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An annotated checklist of the millipedes (Diplopoda) recorded in the Czech Republic

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Abstract. The present checklist summarises information on millipede species recorded in the Czech Republic. The previously published lists are updated by incorporating published and revised data about the millipede fauna of the Czech Republic. Altogether, the checklist of millipedes includes 77 species.

Key words. Catalogue, Diplopoda, Glomerida, Chordeumatida, Julida, Polyxenida, Polyzoniida, Polydesmida, Czech Republic.

INTRODUCTION

The knowledge of the millipede fauna of the Czech Republic has a long history and is closely associated with research on this invertebrate group in surrounding Central European countries. The first papers dealing with millipedes were published in this country at the end of the 19th century (Wankel 1861, Fickert 1875, Rosický 1876, Uličný 1883). In addition, information from Bohemia, Moravia and Silesia (i.e. the main geographically historical parts of the Czech Republic) are included in historical monographs published by Latzel (1884) and Haase (1886, 1887) and authors other than the above mentioned zoologists, such as B. Němec, K. W. Verhoeff, B. Folkmanová, J. Homoláč and V. Borek, also significantly contributed to the knowledge of Czech millipedes during the first half of the 20th century. The first thorough overview of our fauna that included most of the previously published data was presented by Lang (1933, 1954). Based on an evaluation of his work, Gulička (1985) proposed a new list of the millipedes in the Czech fauna, which was more critical and comprehensive than previous lists. A new phase of research started in the nineties of the past century, which is connected with following researchers: J. Čepera, J. Gulička, P. Kocourek, E. Kula, M. Lazorík, K. Tajovský, J. Tufová (nee Ožanová) and I. H. Tuf, and their students. In addition, there were many new records collected during the last few decades based on intensive monitoring of protected areas and nature reserves throughout the whole country and sampling in diverse suburban habitats, including greenhouses and large cities. After Tajovský (2001) published his overview of Czech millipedes and all the historical literary sources, summary lists of millipedes complemented by new records, appeared in several studies reported by Kocourek (2001, 2013) and Tuf & Tufová (2008). The checklist presented here summarises published as well as unpublished data and records, and includes all the species recorded in the Czech Republic.

MATERIALS AND METHODS

The checklist is based on the last published lists (Tajovský 2001, Kocourek 2001, 2013, Tuf & Tufová 2008). Taxonomy follows the database of the Fauna Europaea (Enghoff & Kime 2013). New records of millipedes announced here use the faunistic square codes (FSC) for the mapping of their distribution in the Czech Republic.

RESULTS

The following checklist of the millipede species reported in the Czech Republic includes 77 species. The superscript numbers at the end of the species names refer to the notes in the following text.

Polyxenida	Polyxenidae	*Polyxenus lagurus* (Linnaeus, 1758)
Glomerida	Glomeridae	*Geoglomeris subterranea* Verhoeff, 1908[1] *Glomeris connexa* C. L. Koch, 1847 *Glomeris hexasticha* Brandt, 1833 *Glomeris klugii* Brandt, 1833 *Glomeris pustulata* Latreille, 1804 *Glomeris tetrasticha* Brandt, 1833 *Trachysphaera costata* (Waga, 1857) *Trachysphaera gibbula* (Latzel, 1884)
Polyzoniida	Polyzoniidae	*Polyzonium germanicum* Brandt, 1837
Julida	Blaniulidae	*Blaniulus guttulatus* (Fabricius, 1798) *Choneiulus palmatus* (Němec, 1895) *Nopoiulus kochii* (Gervais, 1847) *Proteroiulus fuscus* (Am Stein, 1857)
	Julidae	*Allajulus nitidus* (Verhoeff, 1891) *Brachyiulus bagnalli* (Curtis, 1845) *Brachyiulus lusitanus* Verhoeff, 1898 *Cylindroiulus arborum* Verhoeff, 1928 *Cylindroiulus boleti* (C. L. Koch, 1847) *Cylindroiulus britannicus* (Verhoeff, 1891) *Cylindroiulus caeruleocinctus* (Wood, 1864) *Cylindroiulus latestriatus* (Curtis, 1845) *Cylindroiulus luridus* (C. L. Koch, 1847) *Cylindroiulus parisiorum* (Brölemann et Verhoeff, 1896) *Cylindroiulus punctatus* (Leach, 1815) *Cylindroiulus truncorum* (Silvestri, 1896) *Cylindroiulus vulnerarius* (Berlese, 1888) *Enantiulus nanus* (Latzel, 1884) *Julus scandinavius* Latzel, 1884 *Julus scanicus* Lohmander, 1925 *Julus terrestris* Linnaeus, 1758 *Kryphioiulus occultus* (C. L. Koch, 1847) *Leptoiulus cibdellus* (Chamberlin, 1921) *Leptoiulus montivagus* (Latzel, 1884) *Leptoiulus noricus* Verhoeff, 1913 *Leptoiulus proximus* (Němec, 1896) *Leptoiulus trilobatus* (Verhoeff, 1894) *Megaphyllum projectum* Verhoeff, 1894 *Megaphyllum unilineatum* (C. L. Koch, 1838) *Ommatoiulus sabulosus* (Linnaeus, 1758) *Ophyiulus pilosus* (Newport, 1842) *Pachypodoiulus eurypus* (Attems, 1895) *Rossiulus vilnensis* (Jawlowski, 1925) *Tachypodoiulus niger* (Leach, 1814)

		Unciger foetidus (C. L. Koch, 1838) *Unciger transsilvanicus* (Verhoeff, 1899)
	Nemasomatidae	*Nemasoma varicorne* C. L. Koch, 1847
Chordeumatida	Anthroleucosomatidae	*Hungarosoma bokori* Verhoeff, 1928[2]
	Brachychaeteumatidae	*Brachychaeteuma bradeae* (Brolemann et Brade-Birks, 1917)[3]
	Chordeumatidae	*Melogona broelemanni* (Verhoeff, 1897) *Melogona gallica* (Latzel, 1884) *Melogona voigtii* (Verhoeff, 1899) *Melogona transsylvanica* (Verhoeff 1897) *Mycogona germanica* (Verhoeff, 1892)
	Craspedosomatidae	*Craspedosoma rawlinsi* Leach, 1814 *Craspedosoma transsylvanicum* (Verhoeff, 1897) *Listrocheiritium septentrionale* Gulička, 1965 *Ochogona caroli* (Rothenbuehler, 1900)
	Haaseidae	*Haasea flavescens* (Latzel, 1884) *Haasea germanica* (Verhoeff, 1901) *Hylebainosoma tatranum* Verhoeff, 1899[4]
	Mastigophorophyllidae	*Haploporatia eremita* (Verhoeff, 1909) *Mastigona bosniensis* (Verhoeff, 1897) *Mastigona mutabilis* (Latzel, 1884) *Mastigophorophyllon saxonicum* Verhoeff, 1916
	Verhoeffiidae	*Haplogona oculodistincta* (Verhoeff, 1893)
Polydesmida	Macrosternodesmidae	*Macrosternodesmus palicola* Brolemann, 1908[5]
	Oniscodesmidae	*Amphitomeus attemsi* (Schubart, 1934)
	Paradoxosomatidae	*Oxidus gracilis* (C. L. Koch, 1847) *Strongylosoma stigmatosum* (Eichwald, 1830)
	Polydesmidae	*Brachydesmus superus* Latzel, 1884 *Polydesmus angustus* Latzel, 1884 *Polydesmus complanatus* (Linnaeus, 1761) *Polydesmus denticulatus* C. L. Koch, 1847 *Polydesmus inconstans* Latzel, 1884 *Propolydesmus germanicus* (Verhoeff, 1896) *Propolydesmus testaceus* (C. L. Koch, 1847)

[1] *Geoglomeris subterranea* was confirmed for the first time in catches from subterranean traps set near the Zbrašov Aragonite Caves, Teplice nad Bečvou (FSC 6472), North eastern Moravia by J. Mikula in 2005–2006 (Mikula 2006). Subsequently, it was recorded also in the Slámova sluj Abyss, the Štramberk Karst (FSC 6474), Northeast Moravia by K. Tajovský in 2006, on railway embankment at Olomouc by M. Navrátil in 2006 (Riedel et al. 2009) and also in the Zbrašov Aragonite Caves by K. Tajovský in 2007.

[2] *Hungarosoma bokori* – based on current analyses, only females of this species were recorded by P. Kocourek and K. Tajovský in forest soil at Hostěnice (FSC 6766), on the Moravian Karst. This the westernmost occurrence of this species was preliminary announced by Mock et al. (2014).

[3] *Brachychaeteuma bradeae* – after the first record of this species (Tajovský & Mlejnek 2007) it was repeatedly collected in mainly subterranean habitats in Eastern Bohemia and several Moravian karstic areas. Females apparently belonging to this species were recorded in soils in Jičín (FSC 5558), Eastern Bohemia by P. Riedel in 2006 (Riedel 2008) and an apple orchard near Starý Hrozenkov (FSC 7073), the White Carpathians Protected Landscape Area, Southeast Moravia, by K. Tajovský in 2011.

[4] *Hylebainosoma tatranum* is a Carpathian endemic species, for which there are several confirmed recordings in Eastern regions of the Beskydy Mts. (Tajovský et al. 2014).

[5] *Macrosternodesmus palicola* was first recorded in the Mladečský Karst, Central Moravia (Tajovský & Mlejnek 2007) and then in the Koněpruské Caves (FSC 6050), Bohemian Karst, Central Bohemia by K. Tajovský in 2009.

Unlike the recently published checklists of the Czech millipedes (Tajovský 2001, Kocourek 2001, 2013, Tuf & Tufová 2008), the following species are not included:

Glomeris marginata (Villers, 1789) listed by Tajovský (2001); historically announced from the Bohemian Karst (Lang 1954), but not confirmed despite intensive surveys of this area.

Craspedosoma alemannicum Verhoeff, 1910 and *C. germanicum* Verhoeff, 1910 listed by Tajovský (2001) and Tuf & Tufová (2008); the published records correspond to the species *C. rawlinsi*.

Craspedosoma slavum Attems, 1929 listed by Tajovský (2001); erroneous information previously criticized by Gulička (1985).

Haasea pinivaga Verhoeff, 1901, listed by Tajovský (2001) and Tuf & Tufová (2008), was described based on material collected in the Bohemian Forest at Teufelssee = the Devils Lake = Čertovo jezero. Based on extensive material collected directly from the locus typicus of *Haasea pinivaga* (with common occurrence of both *H. flavescens* and *H. germanica*) and in agreement with other authors (e.g. Hauser & Voigtländer 2009), *H. pinivaga* should be definitely synonymized with *H. flavescens* (Tajovský unpubl.).

Mastigona vihorlatica (Attems, 1899) listed in Tajovský (2001) and Tuf & Tufová (2008); all previous data included under *Mastigona bosniensis*.

Mastigophorophyllon alpivagum bohemicum Attems, 1900 listed in Tajovský (2001) and Tuf & Tufová (2008); questionable taxon described by Attems without a precise locality. In Fauna Europaea (Enghoff & Kime 2013), it is still treated as two separate species, *M. alpivagum* (Verhoeff, 1897) with distribution in the Czech Republic and *M. bohemicum* Attems, 1900 with no data on its distribution. No historical or recent evidence could be connected with them, therefore this taxon was not included in the checklist.

Ochogona moravica nomen nudum (Kocourek 2007) listed repeatedly by Kocourek (2013) and his student (Skoumalová 2010); the specimens were subsequently determined as *Hungarosoma bokori*; see note 2.

Summarising the available data for the Czech Republic the present checklist includes 77 species of millipedes. The increase in faunistic research over the past two decades has not resulted in many changes so it is likely that the checklist is more or less stable. However, new records are likely for some outlying areas, including records of non-native species.

Three species of millipedes (*Choneiulus palmatus*, *Leptoiulus proximus* and *Listrocheiritium septentrionale*) were described based on material from the Czech Republic. The millipede *Listrocheiritium septentrionale* is recorded mainly in the Czech Republic and only occasionally in adjacent areas in Upper and Lower Austria, and therefore can be considered as the only endemic species occurring in Central Europe other than the Alps and Carpathians.

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