieving, leg. JS, 1 juv. ♂.

Remarks: *T. schmidtii* is regularly found in the Austrian Salzkammergut. The new record from the Salzach Valley in the Bavarian Northern Prealps follows the known distribution, whereas the natural origin of the only previously known Bavarian population from Landshut can be questioned, as it is situated near a castle surrounded by a forest with possible anthropogenic impact.

Order Chordeumatida

Anamastigona pulchella (Silvestri, 1894)

Records: Saxony-Anhalt: Magdeburg Börde, rest area “Dreihöhenberg” (near Eickendorf) at A14 motorway, 90 m, 51.938°N, 11.688°E, 9.VIII.2014, leg. NL, 4 juv., 4.X.2014, leg. NL, 1 ad., 1 juv. ♂, 6 juv. ♀♀.

Remarks: In Germany *A. pulchella* was recorded from the above-mentioned location for the first time in 2008. It could be confirmed there in 2009 and 2010 (LINDNER et al. 2010, REIP et al. 2012) as well as in 2014 for the last time. Subsequent visits at this site, especially several times in 2024, did not yield any further records of the species. One possible reason may be the significant changes of the site conditions in recent years: the originally existing ornamental shrub beds with mulch have disappeared, the soil has become compacted by the numerous visitors to the rest area and the soil has dried out considerably as a result of lower rainfall in the last years. Therefore, it can be assumed that this population is extinct.

Atractosoma meridionale Fanzago, 1876

Records: Bavaria: Wustbachtal NE Burgberg, 3 km NNE Sonthofen, mixed forest (*Picea abies*), 800-900 m, 47.5386°N, 10.2926°E, 04.IX.2015, leg. JS, 3 ♂♂; Hotzenberg 1 km SSW Unterjoch, 7 km ENE Sonthofen, mixed forest, 1,050-1,100 m, 47.5394°N, 10.4179°E, 07.IX.2015, leg. JS, 1 ♂; Iselerbahn Bergstation to Vordere Wiedhagalpe, 2 km SE Oberjoch, 10 km ESE Sonthofen, alpine pastures and stony slopes with *Pinus mugo* and *Rhododendron hirsutum* shrubbery, 1,440-1,600 m, 47.4893°N, 10.3681°E, 08.IX.2015, leg. JS, 1 ♀; Kanzelwand, N-slope, 3 km SE Riezlern, 10 km SW Oberstdorf, stony alpine pastures and shrubbery, 1,700-1,800 m, 47.3372°N, 10.2113°E, 01.X.2021, leg. JS, 1 ♀.

Remarks: *A. meridionale* usually occurs in forests, often dominated by *Picea abies*. The species also inhabits cool ravines as well as light subalpine regions with only a few trees.

Bergamosoma canestrini (Fedrizzi, 1878)

Records: Bavaria: S Osterfelderkopf 1 km N Alpspitze, 7 km SSW Garmisch-Partenkirchen, 2,040-2,150 m, 47.4365°N, 11.0498°E, 16.VII.2014, leg. JS, 1 ♀, 2 juv.; Biberkopf summit, ridge area, 2,595 m, 47.2709°N, 10.2325°E, 20.IX.2023, leg. A. Karle-Fendt, 1 ♂, 1 ♀.

Remarks: In addition to the already known occurrence in the Wetterstein (Zugspitz) mountains, another locality is known thanks to the efforts of Alfred Karle-Fendt. This new record of *B. canestrini* extends the known distribution further to the northwest. Additionally, this species was also found at 2,300 to 2,400 m around the Karpallsattel near St. Anton in Tyrol, Austria (08.-10.IX.2009, leg. J. Spelda).

Members of the genus *Bergamosoma* are usually found in deep ravines and mixed forests in karst areas and in caves. *B. canestrinii* has also been found in high alpine areas in Switzerland (BIGLER 1929, PEDROLI-CHRISTEN 1993), Austria (MEYER 1975) and Germany (SCHUBART 1934). The record from Tyrol

connects the known distribution areas in Switzerland and Germany. Therefore, the German populations are no longer assumed to be isolated. In fact, they fit in with other biogeographical patterns of species that have remigrated from the refugial areas of the Lake Garda along the Etsch Valley, such as *Ochogona brentana* and *Eupolybothrus grossipes*. As *B. canestinii* is associated with areas with interstitial volumes, sampling needs to be undertaken precisely at such places. This may explain the comparatively few records of this genus of the largest chordeumatids in Europe. A map is provided by SPELDA (2008).

***Brachychaeteuma bradeae* (Brölemann, H. K. Brade-Birks & S. G. Brade-Birks, 1917)**

Records: Rhineland-Palatinate: Feldstraßenstollen N Dellfeld, 10 km NW Pirmasens, 260 m, 49.2366°N, 7.4751°E, 05.VII.-01.XI.2014, leg. DW & V. Weber, 1 ♂, 2 ♀♀, 1 juv.; Saarland: Saarbrücken, Stollen Heinrich-Köhl-Strasse, 220-240 m, 49.2467°N, 6.9903°E, 10.XII.2012, leg. DW, 1 ♂.

Remarks: As a predominantly subterranean species, *B. bradeae* is difficult to detect. It is most frequently encountered in caves, generally through manual sampling, as was the case with the records mentioned above. The species is widely distributed across Germany and typically occurs synanthropically in gardens, parks, cemeteries, and similar habitats. It is also frequently recorded from caves and abandoned mine tunnels. Forest occurrences, as reported for the species by KIME & ENGHOF (2021), constitute rare exceptions in Germany.

***Craspedosoma taurinorum* Silvestri, 1898**

Remarks: There are no additional records since REIP et al. (2012). Like other members of the order Chordeumatida, this species requires cool, humid conditions and typically inhabits shaded forest ravines. Beside these requirements, *C. taurinorum* is found in a wide range of biotopes between 260 to 2,600 m (PEDROLI-CHRISTEN 1993). The distribution area barely reaches Germany and all attempts to record the species at other places of the Allgäu Alps beside the Rickenbach ravine and the Riedbach ravine west of Scheidegg failed until now.

***Dendromonomeron oribates* (Latzel, 1884)**

Records: Bavaria: W ruin Falkenstein, 1 km S Flintsbach/Inn, 3 km SE Brannenburg, mixed forest with *Acer pseudoplatanus* and *Phyllitis scolopendrium*, scree with humus in between, 490-510 m, 47.7172°N, 12.1275°E, 20.IV.2016, sieving, leg. JS, 1 ♂, 1 ♀; same locality, 17.III.2017, sieving, 16 juv.; NE Hochries, 3 km SE Grainbach, 8 km E Nußdorf, loose forest (*Picea abies*, *Acer pseudoplatanus*, *Sorbus aucuparia*) with dolines and alpine pastures, 1,300-1,450 m, 47.7511°N, 12.2577°E, 08.X.2014, leg. JS & S. Friedrich, 1 ♀; NE Sonnenalm, 4 km SE Aschau, 21 km SE Rosenheim, NW-slope, alpine pastures, scree, subalpine forest with clearings (*Picea abies*, including stumps), 1,420-1,510 m, 47.7549°N, 12.3542°E, 17.X.2016, leg. JS, 1 juv.; W slope of Lercheck, 1 km NW Unterau, 5 km NE Berchtesgaden, mixed forest, 640-650 m, 47.6599°N, 13.0509°E, 10.X.2018, sieving, leg. JS, 1 juv.; NW Königsbachalm, 1 km SW Jenner, 7 km SSE Berchtesgaden, mixed forest, 1,050-1,200 m, 47.5681°N, 13.0108°E, 30.VI.2014, leg. S. Friedrich & JS, 1 ♂.

Remarks: Juvenile stages of *D. oribates* are easy to recognise due to the *Rhiscosoma* habitus. Therefore, it was possible to record this species without adult specimens for a long period. During investigations in and around the Berchtesgaden National Park in 2021, the species has been recorded from 21 sites in alpine pastures and mixed forests from 600 to 2,260 m. *D. oribates* is a common species in this area.

***Haasea cyanopida* (Attems, 1903)**

Records: Bavaria: Untersberg, Salzburger Hochthron, 2 km SW Grödig, 10 km SW Salzburg, *Pinus mugo* shrubbery, 1,750-1,850 m, 47.7153°N, 13.0034°E, 10.X.2018, leg. JS, 1 ♂.

Taxonomic remark: The taxon previously listed for Germany under the name *Haasea norica* (Verhoeff, 1913) was synonymised with *Haasea cyanopida* by ANTIĆ & AKKARI (2020).

***Haplogona oculodistincta* (Verhoeff, 1893), Figs 1, 4, 5 - First record for Germany**

Records: Bavaria: NE Neufelser, 1 km N Neuburg am Inn, 4 km SSW Passau, *Carpinus* forest near river Inn, 300-320 m, 48.5276°N, 13.4435°E, 12.XI.2021, leg. JS, 3 ♂♂, 14 ♀♀; 13.III.2023, sieving, 6 ♀♀; Jochenstein, 6 km SE Obernzell, mixed mainly deciduous forest (*Fagus*, *Carpinus*, *Quercus*), 300-350 m, 48.5201°N, 13.7128°E, 05.XI.2021, sieving, leg. JS, 3 ♂♂; Vornbacher Bach (bath) SW Vornbach, 10 km SSW Passau, mixed forest (*Acer*, *Carpinus*, *Salix*) with *Corydalis* undergrowth, 310-320 m, 48.4845°N, 13.4333°E, 13.III.2023, sieving, leg. JS, 1 ♂.

Records from adjacent Austria: Salzburg: Scharflinger Sattel S Scharfling, 4 km NE St. Gilgen, mixed forest, 550-600 m, 47.7882°N, 13.3908°E, 17.X.1991, leg. JS, 3 ♂♂, 3 ♀♀, 3 juv.; same locality, 01.XI.2009, 1 ♂, 1 ♀ in copula; same locality, 14.X.2010, 3 juv.; Steinklufte N St. Gilgen am Wolfgangsee, mixed forest, 550-800 m, 47.7769°N, 13.3614°E, 17.X.2005, leg. JS, 2 ♂, 3 ♀♀; Saurüssel N slope, S Aich, Fürbergstr., 1 km E St. Gilgen, mixed forest with *Corylus*, *Fagus*, *Picea*, *Phyllitis scolopendrium*, 540-560 m, 47.7289°N, 13.4836°E, 03.XI.2024, sieving, leg. JS, 4 ♂♂, 9 ♀♀; Upper Austria: Lindau, Auerbachweg, 2 km W Bad Ischl, mixed forest (*Fagus*, *Picea*, *Corylus*), 520-550 m, 47.7121°N, 13.5875°E, 01.XI.2024, sieving, leg. JS, 3 ♂♂, 9 ♀♀, 2 juv.; Lindau, Untere Lindaustr., 2 km W Bad Ischl, mixed forest (*Fagus*, *Picea*, *Corylus*) with *Cyclamen*, 500-520 m, 47.7154°N, 13.5882°E, 03.XI.2024, sieving, leg. JS, 1 ♀.

Remarks: The first record from the northern Alps (Scharflinger Sattel, 17.X.1991, see above) has been given by SPELDA (1996). The species can be recognised by the reduced 9th legpair in males (Fig. 4). In contrast to *Melogona* species adult *Haplogona* females are characterised by their dark parts within the vulvae and the processes at the inner side of the 2nd legpair (Fig. 5). Furthermore, the head is not distinctly darker than the remaining body.



Figure 4: Adult male of *Haplogona oculodistincta* from Bavaria, Jochenstein, 05.XI.2021. Reduced 9th legpair (arrow). Scale bar = 1 mm. Photograph: Jörg Spelda.

***Iulogona tirolensis* (Verhoeff, 1894)**

Records: Bavaria: Weißbachschlucht near Gletschergarten, 2 km NW Weißbach, 9 km W Bad Reichenhall, mixed mainly deciduous forest, 650-680 m, 47.7364°N, 12.7554°E, 10.X.2018, leg. JS, 3 ♂♂; Breitenau, Blaiersäge, 3 km W Kiefersfelden, mixed forest, 530-550 m, 47.6127°N, 12.1455°E, 21.IX.2021, leg. JS, 6 ♂♂, 1 ♀; W Breitenau, 3 km WNW Kiefersfelden, mixed forest, 530-620 m, 47.6172°N, 12.1417°E, 21.IX.2021, leg. JS, 1 ♂; W Mühlau-Karr, 3 km NW Kiefersfelden, mixed forest, 640-670 m, 47.6246°N, 12.1395°E, 21.IX.2021, leg. JS, 5 ♂♂; Ravine W Linderhof castle, 11 km WSW Oberammergau, mixed forest with rocks, 970-1,010 m, 47.5731°N, 10.9539°E, 12.IX.2015, sieving, leg. JS, 1 ♂; Ruin of Werdenfels, 0.6 km W Burgrain, 2 km NNW Garmisch-Partenkirchen, mixed forest, mainly under bark, 760-800 m, 47.5193°N, 11.0925°E, 22.X.2021, leg. JS, 1 ♂; Lahnewiesgraben W Burgrain, 3 km NNW Garmisch-Partenkirchen, mixed forest, near brook, scree, 700-740 m, 47.5223°N, 11.0942°E, 19.X.2021, leg. JS, 1 ♀; Neidernach Valley, 1 km NNW Griesen, 12 km W Garmisch-Partenkirchen, loose, grassy forest, mainly *Picea*, partly rather grazing land, 830-850 m, 47.4832°N, 10.9248°E, 10.X.2023, leg. JS, 1 ♂; Riedberg, 1 km NW Scharnitz, 4 km SSW Mittenwald, mixed forest (*Picea*, *Fagus*, *Acer*, *Pinus*), 930-970 m, 47.3992°N, 11.2521°E, 19.X.2021, leg. JS, 1 ♀.

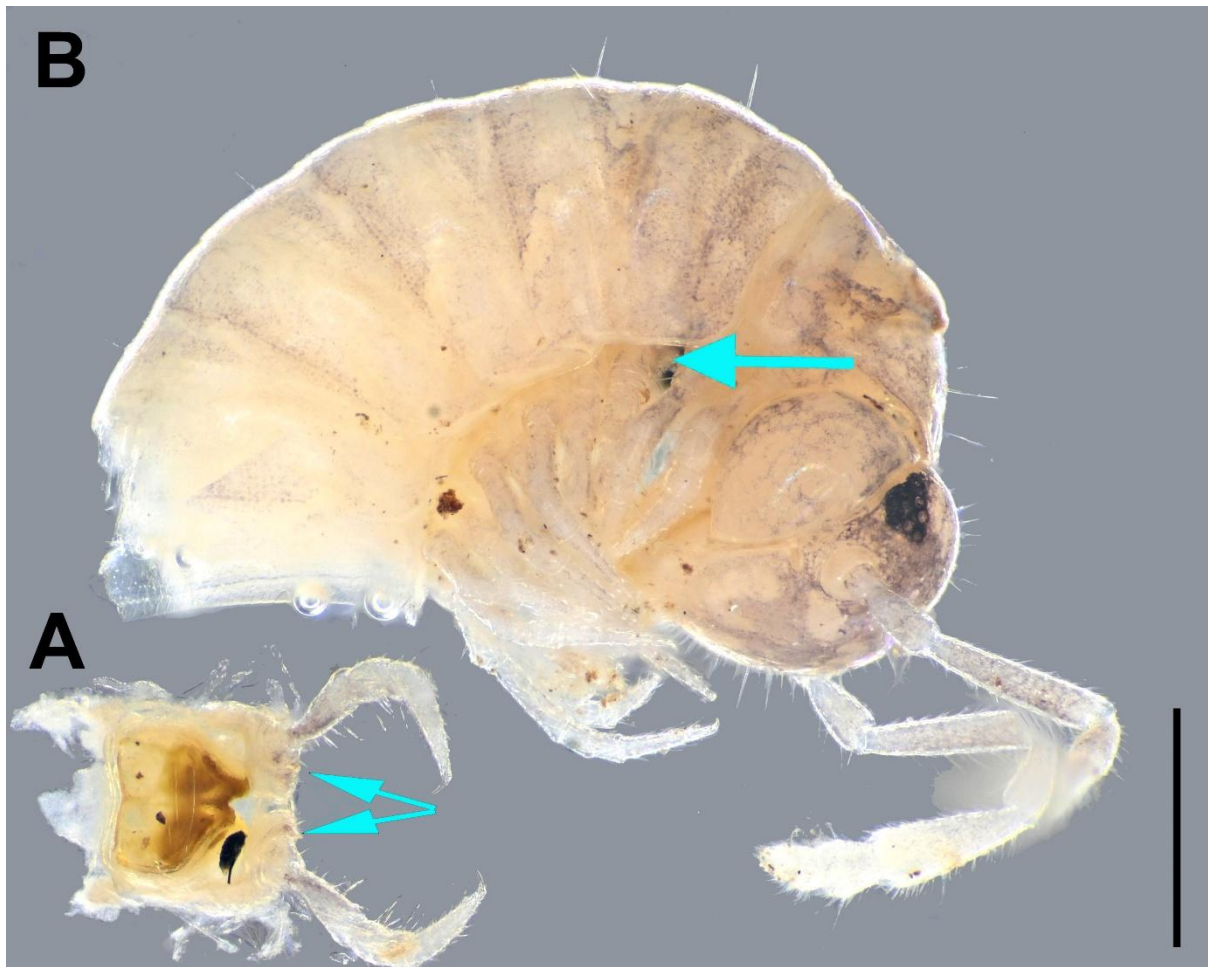


Figure 5: Adult female of *Haplogona oculodistincta* from Bavaria, Neuburg am Inn, 12. XI. 2021. **A:** Isolated vulvae and 2nd legpair in ventral view. **B:** Dark parts within the vulvae and the processes at the inner side of the 2nd legpair (arrows). Scale bar = 500 μ m. Photograph: Jörg Spelda.

***Listrocheiritium cervinum* Verhoeff, 1925**

Record: Bavaria: Untersberg, Salzburger Hochthron, 2 km SW Grödig, 10 km SW Salzburg, *Pinus mugo* shrubbery, 1,750-1,850 m, 47.7153°N, 13.0034°E, 10.X.2018, leg. JS, 1 ♀.

Remarks: The new record of a female confirms the record from 1995 at the Untersberg (REIP et al. 2012), which indicates a well-established population of the species there.

***Listrocheiritium septentrionale* Gulička, 1965, Figs 1, 6 – First record for Germany**

Record: Bavaria: N Kreuzbachklause, 2 km SSE Haidmühle, 7 km NNE Neureichenau, mainly *Picea abies* forest with *Vaccinium myrtillus*, *Sorbus aucuparia* and *Fagus sylvatica*, 910-920 m, 48,8064°N, 13,7891°E, 20.X.2024, sieving, leg. JS, 1 ♂.

Remarks: The species *L. septentrionale* (Fig. 6) has its main distribution area in large parts of Czechia and there are other known occurrences in north-west Lower Austria. The site of the first record for Germany at Kreuzbachklause is only about 15 km from the nearest record of *L. septentrionale* in Czechia near Horní Vltavice and other records of this species close to the German Bavarian border in Czechia

(KOCOUREK et al. 2023). The first record for Germany thus seamlessly connects to the natural distribution area in the neighbouring country, where the species is restricted to spruce forests and bushes and occurs there in climatically different areas (KOCOUREK et al. 2023).



Figure 6: The first German specimen of *Listrocheiritium septentrionale*, adult male. Locality as cited above. Scale bar = 1 mm. Photograph: Jörg Spelda.

***Mastigophorophyllum saxonicum* Verhoeff, 1910**

Remarks: This species reaches its western distribution limit in the area of Saxon Switzerland and on the island of Usedom (HAUSER & VOIGTLÄNDER 2008). *M. saxonicum* is characterized by conspicuous, long macrochaetes and is therefore easily confused with subadult stages of *Craspedosoma rawlinsii*, which has led to repeated false records in the past, as already pointed out by HAUSER & VOIGTLÄNDER (2008). Since the last record in Saxon Switzerland (1974), several excursions by H. Hauser (1997: in the area of the Grosser Zschand), J. Spelda (2008, 2009, 2014) and N. Lindner (2021-2024) have not produced any new records. A similar situation is described for Estonia (SAMMET et al. 2018), and for Latvia (SPUNĢIS 2010), where the species reaches its northern limit and no new records have been recorded since the 1950s.

***Melogona broelemanni* (Verhoeff, 1897), Figs 1, 7A, 8 – First record for Germany**

Records: Bavaria: Passau, Innstadt, E and SE Mariahilf, mixed forest, 320-350 m, 48.5694°N, 13.4713°E, 12.XI.2021, leg. JS, 21 ♂♂, 49 ♀♀; same locality, 17.IV.2023, 1 ♂; Vornbacher Bach (bath) SW Vornbach, 10 km SSW Passau, mixed forest (*Acer*, *Carpinus*, *Salix*) with *Corydalis* undergrowth, 310-320 m, 48.4845°N, 13.4333°E, 13.III.2023, sieving, leg. JS, 2 ♂♂, 6 ♀♀; Hollerner See SE Hollern, 2 km SW Eching, gravel pit, shrubbery, 465-475 m, 48.2863°N, 11.6008°E, 28.III.2023, leg. JS, 1 ♀; W ruin Falkenstein, 1 km S Flintsbach/Inn, 3 km SE Brannenburg, mixed forest with *Acer pseudoplatanus* and *Phyllitis scolopendrium*, 490-510 m, 47.7172°N, 12.1275°E, 20.IV.2016, sieving, leg. JS, 1 ♂; Saxony: Hirschfelde (Ostritz) Neiße Valley, Saupantsche, 50.998°N, 14.912°E, gorge forest (*Arunco-Aceretum*), 26.V.2015, leg. S. Moll, 3 ♂♂; same locality, 18.V.2015, leg. S. Moll, 1 ♂.

Records from adjacent Austria: Salzburg: Kaltenbach NNE Ruine Wildenstein, 1 km SW Bad Ischl, mixed forest, 480-520 m, 47.7016°N, 13.6044°E, 02.XI.2009, leg. JS, 2 ♀♀; Saurüssel N slope, S Aich, Fürbergstr., 1 km E St. Gilgen, mixed forest with *Corylus*, *Fagus*, *Picea*, *Phyllitis scolopendrium*, 540-560 m, 47.7289°N, 13.4836°E, 03.XI.2024, sieving, leg. JS, 2 ♂♂, 2 ♀♀; Upper Austria: SE Bürglstein N Strobl, 10 km WNW Bad Ischl, mixed forest, 540-560 m, 47.7239°N, 13.4955°E, 02.XI.2009, leg. JS, 1 ♂; Lindau, Auerbachweg, 2 km W Bad Ischl, mixed forest (*Fagus*, *Picea*, *Corylus*), 520-550 m, 47.7121°N, 13.5875°E, 01.XI.2024, sieving, leg. JS, 2 ♂♂, 3 ♀♀.

Remarks: The myriapod fauna of the Neiße Valley has been studied since the 1960s in several sampling efforts (e.g. DUNGER et al. 1972, VOIGTLÄNDER & DUNGER 1992). *Melogona voighti* (Verhoeff, 1899) occurs regularly in the Neiße Valley, but only in 2015 *M. broelemanni* could be found there. In August 2010 was there a heavy flood on the Neiße River with water rising up to five meters. *M. broelemanni* was probably transferred from gardens to this site during this heavy flood. Similar happened to *Polydesmus angustus* Latzel, 1884 and *Haplophilus subterraneus* (Shaw, 1794), which were also recorded after the flood for the first time and established with high densities until the present day.

M. broelemanni is widespread in the Balkan Peninsula and is restricted there to mixed forests, bushy habitats, and riparian forests (KIME & ENGHOFF 2021). In Czechia, the most likely origin for the Saxonian specimens, *M. broelemanni* is spreading in gardens, horticulture, parks, on heaps around former mines in Ostrava and Karviná but is also found in semi-cultural and natural landscapes of the White Carpathians (KOCOUREK et al. 2023). It is also found in Czechia in riparian vegetation and forest ecotones near watercourses, which fits very well to the German records in the Neiße Valley. Records from Austria also originate from anthropogenic-influenced habitats, but also from deciduous forests, bushy vegetation, and riparian forests (KURNIK 1987).

The partial COI barcoding sequence of the Saxonian specimen and the Bavarian specimen from Flintsbach am Inn are identical, assuming the same origin of both populations. More data is needed to decide if the Bavarian populations are natural populations or older introductions. For the Saxonian specimen also whole genome shotgun sequencing data is available (GenBank accession no. JAUJYS000000000, COLLINS et al. 2023).

M. broelemanni can be separated by the gonopods from the other species of the genus *Melogona*. Descriptions are given by VERHOEFF (1897) and KURNIK (1987). KURNIK (1987) also provides figures of gonopods and a key to identify female *M. broelemanni*, *M. transsylvanica*, and *M. voightii* with vulvae.

Males of *Melogona broelemanni* and *M. transsylvanica* look quite similar. In contrast to other *Melogona* species they show an acute hyaline backward directed process (green arrows) at the posterior paragonopods (lp 11). This can be seen even in undissected material. For discrimination of the two species the specimens have to be divided between body ring six and seven (Fig. 7), to show the peltogonopodial coxosternum. In *M. broelemanni* it shows three small cranial directed processes (Fig. 7A, red arrows), while in *M. transsylvanica* the coxosternum is blunt in cranial direction but shows a caudal directed short process at the telopodite (Fig. 7B, red arrows).

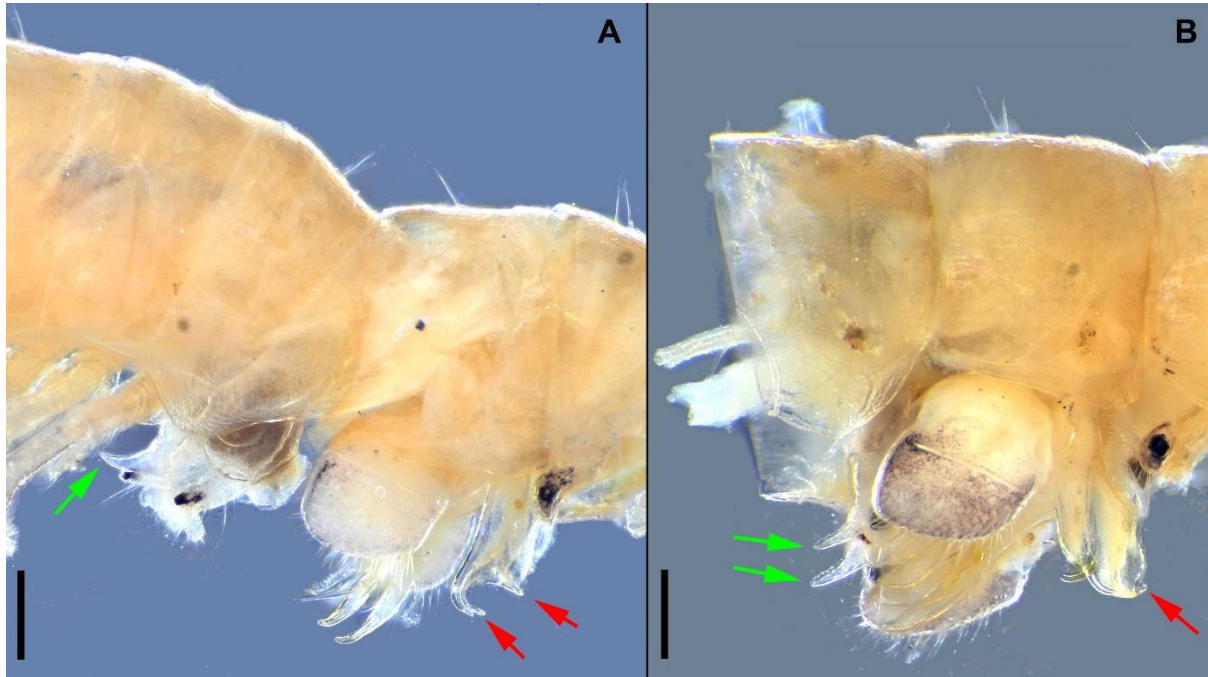


Figure 7: 7th body ring of *Melogona* males in lateral view. **A:** *M. broelemanni*, Bavaria, Passau-Innstadt. **B:** *M. transsylvanica*, Bavaria, Jochenstein. The shared characters of the posterior paragonopods are marked with green arrows, the discriminating features of the peltogonopodial coxosternum with red arrows. Scale bar = 200 µm.

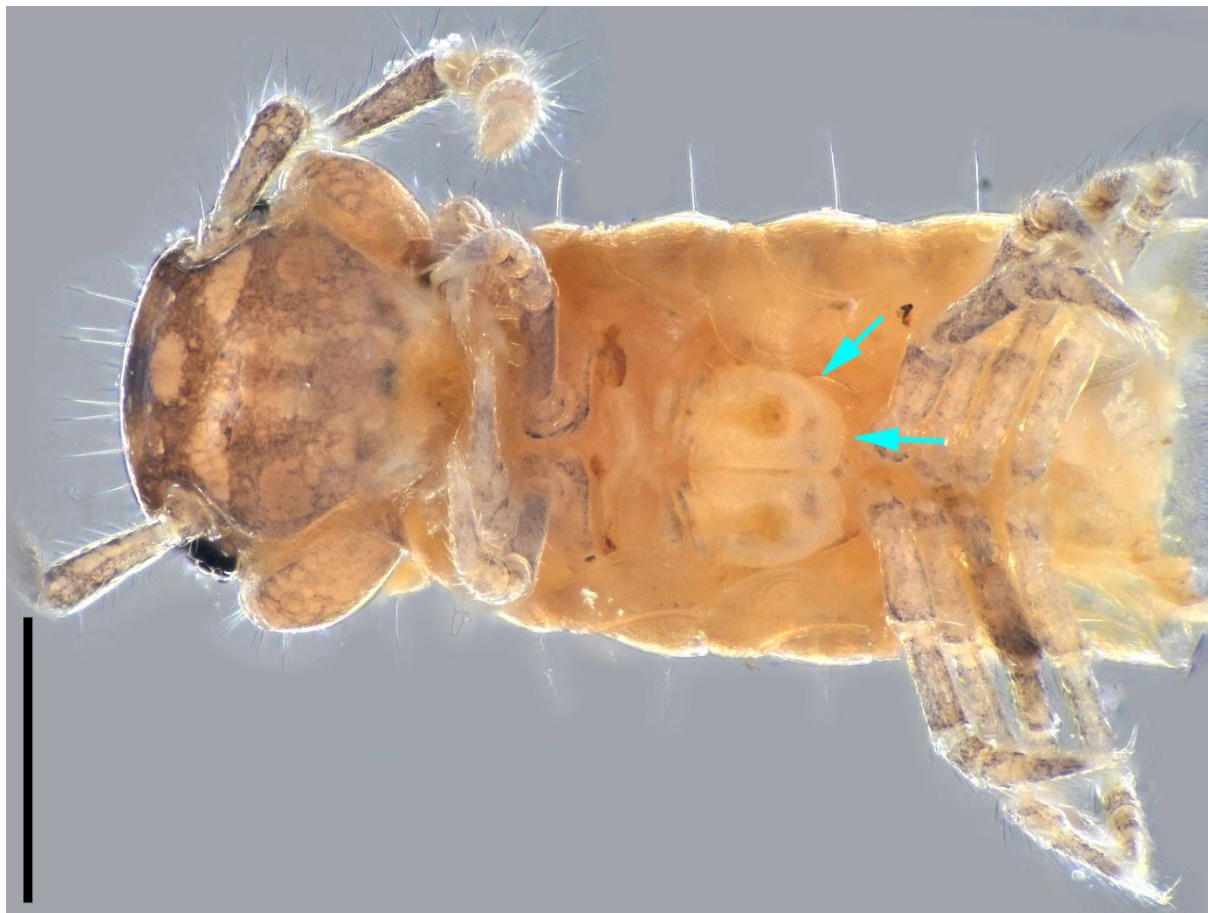


Figure 8: Female of *M. broelemanni*, Bavaria, Passau-Innstadt, in ventral view, arrows pointing to the discriminating characters. Scale bar = 500 µm.

The species *M. broelemanni* and *M. transsylvanica* can also be discriminated in females. In *M. transsylvanica* the bursa of the vulva is distally tapering, laterally emarginate and has a triangular appearance in lateral view (Fig. 9, red arrows). In *M. broelemanni* the bursa shows a broader appearance, the distal part is rounded and the bursa is not emarginate laterally (Fig. 8, red arrows). In contrast to *Haplogona oculodistincta*, *M. broelemanni* and *M. transsylvanica* show a head, which is darker than the other body, a character shared also with *Chordeuma sylvestre*.

***Melogona transsylvanica* (Verhoeff, 1897), Figs 7B, 9**

Records: Bavaria: Kagerer Weg NW Regensburg-Winzer, shrubbery near forest, 340-430 m, 49.0339°N, 12.0469°E, 25.X.2015, leg. JS, 1 ♂, 1 ♀; Winzersteig NW Regensburg-Winzer, shrubbery to mixed deciduous forest, 330-410 m, 49.0337°N, 12.0634°E, 25.X.2015, leg. JS, 2 ♂♂; NW Tegernheim, 5 km WNW Regensburg, mixed mainly deciduous forest, dominated by *Carpinus*, 340-370 m, 49.0299°N, 12.1626°E, 01.XI.2013, leg. F. Hoelzgen, NL & JS, 1 ♂, 2 ♀♀; W Regensburg-Keilberg, 4 km NE Regensburg, mixed deciduous forest on steep slope, soil sample, 380-390 m, 49.0412°N, 12.1468°E, 13.XI.2015, leg. JS, 1 ♂; NE Staubing, W Weltenburg, riparian forest (*Alnus*, *Fraxinus*, *Acer*, *Populus*, *Salix*), 340-350 m, 48.881°N, 11.8168°E, 01.XI.2023, leg. JS, 1 ♂, 1 ♀; E Triftkanal, W Reut, 3 km NE Passau, mixed forest, partly growing on scree, 300-310 m, 48.5977°N, 13.4579°E, 12.XI.2021, sieving, leg. JS, 2 ♂♂; Niederleuthner Steig S Veste Oberhaus N Passau, open mixed deciduous forest (*Carpinus*, *Quercus*) on steep slope, 300-400 m, 48.5777°N, 13.4665°E, 22.III.2023, leg. JS, 1 ♀; Künstlerweg S Schloss Neuburg, Neuburg am Inn, 6 km SSW Passau, mixed forest, partly on scree, 380-390 m, 48.5051°N, 13.4496°E, 12.XI.2021, sieving, leg. JS, 1 ♀; Eidenberger Lusen NE Eidenberg, 3 km SSW Wegscheid, mixed forest, mainly between scree, 650-700 m, 48.5703°N, 13.7831°E, 05.XI.2021, sieving, leg. JS, 1 ♂; N Jochenstein, 6 km SE Obernzell, mixed mainly deciduous forest (*Fagus*, *Carpinus*, *Quercus*, *Corylus*), scree, 300-350 m, 48.5201°N, 13.7128°E, 05.XI.2021, leg. JS, 1 ♀; same locality, 22.III.2023, sieving, 1 ♂; Rambachtal 1 km NW Jochenstein, 4 km SE Obernzell, mixed mainly deciduous forest (*Fagus*, *Carpinus*, *Quercus*), scree, 290-390 m, 48.5291°N, 13.6955°E, 19.XI.2021, leg. JS, 4 ♂, 4 ♀♀.

Remarks: While *M. broelemanni* is a species of river valleys and anthropogenic habitats, *M. transsylvanica* prefers rather natural habitats. In Germany, it is only known from south-east Bavaria.

KURNIK (1987) provides figures of gonopods and a good key to identify females of *M. broelemanni*, *M. transsylvanica*, and *M. voigtii* with vulvae. For diagnostic differences between males of *M. broelemanni* and *M. transsylvanica*, including illustrations (Figs 7–8), see the remarks on *M. broelemanni* above.

***Nanogona polydesmoides* (Leach, 1814)**

Records: North Rhine-Westphalia: Hagen-Delstern, meadow in forest, under heap of mowed grass at edge of meadow, approx. 180 m, 26.IX.2020, leg. M. Drees; Schleswig-Holstein: Bad Segeberg, Kalkberg Cave, near the entrance free crawling, 19.I.2022, leg. D. Haseloh, 2 ♂♂.

Remarks: The species has its natural distribution area in Great Britain, Ireland, France, Belgium, and Italy, and is also known synanthropically from the Danish mainland, Sweden, and Norway (KIME & ENGHOF 2021). *N. polydesmoides* colonises a wide range of different habitats and is often found in caves and karst areas (KIME & ENGHOF 2021). The species is only known from two afforested colliery spoil heaps in the Ruhr area (DECKER & HANNIG 2010), a hedge in Aachen (DECKER et al. 2015), the two new records from a meadow in the Sauerland, and from the Kalkberg cave in Bad Segeberg. While most of

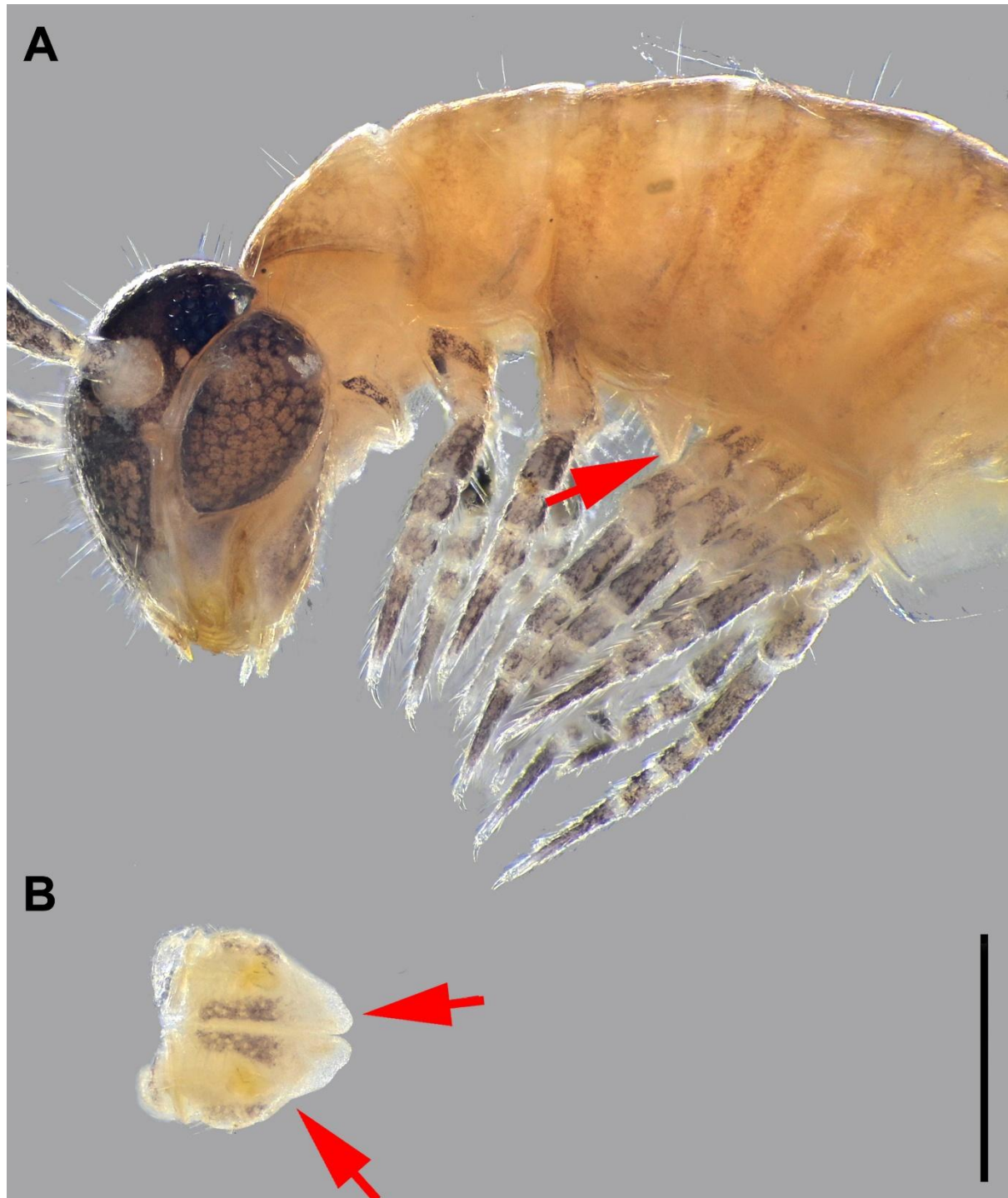


Figure 9: Female of *M. transsylvanica*, Bavaria, Neuburg am Inn. **A:** in lateral view. **B:** Isolated vulvae below, arrows pointing to the discriminating characters. Scale bar = 500 µm.

the records in Germany are based on dispersal, it is still unclear whether the westernmost find near Aachen still belongs to a natural population. The Kalkberg cave was intensively investigated by Erna Mohr from 1928/29 and 1934/35 to 1962 and a number of myriapod species were found (MOHR 1929, 1930, 1937), but not *N. polydesmoides*. The recent finding of two males not far from the cave entrance is therefore a recent introduction, maybe migrated from the forested surrounding or introduced by visitors, as the cave has been open to the public with heavy visitor traffic since 1930.

***Ochogona brentana* (Verhoeff, 1928)**

Records: Bavaria: W ruin Falkenstein, 1 km S Flintsbach/Inn, 3 km SE Brannenburg, mixed forest with *Acer pseudoplatanus* and *Phyllitis scolopendrium*, scree with humus in between, 490-510 m, 47.7172°N, 12.1275°E, 20.IV.2016, sieving, leg. JS, 1 ♂; same locality, 17.III.2017, 2 ♂♂; 7 ♀♀.

Remarks: Due to the short and late time of maturity from the end of autumn to early spring (THALER et al. 1986), a period during which myriapods are usually not yet collected, and the small size (7-10 mm), the species is difficult to record.

***Ochogona regalis* (Verhoeff, 1913)**

Records: Bavaria: Burgstallkopf 1 km N Loipl, 6 km NW Berchtesgaden, heath-like mixed open forest, mainly *Picea abies*; 770-860 m, 47.6656°N, 12.9315°E, 25.XI.2018, leg. JS, 1 ♂; NNW Dammkarhütte, 3 km E Mittenwald, shrubbery with *Pinus mugo*, *Sorbus*, *Rhododendron*, *Alnus*, *Salix*, 1,500-1,600 m, 47.4393°N, 11.3073°E, 04.X.2023, sieving, leg. JS, 1 ♂; 1 km NW Schottmalhorn, 1 km SE Funtensee, 17 km SW Berchtesgaden, subalpine forest (*Larix*, *Pinus mugo*) with pastures, 1,650-1,070 m, 47.4854°N, 12.9443°E, 01.VII.2014, leg. S. Friedrich & JS, 1 ♀.

Remarks: Originally ATTEMS (1895) described *Atractosoma triaina* from Styria (Austria), while VERHOEFF (1913a) described *Ceratosoma regale* from Bavaria (Königssee). He already pointed out the close relationship of both species but argued that these are different species due to Attems' description. Even in the same year VERHOEFF (1913b) found two other populations of the same species complex, which he described as subspecies of *regale*: *Ceratosoma regale ischliense* from Bad Ischl and *C. r. palfnerense* from near Bad Gastein. In his faunistic publication about the myriapod fauna of the Eastern Alps, ATTEMS (1949) treated all taxa as subspecies of *triaina*, now under the genus name *Asandalum*, as it turned out that the name *Ceratosoma* was already preoccupied. The presently accepted genus name *Ochogona* was validated by HOFFMAN (1980). At present it is still unresolved if taxa cited above are only synonyms of *triaina* or represent separate species or subspecies. A revision including genetic data is urgently needed. At present genetic data is only available for *regalis* and *ischliense*, suggesting that at least *ischliense* is a synonym of *regalis*. Until a final revision it is better to keep the taxa *regalis* and *triaina* separate, as it has been done in KIME & ENGHOF (2021). Consequently, the name *Ochogona regalis* has to be used for the populations of Germany and western Austria. Unfortunately, KIME & ENGHOF (2021) included the *O. regalis* records also in their map for *O. triaina*. While *O. regalis* was formerly believed to reach its western border at the Inn Valley, a new record from the Karwendel Massiv extends the distribution further westward.

***Orthochordeumella fulva* (Rothenbühler, 1899)**

Remarks: The records of Lower Austria (GRUBER 2005) contradict the known biogeographic patterns. GRUBER (2005) already discussed possible explanations. The species requires attention, as it may occur in other parts of the lower mountain range of Central Europe.

***Rhymogona cervina* (Verhoeff, 1910)**

Record: Baden-Württemberg: S Schlattstall, 8 km NE Bad Urach, edge of deciduous forest, 510-540 m, 48.5247°N, 9.4994°E, 01.XI.2017, leg. JS, 1 ♀.

Remarks: The female specimen, which could be identified as a member of genus *Rhymogona*, is assigned to *R. cervina* due to the known distribution of the *Rhymogona* species.

Order Polydesmida***Acanthotarsius edentulus* (C. L. Koch, 1847) comb. nov., Fig. 10**

Polydesmus edentulus C. L. Koch, 1847: 134

Records: Bavaria: Schärtenspitze 10 km WSW Berchtesgaden, 1,760-1,770 m, 47.58°N, 12.87°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♂, 1 ♀.

Records from adjacent Austria: Salzburg: Scharflinger Sattel S Scharfling, 4 km NE St. Gilgen, 550-600 m, 47.7882°N, 13.3908°E, 14.X.2010, leg. JS, 1 ♂*, 1 ♀*; Himmelspforte W Schafbergspitze, 3 km NNW Sankt Wolfgang, 1,600-1,780 m, 47.7767°N, 13.4307°E, 05.IX.2010, leg. JS, 1 ♂*; Upper Austria: Koppenbrüller Höhle 2 km NE Obertraun, mixed forest outside cave, 535-550 m, 47.5674°N, 13.7208°E, 06.X.1995, leg. JS, 2 ♂♂, 2 ♀♀; Krippenstein, 4 km S Obertraun, 2,050-2,100 m, 47.7882°N, 13.3908°E, 06.X.1995, leg. JS, 1 ♂, 1 ♀, 2 juv.

Remarks: Beside the record given by VERHOEFF (1929) from the Partnachklamm, which was already questioned by himself in the same publication, this is the first verified record from Germany. The specimens marked with an asterisk have been successfully used for DNA barcoding and are genetically confirmed.

The genus *Polydesmus* had a broad concept for a long time and would also include *Acanthotarsius* Verhoeff, 1931. ENGHOF et al. (1997) already pointed out that the genus taxon *Acanthotarsius* shows strong relations to two members of the genus *Serradium* (including the type species *S. hirsutipes* Verhoeff, 1941), which implies the treatment of *Acanthotarsius* as distinct from *Polydesmus*. However, a synonymisation of *Serradium* under *Acanthotarsius* would have meant to exclude some *Serradium* species from *Acanthotarsius* and leave them orphaned. Therefore, ENGHOF et al. (1997) hesitated to formalise the synonymisation and upgrading, leaving it for a comprehensive revision of the family Polydesmidae. A few years later DJURSVOLL et al. (2000) separated the genera *Propolydesmus*, *Soleurus* and *Pseudomastuchus* from *Polydesmus* but treated the subgenera *Acanthotarsius*, *Hormobrachium* and several other subgenera as subjective synonyms of *Polydesmus*, even suggesting that *Serradium* might also belong to *Polydesmus* sensu strictu, referring to ENGHOF et al. (1997). Since the transfer of the former subgenus *Hormobrachium* from *Polydesmus* to *Propolydesmus* (ENGHOFF & GOLOVATCH 2003) it is very difficult now to assign members of other former subgenera of *Polydesmus* sensu lato to one of the two genera *Polydesmus* or *Propolydesmus*. Especially the members of the subgenus *Acanthotarsius*

with their very special gonopod conformation fit neither in *Polydesmus* nor in *Propolydesmus*. The deficient treatment of the taxa *Acanthotarsius* and *Serradium* in DJURSVOLL et al. (2000) was already stated by ENGHOFF & GOLOVATCH (2003). The consequence is to upgrade *Acanthotarsius* now as distinct genus (**stat. nov.**), which includes the genus *Serradium* (**syn. nov.**) as based on its type species *S. hirsutipes*. *Polydesmus* (*Acanthotarsius*) *edentulus* as the type species of the former subgenus *Acanthotarsius* becomes *Acanthotarsius edentulus* **comb. nov.**

Diagnosis: Members of the family Polydesmidae with the caudal (posterior) side of the gonopod exomerite covered with long, proximal directed spines (Fig. 10, red arrow); solenomere missing, pilose pulvillus associated with a spine-shaped distofemoral process.

Members: *Acanthotarsius edentulus* (C. L. Koch, 1847) **comb. nov.**, *A. hirsutipes* (Verhoeff, 1941) **comb. nov.**, *A. longicornis* (Silvestri, 1895) **comb. nov.**, *A. pecinarum* (Strasser, 1971) **comb. nov.**, *A. pseudoedentulus* (Mrsić, 1986) **comb. nov.**, *A. robiniarum* (Verhoeff, 1926) **comb. nov.**, *A. shbordoni* (Strasser, 1975) **comb. nov.**, *A. semiaquaticum* (Enghoff, Caoduro, Adis & Messner, 1997) **comb. nov.**, *Acanthotarsius spiliarum* (Strasser, 1974) **comb. nov.**

The taxa *A. longicornis*, *A. pecinarum*, *A. shbordoni* and *A. spiliarum* do not fit into the concept sensu strictu of *Acanthotarsius* and need further taxonomical revisions to evaluate their generic affiliation within the family Polydesmidae.



Figure 10: German specimen of *Acanthotarsius edentulus*. Locality as cited above. Spines on gonopods marked with red arrow. Green spots are probably artefacts of preservation fluid (contained acetic acid). Photograph: Jörg Spelda. Scale bar = 200 µm.

***Ophiodesmus albonanus* (Latzel, 1895)**

Record: Saxony: Osterzgebirge, Freital, Coßmannsdorf, Rabenauer Grund, hillside forest on the edge of the village, under stone at the foot of the slope, 50.972°N, 13.618°E, 25.V.2021, leg. NL, 1 ♀.

Remarks: The record of this synanthropic species in Germany in this near-natural habitat could be the result of immigration or introduction from the outskirts of the small town (gardens, compost).

***Polydesmus monticola* Latzel, 1884**

Records: Bavaria: 1 km NW Schottmalhorn, 1 km SE Funtensee, 17 km SW Berchtesgaden, subalpine forest (*Larix*, *Pinus Mugo*) with pastures, 1,650-1,750 m, 47.4854°N, 12.9443°E, 01.VII.2014, leg. S. Friedrich & JS, 1 ♀.

Remarks: During investigations in and around the Berchtesgaden National Park in 2021 the species has been recorded from 17 sites. *P. monticola* is a moderately common species in this area in subalpine forests and pastures at 600 to 2,260 m.

***Propolydesmus germanicus* (Verhoeff, 1896)**

Remarks: This West-Continental and Central European species (KIME & ENGHOF 2011) reaches its distribution limit in Germany along the Harz-Regensburg-Inn line (VERHOEFF 1916, 1917) and was previously classified as quite rare (REIP et al. 2012). In addition to sites with bedrock (nature reserve Tote Täler in Saxony-Anhalt), the species has been recorded very frequently from fields and meadows as well as other open, sunny habitats and then only rarely in mountains (VOIGTLÄNDER 2000). *P. germanicus* is generally not recorded using conventional trapping methods such as pitfall traps or hand collecting, as the species reaches its maximum settlement density at a soil depth of 10-25 cm (HERBKE 1962, PETERS 1984), occasionally even down to a depth of 90 cm in the walls of earthworm tunnels (REMUS 1969). In recent studies on arable land in the Rhein-Sieg district (North Rhine-Westphalia), which are occasionally flooded, high abundances of this species were found in net traps (filled with plant cuttings) burrowed up to 30 cm deep in the soil (Leif Moritz & Thomas Wesener – pers. comm.).

***Propolydesmus helveticus* (Verhoeff, 1894)**

Record: Baden-Württemberg: NW Grenzach-Wyhlen, Hörnle (street), 2 km ESE Basel, garden, 265 m, 47.5634°N, 7.6359°E, 17.IX.2016, leg. S. Huber, 4 juv. ♂♂, 2 juv. ♀♀.

Remarks: The present knowledge of this species suffers from a recording bias, as there had been no recent surveys in the Southern Upper Rhine Valley since 2010. Thus, the only new record comes from a sample sent to JS by Siegfried Huber.

Order Julida***Archiboreoiulus pallidus* (Brade-Birks, 1920)**

Remarks: We suppose that this species is more common in northwest Germany, but due to its occurrence in deeper soil layers, it is usually not recorded using conventional survey methods which probably reduces the number of records.

***Boreoiulus tenuis* (Bigler, 1913)**

Records: Brandenburg: Chorin, Joachimsthal, Valley cut Werbellin-Kanal, at Jägerberg, mixed forest, in leaf litter, 52.9593°N, 13.7498°E, 18.X.2019, leg. HR, 2 ♀♀, 2 juv., 2 sp.; Hamburg: Hamburg, Stadtring Pflanzen un Blumen, north side, east and west of Binnenalster, park area with various deciduous trees, in fresh leaf litter, 53.5574°N, 9.9967°E, 11.XI.2021, leg. HR, 2 ♂♂, 5 ♀♀; Hamburg, Stadtring Pflanzen un Blumen, south-westend, below Stintfang, park area with various deciduous trees, in fresh leaf litter, 53.5461°N, 9.9720°E, 11.XI.2021, leg. HR, 1 ♀; Saxony: Osterzgebirge, Freital, Coßmannsdorf, Rabenauer Grund, hillside forest on the edge of the village, under a stone at the foot of the slope, 50.972°N, 13.618°E, 25.V.2021, leg. NL, 2 ♀♀; Thuringia: Krachichfeld, Hohenfelden, Katzenberg, south side, mixed forest (*Pinus*, *Fagus*, *Ligustrum*), in leaf litter, 50.8873°N, 11.1382°E, 16.VI.2012, leg. HR, 1 ♂, 2 ♀♀; Königsee, Allendorf, Allendorfer Höhle, in the cave, on sinter stone, 50.6603°N, 11.1493°E, 04.V.2024, leg. E. Göbel, 1 ♀.

Remarks: This smallest German Blaniulid species has a western European distribution centre (KIME & ENGHOF 2017). In Germany, as in the whole of north-eastern Europe, the species tends to occur in habitats with calcareous soils and shows a strong preference for synanthropic habitats (see also records above), especially in urban environments (gardens, parks, churchyards, greenhouses, shrubby areas), more rarely in agricultural fields, dry meadows and copses.

The above-mentioned records Jägerberg, Katzenberg and Rabenauer Grund, where *B. tenuis* was found in semi-natural habitats, are all located close to villages. Dispersal with garden waste or soil or immigration from settlements could be a reason for these findings.

***Brachyiulus jawlowskii* Lohmander, 1928, Figs 1, 11 – First record for Germany**

Record: Bavaria: Landshut, Ochsenau, NSG "Ehemaliger Standortübungsplatz Landshut mit Isarleite", sheep's fescue grassland, 48.5602°N, 12.2069°E, 10.VI.1994, pitfall traps, leg. O. Fischer-Leipold & D. Leipold, 1 ♂.

Remarks: According to KIME & ENGHOF (2017) this species is distributed in the forest-steppe belt from Kazakhstan, Russia, Ukraine, reaching Moldova in the south, Romania, and reaching its western distribution border in Poland. In Germany, *B. jawlowskii* has only been recorded once in Bavaria, in the Ochsenau, situated in the Isar Valley. There it was found in the nature reserve 'Ehemaliger Standortübungsplatz Landshut mit Isarleite' on a very homogeneous dry calcareous meadow with low ground cover of the dominant sheep's fescue (*Festuca ovina*) which is surrounded by large sheep pasture (LEIPOLD & LORENZ 1995). The area was used for military purposes from 1880 to 1993/94. *B. jawlowskii* is therefore a neobiota that was probably introduced by military vehicles and could also occur in other military training areas.

This species can be only differentiated from *Brachyiulus pusillus* (Bosc, 1792) and other species of the genus by gonopods in males (Fig. 11). Good descriptions are provided by LOHMANDER (1928) and SCHUBART (1934), for a photo see JASTRZEBSKI (2012).

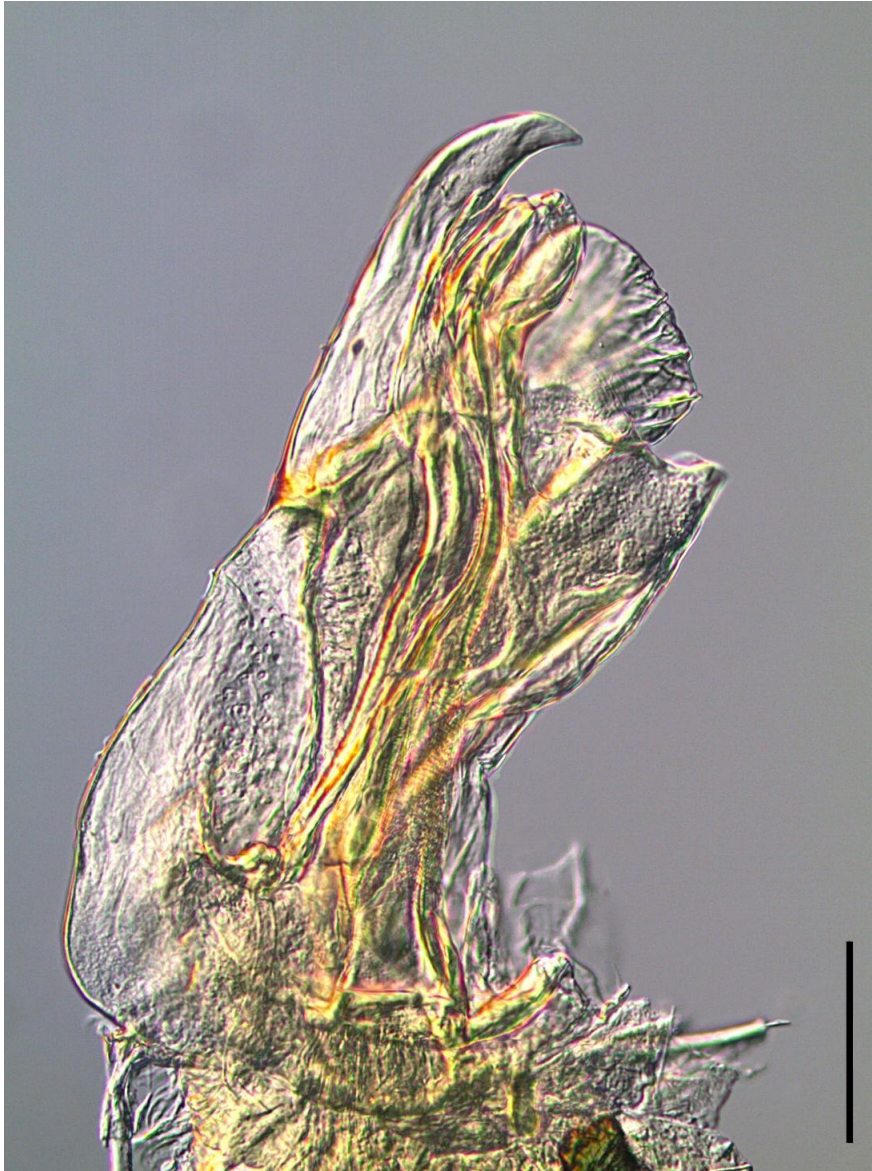


Figure 11: Male *Brachyiulus jawlowskii* from Ochsenau, left male gonopod, medial view. Scale bar = 100 µm.

***Cylindroiulus boleti* (C. L. Koch, 1847)**

Records: Bavaria: Mettenbach Valley, Markt Metten E of monastery, 3 km NW Deggendorf, 310-350 m, 48.5538°N, 12.9201°E, 17.IV.2023, leg. JS, 3 ♂♂, 2 ♀♀, 1 juv. ♀; NE Neufelser, 1 km N Neuburg am Inn, 4 km SSW Passau, mixed forest, partly on scree, partly brook valley, partly near river, 300-340 m, 48.5271°N, 13.4439°E, 13.III.2023, sieving, leg. JS, 1 ♀; Niederleuthner Steig S Veste Oberhaus N Passau, open mixed deciduous forest (mainly *Carpinus*, *Quercus*) on steep slope, 300-400 m, 48.5777°N, 13.4665°E, 22.III.2023, leg. JS, 2 ♂♂, 2 ♀♀, 1 juv. ♀; Passau-Hals, 2 km NE Passau, mixed forest, shrubbery, 300-360 m, 48.5928°N, 13.4609°E, 17.IV.2023, leg. JS, 2 ♂♂, 1 ♀; Passau, Innstadt, E and SE Mariahilf, mixed forest, 320-350 m, 48.5694°N, 13.4713°E, 17.IV.2023, leg. JS, 5 ♀♀, 1 juv. ♂, 5 juv. ♀♀; Passau-Ingling, 2 km SW Passau, mixed forest, 300-320 m, 48.5464°N, 13.4385°E, 17.IV.2023, leg. JS, 1 ♂; Donauleiten near closed railway NE Erlau, 9 km E Passau, partly open mixed deciduous forest (*Carpinus*, *Quercus*) with *Scilla bifolia*, 310-320 m, 48.5693°N, 13.5855°E, 22.III.2023, leg. JS, 1 ♀, 1 juv.

♂; N Jochenstein, 6 km SE Obernzell, mixed mainly deciduous forest (*Fagus, Carpinus, Quercus*), soil sample, 300-350 m, 48.5204°N, 13.7144°E, 05.XI.2021, leg. JS, 1 juv. ♂; same locality, 22.III.2023, 3 ♀♀.; Vornbacher Bach Valley SW Vornbach, 10 km SSW Passau, mixed forest (*Acer, Carpinus, Salix*) with *Corydalis* undergrowth, 310-320 m, 48.4845°N, 13.4333°E, 13.III.2023, sieving, leg. JS, 4 ♂♂, 2 ♀♀, 1 juv. ♀; riparian forest S Vornbach, 10 km S Passau, 300-310 m, 48.4795°N, 13.4359°E, 13.III.2023, leg. JS, 1 ♂.

Remarks: *C. boleti* is a species of southeastern Europe, which reaches in eastern Bavaria its western border along the Danube Valley and its tributary rivers Inn and Salzach. In Germany it is mainly occurring in riparian forests.

***Cylindroiulus fulviceps* (Latzel, 1884)**

Remarks: This species was recorded over the last years from 15 localities in Upper Bavaria from 400 up to 1,600 m in mixed forests (*Acer pseudoplatanus, Corylus avellana, Fagus sylvatica, Picea abies*) and shrubberies (*Pinus mugo, Sorbus aucuparia, Rhododendron hirsutum, Erica carnea, Alnus alnobetula, Salix*)

***Cylindroiulus luridus* (C. L. Koch, 1847)**

Records: Bavaria: NE Buchbergmühle, 3 km W Freyung, mixed forest, scree, 440-460 m, 48.8124°N, 13.5022°E, 31.X.2021, sieving, leg. JS, 1 ♂; Passau-Hals, 2 km NE Passau, mixed forest, shrubbery, 300-360 m, 48.5928°N, 13.4609°E, 17.IV.2023, leg. JS, 1 ♂, 2 ♀♀, 1 juv. ♂, 2 juv. ♀♀; Passau-Reut, 3 km NE Passau, mixed forest, shrubbery, 295-365 m, 48.5967°N, 13.4631°E, 17.IV.2023, leg. JS, 1 ♂, 3 ♀♀, 1 juv. ♀; Passau, Innstadt, E and SE Mariahilf, mixed forest, 320-350 m, 48.5694°N, 13.4713°E, 12.XI.2021, leg. JS, 1 juv. ♀, 17.IV.2023, 4 ♀♀, 2 juv. ♂♂, 2 juv. ♀♀; Künstlerweg S Schloss Neuburg, Neuburg am Inn, 6 km SSW Passau, mixed forest, partly on scree, 380-390 m, 48.5051°N, 13.4496°E, 12.XI.2021, leg. JS, 3 ♀, 1 juv. ♀; Passau-Ingling, 2 km SW Passau, mixed forest, 300-320 m, 48.5464°N, 13.4385°E, 17.IV.2023, leg. JS, 1 ♀, 1 juv. ♀; Donauleiten E of "Am Sonnenhang" NE Erlau, 9 km E Passau, partly open mixed deciduous forest (*Fagus, Carpinus, Quercus*), 310-340 m, 48.5688°N, 13.5839°E, 22.III.2023, leg. JS, 1 ♂, 2 ♀♀, 1 juv. ♀; Donauleiten near closed trailway NE Erlau, 9 km E Passau, partly open mixed deciduous forest (*Carpinus, Quercus*) with *Scilla bifolia*, 310-320 m, 48.5693°N, 13.5855°E, 22.III.2023, leg. JS, 1 ♀, 2 juv. ♂♂, 1 juv. ♀; Kohlbachtal N Kohlbachmühle, 2 km SE Obernzell, mixed mainly deciduous forest (*Fagus, Carpinus, Quercus*), *Cyclamen purpurescens, Leucojum vernum*, 300-320 m, 48.5464°N, 13.4385°E, 22.III.2023, leg. JS, 2 juv. ♀; Hochwiestobel 1 km SW Leithen, 8 km E Passau, mixed, mainly deciduous forest on scree, brook valley, 300-330 m, 48.5761°N, 13.5461°E, 05.XI.2021, leg. JS, 1 ♀; N Jochenstein, 6 km SE Obernzell, mixed mainly deciduous forest (*Fagus, Carpinus, Quercus*), 300-350 m, 48.5204°N, 13.7144°E, 05.XI.2021, leg. JS, 1 ♂, 22.III.2023, 2 ♂♂, 1 juv. ♀; Vornbacher Bach Valley SW Vornbach, 10 km SSW Passau, mixed forest (*Acer, Carpinus, Salix*) with *Corydalis* undergrowth, 310-320 m, 48.4845°N, 13.4333°E, 13.III.2023, sieving, leg. JS, 1 ♂, 2 juv. ♀♀.

Remarks: With *C. luridus*, we have another species of southeast European provenance, which reaches its western border in eastern Bavaria. It prefers natural forests on stony substrate, but may also be found in riparian forests, where the species occur sympatrically with *C. boleti*.

***Cylindroiulus vulnerarius* (Berlese, 1888)**

Remarks: So far, only three records of the species, which originates from Italy, have been found: In a garden in Waltrop (DECKER & HANNIG 2011), in the outdoor area of the Botanical Garden of the Ruhr University Bochum (DECKER et al. 2015) and in a greenhouse of the Botanical Garden in Potsdam (DECKER et al. 2014). Therefore, the species is likely to be found in other gardens and parks in Germany.

***Julus terrestris* Linnaeus, 1758**

Records: Brandenburg: Fittesee, Lower Oder Valley National Park, riparian forest (*Salix alba*) along a lakeside, 1 m, route from 53.065°N, 14.322°E to 53.057°N, 14.308°E, 01.VI.2021, leg. NL, 7 ad., 4 juv. ♂♂, 22.IX.2021, 6 ad., 1 juv. ♀♀.

Remarks: *J. terrestris* has an Eastern European type of distribution. According to KIME & ENGHOF (2017), it occurs from the southernmost part of Finland and south-east Sweden in the north to Serbia and Romania in the South and to northern Ukraine in the east, with records in the Baltic countries, Poland, Belarus, Slovakia, Hungaria, Slovenia, and north-east Croatia. The distribution area touches Germany in its easternmost part.

The closely related species *J. scanicus* was separated from *J. terrestris* by Lohmander in 1925. Therefore, historical records of *J. terrestris* had to be verified, which was done for the area of Germany by SCHUBART (1931). REIP et al. (2012) erroneously assigned the old record from Bad Oldesloe (Schleswig-Holstein) to *J. terrestris*, although it matches *J. scanicus* (SCHUBART 1931). Only the records from the island of Usedom (SCHUBART 1931, 1934) and from Rahnsdorf at Berlin's Müggelsee (SCHUBART 1931, 1957) can still be assigned to *J. terrestris*. During an excursion in 2021 in the area of the island of Usedom and the neighbouring mainland (the north-easternmost area of Germany) no evidence was found that the population still exists. The original habitat of the sample site at lake Müggelsee – a meadow with *Salix* north of the Spree flowing into the lake – no longer exists, as it is now an urban area. Perhaps, comparable habitats can still be found to the east and south of it. The recent records mentioned above confirm the existence of the only population currently known in Germany in the Lower Oder Valley, which was intensively investigated by ZERM (1997). *J. terrestris* is here apparently well-adapted to regular flooding. However, the extent to which the population has grown to cope with the extreme floods that are becoming more frequent as a result of climate change, must be critically examined.

Historic (German) records from sites in Tschicherzig (Cigacice) and Meseritz (Międzyrzecz) at the rivers Oder (Odra) and Obra (SCHUBART 1957) in present-day Poland suggest that the species could also occur further south of the currently known occurrence, maybe in the Oderbruch region.

Still unknown is the effect of the Oder environmental disaster in August 2022, on the local population of *J. terrestris*. This mass mortality (especially fish and other water organisms) event was most probably caused by an algal bloom, which was made possible by the discharge of saline industrial wastewater into the river during summer heat and lower water levels.

***Leptoiulus alemannicus* (Verhoeff, 1892)**

Records: Bavaria: Nebelhorn, S-slope, 4 km ENE Oberstdorf, stony alpine pastures, scree, 2,000-2,100 m, 47.4201°N, 10.3479°E, 30.IX.2021, leg. JS & HR, 1 ♂, 2 ♀♀; Hinteres Dammkar, 3 km ESE Mittenwald, rubble with sparse vegetation, 2,120-2,200 m, 47.4316°N, 11.3039°E, 04.X.2023, leg. JS,

1 ♂; Dammkarhütte, 3 km E Mittenwald, rubble, alpine pasture with *Pinus mugo* shrubbery and rubble, 1,650-1,680 m, 47.4369°N, 11.3088°E, 04.X.2023, leg. JS, 2 ♂♂; Gatterschwand N Spitzwand, quarry, 1 km S Rohrmoos, 8 km W Oberstdorf, scree, subalpine mixed forest (*Pinus mugo*, *Picea abies*), 1,200-1,330 m, 47.3927°N, 10.1583°E, 29.IX.2021, leg. HR & JS, 2 ♂♂; Gottesacker, 1 km ENE Hoher Ifen, 6 km WNW Riezlern, stony alpine pastures and shrubbery, 1,830-1,940 m, 47.3664°N, 10.1092°E, 02.X.2021, leg. JS, 2 ♂♂, 1 ♀; Gottesackeralpe-Gottesackerloch, 2 km ENE Hoher Ifen, 6 km WNW Riezlern, deep ravine with stony alpine pastures and shrubbery, 1,780-1,830 m, 47.3707°N, 10.1145°E, 02.X.2021, leg. JS, 2 ♀♀.

Remarks: In Germany, the species occurs in the Allgäu Alps and was recently rediscovered in the Karwendel massiv. All records are from areas above the timberline.

There had been much confusion about the identity and diagnosis of the two species *L. alemannicus* and *L. simplex* until the final definitions of the subtaxa of the *alemannicus*-group were published by VERHOEFF (1908: 435-446). Until this time, all subtaxa were still included in the taxon "*Julus alemannicus*". Therefore, several old records, especially from lower altitudes in Bavaria and adjacent Austria, need to be verified.

***Leptoiulus marcomannius* (Verhoeff, 1892)**

Records: Bavaria: 1 km S Bayerisch Eisenstein, mixed *Fagus* forest, 820-830 m, 49.10875°N, 13.1979°E, 10.-30.VIII.2021, leg. S. Kleinfelder, 1 ♂; 1 km S Bayerisch Eisenstein, mixed forest *Picea abies*, *Abies alba*, 730-750 m, 49.10758°N, 13.1979°E, 16.VIII.-08.IX.2021, leg. S. Kleinfelder, 1 ♀; Lusen, Himmelsleiter, 3 km ENE Waldhäuser, 9 km NNE Grafenau, forest clearing (formerly *Picea abies*), boulder area, 1,250-1,373 m, 48.9388°N, 13.5053°E, 04.IX.2013, leg. JS, 2 ♂♂, 1 ♀, 1 juv. ♀; Ravine W Bärnstein, 2 km SW Grafenau, mixed forest, boulder area, 540-560 m, 48.8501°N, 13.3761°E, 07.IX.2013, sieving, leg. JS, 1 ♀; Ravine at (old) bridge SW Bärnstein, 2 km SW Grafenau, mixed (deciduous) forest, boulder area, below rockface, 540-560 m, 48.8485°N, 13.3764°E, 07.IX.2013, sieving, leg. JS, 2 ♂♂; Neuschöna, Lerchenweg 14, 6 km NE Grafenau, garden, 720-730 m, 48.8798°N, 13.4717°E, 04-08.IX.2013, leg. JS, 1 ♂; NE Mitterndorf, 8 km SE Hengersberg, mixed forest, 320-350 m, 48.7103°N, 13.1122°E, 10.IV.2011, leg. JS, 1 ♂; E Triftkanal, W Reut, 3 km NE Passau, mixed forest, partly on scree, 300-310 m, 48.5977°N, 13.4579°E, 12.XI.2021, sieving, leg. JS, 1 ♂; Triftsperre SE Unteröd im Ilztal, 3 km NE Passau, mixed forest, partly between scree, 300-310 m, 48.5964°N, 13.4545°E, 12.XI.2021, sieving, leg. JS, 1 ♂; NE Neufelser, 1 km N Neuburg am Inn, 4 km SSW Passau, *Carpinus betulus* forest with *Acer campestre* directly at river Inn, 300-320 m, 48.5276°N, 13.4435°E, 13.III.2023, sieving, leg. JS, 1 ♂.

Remarks: KIME & ENGHOF (2017) list *L. marcomannius* as a synonym of *Leptoiulus noricus* Verhoeff, 1913, without justifying this. According to the morphological examination of material and DNA barcoding data of both species, we assume that these are rather two different species.

***Leptoiulus montivagus* (Latzel, 1884)**

Records: Baden-Württemberg: Baßgeige N Oberbergen, 19 km NW Freiburg im Breisgau, vineyard, 350 m, 48.1045°N, 7.6469°E, 05.X.2013, leg. A. Kobel-Lamparski, 2 ♂♂, 3 ♀♀; Bavaria: Teufelsloch 2 km NE Waldhäuser, 6 km N Neuschönau, 980-1,000 m, 47.4621°N, 10.9738°E, 05.IX.2013, leg. JS, 1 ♂.

Remarks: The so-called *montivagus*-group of *Leptoiulus* (= *L. braueri*-group sensu KURNIK & THALER 1985) is a challenge. This could be a species group with several distinct species. Morphological and molecular data are needed to clarify this question. The population from the Bavarian Forest (Germany) and Sumawa Forest (Czechia), formerly named *L. weberi* Verhoeff, 1927, seems to be restricted to stone runs. Beside the type locality of *L. weberi* (VERHOEFF 1927b), only the record cited above is known from the Bavarian Forest. There are some more records from Bohemia (KOCOUREK et al. 2023). The population from the Rhine Valley shows completely different ecological behaviour. At the Kaiserstuhl mountain it occurs in dry and warm vineyards (KOBEL-LAMPARSKI 1987). In the Rheinacher Heide in northern Switzerland *L. montivagus* it was found in a protected area with dry meadows (PEDROLI-CHRISTEN 1993).

***Leptoiulus noricus* (Verhoeff, 1892)**

Remarks: During investigations in and around the Berchtesgaden Alps in the year 2021, the species has been recorded from 17 sites, mainly from pitfall traps. *L. noricus* is a moderately common species in this area in (sub-)alpine mixed forests and pastures.

***Leptoiulus saltuvagus* (Verhoeff, 1898)**

Remarks: There are more than 20 new records during the recent decades, mostly in the alpine regions of Bavaria and one in the Bavarian Forest.

***Megaphyllum projectum projectum* Verhoeff, 1894**

Remarks: *M. projectum projectum* is distributed from Germany, Austria via Hungary to Romania and Slovakia (LAZÁNYI & KORSÓS 2011). The former record of this subspecies in Germany have been formerly identified as *Brachyiulus* or *Chromatoiulus projectus dioritanus* (Verhoeff, 1907) (LAZÁNYI & KORSÓS 2011, SCHUBART 1934). *M. projectum projectum* has been recorded from several dozen localities from the Bavarian Alps to the southern Bavarian Forest in recent years due to new samplings and revision of old records. It was found in (mixed) forests from 300 up to 1,120 m. According to LAZÁNYI & KORSÓS (2011), all German records from the Alps and Prealps need to be checked against *M. projectum projectum* and the possible hybrid with *M. p. kochi*. This means that only male specimens can be reliably evaluated.

***Ommatoiulus rutilans* (C. L. Koch, 1847)**

Remarks: There are no new records of this species. Until 1990, *Ommatoiulus rutilans* was reported several times from open land and agricultural areas in the south and south-west of Germany (BECKER 1975, HANDKE 1988, KOCH 1847, SCHMID 1966, SCHUBART 1934). In recent decades, however, the species has only been recorded on very few calcareous grasslands in the Eifel (DECKER & HANNIG 2011) and Baden-Württemberg (REIP et al. 2012). Due to its close habitat dependence on nutrient-poor open land and extensive arable land on limestone, *Ommatoiulus rutilans* is considered to be endangered in Germany by habitat loss.

***Ommatoiulus vilmensis* (Jawłowski, 1925)**

Records: Brandenburg: Schorfheide, approx. 1.5 km ENE Kloster Chorin, "Teufelskuten", brook forest (*Alnus*) around a bog complex, in leaf litter/under dead wood (branches), 50 m, 52.897°N, 13.905°E, 2.VI.2021, leg. NL, 1 ♀; same locality, 3.X.2021, leg. NL, 3 ♀♀, 1 ♂. Saxony: "Gladiolenwiese Dauban" within the FFH area "Biosphärenreservat Oberlausitzer Heide- und Teichlandschaft", 1 km NW Dauban, meadow complex composed of the eponymous meadow (with *Gladiolus imbricatus*, *Dactylorhiza majalis*, *D. fuchsi*), a fallow land (with *Holcus mollis*, *Festuca rubra*, *Alopecurus pratensis*, *Arrhenatherum elatius*) and a pure stand of *Spiraea douglasii* (partially mowed), 150 m, 51.29°N, 14.614°E, 09.V.2014, 22.VI.2015, 6.VII. 2015, 20.VII.2015, 3.VIII.2015, pitfall traps, leg. H. Haase et al., total: 14 specimens; Hoyerswerda, Dubringer (Zeißholzer) moor, birch swamp forest (Uliginosi-Betulo-Pinetea), 51.4013°N, 14.1735°E, 31.V.2017, leg. KV, 3 ♂♂, 4 ♀♀; NSG Bergen-Weißacker moor, approx. 10 km S Luckau (Dahme-Spreewald district), 51.7602°N, 13.7209°E, IV.-VI.2024, pitfall traps, leg. L. Ilgeroth, 19 ♂♂, 33 ♀♀; Grünswalder moor, approx. 7 km SW Luckau (Dahme-Spreewald district), 51.785962°N, 13.658432°E, IV.-VI.2024, pitfall traps, leg. L. Ilgeroth, approx. 30 ind.

Uncertain records (females and juveniles only): Brandenburg: Lower Oder Valley National Park, Feldplänetal near Geltersdorf, *Alnus-Fraxinus*-forest, under dead wood, 15 m, 52.9634°N, 14.087°E, 03.VI.2021, leg. NL, 1 ♀. Mecklenburg-Western Pomerania: Gorinsee, 15 km E Torgelow, brook forest (*Alnus*) around a bog complex, under leaf litter, 10 m, 53.6053°N, 14.2434°E, 30.IV.2021, leg. NL, 3 ♀♀, 4 juv.; NSG Ahlbecker Seegrund (Fenn), approx. 12 km E Torgelow, brook forest (*Alnus*), 5 m, 53.65°N, 14.2°E, 01.V.2021, leg. NL, 1 intercalary-♂, 1 juv. ♂, 2 juv. ♀♀; same locality, 02.X.2021, leg. NL, 1 ♂, 3 juv. ♂♂, 2 juv. ♀♀; Witschebruch, 4 km SW Altwarp, old brook forest (*Alnus*), 2 m, 53.7186°N, 14.222°E, 01.V.2021, leg. NL, 1 intercalary-♂, 1 juv. ♂, 1 juv. ♀.

Remarks: This species is mainly distributed in the lowlands from the Baltic States through Poland to the easternmost part of Germany, where it reaches its western border in the Spreewald (SCHUBART 1957). All new records to date do not cross this border to the west. The southernmost records for Germany come from the Upper Lusatian Heath and Pond Landscape Biosphere Reserve near Dauban (HAASE et al. 2019).

In HAASE et al. (2019), the western border for Germany is incorrectly given as "Wusterwitz" (town and lake near the town of Brandenburg/Havel), the only remaining location with this name in present-day Germany. However, "Wusterwitzer See", the original sample site of Otto Schubart, is situated in present-day Poland (Jezioro Ostrowiec, 10 km E Ińsko, 53.45°N, 15.7157°E).

O. vilmensis is most frequently found from May to June, whereas the very similar species *O. sabulosus* has its main activity in the summer months until September (VOIGTLÄNDER 1996). The recorded intercalary males are probably the first published observation for this species.

Remarks on taxonomy: *Ommatoiulus vilmensis* was described as *Schizophyllum vilmense* by Jawłowski (1925). Later, LOHMANDER (1927) placed *S. vilmense* in his new genus *Sarmatiulus* Lohmander, 1927. Then, LOHMANDER (1928) synonymized *Rossiulus* Attems, 1927 (already erected invalidly in 1926) under *Sarmatiulus*. Further, ATTEMs (1952: 363) pretended priority and placed *Rossiulus* as a subgenus within the genus *Schizophyllum* Verhoeff, 1895 (= *Schizophyllum (Rossiulus) vilmensis*). HOFFMANN (1980: 113) synonymized *Schizophyllum* with *Ommatoiulus* Latzel, 1880 and moved all former subgenera of *Schizophyllum* under *Ommatoiulus* (= *Ommatoiulus (Rossiulus) vilmensis*). Nevertheless, the name

Rossiulus vilnensis remained in use, e.g. CHORNYI & GOLOVATCH (1993) or KIME & ENGHOFF (2017). AKKARI & ENGHOFF (2012) gave an overview of the history of the nomenclature of the genus *Ommatoiulus* and supported the view of *Rossiulus* as a synonym of *Ommatoiulus*.

In addition to the taxonomy based on morphology, COI barcoding data of *O. vilnensis* and several other species of the genus *Ommatoiulus* throughout Europe support the synonymy of *Rossiulus* and clearly show, that *O. vilnensis* nests within *Ommatoiulus*.

***Ophiulus major* Bigler & Verhoeff, 1920**

Records: Bavaria: Klausenhöhle, SW Essing, 7 km W Kelheim, mixed (mostly) deciduous forest, 370-400 m, 48.9344°N, 11.7844°E, 03.X.2013, leg. JS, 1 ♂; Schleiferholz W Pfaffenhofen an der Ilm, *Picea abies* forest with *Pinus sylvestris*, *Fagus sylvatica*, *Abies alba*, *Vaccinium myrtillus*, 465-480 m, 48.5332°N, 11.4791°E, 22.X.2023, leg. JS, 1 ♂; Passau, Innstadt, E and SE Mariahilf, mixed forest, 320-350 m, 48.5694°N, 13.4713°E, 17.IV.2023, leg. JS, 1 ♂; 2 km ENE Pulling, 3 km SSW Freising, mixed deciduous riparian forest, 440-470 m, 48.3692°N, 11.7308°E, 19.IV.2015, leg. JS, 1 ♂; Schwarzhölzl, 2 km NE Karlsfeld, 4 km SE Dachau, forest, 480-520 m, 48.2435°N, 11.4955°E, 30.IV.2017, leg. JS, 1 ♀; 1 km NE Paterzell, 6 km WNW Weilheim in Oberbayern, mixed forest (*Picea abies*, *Taxus baccata*, *Fagus sylvatica*, *Acer pseudoplatanus*) on tuff, 610-640 m, 47.8601°N, 11.0556°E, 16.IX.2023, sieving, leg. JS, 1 ♂; Spitzschlag- und Tiefentalgraben NE Ettal, 8 km N Garmisch-Partenkirchen, mixed forest, 920-980 m, 47.5721°N, 11.1013°E, 24.IX.2023, leg. JS, 1 ♂, 1 ♀; Steinriglwald N Eibsee, 3 km WSW Grainau, 9 km WSW Garmisch-Partenkirchen, mixed forest (*Picea*, also *Fagus*, *Acer*), 980-1,000 m, 47.4621°N, 10.9738°E, 25.IX.2023, leg. JS, 1 ♂; Steppbergalpensteig, Predigtstuhl, 4 km WNW Garmisch-Partenkirchen, loose mixed forest (*Picea abies*, *Pinus sylvestris*, *Fagus sylvatica*), 1,100-1,480 m, 47.4957°N, 11.0378°E, 04.X.2023, leg. JS, 1 ♂, 1 ♀; Burgberg, Leutascher Str., NE slope, E Mittenwald, mixed forest (*Fagus*, *Acer*, *Picea*, *Corylus*), 930-950 m, 47.4349°N, 11.2577°E, 04.X.2023, sieving, leg. JS, 1 ♂.

Remarks: *O. major* was originally described as a subspecies of *Ophiulus pilosus* (Newport, 1822) and then regarded as a synonym of the latter. Later, it was elevated to species rank (ATTEMS 1954, FODDAI et al. 1995). The records have been documented in REIP et al. (2012, 2016). Unpublished COI barcoding data show, that Austrian and Italian *O. major* are forming a clade distinct from *O. pilosus* and *O. nigrofuscus*. *O. major* differs from *O. pilosus* in size, the shape of the first legpair of the males and the gonopods. *O. major* has a hyaline, upward-pointing projection on the anal scale, as seen in various Italian *Ophiulus* species.

O. major is a moderately common species in the Bavarian Alps. It occurs only in the Alpine region, including the Prealps, particularly frequently in the Southern Alps, while *O. pilosus* is also found in large parts of Europe outside the Alps.

***Ophiulus nigrofuscus* (Verhoeff, 1894)**

Records: Bavaria: Nebelhorn, S-slope, 4 km ENE Oberstdorf, 2,000-2,100 m, 47.4201°N, 10.3479°E, 30.IX.2021, leg. HR & JS, 1 ♂; Iselerbahn Bergstation to Vordere Wiedhagalpe, 2 km SE Oberjoch, 10 km ESE Sonthofen, alpine pastures and stony slopes with *Pinus mugo* and *Rhododendron hirsutum* shrubbery, 1,440-1,600 m, 47.4893°N, 10.3681°E, 08.IX.2015, leg. JS, 1 ♂.

Remarks: This extremely rare species was so far only known from a few records near Oberstdorf in the Oberallgäu and Wetterstein mountains (REIP et al. 2012). Two new records have now been made near Oberstdorf. The species is restricted to alpine open habitats.

***Pachypodoiulus eurypus* (Attems, 1895)**

Records: Bavaria: Teufelsloch 2 km NE Waldhäuser, 6 km N Neuschönau, mixed forest (mainly *Picea abies*), clearings, 1,110-1,140 m, 48.9395°N, 13.4822°E, 05.IX.2013, leg. JS, 1 ♂; W Brudersbrunnen, W Grafenau-Schlag, mixed forest, scree, 610-630 m, 48.8316°N, 13.3606°E, 31.X.2021, sieving, leg. JS, 1 ♀; 1 km NE Paterzell, 6 km WNW Weilheim in Oberbayern, mixed forest (*Picea abies*, *Taxus baccata*, *Fagus sylvatica*, *Acer pseudoplatanus*) on tuff, 610-640 m, 47.8601°N, 11.0556°E, 16.IX.2023, leg. JS, 1 ♂; 1 km NW Marktschellenberg, 5 km WNW Hallein, mixed deciduous forest with small cave systems, 680-700 m, 47.7049°N, 13.0383°E, 26.IV.2014, sieving, leg. JS, 4 ♂♂; nature conservation area "Höllental " east of Lichtenberg (Oberfr.), slopes along river Selbitz, *Fraxinus*-*Acer*-ravine-forest and slope forest on scree, mixed deciduous forest on scree along slope, treeless slope with a boulder field, 430-470 m, several sample sites within an area from 50.369 to 50.394°N, from 11.686 to 11.697°E, 28.X.2013, leg. NL, 3 ♀♀ 30.IX.2022, leg. U. Burkhardt, R. Orsakowsky & KV, 1 ♂; same locality, 02.X.2022, leg. NL, LM, R. Orsakowsky, HR, KV & P. Voitz, 4 ♂♂, 8 ♀♀ 1 juv. ♀; same locality, 27.X.2022, leg. HR, 25 ♂♂, 33 ♀, 17 juv. ♂, 11 juv. Saxony: Geisingberg, 1 km NE Altenberg, ashes–maples-slope-forest upon basalt, 800 m, 50.77°N, 13.774°E, 13.X.1965, 25.V.1966, leg. H. Richter, 2 ♀♀.

Remarks: This predominantly northeastern alpine species has also scattered and isolated occurrences outside its main range. In Germany, these are the records in the Rabenauer Grund in Saxony (voucher material in the SMNG, RICHTER 1967) and in the Höllental on the border between Thuringia and Bavaria. As introduction is unlikely for this cool and damp-loving species, glacial relict populations could be an explanation for this distribution pattern.

The records in the stone runs in the Rabenauer Grund (ravine forest with predominantly *Ulmus*, *Acer platanoides*, *A. pseudoplatanus*) could not be confirmed by intensive searches in the 1980s and 2021/2022. Further investigations, especially in the large stone runs, are urgently needed.

***Pteridoiulus aspidiorum* Verhoeff, 1913**

Records: Bavaria: Reiteralalm, Eisbergalm 12 km WNW Berchtesgaden, 1,080-1,260 m, 47.63°N, 12.84°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♀; Blaueishütte 10 km WSW Berchtesgaden, 1,650-1,660 m, 47.59°N, 12.87°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♀; Trischübel, Rauhe Köpfe 13 km SW Berchtesgaden, 1,910-2,260 m, 47.52°N, 12.91°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♂, 4 ♀♀; Trischübel, Hirschwiese 12 km SW Berchtesgaden, 2,000-2,200 m, 47.53°N, 12.92°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 10 ♂♂, 16 ♀♀; Seeleinsee 10 km SSE Berchtesgaden, 1,820-1,870 m, 47.54°N, 13.03°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♂; Regenalm 11 km S Berchtesgaden, 1,540-1,640 m, 47.53°N, 13.00°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♂, 1 ♀; Gotzentel 9 km S Berchtesgaden, 1,020-1,460 m, 47.55°N, 13.00°E, 14.V.-15.IX.2021, pitfall traps, leg. NPV-BGD, 1 ♂; 1 km NW Schottmalhorn, 1 km SE Funtensee, 17 km SW Berchtesgaden, subalpine forest (*Larix*, *Pinus*) with pastures, 1,650-1,750 m, 47.4854°N, 12.9442°E, 01.VII.2014, leg. JS & S. Friedrich, 1 ♂, 1 ♀; Berchtesgaden, Königssee, SO Obersee, Kärlinger-house,

Funtensee, northern slope, subalpine slope meadow with various bushes, under stones, 47.494°N, 12.9403°E, 31.V.2014, leg. HR, 1 ♂, 1 ♀; Berchtesgaden, Königssee, S Obersee, In der Röth, beech stand on the slope, 47.5028°N, 13.0177°E, 30.V.2014, leg. HR, 1 ♂, 1 ♀; Berchtesgaden, Königssee, S Kärlinger-House, Geigen, meadow with various bushes, under stones, 47.4951°N, 12.9358°E, 31.V.2014, leg. HR, 1 ♂, 1 ♀.

Remarks: *P. aspidiorum* was recorded so far very localised in the Berchtesgaden Alps in subalpine meadows and forests in 1,500 m to 2,200 m. It is only known from the Alps in Austria and Sanntaler Alps in Slovenia (ENGHOFF et al. 2013b).

Stygiulus seewaldi (Strasser, 1967)

Remarks: The single German record from the year 1965 originates from the original description of this species from the Berchtesgaden Alps in a cave in the Untersberg (STRASSER 1967). In more recent years additional specimens have been found in three Austrian caves, all of them in the surroundings of the Dachstein Massif (FRITSCH 1998). The species shows troglobiotic adaptations and is confined to deep crevices and caves of karstified landscape, thus extremely difficult to record. VAGALINSKI et al. (2022) transferred the species from the genus *Typhloiulus* to the genus *Stygiulus*.

Order Polyzonida

Hirudisoma pallidum Fanzago, 1875, Figs 1, 12 – First record for Germany

Record: Baden-Württemberg: 1 km NW Altlußheim, 3 km ESE Speyer, 90-100 m, 49.3071°N, 8.4834°E, 08.IV.2010, leg. JS, 4 ♂♂.

Remarks: The distribution of *H. pallidum* encompasses central and southern Italy, south of the Po Valley (KIME & ENGHOFF 2017). *H. pallidum* was found in an alluvial forest on the Upper Rhine as the first record in Germany. This population is obviously introduced by human activity. Whether the species also occurs in the neighbouring floodplains of the Rhine and has possibly already established itself needs to be investigated.

Hirudisoma can be misidentified as *Polyzonium germanicum* Brandt, 1837. Nevertheless, both genera can be discriminated in dorsal view by the freely visible telson in the genus *Polyzonium*, while the telson is covered by the penultimate tergite in the genus *Hirudisoma* (Fig. 12). Descriptions and notes on identification of *H. pallidum* can be found in FANZAGO (1881), VERHOEFF (1930a: 434), and VERHOEFF (1930b, under synonym *H. aprutianum* Verhoeff, 1930).

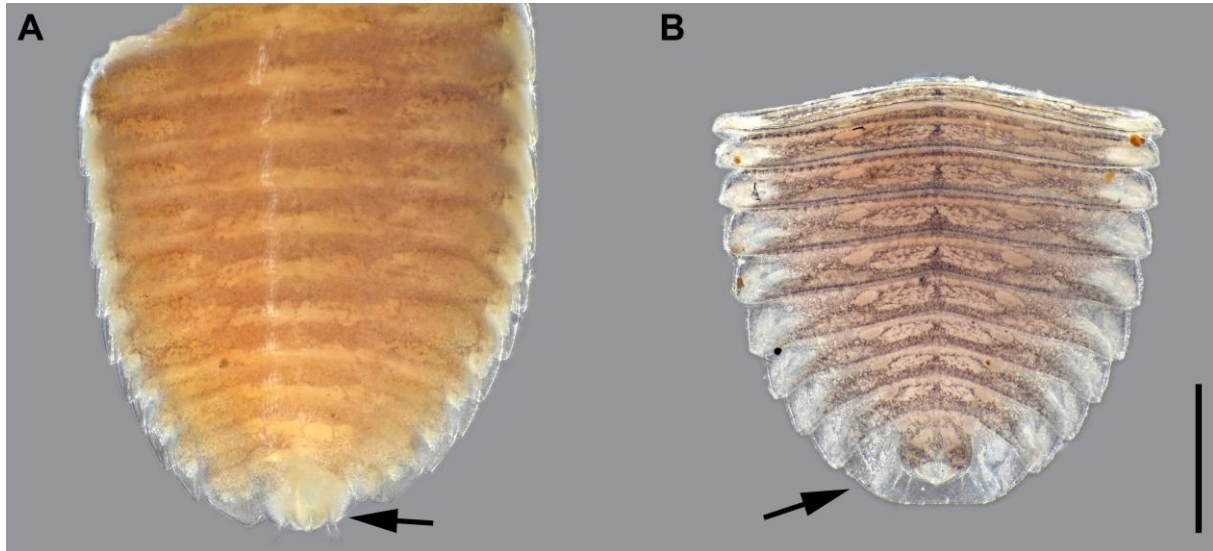


Figure 12: Difference between the genera *Polyzonium* (A) and *Hirudisoma* (B). Posterior end in dorsal view. The arrow marks the freely visible telson in *Polyzonium* and the covered telson in *Hirudisoma*. A: Adult female of *Polyzonium germanicum* from Saxony, Lodenau, 10.09.2024; B: Adult male of *Hirudisoma pallidum*, locality as cited above. Photograph: Jörg Spelda. Scale bar = 500 µm.

4 Discussion

This current contribution adds one chilopod and five diplopod species to the fauna of Germany, resulting in a total of 66 centipede species and 137 millipede species recorded outdoors, of which four diplopod species are endemic to Germany (DECKER et al., in press). Additionally, another five centipede and 11 millipede taxa are currently exclusively found in greenhouses (DECKER et al. 2014).

The millipede and centipede fauna of Germany is well studied compared to other soil animal groups, but still, there are surprises. On the one hand, some species arrive in Germany through introductions, e.g. *Brachyiulus jawlowskii* or *Hirudisoma pallidum*, other species seem to spread further in Germany with the help of humans (plants, soil), like *Melogona broelemanni* and *Nanogona polydesmoides*.

Especially the little-studied regions in the east and south-east of Germany (Ore mountains, Upper Palatine Forest, Bavarian Forest) are probably inhabited by many species otherwise only known from the alpine region. Presumably, further records of species currently classified as rare can be expected there (e.g. *L. septentrionale*, *G. austriacus* or *S. tyrolensis*). As possible candidate as a new species for Germany, *Haploglomeris multistriata* (C. L. Koch, 1844) can be expected, that is common in adjacent Austria (KIME & ENGHOFF 2011) and was recently recorded for the first time in Czechia (KOCOUREK & DOLEJS 2015).

At the shore of the German North Sea also the small and inconspicuous species *Hydroschendyla submarina* (Grube, 1872), wide spread from Scandinavia to North Africa along the North Atlantic and the Mediterranean Sea (BARBER 2011), can be expected as well as coastal species.

The millipede *Xylophageuma zschokkei* Bigler, 1912 is known from Belgium, France and Switzerland (KIME & ENGHOFF 2021), therefore it can be expected in Rhineland-Palatinate in southwestern Germany.

In Eastern Germany the eastern and south-eastern distributed (BONATO et al. 2016) centipede species *Lithobius burzenlandicus* Verhoeff, 1931 can be expected and was probably not differentiated in the past from the very similar *Lithobius microps* Meinert, 1868.

Other European species are potential candidates to be dispersed by human activity and could be therefore found in urban habitats and viticultural regions, especially the millipede species *Melogona scutellaris* (Ribaut, 1913), *Cylindroiulus apenninorum* Brölemann, 1897, *Ommatoiulus moreleti* (Lucas, 1860), and *Unciger transsilvanicus* (Verhoeff, 1899). Concerning centipedes, the following species are expected to be found: *Dicelloglyphus carniolensis* Koch, 1847, *Geophilus easoni* Arthur, Foddai, Kettle, Lewis, Luczynski & Minelli, 2001, *Schendyla dentata* Brölemann & Ribaut, 1911, *Haplophilus souletinus* Brölemann, 1907, *Henia illyrica* (Meinert, 1870), *Lithobius castaneus* Newport, 1844, *L. crassipesoides* Voigtländer, Iorio, Decker & Spelda, 2017, or *L. pilicornis* Newport, 1844.

This would mean that German fauna could potentially contain more than a dozen of yet unrecorded species.

Acknowledgments

We are very grateful to the German Red List Centre (RLZ), German Aerospace Center (DLR) and Bavarian State Office for the Environment (LfU) for financing several field trips. We thank the LOEWE Centre for Translational Biodiversity Genomics funded by the Hessen State ministry of Higher Education, Research and the Arts (HMWK) for sequencing of *Melogona broelemanni*. The collectors and institutions Sascha Buchholz (Münster), Jörn Buse (National Park Black Forest), Michael Drees (Hagen), Dennis Haseloh (Bad Segeberg), Siegfried Huber (Uhldingen-Mühlhofen), Alfred Karle-Fendt (Sonthofen), Stefan Kleinfelder (Wörrstadt), Tobias Richter (Berchtesgaden National Park) and Dieter Weber (Müncheberg) and numerous other collectors mentioned in the records sections supported us with interesting material and important specimens. We also would like to thank Leif Moritz (Düsseldorf) and Ulrich Burkhardt (Görlitz) for their help with earlier versions of the manuscript. The reviewers Etienne Iorio (Sarrians) and Andreas Tadler (Vienna) also gave good suggestions to improve this manuscript.

References

- AKKARI, N.; ENGHOFF, H. (2012): Review of the genus *Ommatoiulus* in Andalusia, Spain (Diplopoda: Julida) with description of ten new species and notes on a remarkable gonopod structure, the fovea. – *Zootaxa* 3538: 1-53. doi: [10.11646/zootaxa.3538.1.1](https://doi.org/10.11646/zootaxa.3538.1.1)
- AKKARI, N.; ENGHOFF, H. (2017): Revision of the Genus *Ommatoiulus* Latzel, 1884 (Julida, Diplopoda) in Portugal, with description of six new species. – *European Journal of Taxonomy* 295: 1-42. doi: [10.5852/ejt.2017.295](https://doi.org/10.5852/ejt.2017.295)
- ANTIĆ, D.; AKKARI, N. (2020): *Haasea* Verhoeff, 1895—a genus of tumultuous history and chaotic records – redefinition, revision of taxonomy and geographic distributions, with descriptions of two new species from Austria and Serbia (Diplopoda, Chordeumatida, Haaseidae). – *Zootaxa* 4798 (1): 1-77. doi: [10.11646/zootaxa.4798.1.1](https://doi.org/10.11646/zootaxa.4798.1.1)
- ATTEMS, C.M.T. (1895): Die Myriopoden Steiermarks. – Sitzungsberichte der österreichischen Akademie der Wissenschaften in Wien, mathematisch-naturwissenschaftliche Klassen, Abteilung I, 104: 117-238.
- ATTEMS, C.M.T. (1929): Myriapoda 1. Geophilomorpha. – In: Das Tierreich, Walter de Gruyter & Co., Berlin, Leipzig 52: 1-388.
- ATTEMS, C.M.T. (1949): Die Myriopodenfauna der Ostalpen. – Sitzungsberichte der Akademie der Wissenschaften mathematisch-naturwissenschaftlichen Klasse 158: 79-153.
- ATTEMS, C.M.T. (1952): Myriopoden der Forschungsreise Dr. H. Franz in Spanien 1951 nebst Übersicht über die gesamte iberische Myriopodenfauna. – *EOS, Revista Espanola de Entomologia* 28 (4): 323-366.
- ATTEMS, C.M.T. (1954): Myriopoda. – In: FRANZ, H. (ed.): Die Nordostalpen im Spiegel ihrer Landtierwelt. Eine Gebietsmonographie. Band 1. – Universitätsverlag Wagner, Innsbruck: 289-328.

- BARBER, A.D. (1987): British Schendylidae. – Bulletin of the British Myriapod Group 4: 41-48.
- BARBER, A.D. (2006): Myriapoda (Centipedes & Millipedes) from the Channel Islands. – Bulletin of the British Myriapod & Isopod Group 21: 19-39.
- BARBER, A.D. (2009a): Centipedes. – Linnean Society Synopses of the British Fauna (New Series) 58. Field Studies Council, Shrewsbury: 228 pp.
- BARBER, A.D. (2009b): Littoral myriapods: a review. – In: XYLANDER, W.E.R.; VOIGTLÄNDER, K. (eds): Myriapoda and Onychophora of the World – Diversity, Biology and Importance. Proceedings of the 14th International Congress of Myriapodology, Görlitz. – Soil Organisms 81 (3): 735-760.
- BARBER, A.D. (2011): Geophilomorph centipedes and the littoral habitat. – Terrestrial Arthropod Reviews 4: 17-39.
- BARBER, A.D.; GREGORY, S. J.; MARQUIS, A. (2020): Long form of *Pachymerium ferrugineum* (C.L. Koch, 1835) recorded from the Channel Islands (Geophilomorpha: Geophilidae). – Bulletin of the British Myriapod and Isopod Group 32: 73-83.
- BARBER, A.D. (2022): Atlas of the Centipedes of Britain and Ireland. – Shrewsbury, Field Studies Council: 390 pp.
- BECKER, J. (1975): Art und Ursachen der Habitatbindung von Bodenarthropoden (Carabidae [Coleoptera], Diplopoda, Isopoda) xerothermer Standorte in der Eifel. – Beiträge Landespflege Rheinland-Pfalz, Beiheft 4: 89-140.
- BIGLER, W. (1929): Die Diplopodenfauna des schweizerischen Nationalparks. – Ergebnisse der wissenschaftlichen Untersuchungen im Schweizerischen Nationalpark 5: 1-87.
- BLOWER, J.G. (1987): More Myriapods from Brittany. – Bulletin of the British Myriapod Group 4: 37-40.
- BONATO, L.; MINELLI, A. (2014): Chilopoda Geophilomorpha of Europe: a revised list of species, with taxonomic and nomenclatorial notes. – Zootaxa 3770 (1): 1-136. doi: [10.11646/zootaxa.3770.1.1](https://doi.org/10.11646/zootaxa.3770.1.1)
- BONATO, L.; CHAGAS JUNIOR, A.; EDGEcombe, G.D.; LEWIS, J.G.E.; MINELLI, A.; PEREIRA, L.A.; SHELLEY, R.M.; STOEVE, P.; ZAPPAROLI, M. (2016): ChiloBase 2.0 - A World Catalogue of Centipedes (Chilopoda). Available at <https://chilobase.biology.unipd.it>, accessed 17. III. 2025.
- BONATO, L.; BORTOLIN, F.; DE ZEN, G.; DECKER, P.; LINDNER, E.N.; ORLANDO, M.; SPELDA, J.; VOIGTLÄNDER, K.; WESENER, T. (2023): Towards elucidating species diversity of European inland *Strigamia* (Chilopoda: Geophilomorpha): a first reassessment integrating multiple lines of evidence. – Zoological Journal of the Linnean Society 199 (4): 945-966. doi: [10.1093/zoolinnean/zlad070](https://doi.org/10.1093/zoolinnean/zlad070)
- BRÖLEMANN, H. W.; RIBAUT, H. (1912): Essai d'une monographie des Schendylina (Myriapodes, Géophilomorphes). Nouvelles Archives du Muséum d'Histoire Naturelle, 5 série 4: 53-181.
- BURKHARDT, U.; RUSSELL, D.J.; DECKER, P.; DÖHLER, M.; HÖFER, H.; LESCH, S.; RICK, S.; RÖMBKE, J.; TROG, C.; VORWALD, J.; WURST, E.; XYLANDER, W.E.R. (2014): The Edaphobase project of GBIF-Germany – A new online soil-zoological data warehouse. – Applied Soil Ecology 83: 3-12. doi: [10.1016/j.apsoil.2014.03.021](https://doi.org/10.1016/j.apsoil.2014.03.021)
- BÜTTNER, K. (1963): Beitrag zur Kenntnis der Verbreitung der Diplopoden, Symphylen und Chilopoden in Westsachsen. – Abhandlungen und Berichte des Naturkundemuseums Görlitz 38 (4): 1-7.
- CABANILLAS, D. (2020). First record of *Strigamia maritima* (Leach, 1817) (Chilopoda, Geophilomorpha, Linotaeniidae) in Spain. – Graellsia 76 (1): e105. doi: [10.3989/graeellsia.2020.v76.254](https://doi.org/10.3989/graeellsia.2020.v76.254)
- CHERPITEL, T.; FILIPE, M.; BRAUD, Y. (2019): À propos de quelques Arthropodes (Dermaptera, Isopoda, Geophilomorpha) découverts sur la plage de Lafitenia à Saint-Jean-de-Luz (Pyrénées-Atlantiques, France). L'Entomologiste 75 (2): 77-83.
- CHERPITEL, T.; FILIPE, M. (2024): *Strigamia maritima* (Leach, 1817) (Chilopoda, Geophilomorpha, Linotaeniidae) et *Thalassiosobates littoralis* (Silvestri, 1903) (Diplopoda, Julida, Nemasomatidae), deux espèces de myriapodes découvertes sur le littoral rocheux du Portugal. – Bulletin de la Société entomologique de France 129 (4): 381-386. doi: [10.32475/bsef_2280](https://doi.org/10.32475/bsef_2280)
- CHORNIY, N.G.; GOLOVATCH, S.I. (1993): [Millipedes (Diplopoda) of the plain areas of the Ukraine]. [Russian with English summary] Kiev: 57 pp.
- COLLINS, G.; SCHNEIDER, C.; BOŠTJANČIĆ, L.L.; BURKHARDT, U.; CHRISTINA, A.; DECKER, P.; EBERSBERGER, I.; HOHBERG, K.; LECOMPTE, O.; MERGES, D.; MUELBAIER, H.; ROMAHN, J.; RÖMBKE, J.; RUTZ, C.; SCHMELZ, R.; SCHMIDT, A.; THEISSINGER, K.; VERES, R.; LEHMITS, R.; PFENNINGER, M.; BALÍNT, M. (2023): The metainvert genome resource provides insights into below-ground biodiversity and evolution. – Communication Biology 6 (1241): 1-12. doi: [10.1038/s42003-023-05621-4](https://doi.org/10.1038/s42003-023-05621-4)

- DÁNYI, L.; TUF, I.H. (2016): Out of Africa: The first introduced African geophilomorph centipede record from a European greenhouse (Chilopoda: Geophilidae). – *Zootaxa* 4067 (5): 585-588. doi: [10.11646/zootaxa.4067.5.6](https://doi.org/10.11646/zootaxa.4067.5.6)
- DECKER, P.; HANNIG, K. (2008): Erstnachweis von *Glomeris pustulata* Latreille, 1804 (Diplopoda: Glomerida) für Nordrhein-Westfalen. – *Schubartiana* 3: 53-56.
- DECKER, P.; HANNIG, K. (2010): *Nanogona polydesmoides* (Leach, 1815) – New for the German fauna (Diplopoda, Chordeumatida, Craspedosomatidae). – *Bulletin of the British Myriapod & Isopod Group* 10: 34-35.
- DECKER, P.; HANNIG, K. (2011): Checkliste Hundert- und Tausendfüßer (Myriapoda: Chilopoda, Diplopoda) Nordrhein-Westfalens. – *Abhandlungen aus dem Westfälischen Museum für Naturkunde* 1: 3-48.
- DECKER, P.; REIP, H.S.; VOIGTLÄNDER, K. (2014): Millipedes and Centipedes in German greenhouses (Myriapoda: Diplopoda, Chilopoda). – *Biodiversity Data Journal* 2: e1066. doi: [10.3897/bdj.2.e1066](https://doi.org/10.3897/bdj.2.e1066)
- DECKER, P.; HANNIG, K.; VOIGTLÄNDER, K.; WESENER, T. (2015): Nachtrag zur Checkliste der Hundert- und Tausendfüßer (Myriapoda: Chilopoda, Diplopoda) und Artenverzeichnis der Zwerg- und Wenigfüßer (Symphyla, Pauropoda) Nordrhein-Westfalens. – *Abhandlungen aus dem Westfälischen Museum für Naturkunde* 80: 5-22.
- DECKER, P.; VOIGTLÄNDER, K.; SPELDA, J.; REIP, H.S. (2016): Rote Liste und Gesamtartenliste der gefährdeten Hundertfüßer (Myriapoda: Chilopoda) Deutschlands. – In: GRUTKE, H.; BINOT-HAFKE, M.; BALZER, S.; HAUPT, H.; HOFBAUER, N.; LUDWIG, G. (eds): *Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands, Band 4: Wirbellose Tiere (Teil 2)*. – *Naturschutz und Biologische Vielfalt* 70 (4): 327-346.
- DECKER, P.; WESENER, T.; SPELDA, J.; LINDNER, E.N.; VOIGTLÄNDER, K. (2017): Barcoding reveals the first record of *Lamyctes africanus* (Porat, 1871) in Germany (Chilopoda: Lithobiomorpha). – *Bonn Zoological Bulletin* 66 (1): 3-10.
- DECKER, P.; BURKHARDT, U.; HAUSER, H.; LINDNER, E.N.; MORITZ, L.; REIP, H.S.; SPELDA, J.; VOIGTLÄNDER, K.; (in press): Rote Liste und Gesamtartenliste der Hundertfüßer und Doppelfüßer (Myriapoda: Chilopoda et Diplopoda) Deutschlands. – *Naturschutz und Biologische Vielfalt* 170 (12): 83 pp.
- DIJRSVOLL, P.; GOLOVATCH, S.I.; JOHANSON, K.A.; MEIDELL, B.A. (2000): Phylogenetic relationships within *Polydesmus senu lato* (Diplopoda: Polydesmidae). – In: WYTWER, J.; GOLOVATCH, S.I. (eds): *Progress in Studies on Myriapoda and Onychophora*. – *Fragmenta Faunistica Supplement zu Band* 43: 37-59.
- DUNGER, W.; DUNGER, I.; ENGELMANN, H.-D.; SCHNEIDER, R. (1972): Untersuchungen zur Langzeitwirkung von Industrie-Emissionen auf Böden, Vegetation und Bodenfauna des Neißetales bei Ostritz/ Oberlausitz. – *Abhandlungen und Berichte des Naturkundemuseums Görlitz* 47 (3): 1-40.
- EASON, E.H. (1964): *Centipedes of the British Islands*. – Frederick Warne, London: 294 pp.
- EASON, E.H. (1972): The type specimens and identity of the species described in the genus *Lithobius* by C.L. Koch and L. Koch from 1841 to 1887 (Chilopoda: Lithobiomorpha). – *Bulletin of the British Museum (Natural History) / Zoology series* 22: 105-150.
- EASON, E.H. (1974): The type specimens and identity of the species described in the genus *Lithobius* by F. Meinert, and now preserved in the Zoological Museum, Copenhagen University (Chilopoda: Lithobiomorpha). – *Zoological Journal of the Linnean Society* 55: 1-52.
- EASON, E.H. (1980): On *Lithobius subtilis* Latzel, 1880, a little-known european species of Lithobiidae (Chilopoda, Lithobiomorpha). *Bulletin Zoologisch Museum, Universiteit van Amsterdam* 7 (12): 125-131.
- EASON, E.H. (1982): A review of the north-west european species of Lithobiomorpha with a revised key to their identification. – *Zoological Journal of the Linnean Society* 74 (1): 9-33.
- EICHLER, W. (1952). *Die Tierwelt der Gewächshäuser*. – Akademische Verlagsanstalt Geest & Portig KG, Leipzig: 93 pp.
- ENGHOFF, H.; CAODURO, G.; ADIS, J.; MESSNER, B. (1997): A new cavernicolous, semiaquatic species of *Serradium* (Diplopoda, Polydesmidae) and its terrestrial, sympatric congener. With notes on the genus *Serradium*. – *Zoologica Scripta* 26 (3): 279-290.
- ENGHOFF, H.; GOLOVATCH, S.I. (2003): The millipede genus *Propolydesmus* Verhoeff, 1895 redefined, with a revision of the genus in the Canary Islands (Diplopoda, Polydesmida, Polydesmidae). – *Graellsia: revista de entomologos espanoles* 59 (1): 79-86.
- ENGHOFF, H.; AKKARI, N.; PEDERSEN, J. (2013a): Aliquid novi ex Africa? *Lamyctes africanus* (Porath, 1871) found in Europe (Chilopoda: Lithobiomorpha: Henicopidae). – *Journal of Natural History* 47: 1-24. doi: [10.1080/00222933.2012.763062](https://doi.org/10.1080/00222933.2012.763062)

- ENGHOFF, H.; PETERSEN, G.; SEBERG, O. (2013b): The aberrant millipede genus *Pteridoiulus* and its position in a revised molecular phylogeny of the family Julidae (Diplopoda: Julida). – Invertebrate Systematics 27: 515-529. doi: [10.1071/IS13016](https://doi.org/10.1071/IS13016)
- FANZAGO, F. (1881): Escursione in Calabria (1877–78). Miriapodi. – Bollettino della Società Entomologica Italiana 12 (4): 265-277.
- FODDAI, D.; MINELLI, A.; SCHELLER, U.; ZAPPAROLI, M. (1995): Chilopoda, Diplopoda, Pauropoda, Symphyla. – In: MINELLI, A.; RUFFO, S.; LA POSTA, S. (ed.): Checklist delle Specie della Fauna Italiana 32/33: 1-35.
- FOLKMANOVÁ, B. (1947): Stonozky z Jeseníků. – Entomologické listy 10: 75-81.
- FOLKMANOVÁ, B. (1949): Príspevek k poznání stonožek severního Slezska (Dokoncení). – Acta Rerum Naturalium Districtus Ostraviensis 10: 342-361.
- FOLKMANOVÁ, B. (1954): Příspěvek k poznáslezských stonožek z Beskyd. Contributions à la connaissance des myriapodes des montagnes Beskyde. [Czech, French summ.] – Přírodovědecký sborník Ostravského kraje 15 (2/3): 194-219.
- FRITSCH, E. (1998): Die Höhlenfauna des Hirlatzmassivs. – Die Höhle, wissenschaftliche Beihefte 52: 136-192.
- FRÜND, H.-C. (1989): Untersuchungen zur Biologie städtischer Böden. 5. Epigäische Raubarthropoden. – Verhandlungen der Gesellschaft für Ökologie 18: 201-209.
- GREGORY, ST.J.; GARNHAM, N. (2022): *Lamycles africanus* (Porath, 1871) in Britain (Chilopoda: Lithobiomorpha: Henicopidae). – Bulletin of the British Myriapod & Isopod Group 34: 7-13.
- GRUBER, J. (2005): Zwei für Österreichs Fauna neue Chordeumatidae (Diplopoda: Chordeumatida) im niederösterreichischen Waldviertel. – Schubartiana 1: 9-15.
- HAASE, E. (1881): Schlesiens Chilopoden. II. Chil. epimorpha. – Zeitschrift für Entomologie, N.F. 8: 66-92.
- HAASE, H.; BRUNK, I.; VOIGTLÄNDER, K.; BALKENHOL, B. (2019): Invasion des Neophyten *Spiraea* sp. und Sukzession artenreicher Graslandflächen: Auswirkungen auf die Artengemeinschaften von Spinnen (Araneae), Laufkäfern (Carabidae) sowie Doppel- und Hunderfüßern (Diplopoda, Chilopoda). – Berichte der Naturforschenden Gesellschaft der Oberlausitz 27: 5-42.
- HANDKE, K. (1988): Faunistisch-ökologische Untersuchungen auf Brachflächen in Baden-Württemberg. – Arbeitsberichte Lehrstuhl Landschaftsökologie Münster 8: 1-169.
- HAUSER, H.; VOIGTLÄNDER, K. (2008): Doppelfüßer (Diplopoda) der Sächsischen Schweiz und der Umgebung von Dresden. – Berichte der Naturforschenden Gesellschaft der Oberlausitz 16: 143-152.
- HAUSER, H.; VOIGTLÄNDER, K. (2009a): Doppelfüßer (Diplopoda) Ostdeutschlands. – DJN, Deutscher Jugendbund für Naturbeobachtung, Göttingen: 112 pp.
- HAUSER, H.; VOIGTLÄNDER, K. (2009b): Zoogeography of the millipedes (Diplopoda) of eastern Germany. – In XYLANDER, W.E.R.; K. VOIGTLÄNDER (eds): Myriapoda and Onychophora of the World – Diversity, Biology and Importance. – Soil Organisms 81 (3): 617-633.
- HAUSER, H.; VOIGTLÄNDER, K. (2019): Doppelfüßer (Diplopoda) Deutschlands. Verhalten, Ökologie, Verbreitung, Lebendbestimmung. – DJN, Deutscher Jugendbund für Naturbeobachtung, Göttingen: 1-148 pp.
- HENNINGS, C. (1903): Zur Biologie der Myriopoden I. Marine Myriopoden. – Biologisches Zentralblatt 23: 720-725.
- HERBKE, C. (1962): Untersuchungen über das Vorkommen von Tausendfüßlern in landwirtschaftlich genutzten Böden des Dauerdüngungsversuches Dikopshof. – Monographien zur angewandten Entomologie 18: 13-43.
- HNATEWYTSCH, B. (1929): Die Fauna der Erzgruben von Schneeberg im Erzgebirge. – Zoologische Jahrbücher, Abteilung für Systematik, Ökologie und Geographie der Tiere 56: 173-261.
- HOFFMAN, R.L. (1980): Classification of the Diplopoda. – Muséum d'Histoire Naturelle, Genève: 237 pp.
- IORIO, E. (2014): Catalogue biogéographique et taxonomique des chilopodes (Chilopoda) de France métropolitaine. – Mémoires Société Linnéenne de Bordeaux 15: 372 pp.
- IORIO, E.; LABROCHE, A. (2015): Les chilopodes (Chilopoda) de la moitié nord de la France: toutes les bases pour débiter l'étude de ce groupe et identifier facilement les espèces. – Invertébrés armoricains 13: 108 pp.
- IORIO, E. (2016): Confirmation of the presence of *Lamycles africanus* (Porath, 1871) in France (Chilopoda, Lithobiomorpha: Henicopidae). – Bulletin of the British Myriapod & Isopod Group 29: 44-48.

- IORIO, E.; QUINDROIT, C. (2018): New records of *Henia (Chaetechelyne) duboscqui* (Verhoeff, 1943) and of other centipedes from Corsica (Chilopoda) together with some notes on the French species of *Henia*. – Bulletin of the British Myriapod & Isopod Group 30: 71-83.
- IORIO, E.; LABROCHE, A.; JACQUEMIN, G. (2022): Les chilopodes (Chilopoda) de la moitié nord de la France : toutes les bases pour débiter l'étude de ce groupe et identifier facilement les espèces. – Version 2. Document inédit basé sur la première version parue dans la revue « Invertébrés Armoricains » n°13 (épuisée), décembre 2022: 90 pp.
- IORIO, E.; JACQUEMIN, G. (2025): Les Chilopodes d'Auvergne-Rhône-Alpes et de Provence-Alpes-Côte d'Azur (Chilopoda) : guide pratique d'identification. Ouvrage finalisé pour le Pôle Invertébrés d'Auvergne-Rhône-Alpes: 172 pp.
- IORIO, E.; RACINE, A.; CARNET, M.; CHERPITEL, T.; DESMOTS, D.; GEOFFROY, J.-J.; JACQUEMIN, G.; QUINDROIT, C.; JEUSSET, A.; REGNIER, C.; BARAUD, L.; VERON, S.; GIGOT, G.; KIRCHNER, F. (2025). La Liste rouge des espèces menacées en France – Chapitre Mille-pattes chilopodes de France métropolitaine. UICN Comité français, OFB, MNHN & Myria-France: 12 pp.
- JANETSCHKE, H. (1948): Über einige für Nordtirol neue oder wenig bekannte Gliederfüßler. – Tiroler Heimatblätter 23 (9/10): 1-9.
- JASTRZEBSKI, P. (2012): *Brachyiulus jawlowskii* Lohmander, 1928, a millipede species new to the fauna of Poland (Myriapoda: Diplopoda). – Fragmenta Faunistica 55 (1): 1-3.
- JAWŁOWSKI, H. (1925): Zwei neue Diplopoden aus der Umgegend von Wilno. – Annales Zoologici Musei Polonici Historiae Naturalis 4: 309-313.
- JEEKE, C.A.W. (1964): Beitrag zur Kenntnis der Systematik und Ökologie der Hundertfüßer (Chilopoda) Nordwestdeutschlands. – Abhandlungen und Verhandlungen des Naturwissenschaftlichen Vereins in Hamburg 8: 111-153.
- JONES, R.E. (1998): A description of *Schendyla peyerimhoffi* Brölemann & Ribaut (1911). – Bulletin of the British Myriapod Group 14: 26-30.
- KACZMAREK, J. (1979): Pareczniki (Chilopoda) Polski. – Uniwersytet imienia Adama Mickiewicza w Poznaniu, Seria Zoologia 9: 1-98.
- KIME, D.R.; ENGHOFF, H. (2011): Atlas of European millipedes (Class Diplopoda). Volume 1. – Pensoft Publishers, Sofia: 282 pp.
- KIME, D.R.; ENGHOFF, H. (2017): Atlas of European millipedes 2: Order Julida (Class Diplopoda). – European Journal of Taxonomy 346: 1-299. doi: [10.5852/ejt.2017.346](https://doi.org/10.5852/ejt.2017.346)
- KIME, D.R.; ENGHOFF, H. (2021): Atlas of European millipedes 3: Order Chordeumatida (Class Diplopoda). – European Journal of Taxonomy 769: 1-244. doi: [10.5852/ejt.2021.769.1497](https://doi.org/10.5852/ejt.2021.769.1497)
- KOBEL-LAMPARSKI, A. (1987): Die Neubesiedlung von flurbereinigtem Reb Gelände im Kaiserstuhl und die weitere frühe Sukzession am Beispiel ausgewählter Tiergruppen aus verschiedenen Trophieebenen. – Dissertation, Universität Freiburg i. Br.: 453 pp.
- KOCH, C.L. (1835): Deutschlands Crustaceen, Myriapoden und Arachniden: ein Beitrag zur deutschen Fauna. – In: HERRICH-SCHÄFFER, A. (ed.): Deutschlands Insecten, Heft 3. – Friedrich Pustet, Regensburg: 9 Bl.
- KOCH, C.L. (1847): System der Myriapoden mit den Verzeichnissen und Berichtigungen zu Deutschlands Crustaceen, Myriapoden und Arachniden. – In: Kritische Revision der Insectenfauna Deutschlands, III.: 1-196.
- KOCH, L. (1862): Die Myriapodengattung *Lithobius*. – Verlag von J.L. Lotzbeck, Nürnberg: 94 pp.
- KOCOUREK, P.; DOLEJŠ, P.; KOVAŘÍKOVÁ, A. (2023): Atlas rozšíření mnohonožek v České republice. Atlas of the millipedes of the Czech Republic. – Národní Muzeum, Praha: 152 pp.
- KOREN, A. (1992): Die Chilopodenfauna von Kärnten und Osttirol. 2. Teil. Lithobiomorpha. – Carinthia II, 51. Sonderheft: 138 pp.
- KURNIK, I.; THALER, K. (1985): Weitere Diplopoden-Fallenfänge in Nordtirol (Österreich) (Myriapoda: Diplopoda). – Berichte des naturwissenschaftlich-medizinischen Vereins in Innsbruck 72: 145-154.
- KURNIK, I. (1987): Studien an Chordeumatida (Diplopoda). Weibliche Genitalmorphologie und Verbreitung der Chordeumatidae Österreichs. – Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere 114: 269-288.
- LAŠKA, V. (2004): Atlas rozšíření stonožek (Chilopoda) České Republiky. – Bachelor's thesis, Univerzita Palackého v Olomouci, Přírodovědecká Fakulta: 87 S.

- LATZEL, R. (1880): Die Myriapoden der Österreichisch-Ungarischen Monarchie. – Alfred Hölder, Wien: I-XV, 1-414, plate I-XVI.
- LATZEL, R. (1894): Myriopoden aus der Umgebung Hamburgs. – Mitteilungen aus dem Naturhistorischen Museum Hamburg 12: 99-109.
- LAZÁNYI, E.; KORSÓS, Z. (2011): Revision of the *Megaphyllum projectum* Verhoeff species complex (Myriapoda: Diplopoda: Julida: Julidae). – Zootaxa 2864: 43-56. doi: [10.11646/zootaxa.2864.1.3](https://doi.org/10.11646/zootaxa.2864.1.3)
- LEIPOLD, D.; LORENZ, W. (1995): Zoologische Untersuchungen auf dem Standortübungsplatz Landshut 1994: Spinnen und Laufkäfer (Araneae; Coleoptera: Carabidae). – Bayerisches Landesamt für Umweltschutz: 25 pp.
- LESNIEWSKA, M.; BONATO, L.; FUSCO, G. (2009): Morphological anomalies in a Polish population of *Stigmatogaster subterranea* (Chilopoda: Geophilomorpha): a multi-year survey. – In: XYLANDER, W.E.R.; VOIGTLÄNDER, K. (ed.) Myriapoda and Onychophora of the world - Diversity, Biology and Importance – Proceedings of the 14th International Congress of Myriapodology. Görlitz, Germany. – Soil Organisms 81 (3): 347-358.
- LEWIS, J.E.G. (1961): On *Schendyla peyerimhoffi* Brolemann & Ribaut and *Geophilus pusillifrater* Verhoeff, two geophilomorph centipedes new to the British Isles. – The Annals and Magazine of Natural History, series 13, 4: 393-399.
- LEWIS, J.G.E. (1962): The ecology, distribution and taxonomy of the centipedes found on the shore in the Plymouth area. – Journal of the Marine Biological Association of the United Kingdom 42: 655-664.
- LINDNER, E.N.; SPELDA, J. (2008): Erstnachweise von *Geophilus oligopus* (Attems, 1895) für Deutschland (Chilopoda: Geophilida: Geophilidae). – Schubartiana 3: 49-52.
- LINDNER, E.N. (2010): Wiederfund und weitere Funde von *Cryptops anomalans* Newport, 1844 (Chilopoda: Scolopendrida: Cryptopidae) in Sachsen. – Schubartiana 4: 15-16.
- LINDNER, E.N.; REIP, H.S.; SPELDA, J. (2010): *Anamastigona pulchella* (Silvestri, 1898) (Diplopoda: Chordeumatida: Anthroleucosomatidae) – ein für Deutschland neuer Tausendfüßer. – Schubartiana 4: 1-8.
- LINDNER, E.N.; VOIGTLÄNDER, K.; DECKER, P. (2020): Rote Listen Sachsen-Anhalt. 22. Hundertfüßer (Chilopoda). – Berichte des Landesamtes für Umweltschutz Sachsen-Anhalt 1/2020: 419-424.
- LINDNER, E.N.; SPELDA, J.; VOIGTLÄNDER, K. (in prep.) *Geophilus austriacus* Latzel, 1880, a long times misjudged species in the *G. flavus* species-complex.
- LOHMANDER, H. (1927): *Schizophyllum kessleri* n. sp., ein neuer Diplopode aus Südwestrußland. – Zoologischer Anzeiger 72 (9/10): 225-230.
- LOHMANDER, H. (1928). Neue Diplopoden aus Ukraine und dem Kaukasus. (2. Aufsatz über Diplopoden aus dem Sovjet-Gebiet). – Académie des Sciences de l'Ukraine. Mémoires de la Classe des Sciences Physiques et Mathématiques 6 (3): 529-550.
- LOKSA, I. (1955): Über die Lithobiiden des Faunagebiets des Karpatenbeckens. – Acta Zoologica Academiae Scientiarum Hungaricae 1: 331-349.
- MACHADO, A. (1952): Myriápodes de Portugal. Primeira parte: Quilópodes. – Brotéria, cultura e informação. Série trimestral, Ciências naturais 21: 65-169.
- MATIC, Z. (1966): Fauna Republicii Socialiste România, Clasa Chilopoda, Subclasa Anomorpha. – Editura Academiei RSR, Bucureşti 6 (1): 266 pp.
- MAUERMAYER, G. (1962): Verzeichnis der Veröffentlichungen von Karl W. Verhoeff. – In: Karl Wilhelm Verhoeff 1867-1945. Johann Ambrosius Barth, Leipzig: 18-50.
- MEYER, E. (1975): Über einige Diplopoden aus dem Rätikon (Vorarlberg, Österreich). – Bericht des naturwissenschaftlich-medizinischen Vereins in Innsbruck 62: 63-69.
- MINELLI, A. (1982): Contributo alla revisione dei chilopodi geofilomorfi finora riferiti ai generi *Henia* e *Chaetechelyne*. – Memorie della Società entomologica italiana 60 (2): 253-268.
- MOHR, E. (1929): Biologische Untersuchungen in der Segeberger Höhle. – Schriften des Naturwissenschaftlichen Vereins für Schleswig-Holstein 19 (1): 1-25.
- MOHR, E. (1930): Die Höhle von Segeberg (Holstein) und ihre Bewohner. – Zeitschrift für Karst- und Höhlenkunde 8: 81-89.
- MOHR, E. (1937): Neue biologische Untersuchungen in der Segeberger Höhle. – Schriften des Naturwissenschaftlichen Vereins für Schleswig-Holstein 22 (1): 116-139.

- NEGREA, S. (2010): Critical evaluation of the specimens of *Lithobius validus* Meinert – species group (Chilopoda: Lithobiidae) from the “Z. Matic” and “St. Negrea” collections (Romania). – Travaux du Muséum National d’Histoire Naturelle “Grigore Antipa” 53: 125-138.
- OEYEN, J.P., PODSIADLOWSKI, L.; WESENER, T. (2021): First recent record of the centipede *Strigamia maritima* (Leach, 1817) from Germany (Myriapoda, Chilopoda, Geophilomorpha). – Bulletin of the British Myriapod & Isopod Group 33: 88-90.
- ORSZÁGH, I. (2001): Centipedes (Chilopoda) of the Slovak Republic. – Myriapodologica Czecho-Slovaca 1: 49-57.
- PEDROLI-CHRISTEN, A. (1993): Faunistique des mille-pattes de Suisse (Diplopoda) – Faunistik der Tausendfüßler der Schweiz (Diplopoda). – Documenta Faunistica Helvetiae 14: 1-167.
- PETERS, D. (1984): Faunistische und ökologische Untersuchung der Lumbriciden, Diplopoden und Chilopoden auf verschieden bewirtschafteten Flächen der niederrheinischen Tiefebene. – Phd-thesis, Rheinische Friedrich-Wilhelm-University: 185 S.
- PILZ, C.; MELZER, R.R.; SPELDA, J. (2008): Morphometrics and Scanning EM analysis of the species pair *Lithobius mutabilis* L. Koch, 1862 and *Lithobius glacialis* Verhoeff, 1937 (Chilopoda: Lithobiomorpha). – Organisms, Diversity and Evolution 7: 270e1-270e20.
- POSTNER, M. (1952): Biologisch-ökologische Untersuchungen an Hummeln und ihren Nestern. – Veröffentlichungen aus dem Übersee-Museum Bremen, Reihe A 2 (1): 45-86.
- QUINDROIT, C. (2021): Deuxième contribution à la connaissance des Chilopodes (Chilopoda) du Nord et du Pas-de-Calais: découverte de *Lithobius muticus* C.L.Koch, 1847, de *Geophilus electricus* (Linnaeus, 1758) et réobservation du rare *Strigamia maritima* (Leach, 1817). – Bulletin de la Société entomologique du Nord de la France 378: 1-11.
- RACINE, A.; IORIO, E. (2017): Contribution à la connaissance des chilopodes du Finistère et des Côtes d'Armor (Myriapoda, Chilopoda). – Invertébrés Armoricains 16: 3-28.
- RACINE, A.; IORIO, E.; DESMOT, D. (2023): Projet d’atlas des chilopodes (Chilopoda) des Pays de la Loire: bilan des 7^{ème}, 8^{ème} et 9^{ème} années. – GRECIA: 19 pp.
- REIP, H.S.; VOIGTLÄNDER, K. (2009): Diplopoda and Chilopoda of Thuringia, Germany. – In: XYLANDER, W.E.R., VOIGTLÄNDER, K. (eds): Myriapoda and Onychophora of the World – Diversity, Biology and Importance. Proceedings of the 14th International Congress of Myriapodology, Görlitz. – Soil Organisms 81 (3): 635-645.
- REIP, H.S.; DECKER, P.; VOIGTLÄNDER, K.; LINDNER, E.N.; HANNIG, K.; SPELDA, J. (2012): Seltene Myriapoden Deutschlands (Diplopoda, Chilopoda). – Schubartiana 5: 49-112.
- REIP, H.S.; SPELDA, J.; VOIGTLÄNDER, K.; DECKER, P.; LINDNER, E.N. (2016): Rote Liste und Gesamtartenliste der Doppelfüßer (Myriapoda: Diplopoda) Deutschlands. – In: GRUTKE, H.; BINOT-HAFKE, M.; BALZER, S.; HAUPT, H.; HOFBAUER, N.; LUDWIG, G. (eds): Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands, Band 4: Wirbellose Tiere (Teil 2). – Naturschutz und Biologische Vielfalt 70 (4): 327-346.
- REMUS, A. (1969): Wirkungen der Lößumlagerung im Naßverfahren auf die Bodenfauna und die Entwicklung der Bodentiergemeinschaft im aufgelandeten Löß(roh)boden. – Zeitschrift für Acker- und Pflanzenbau 129: 206-224.
- RICHTER, H. (1967). Zur Diplopodenfauna des Osterzgebirges. Faunistisch-ökologische und morphologisch-biologische Untersuchungen in vier Blockhaldenbiotopen. – Abhandlungen und Berichte des Naturkundemuseums Görlitz 42 (4): 1-62.
- ROSSOLIMO, T.E.; RYBALOV, L.B. (1979): Thermo- und hygropreferendum of some soil invertebrates with respect to their biotopical distribution. [in Russian. English summary]. – Zoologicheskii Zhurnal 58 (12): 1802-1810.
- RÜPPELL, A. (1967). Tagesrhythmische und langfristige Faunenverschiebungen im marinen Supralitoral. – Zeitschrift für Morphologie und Ökologie der Tiere 60 (4): 338-375.
- SAMMET, K.; IVASK, M.; KURINA, O. (2018): A synopsis of Estonian myriapod fauna (Myriapoda: Chilopoda, Diplopoda, Symphyla and Pauropoda). – ZooKeys 793: 63-96. doi: [10.3897/zookeys.793.28050](https://doi.org/10.3897/zookeys.793.28050)
- SCHMID, G. (1966): Die übrige "niedere" Tierwelt des Spitzbergs. – In: MÜLLER, T.; GÖRS, S.; SCHMID, G. (eds): Der Spitzberg bei Tübingen. – Landesstelle für Naturschutz und Landschaftspflege Baden-Württemberg, Band 3: 998-1027.

- SCHNUR, J. (1857): Systematische Aufzählung der Crustaceen, Arachniden und Miriapoden [sic!], welche ich bisher in der Umgebung von Trier gefunden habe. – Jahresbericht der Gesellschaft für Nützliche Forschungen zu Trier vom Jahre 1856 (1857): 53-55.
- SCHUBART, O. (1929): Thalassobionte und thalassophile Myriapoda. – In: GRIMPE, G. (ed.): Tierwelt der Nord- und Ostsee 11: 1-20.
- SCHUBART, O. (1931): Über die Diplopodenfauna Pommerns und einiger der Küste vorgelagerten Inseln (Über Diplopoden Nr. 16.). – Dohrniana 11: 241-279.
- SCHUBART, O. (1934): Tausendfüßler oder Myriapoda. I: Diplopoda. – In: DAHL, F. (ed.): Die Tierwelt Deutschlands und der angrenzenden Meeresteile, 28. Teil, Jena: 318 pp.
- SCHUBART, O. (1957): Die Diplopoden der Mark Brandenburg. Eine ökologische Studie. – Mitteilungen aus dem Zoologischen Museum in Berlin 33: 3-95.
- SPELDA, J.; RAHMANN, H. (1995). Faunistisch-ökologische Untersuchungen der Hundert- und Tausendfüßerfauna (Chilopoda, Diplopoda) im Wurzacher Becken, Landkreis Ravensburg/Baden-Württemberg. – Mitteilungen der Deutschen Gesellschaft für Allgemeine und Angewandte Entomologie 9: 665-668.
- SPELDA, J. (1996): Millipedes as Aids for the Reconstruction of Glacial Refugia. – In: GEOFFROY, J.-J., MAURIÈS, J.-J.; NGUYEN DUY-JAQUEMIN, M. (eds.): Acta Myriapodologica. – Mémoires du Muséum National d'Histoire Naturelle, Paris 169: 151-161.
- SPELDA, J. (1999): Verbreitungsmuster und Taxonomie der Chilopoda und Diplopoda Südwestdeutschlands. Diskriminanzanalytische Verfahren zur Trennung von Arten und Unterarten am Beispiel der Gattung *Rhymogona* COOK, 1896 (Diplopoda: Chordeumatida: Craspedosomatidae). Teil 2. – Dissertation, Universität Ulm: 324 pp.
- SPELDA, J. (2004): Rote Liste gefährdeter Hundert- und Tausendfüßer (Myriapoda: Chilopoda, Diplopoda) Bayerns. – Schriftenreihe Bayerisches Landesamt für Umweltschutz 166: 339-342.
- SPELDA, J. (2005a): Improvements in the knowledge of the myriapod fauna of southern Germany between 1988 and 2005 (Myriapoda: Chilopoda, Diplopoda, Pauropoda, Symphyla). – Peckiana 4: 101-129.
- SPELDA, J. (2005b): Erstnachweise von *Harpolithobius anodus* (Latzel, 1884) in Deutschland (Chilopoda: Lithobiida: Lithobiidae). – Schubartiana 1: 65-66.
- SPELDA, J.; PILZ, C.; FRIEDRICH, S.; MARTIN, J.; UNSÖLD, M.; MELZER, R.R. (2005): Hundert- und Tausendfüßer aus Südbayern, gesammelt auf den Exkursionen der Abteilung "Arthropoda Varia" der Zoologischen Staatssammlung München in den Jahren 2003 und 2004 (Myriapoda: Chilopoda, Diplopoda). – Schubartiana 1: 57-62.
- SPELDA, J. (2008): The genus *Pyrgocyphosoma* Verhoeff, 1910 (Diplopoda: Chordeumatida: Craspedosomatidae): New aspects on systematics, distribution and ecology. – Schubartiana 3: 5-47.
- SPELDA, J.; REIP, H.S.; OLIVEIRA BIENER, U.; MELZER, R.R. (2011): Barcoding Fauna Bavarica: Myriapoda – a contribution to DNA sequence-based identifications of centipedes and millipedes (Chilopoda, Diplopoda). – ZooKeys 156: 123-139. doi: [10.3897/zookeys.156.2176](https://doi.org/10.3897/zookeys.156.2176)
- SPUNGIS, V. (2010): Fauna of millipedes (Diplopoda) in Latvia with Notes on Occurrence, Habitat Preference and Abundance. – Latvijas Entomologs 48: 107-115.
- STRASSER, K. (1967): Ein Typhloiuline aus den Nördlichen Kalkalpen (Diplopoda Symphyognatha). – Berichte des Naturwissenschaftlich-Medizinischen Vereins in Innsbruck 55: 145-154.
- STRZELCZYK, P. (1994): Ökofaunistische Studie zur Evertebratenfauna tiefer Gewölbekeller in der Kernstadt von Bautzen (Sachsen) als Beitrag zur Kenntnis der Domikolfuna Mitteleuropas. – Diploma Thesis, Universität Leipzig: 140 pp.
- THALER, K.; KOFLER, A.; MEYER, E. (1986): Fragmenta Faunistica Tirolensia - VII (Arachnida: Aranei; Myriapoda, Diplopoda: Chordeumatida, Polydesmida; Insecta, Coleoptera: Curculionidae). – Veröffentlichungen des Tiroler Landesmuseums Ferdinandeum 66: 131-154.
- VAGALINSKI, B.; BORISOV, S.; BOBEVA, A.; CANCIANI, G.; ANTIĆ, D.Ž. (2022): The mostly cavernicolous millipede genus *Stygiulus* Verhoeff, 1929, stat. nov.: taxonomy, distribution and phylogenetic relationships (Diplopoda, Julida, Julidae). – European Journal of Taxonomy 798: 30-69. doi: [10.5852/ejt.2022.798.1669](https://doi.org/10.5852/ejt.2022.798.1669)
- VERHOEFF, K.W. (1895): Beiträge zur Kenntniss paläarktischer Myriopoden. II. Aufsatz: Ueber mitteleuropäische Geophiliden. – Archiv für Naturgeschichte 61 (1): 346-356.

- VERHOEFF, K.W. (1897): Über Diplopoden aus Bosnien, Herzegowina und Dalmatien. II.Theil: Chordeumidae und Lysiopetalidae. – Archiv für Naturgeschichte 63 (1): 147-156.
- VERHOEFF, K.W. (1908): Über Diplopoden. 10. (30.) Aufsatz: Zur Kenntnis der Juliden und über einige Polydesmiden. – Archiv für Naturgeschichte 73 (1): 423-474.
- VERHOEFF, K.W. (1910). Über Diplopoden. 18. (38.) Aufsatz. Die nordböhmisch-sächsische Fauna und ihre Bedeutung für die Zoogeographie Mitteleuropas. – Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft "ISIS" in Dresden 1910 (1): 20-66.
- VERHOEFF, K.W. (1913a): *Ceratosoma* und *Listrocheiritium* n. g. (Über Diplopoden, 58. Aufsatz.). – Zoologischer Anzeiger 41 (7): 298-314.
- VERHOEFF, K.W. (1913b): Norische Formen aus den Gattungen *Leptoiulus*, *Ceratosoma* und *Polydesmus* (Über Diplopoden, 66. Aufsatz). – Zoologischer Anzeiger 43: 97-110.
- VERHOEFF, K.W. (1916): Germania zoogeographica. (Über Diplopoden. 90. Aufsatz). – Zoologischer Anzeiger 47 (4/5): 100-125.
- VERHOEFF, K.W. (1917): Zur Kenntnis der Zoogeographie Deutschlands, zugleich über Diplopoden namentlich Mitteldeutschlands und Beiträge für die biologische Beurteilung der Eiszeiten (85.-88. Diplopoden-Aufsatz). – Nova Acta Academiae Caesareae Leopoldino-Carolinae Germanicae Naturae Curiosorum 103: 1-157.
- VERHOEFF, K.W. (1927a): Beiträge zur Kenntnis der Steinläufer, Lithobiiden. – Archiv für Naturgeschichte 91A (9) [1925]: 124-158.
- VERHOEFF, K.W. (1927b): Über Diplopoden des bayrischen Waldes. 105. Diplopoden-Aufsatz. – Zoologische Jahrbücher, Abteilung für Systematik, Ökologie und Geographie der Tiere 53: 147-174.
- VERHOEFF, K.W. (1929): Studien über Ökologie und Geographie der Diplopoden hauptsächlich der Ostalpen. 112. Diplopoden-Aufsatz. – Zeitschrift für Morphologie und Ökologie der Tiere 15: 35-89.
- VERHOEFF, K.W. (1930a): Über Diplopoden aus Italien, namentlich Piemont. 114. Diplopoden-Aufsatz. – Zoologische Jahrbücher - Abteilung für Systematik, Ökologie und Geographie der Tiere 59: 387-446.
- VERHOEFF, K.W. (1930b): Zur Kenntnis italienischer Diplopoden. 119. Diplopoden-Aufsatz. – Zoologische Jahrbücher, Abteilung für Systematik, Ökologie und Geographie der Tiere 60 (3-4): 281-326.
- VERHOEFF, K.W. (1931) Über europäische *Cryptops*-Arten. – Zoologische Jahrbücher, Abteilung für Systematik, Ökologie und Geographie der Tiere 62 (3): 263-288.
- VERHOEFF, K. W. (1934): Diplopoda, Symphyla, Pauropoda, Chilopoda. Ergänzungsband (Oberklasse: Progoneata). – In: BROHMER, P.; EHRLMANN, P.; ULMER, G. (eds): Die Tierwelt Mitteleuropas 2 (3). – Quelle & Meyer: 1-120.
- VERHOEFF, K.W. (1935): Quer durch Schwarzwald und schweizerischen Jura (Chiemgau), Chilopoden. – Verhandlungen des naturwissenschaftlichen Vereins in Karlsruhe 31: 181-208.
- VERHOEFF, K.W. (1936). Unsere Kenntnisse von den Diplopoden des alemannischen Gaues. 145. Diplopoden-Aufsatz. – Beiträge zur naturkundlichen Forschung in Südwestdeutschland 1 (2): 228-254.
- VERHOEFF, K.W. (1937): Chilopoden-Studien. Zur Kenntnis der Lithobiiden. – Archiv für Naturgeschichte, N.F., 6 (2): 171-257.
- VOIGTLÄNDER, K. (1988): Für die DDR neue oder seltene Myriapoden (Diplopoda, Chilopoda). – Abhandlungen und Berichte des Naturkundemuseums Görlitz 62 (10): 21-25.
- VOIGTLÄNDER, K.; DUNGER, W. (1992): Long-term Observations of the Effects of Increasing Dry Pollution on the myriapod Fauna of the Neiße Valley (East Germany). – Berichte des Naturwissenschaftlich-Medizinischen Vereins in Innsbruck, Suppl. 10: 251-256.
- VOIGTLÄNDER, K. (1996): Diplopoden und Chilopoden von Trockenstandorten im Hallenser Raum (Ostdeutschland). – Hercynia N. F., Halle 30: 109-126.
- VOIGTLÄNDER, K. (2000): *Polydesmus germanicus* Verhoeff, 1896 (Diplopoda, Polydesmidae) in Deutschland. – Abhandlungen und Berichte für Naturkunde, Magdeburg 23: 53-56.
- VOIGTLÄNDER, K. (2004a): Rote Liste der Hundertfüßer (Chilopoda) Sachsen-Anhalts. – Berichte des Landesamtes für Umweltschutz Sachsen-Anhalt 39: 175-177.
- VOIGTLÄNDER, K. (2004b): Rote Liste der Doppelfüßer (Diplopoda) des Landes Sachsen-Anhalt. – Berichte des Landesamtes für Umweltschutz Sachsen-Anhalt 39: 178-180.

- VOIGTLÄNDER, K.; HAUSER, H. (2005): Untersuchungen zur Bodenmakrofauna der Lausche (Diplopoda, Chilopoda, Isopoda, Lumbricidae). – Berichte der Naturforschenden Gesellschaft der Oberlausitz 13: 75-81.
- VOIGTLÄNDER, K.; LINDNER, E.N. (2010): Die Myriapodenfauna (Diplopoda, Chilopoda) des Harzgebietes mit besonderer Berücksichtigung ihrer Beziehung zur Fauna Sachsen-Anhalts. Beiträge zur Myriapodenfauna des Harzes. I. – Entomologische Mitteilungen Sachsen-Anhalt, Sonderheft 2010/2: 80-92.
- VOIGTLÄNDER, K. (2016): Tausendfüßer (Myriapoda: Diplopoda, Chilopoda). – In: FRANK, D.; SCHNITTER, P. (eds): Pflanzen und Tiere in Sachsen-Anhalt. Ein Kompendium der Biodiversität. – Natur +Text, Rangsdorf: 592-598.
- VOIGTLÄNDER, K.; LINDNER, E.N.; REIP, H.S. (2018): Doppel - und Hundertfüßer der Insel Rügen mit Checkliste der Myriapoda Mecklenburg-Vorpommerns, Deutschland (Diplopoda, Chilopoda; Symphyla, Pauropoda). – Schubartiana 7: 23-37.
- VOIGTLÄNDER, K.; LINDNER, E.N.; DECKER, P. (2020): Rote Listen Sachsen-Anhalt. 21. Doppelfüßer (Diplopoda). – Berichte des Landesamtes für Umweltschutz Sachsen-Anhalt 1/2020: 411-417.
- WESENER, T.; VOIGTLÄNDER, K.; DECKER, P.; OEYEN, J.P.; SPELDA, J. (2016): Barcoding of Central European *Cryptops* centipedes reveals large interspecific distances with ghost lineages and new species records from Germany and Austria (Chilopoda, Scolopendromorpha). – ZooKeys 564: 21-46.
- WESENER, T.; BEHR, N.; MORITZ, L. (2019): The first record of the dwarf pill millipede *Geoglomeris subterranea* Verhoeff, 1908 in western Germany (Diplopoda, Glomerida) and the associated myriapoda fauna of the Quirrenbach (Siebengebirge, NRW). – Bulletin of the British Myriapod & Isopod Group 31: 9-15.
- WÜRMLI, M. (1972): Catalogus Faunae Austriae. Ein systematisches Verzeichnis aller auf österreichischem Gebiet festgestellten Tierarten. Teil XI a: Chilopoda. – Springer-Verlag, Wien: 1-16.
- ZAPPAROLI, M. (1994): Note tassonomiche e faunistiche su Chilopodi della Grecia (Chilopoda). – Fragmenta entomologica 26 (1): 11-66.
- ZERM, M. (1997): Die Fauna der Tausend-, Hundert- und Zwergfüßer (Myriapoda: Diplopoda, Chilopoda, Symphyla) sowie der Landasseln (Isopoda: Oniscidea) im Unteren Odertal, unter besonderer Berücksichtigung des Standortfaktors Überschwemmung. – Zoologische Beiträge 38 (1): 97-134.

