Terrestrial invertebrate fauna of Polish caves – a summary of 100 years of research

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Abstract

The year 2018 is particularly important in the history of zoological research in Poland. A hundred years ago, Kazimierz Demel published the first work concerning the terrestrial cave fauna of caves in the Ojców area. In this paper we present the extent of research on the terrestrial invertebrate fauna of Polish caves in the last 100 years. All accessible research papers that have been published during this period were analysed. Based on published literature, 593 species of terrestrial invertebrate were recorded in Polish caves. Additionally, detailed list of species of individual taxonomic groups was provided.

Keywords

subterranean fauna, terrestrial, invertebrate, checklist, caves, Poland

Introduction

The year 2018 is particularly important in the history of zoological research conducted in our country as it closes a period of 100 years of research on terrestrial invertebrates inhabiting the caves of Poland. A hundred years ago, Kazimierz Demel published the first groundbreaking work concerning the fauna of caves in the Ojców area. Although many works regarding Poland’s cave fauna have been published in the last 100 years, it is still of marginal research interest to Polish zoologists, ecologists or general biologists. The aim of this paper is to present the entire range of research on the terrestrial invertebrate fauna of Polish caves in the last 100 years.
Materials and methods

All accessible research papers regarding the terrestrial invertebrate fauna of Polish caves that were published in the last 100 years were analysed in this article. These include the accessible papers published as monographs, original research papers, notes and conference materials. The results were presented here as a historical overview of the research, a list of references and a list of proven invertebrate species. The generic names have been provided regarding taxonomic indexes Fauna Europaea [https://fauna-eu.org](https://fauna-eu.org) and World Spider Catalog [https://wsc.nmbe.ch](https://wsc.nmbe.ch).

Results

Historical overview of the research

The beginning of interest in the terrestrial fauna of Polish caves dates back to the first years of the 20th century when Kazimierz Demel conducted his pioneer research in 1914. Unfortunately, the First World War prevented him from processing and issuing the results, which were actually published in 1918. Demel presented the fauna inhabiting eight caves of the Ojców area (southern part of Kraków-Częstochowa Upland), i.e. Jaskinia Koziarnia, Jaskinia Pustelnia, Jaskinia Biała, Jaskinia Złodziejska, Jaskinia Zbójecka, Jaskinia Łokietka, Jaskinia Ciemna and Jaskinia Jerzmanowska. Despite the period devoted to the research being relatively short (two and a half months), Demel collected a vast number of invertebrates, and in the presented results listed 30 species of invertebrates, 11 of which were described as cave forms, although they could be observed outside of caves (contemporarily named as troglophiles). In his works, Demel compared his results to the ones already presented by the cave fauna researchers from Germany, Belgium, France and Austria, giving attention to faunal similarities with other caves. In the papers of the above-mentioned author, one can find both: a list of species and data concerning cave environment observations, i.e. temperature, humidity, light coverage and access to degrading organic matter, which enabled the author to perform ecological analyses.

Based on the material compiled by Demel, Stach (1919) proved the presence of five species of springtails, including description of one species new to science, i.e. *Mesorachorutes ojcovensis*. The author also compared the Polish springtail fauna to that of other European countries and confirmed Demel’s assumptions that troglobionts are scarce in Polish caves. Furthermore, the data concerning springtail species found in Polish caves were summarised by Stach (1947–1963).

In the 1920s, Arndt (1921, 1923) published two papers based on his research in a few caves and mines (e.g. Złota Sztolnia) in Sudety Mountains. Nowadays most of these mines are located in the Czech Republic, while others, i.e. Niedźwiedzia Jama or Solna Jama, in Poland. Despite the research was conducted only from March to October 1920, Arndt proved the presence of 42 invertebrate species (including stygobiotic...
ones) and recognised the *Schaefferia emucronata* springtail as a troglobiont species. He noticed that the fauna of the Sudety Mountains lacks the species typical to the caves of Harz Mountains, Central Alps and Urals, i.e. blind beetles (Coleoptera), Orthoptera and Acari. In the second paper, Arndt (1923) supplemented the information on ecological groups and faunal genesis in the examined subterranean sites.

Other papers devoted to the cave-dwelling fauna of the Sudety Mountains were published by Pax and Maschke (1935) and Pax (1937). The object of the research was both terrestrial and aquatic fauna in the Rogóžka Cave. The research, which began in 1933, was focused not only on the cave fauna but also on the environmental conditions, i.e. the physical and chemical properties of the lake water, and the air temperature. Nowadays the Rogóžka Cave is the non-existent cave, in 1962 it was partly destroyed by mining in the crystalline limestones quarry, and next the entrance was covered by stones (Bieroński et al. 2009).

The Second World War delayed the faunal research in Polish caves for a few years. The first post-war researcher who was interested in cave-dwelling invertebrate fauna was Kazimierz Kowalski, who presented the results of his biological observations and the research project on the Tatra Mountains caves for the years 1951–1952 in the “Wierchy” annual. In 1955, he published a paper with the results of the above-mentioned research. During his research, he visited all known Tatra caves, but his main research interest was in six caves, i.e. Jaskinia Dziura Wyżnia, Jaskinia Zimna, Jaskinia Groby, Jaskinia Magurska, Jaskinia Lodowa and Jaskinia Dziura. His methodology included not only the faunal collection by means of Barber traps or direct search methods, but also microclimate analyses, i.e. light influence and air movement. Kowalski did not limit his research to the invertebrate fauna, as it included also bats. In his work, the characteristics of the research area and detailed descriptions of microclimate conditions can be found.

In the following decades, i.e. in the 60s and 70s of the 20th century, Skalski presented exceptional research activity in the field of cave-dwelling fauna. He published his first work together with Wójcik (Skalski and Wójcik 1968), where they presented faunal genesis and microclimate characteristics of selected caves of the Częstochowa area. They proved the presence of six troglobiont species i.e. *Mesachorutes ojcoviensis*, *Catops tristis infernus*, *Choleva lederiana gracilenta*, *Porrhomma egeria*, *Arrhopalites pygmeus*, *Onychiurus alborufescens* and also determined the geographical distribution of these species.

The subsequent works by Skalski (1967, 1969) were dedicated to invertebrate fauna in the Tatra Mountains. In addition to the presented list of species, he also considered the relationship between the age of the cave and the number of troglobionts as an important factor influencing the species variety. Furthermore, he presented detailed information about the occurrence of *Onychiurus armatus* springtails in the Mylna and Czarna caves, *Hypena obsitalis* butterflies in the Mylna cave and *Exephanes ischioxanthus* hymenoptera in Szczelina Chochołowska.

In 1973, Skalski published an extensive paper on the research and observations conducted in the years 1957–1970 in 19 caves of the Częstochowa Upland. Using a
wide range of entomological methods (Barber traps, Tullgren funnels, entomological sieves and direct searches), he detected 83 species belonging to a few arthropod and molluscan orders. He extensively discussed ecological issues, also concerning troglóxenes, for example he paid special attention to describing the associations of arthropods living or resting on cave walls. The paper includes valuable data on reproduction, position and spread of individual species in the caves like characteristics of massive occurrence of *Choleva lederiana gracilenta* if there is high availability of food.

Apart from the above mentioned research published in the form of papers, presentations at Speleological Conferences, which have been taking place since 1965, give an update on the invertebrate cave fauna research. The first information can be found in the materials form 3rd/4th Speleological Conference (1971), where Skalski (1971) presented overview of terrestrial and aquatic fauna, named all the known species and compared the knowledge from various Polish cave regions.

In his subsequent paper, Skalski (1981) focused on known data of invertebrate fauna again. However, he put particular emphasis on dominant groups and tried to determine the reasons for underground sites colonisation. He emphasised the primary dominance of not only insects and springtails in the caves but also spiders, and analysed the conditions favourable to cave organisms, i.e. food accessibility and cave habitat as a shelter for fauna during the winter.

In 1975, Baranek and Powichrowski published an article about the cave fauna in Dolina Wodącej. Three caves of the valley, Jaskinia Źródlana (Psia), Jasknia Zegarowa and Jaskinia Mroczna, were discussed in the paper. The authors observed the associations of arthropods trogloxenes like numerous fly community, spiders (particularly *Meta* sp.) and other arachnids on the cave walls. Springtails and beetles of families Staphylinidae and Catopidae (Leiodidae) were recognised among the regular cave-dwelling species. The only troglobiont species recorded was *Porhomma moravicum* (currently *P. egeria*), which was observed in Jaskinia Mroczna.

Sanocka-Wołoszynowa (1981) on Kraków – Częstochowa Upland arachnids study added great value to the state of knowledge of invertebrate fauna exploration. The author examined 184 caves and shelters; 40 of them were examined in all four seasons. Samples were collected by means of Barber traps or direct search. As a result, 13000 specimens representing 186 species of spiders, arachnids and pseudoscorpions were collected. Two species of spiders recorded deserve special attention: troglobiontic *Porhomma egeria* (in the paper *P. moravicum*) and troglophilic *Meta menardi*. Among arachnids also harvestman *Ischyropsalis helwigii*, known earlier from the Sudety Mountains area, the observation of which in Kraków – Częstochowa Upland widened the range of its occurrence. The author in addition to the detailed list of species, carried out an ecological and zoocoenological analysis, for example, she distinguished communities of arachnids living in the litter, associations of wall arachnids and a deep-cave group of species with dominant species *Porhomma egeria*.

At the 15th Speleological Conference, Sobiepanek (1985) described the results of the research conducted during Tatra Mountains caves inventory. During the research, the samples were collected by direct search or by means of Barber traps. As a result,
many taxa belonging to dipterans, beetles, trichopterans, millipedes, spiders, gastropods, springtails and earthworms were observed. During the 30th Speleological Conference, Gubala (1996) presented his paper about the results of an inventory of 131 caves and shelters in świętokrzyskie region.

The end of the 20th century provided new data to particular systematic groups. Pomorski (1992) focused on the springtail fauna in the Sudety Mountains caves and mines. In his study, Pomorski detected 34 species, seven of which were classified as troglobionts i.e. Bonetogastrura cavicola, Schaefferia emucronata, Oligophorura schoetti, Onychiurus ambulans, Onychiurus cebennarius, Oncopodura reyersdorfensis, Arrhopalites bifidus and 10 as troglophiles. Skalski (1994) noted the successful introduction of Speonomus hydrophilus to Jaskinia Dzwnonica in Wyżyna Częstochowska.

Further papers were published after the year 2000. The studies by Maślak and Barczyk (2011) and Barczyk and Madej (2014) were devoted to cave mites. The first article refers to Oribatida dwelling in five Jurassic caves, i.e. Jaskinia Nietoperzowa, Jaskinia Wierna, Jaskinia Studnisko, Jaskinia Błotna and Jaskinia Pod Porzeczką, and their immediate surroundings. The study presented an analysis of faunistic similarities between the species and caves. Altogether 65 Orbatida species, including one typically cave dwelling species, were recorded. It was proven that the faunal composition of larger caves significantly differs from smaller ones. Communities of small caves, such as Jaskinia Błotna, Jaskinia Pod Porzeczką were similar to soil fauna communities. The species composition was mainly influenced by the accessibility of particular food sources (leaves, guano, wood) (Maślak and Barczyk 2011). The second paper refers to eight caves of the Kraków – Częstochowa Upland (Jaskinia Lodowa, Jaskinia poniżej Lodowej, Jaskinia Pod Porzeczką, Jaskinia Studnisko, Jaskinia Pod Sokołą, Jaskinia Jasna, Jaskinia Błotna and Jaskinia Schronisko koło Jaskini Lodowej), where 316 samples were collected. There were 270 samples collected from the immediate surroundings of the caves. As a result, the author identified 106 species from 13 families, including four species new in Polish fauna i.e. Paragamasus arcuatus, Parasitus hortivagus, Pachylaelaps sublongisetus, Pachyglobolaelaps ballidayi and troglobiont species recognised earlier in other caves. Significant differences in species composition between Acari communities inhabiting caves and cave surroundings were described.

Among the contemporary studies devoted to invertebrate fauna, Dumnicka and Płotek (2013) discussed the differences in invertebrate fauna between the caves Jaskinia Towarna and Jaskinia Dzwnonica, with regards to microclimate conditions, organic matter content in the cave deposits and tourism intensity.

During the 49th Speleological Conference, Kocot – Zalewska (2015) presented the preliminary results of the research on Jaskinia Kroczycyka fauna. The presentation included general data however indicated seven orders: butterflies, dipterans, spiders, beetles, trichopterans, mites and springtails. At the next Speleological Conference, Kocot – Zalewska (2016) presented the results of the observation of Jaskinia Towarna colonisation by Speonomus normandi hydrophilus of Leiodidae family. The beetle was introduced in the caves in 1982 and its natural place of occurrence is Arize Massif in Pyrenees.
In a contemporary paper, Kur et al. (2016) characterised the fauna of Jaskinia Szeptunów (Smaragdowa). Based on the samples collected in the years 2005, 2006, 2010, 2014, 2015, 5 species of springtails, 2 species of Myriapoda, 1 spider species, 2 species of butterflies and mites were observed. The cave was opened in 1990 and the colonisation rate by living organisms was monitored.

At the 51st Speleological Conference, Kocot – Zalewska and Słupińska (2017) presented the discovery of a great population of *Choleva lederiana gracilenta*, which is endemic to Sokole Mountain caves, and presented detailed information about its quantity, sex ratio and cave positioning. During the same Speleological Conference, Dumnicka (2017) discussed the state of knowledge of invertebrate cave fauna of Polish Tatra Mountains based on literature data, mainly the works by Stach (1934, 1954) and Kowalski (1955).

Several short articles were devoted to interesting discoveries of invertebrate species found in caves (Dylewska and Błoszyk 2006, Kocot-Zalewska and Rozwałka 2018, Kasprzak 1973, Weiner 1990), however, several synthetic articles were also written, summarizing the state of knowledge and valorization of a valuable studied area (Błoszyk and Rozwałka 2008, Ochman 2004, Wołoszyn and Wójcik 1964).

**Checklist of terrestrial invertebrate record in Polish caves**

Based on published literature, 593 species of terrestrial invertebrate are recorded in Polish caves.

Insects are represented by 146 species. Respectively: Coleoptera 50 species, Diptera 60 species, Hymenoptera 18 species, Lepidoptera 10 species, Trichoptera 4 species, Siphonaptera 3 species, Thysanoptera 1 species. Detailed list of recorded species is presented in Table 1.

**Table 1.** The checklist of insects recorded in Polish caves.

| Species                      | References                     |
|------------------------------|-------------------------------|
| **Coleoptera:**              |                               |
| *Acidota cruentata* Mannerheim, 1830 | Ochman 2004, Skalski 1973a |
| *Acrotrichius intermedia* (Gillmeister, 1845) [* Trichopteryx intermedia ‡*] | Pax and Maschke 1935 |
| *Aleochara diversa* (J. Sahlberg, 1876) | Pax and Maschke 1935 |
| *Aphodius fimetarius* (Linnaeus, 1758) | Pax and Maschke 1935 |
| *Apocatops nigrita* (W.F. Erichson, 1837) [*Catops nigrita* W.F. Erichson, 1837‡] | Pax and Maschke 1935 |
| *Atheta fungi* (J.L.C. Gravenhorst, 1806) | Pax and Maschke 1935 |
| *Atheta trinotata* (E.G. Kraatz, 1856) | Pax and Maschke 1935 |
| *Cantharis rustica* C.F. Fallén, 1807 | Pax and Maschke 1935 |
| *Catops alpinus* Gyllenhal, 1827 | Pax and Maschke 1935 |
| *Catops fuliginosus* Erichson, 1837 | Kowalski 1955 |
| *Catops fuscus* (Panzer, 1794) | Pax and Maschke 1935 |
| *Catops longulus* Kellner, 1846 | Kowalski 1955, Pax and Maschke 1935, Skalski 1973a |
| *Catops subfuscus* Kellner, 1846 | Kowalski 1955, Pax and Maschke 1935, Skalski 1973a |
| Species | References |
|---------|------------|
| *Catops tristis tristis* (Panzer, 1794) | Kowalski 1955, Pax and Maschke 1935 |
| *Catops tristis infernus* Szymczakowski, 1957 | Ochman 2004, Skalski 1971, Skalski 1973a, Skalski 1973b, Skalski 1981, Skalski 1994-1995, Skalski 1994a, Skalski and Wójcik 1968, Szymczakowski 1957 |
| *Choleva agilis* (Illiger, 1798) | Gubała 1996, Wołoszyn and Wójcik 1964 |
| *Choleva angustata* (Fabricius, 1781) | Gubała 1996 |
| *Choleva cisteloides* Frölich, 1799 | Ochman 2004, Skalski 1973a |
| *Choleva elongata* (Paykull, 1798) | Pax and Maschke 1935 |
| *Choleva gauca* Britten, 1918 | Skalski 1967 |
| *Choleva ledentana gracilenta* Szymczakowski, 1957 | Kocot-Zalewska and Słupińska 2017, Ochman 2004, Skalski 1971, Skalski 1973a, Skalski 1973b, Skalski 1981, Skalski 1994-1995, Skalski 1994a, Skalski and Wójcik 1968, Szymczakowski 1957 |
| *Choleva nivalis* Kraatz, 1856 [= *Choleva bicolor* Jeannel, 1923 ‡] | Kowalski 1955, Skalski 1967 |
| *Choleva* (Cholevopsis) spadicea (J. Sturm, 1839) | Pax and Maschke 1935 |
| *Cryptophagus pilosus* Gyllenhal, 1827 | Pax and Maschke 1935 |
| *Duvaliopsis pilosella stobieckii* (Csiki, 1907) | Kowalski 1955, Skalski 1971 |
| *Enicus minutus* (Linnaeus, 1767) | Ochman 2004, Skalski 1973a |
| *Lathrobium palatinum* Nordmann, 1837 | Pax and Maschke 1935 |
| *Lesteva monticola* Kiesenwetter, 1847 | Kowalski 1955 |
| *Nebria tatrica* Miller, 1859 | Kowalski 1955 |
| *Ocalea badia* W. F. Erichson, 1837 | Pax and Maschke 1935 |
| *Omalium excursatum* Stephens, 1834 | Kowalski 1955 |
| *Omalium rivulare* Paykull, 1789 | Kowalski 1955, Pax and Maschke 1935 |
| *Omalium septentrionis* C.G. Thomson, 1857 | Pax and Maschke 1935 |
| *Othius myrmecophilus* Kiesenwetter, 1843 | Ochman 2004, Skalski 1973a |
| *Otiorhynchus scaber* (Linnaeus, 1758) | Kowalski 1955 |
| *Philonthus* (Philonthus) carbonarius (Gravenhorst, 1802) [= *Philontus varius* (Gyllenhal, 1810) ‡] | Skalski 1973a |
| *Porciulus lepidus lepidus* (Leske, 1785) [= *Pterostichus vires* (Müller, 1776) ‡] | Sobiepanek 1985 |
| *Pielaphus heiei* J.F.W. Herbst, 1792 | Pax and Maschke 1935 |
| *Pterostichus niger* (Schaller, 1783) | Pax and Maschke 1935 |
| *Quedius humeralis* Stephens, 1832 | Kowalski 1955 |
| *Quedius mauro* (Sahlberg, 1830) | Ochman 2004, Skalski 1973a |
| *Quedius mesomelinus* (Marsham, 1802) | Demel 1918, Gubała 1996, Kowalski 1955, Ochman 2004, Pax and Maschke 1935, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968 |
| *Quedius schoepferi* Erichson, 1840 | Kowalski 1955 |
| *Speonomus normandi hydrophilus* Jeannel, 1907 | Dumnicka and Płotek 2013, Klasiszki 2006, Kocot-Zalewska 2016, Skalski 1994a, Skalski 1994b |
| *Spodrus leucophthalmus* (Linnaeus, 1758) | Gubała 1996 |
| *Tachinus subterraneus* (Linnaeus, 1758) | Kowalski 1955 |
| *Trechus latus* Putzeys, 1847 | Kowalski 1955 |
| *Trechus quadristriatus* (Schrank von Paula, 1781) | Pax and Maschke 1935 |
| *Trichophya plicicornis* (L. Gyllenhal, 1810) | Pax and Maschke 1935 |
| *Xylosternus concinnus* (Th. Marsham, 1802) | Pax and Maschke 1935 |

**Diptera:**

| Species | References |
|---------|------------|
| *Amnabaleria spectabilis* (Loew, 1862) | Kowalski 1955 |
| *Aphiochaeta rufipes* Meigen, 1804 | Arndt 1921 |
| *Apteromyia claviventris* (Strobl, 1909) [= *Limosina claviventris* Strobl, 1909‡] | Pax and Maschke 1935 |
| *Braeysia forficulata* (Bezzi, 1914) [= *Neosciara forficulata* Bezzi, 1914‡] | Pax and Maschke 1935 |
| Species                          | References                        |
|---------------------------------|-----------------------------------|
| *Bolitophila ofnera*            | Sobiepanek 1985                   |
| *Calliphora vicina* Robineau-Desvoidy, 1830 [= *Calliphora erythrocephala* Meigen, 1826 ‡] | Pax and Maschke 1935 |
| *Calliphora vomitoria* (Linnaeus, 1758) | Pax and Maschke 1935, Skalski 1973a, Skalski 1981 |
| *Copromyza glacialis* (Meigen, 1830) | Sobiepanek 1985 |
| *Copromyza nigra* (Meigen, 1830) | Sobiepanek 1985 |
| *Copromyza nitida* (Meigen, 1830) | Sobiepanek 1985 |
| *Crumomyia nitida* (Meigen, 1830) | Kowalski 1955 |
| *Crumomyia nigra* (Meigen, 1830) [= *Borboria nigra* Meigen, 1830‡] | Pax and Maschke 1935 |
| *Crumomyia glacialis* (Meigen, 1830) | Hajduk and Ogorzałek 1970, Skalski 1967 |
| *Culex pipiens* Linnaeus, 1758 | Arndt 1921, Hajduk and Ogorzałek 1970, Kowalski 1955, Pax and Maschke 1935, Skalski 1967, Skalski 1973a, Skalski 1981, |
| *Culiseta anmula* (Schrank, 1776) | Hajduk and Ogorzałek 1970, Pax and Maschke 1935, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968 |
| *Cypsela nigra* Meigen †        | Arndt 1921                        |
| *Cypsela suillina* †            | Arndt 1921                        |
| *Diploneuva florecens* (Turton, 1801) [= *Diploneuva versicolor* Schmitz, 1929‡] = *Diploneuva florea* (Fabricius, 1794 ‡) | Pax and Maschke 1935 |
| *Drosophila (Sophophora) melanogaster* Meigen, 1830 [= *Drosophila fasciata* ‡] | Skalski 1973a |
| *Ecctopomera emarginata* Loew, 1862 | Hajduk and Ogorzałek 1970, Kowalski 1955, Pax and Maschke 1935, Sobiepanek 1985 |
| *Ecctopomera obscura* (Meigen, 1830) | Sobiepanek 1985 |
| *Ecctopomera pallescens* (Meigen, 1830) | Hajduk and Ogorzałek 1970, Kowalski 1955, Skalski 1967 |
| *Exechia indecisa* (Walker, 1856) [= *Exechiopsis indecisa* ‡] | Ochman 2004, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968 |
| *Gymnomus caesius* (Meigen, 1830) [= *Scoliocentra caesius* = *Heleomyza caesia* (Meigen, 1830) = *Amoebaleria caesia* (Meigen, 1830) ‡] | Arndt 1921, Hajduk and Ogorzałek 1970, Kowalski 1955, Pax and Maschke 1935, Sobiepanek 1985 |
| *Gymnomus amplicornis* (Czerny, 1924) [= *Amoebaleria amplicornis* Czerny, 1924‡] | Skalski 1967 |
| *Helomyza captiosa* (Gorodkov, 1962) | Dumnicka and Płotek 2013, Sobiepanek 1985 |
| *Helomyza modesta* (Meigen, 1835) | Arndt 1921, Hajduk and Ogorzałek 1970, Kowalski 1955, Pax and Maschke 1935, Sobiepanek 1985, Skalski 1967 |
| *Helomyza serrata* (Linnaeus, 1758) | Arndt 1921, Hajduk and Ogorzałek 1970, Kowalski 1955, Ochman 2004, Pax and Maschke 1935, Skalski 1967, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968, Sobiepanek 1985, |
| *Heteromyza atricornis* Meigen, 1830 [= *Tethyla atricornis* ‡] | Kowalski 1955 |
| *Hydrophorus bipunctatus* (Lehmann, 1822) | Pax and Maschke 1935 |
| *Hydrotaea dentipes* (Fabricius, 1805) | Pax and Maschke 1935 |
| *Limonia nubeculosa* Meigen, 1804 | Arndt 1921, Hajduk and Ogorzałek 1970 |
| *Limonia silvatica* (Meigen, 1830) [= *Limosina silvatica* ‡] | Arndt 1921 |
| *Megaselia albicandata* (Wood, 1910) | Pax and Maschke 1935 |
| *Megaselia angusta* (Wood, 1909) | Pax and Maschke 1935 |
| *Megaselia plicaria* (Fallén, 1823) | Pax and Maschke 1935 |
| *Megaselia rufipes* (Meigen, 1804) | Pax and Maschke 1935 |
| *Metisomyza rorida* (Fallén, 1820) [= *Sapromyza rorida* Fallén, 1820‡] | Pax and Maschke 1935 |
| *Mycetophila ruficornis* Meigen, 1818 | Sobiepanek 1985 |
| *Neuroctena anilis* Fallen, 1820 [= *Dryomyza anilis* Fallén, 1820‡] | Pax and Maschke 1935 |
| *Oeothea praecox* Loew, 1862 | Arndt 1921 |
| Species | References |
|---------|------------|
| Phaonia populi (Meigen, 1826) | Ochman 2004, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968 |
| Sarophaga alpina Zetterstedt, 1838 [= Acrophaea alpina Zetterstedt, 1838] | Pax and Maschke 1935 |
| Sciara atomaria (Lynch Arribalzaga, 1892) [= N. vivida Winnertz, 1867] | Pax and Maschke 1935 |
| Scioiocentra villosa (Meigen, 1830) | Dumnicka and Plotek 2013, Ochman 2004, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968, |
| Spelobia pseudostararia (Duda, 1918) [= Limosina penetralis Collin, 1925] | Pax and Maschke 1935 |
| Speleoptera leptogaster (Winnertz, 1863) | Pax and Maschke 1935, Sobiepanek 1985 |
| Sphaerophoria scripta (Linnaeus, 1758) | Kowalski 1955 |
| Sylvicola fenestralis (Scopoli, 1763) [= Anisopus fenestralis (Scopoli 1763)] | Hajduk and Ogorzałek 1970 |
| Theobaldia alascensis Ludlow † | Kowalski 1955 |
| Tipula scripta Meigen, 1830 | Arndt 1921 |
| Trichocera biennalis (De Geer, 1776) | Pax and Maschke 1935 |
| Trichocera maculipennis Meigen, 1818 | Arndt 1923, Demel 1918, Ochman 2004, Pax and Maschke 1935, Skalski 1967, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968, Sobiepanek 1985 |
| Trichocera regelationis (Linnaeus, 1758) | Pax and Maschke 1935 |
| Tricholea antroculis (Schmitz, 1918) | Pax and Maschke 1935 |
| Trichocera distinguenda (Strobl, 1892) [= Triphleba unicalcarata (Becker, 1901)] | Pax and Maschke 1935 |
| Tricholea hyalinata (Meigen, 1830) | Pax and Maschke 1935 |
| Tricholea lyra Schmitz, 1935 | Pax and Maschke 1935 |
| Tricholea uncinata Schmitz † | Pax and Maschke 1935 |
| Thoracochaeta brachystoma (Stenhammar, 1855) | Pax and Maschke 1935 |
| Hymenoptera: | |
| Amblytelus atratorius (Villers, 1789) [= Coelichneumon atratorius †] | Arndt 1921 |
| Ambyletus quadripunctator Musser † | Kowalski 1955 |
| Aplolepta nervosa (Haliday, 1833) | Pax and Maschke 1935 |
| Blacus instabilis Ruthe, 1861 | Pax and Maschke 1935 |
| Diphyus monitorius (Pazer, 1801) | Skalski 1973a |
| Diphyus fusiorius (Linnaeus, 1758) | Skalski 1973a |
| Éxallonyx ater (Gravenhorst, 1807) [= Serphus filicornis Kieffer, 1908] | Pax and Maschke 1935 |
| Éxallonyx ligatus Nees, 1834 [= Serphus ligatus Nees, 1834 †] | Pax and Maschke 1935 |
| Euphimates hilari Nees Gravenhorst † | Hajduk and Ogorzałek 1970, Kowalski 1955, Pax and Maschke 1935 |
| Euphantes ischioaustus (Gravenhorst, 1829) | Skalski 1969, Skalski 1973a, Skalski 1981 |
| Formica fusca Linnaeus, 1758 | Pax and Maschke 1935 |
| Hemiteles fulipes Gravenhorst, 1929 † | Pax and Maschke 1935 |
| Ichneumon extensorius Linnaeus, 1758 | Pax and Maschke 1935 |
| Ichneumon gracilicornis Gravenhorst, 1829 | Pax and Maschke 1935 |
| Megastylus cruentator Schiodte, 1839 | Pax and Maschke 1935 |
| Mutilla europaea Linnaeus, 1758 | Hajduk and Ogorzałek 1970 |
| Proctotrupes gravitor (Linnaeus, 1758) | Skalski 1981 |
| Trestserphus laricis (Haliday, 1839) [= Cryptoerphus laricis (Haliday, 1839) †] | Pax and Maschke 1935 |
| Lepidoptera: | |
| Aglais urticae (Linnaeus, 1758) [= Vanessa urticae (Linnaeus, 1758)] | Kowalski 1955, Pax and Maschke 1935, Skalski 1967, Skalski 1973a |
Species | References
---|---
Bomolocha obesalis Treitschke 1828 | Kowalski 1955, Skalski 1967
Caradrina simulans (Hufnagel, 1766) [= Rhyacia simulans (Hufnagel, 1766) ‡] | Skalski 1973a
Hypena obsitalis (Hübner, 1813) | Skalski 1969
Hypena rostralis (Linnaeus, 1758) | Skalski 1973a
Monopis lareigella (Denis & Schiffermüller, 1775) [= Monopis rusticella (Hübner, 1813) ‡] | Skalski 1973a
Nudaria mundana (Linnaeus, 1760) | Skalski 1973a
Scoliopteryx libatrix (Linnaeus, 1758) | Baranek and Powichrowski 1975, Demel 1918, Dumnicka and Płotek 2013, Hajduk and Ogorzałek 1970, Kowalski 1955, Kur et al. 2016, Pax and Maschke 1935, Skalski 1967, Skalski 1973a, Skalski 1981, Skalski 1994-1995, Skalski and Wójcik 1968, Sobiepanek 1985, Wołoszyn and Wójcik 1964
Triphosa dubitata (Linnaeus, 1758) | Arndt 1921, Baranek and Powichrowski 1975, Demel 1918, Dumnicka and Płotek 2013, Hajduk and Ogorzałek 1970, Kowalski 1955, Kur et al. 2016, Pax and Maschke 1935, Pax 1937, Skalski 1967, Skalski 1973a, Skalski 1981, Skalski 1994-95, Skalski and Wójcik 1968, Sobiepanek 1985, Wołoszyn and Wójcik 1964,
Vanessa io (Linnaeus, 1758) | Arndt 1921, Dumnicka and Płotek 2013, Kowalski 1955, Pax and Maschke 1935, Skalski 1967, Skalski 1973a, Wołoszyn and Wójcik 1964,

Trichoptera:
Micropterna nyctehobia McLachlan, 1875 | Arndt 1921, Hajduk and Ogorzałek 1970
Micropterna sequax McLachlan, 1875 | Arndt 1921
Micropterna testacea (Gimelin, 1789) | Arndt 1921, Hajduk and Ogorzałek 1970
Stenophylax permistus McLachlan, 1895 | Arndt 1921, Baranek and Powichrowski 1975, Demel 1918, Hajduk and Ogorzałek 1970, Kowalski 1955, Kur et al. 2016, Pax and Maschke 1935, Pax 1937, Skalski 1967, Skalski 1973a, Skalski 1981, Skalski 1994-95, Skalski and Wójcik 1968, Sobiepanek 1985, Wołoszyn and Wójcik 1964,

Siphonaptera:
Ctenophthalmus solatus Jordan & Rothschild, 1920 | Skalski 1981
Ichnospyllus besacennu (Kolenati, 1856) | Pax and Maschke 1935
Nonospyllus faciatus (Bosc, 1800) | Skalski 1981

Thysanoptera:
Chirothrips manicatus Haliday, 1836 | Pax and Maschke 1935

† – status of the species name is unclear, ‡ - name published in original paper

Arachnids are the most often represented group of terrestrial invertebrate with 317 recorded species. Among the arachnids the mites (Acari) are represented by 189 species, spiders (Araneae) by 103 species. Remaining orders of Arachnids (Opiliones and Pseudoscorpionida) are represented by 20 and 5 species respectively. Detailed list of arachnids recorded in Polish caves is presented in Table 2.
| Species                                                                 | References                        |
|------------------------------------------------------------------------|-----------------------------------|
| Anachipteria deficiens Grandjean, 1932                                 | Maślak and Barczyk 2011           |
| Antennaeius bacatus Athias-Henriot, 1961                               | Barczyk and Madej 2014            |
| Arctoseius brevichelis Karg, 1969                                      | Barczyk and Madej 2014            |
| Arctoseius cetratus (Sellnick, 1940)                                   | Barczyk and Madej 2014            |
| Arctoseius magnanalis Evans, 1958                                       | Barczyk and Madej 2014            |
| Arctoseius venustulus (Berlese, 1917)                                  | Barczyk and Madej 2014            |
| Aica aphidoides (Linneaus, 1758)                                       | Barczyk and Madej 2014            |
| Atropacarus striculius (Koch, 1835)                                    | Maślak and Barczyk 2011           |
| Autogveta longilamelata (Michael, 1885)                                | Maślak and Barczyk 2011           |
| Berniniella bicarinata (Paoli, 1908)                                   | Maślak and Barczyk 2011           |
| Carabodes femoralis (Nicolet, 1855)                                    | Maślak and Barczyk 2011           |
| Carabodes ornatus Storkén, 1925                                        | Maślak and Barczyk 2011           |
| Cephus dentatus (Michael, 1888)                                        | Maślak and Barczyk 2011           |
| Ceratozetes gnacilis gracilis (Michael, 1884)                          | Maślak and Barczyk 2011           |
| Ceratozetes mediocris Berlese, 1908                                    | Maślak and Barczyk 2011           |
| Chamobates (Xiphobates) togozi (Oudemans, 1902)                        | Maślak and Barczyk 2011           |
| Chamobates cuspidatus (Michael, 1884)                                  | Maślak and Barczyk 2011           |
| Chamobates pusillus (Berlese, 1895)                                    | Maślak and Barczyk 2011           |
| Chamobates subglobulus (Oudemans, 1900)                                | Maślak and Barczyk 2011           |
| Copropyclisus stammeri (Türk & Türk, 1957)                             | Skalski 1994a                     |
| Cadtroribula bicultrata (Berlese, 1905)                                | Maślak and Barczyk 2011           |
| Cyrtolaelaps chiropterae Karg, 1971                                    | Barczyk and Madej 2014            |
| Cyrtolaelaps mucronatus (G. & R. Canestrini, 1881)                     | Barczyk and Madej 2014            |
| Cyta latirostris (Hermann, 1804)                                       | Pax and Maschke 1935              |
| Damaeus gracilipes (Kulczyński, 1902) [= Belba gracilipes Kulczyński]  | Pax and Maschke 1935              |
| Dendrolaelaps (Punctodendrolaelaps) arvicolus (Leitner, 1949)          | Barczyk and Madej 2014            |
| Dendrolaelaps (Punctodendrolaelaps) rotundus (Hirschm. 1960)           | Barczyk and Madej 2014            |
| Dissorhina ornata (Oudemans, 1900)                                     | Maślak and Barczyk 2011, Skalski 1973a |
| Eugamasus cavernicola Frågårdh, 1912                                  | Barczyk and Madej 2014            |
| Eugamasus furcatus (G. et R. Canestrini, 1882)                         | Barczyk and Madej 2014            |
| Eupelops acromios (Hermann, 1804)                                      | Maślak and Barczyk 2011           |
| Eupelops plicatus (Koch, 1835)                                         | Maślak and Barczyk 2011           |
| Euphotinaracus cribriarius (Berlese, 1904)                             | Barczyk and Madej 2014            |
| Eurypanastus emerginatus (Koch, 1839)                                  | Barczyk and Madej 2014            |
| Eviphiostinus (Koch, 1836)                                             | Barczyk and Madej 2014            |
| Fosseremus laciniatus (Berlese, 1905)                                  | Maślak and Barczyk 2011           |
| Foveolaches (Proxistella) terricola (Koch, 1835) [= Rhodidia terricola Koch, 1935] | Pax and Maschke 1935, Pax 1937 |
| Gaéolaelaps aculeifer (Canestrini, 1883)                               | Barczyk and Madej 2014            |
| Gaéolaelaps brevipila (Bernhard, 1969)                                 | Barczyk and Madej 2014            |
| Gaéolaelaps nolli (Karg, 1962)                                         | Barczyk and Madej 2014            |
| Gamasellodes bicolor (Berlese, 1918)                                   | Barczyk and Madej 2014            |
| Gamasellus montanus (Wüllman, 1936)                                   | Barczyk and Madej 2014            |
| Gamasellus spiricornis (G. & R. Canestrini, 1882)                      | Barczyk and Madej 2014            |
| Gamasodes spiniger (Triagardh, 1910)                                   | Barczyk and Madej 2014            |
| Geholaspis (Geholaspis) longispinosus (Kramer, 1876)                   | Barczyk and Madej 2014            |
| Geholaspis (Longichelus) mandibularis (Berlese, 1904)                  | Barczyk and Madej 2014            |
| Globozetes birulai (Kulczynski, 1902)                                  | Maślak and Barczyk 2011           |
| Haemogamasus nidi Michael, 1892                                        | Barczyk and Madej 2014            |
| Hemileius initialis (Berlese, 1908)                                   | Maślak and Barczyk 2011           |
| Holoparastius calcatus (Koch, 1839)                                   | Barczyk and Madej 2014            |
| Species                                                                 | References                        |
|------------------------------------------------------------------------|-----------------------------------|
| Holoparasitus excisus (Berlese, 1906)                                  | Barczyk and Madej 2014            |
| Holoparasitus intermedius (Holzmann, 1969)                             | Barczyk and Madej 2014            |
| Hypoaspis (Alloparasitus) oklonga (Halbert, 1915)                      | Barczyk and Madej 2014            |
| Hypoaspis (Alloparasitus) sandae (Berlese, 1911)                       | Barczyk and Madej 2014            |
| Hypochothionis luteus Oudemans, 1917                                   | Maślak and Barczyk 2011           |
| Ixodes ricinus Linnaeus, 1758                                          | Skalski 1973a, Skalski 1981       |
| Ixodes vespertilionis Koch, 1844                                       | Skalski 1973a, Skalski 1981       |
| Kunstidamaeus tectiola (Michael, 1888)                                 | Maślak and Barczyk 2011           |
| Lastioseius lawrencei Evans, 1957                                      | Barczyk and Madej 2014            |
| Lastioseius muricattu (Koch, 1839)                                     | Barczyk and Madej 2014            |
| Lauropria bessidienys (Niemi et Skubala, 1993)                         | Maślak and Barczyk 2011           |
| Lauropria falcata marginidentata (Strenzke, 1951)                      | Maślak and Barczyk 2011           |
| Lauropria maritima (Willmann, 1928)                                    | Maślak and Barczyk 2011           |
| Leptogamasus alstoni (Bhattacharyya, 1963)                             | Barczyk and Madej 2014            |
| Leptogamasus patrulli (Berlese, 1903)                                  | Barczyk and Madej 2014            |
| Leptogamasus tectegynellus (Athias-Henriot, 1967)                      | Barczyk and Madej 2014            |
| Licneremaeus lincophorus (Michael, 1882)                               | Maślak and Barczyk 2011           |
| Liebstadia longior (Berlese, 1908)                                     | Maślak and Barczyk 2011           |
| Liochthonius hystricinus (Forsslund, 1942)                              | Maślak and Barczyk 2011           |
| Macrocheles (Macrholaspis) dentatus (Evans & Browning, 1956)           | Barczyk and Madej 2014            |
| Macrocheles (Macrholaspis) recki (Bregetova & Koroleva, 1960)          | Barczyk and Madej 2014            |
| Macrocheles (Macrocheles) tardus (Koch, 1841)                          | Barczyk and Madej 2014            |
| Macrocheles carinatus (Koch, 1839)                                     | Barczyk and Madej 2014            |
| Macrocheles montanus (Willmann, 1951)                                  | Barczyk and Madej 2014            |
| Macronyssus ellipticus (Kolenati, 1856) [= Liponissus ellipticus Kolenati, 1856] | Pax and Maschke 1935          |
| Metabelba (Parametabelba) italica (Sellnick, 1931)                     | Maślak and Barczyk 2011           |
| Metabelba pulverulenta (Koch, 1839)                                    | Maślak and Barczyk 2011           |
| Minunthozetes pseudofusiger (Schweitzer, 1922)                         | Maślak and Barczyk 2011           |
| Moritzoppia keilbachi (Moritz, 1969)                                   | Maślak and Barczyk 2011           |
| Moritzoppia unicarinata (Paoli, 1908)                                  | Maślak and Barczyk 2011           |
| Multioppia glabna (Mihelčič, 1955)                                     | Maślak and Barczyk 2011           |
| Nicoletiella denticulata (Schrank, 1776)                               | Pax and Maschke 1935, Pax 1937    |
| Ololaelaps placenta (Berlese, 1887)                                    | Barczyk and Madej 2014            |
| Ololaelaps sueciicus Sellnick, 1950                                    | Barczyk and Madej 2014            |
| Oppiella nova (Oudemans, 1902)                                         | Maślak and Barczyk 2011           |
| Oribatella calcana (Koch, 1835)                                        | Maślak and Barczyk 2011           |
| Oribatella meridionalis (Berlese, 1908)                                | Pax and Maschke 1935, Pax 1937    |
| Oribatella pusilla (Kunst, 1962)                                       | Maślak and Barczyk 2011           |
| Pachyseius humeralis Berlese, 1910                                     | Barczyk and Madej 2014            |
| Species | References |
|---------|------------|
| Pantelozetes cavaticus (Kunst, 1962) [=Oribella cavatica Kunst, 1962] | Skalski 1994a |
| Pantelozetes paolii (Oudemans, 1913) | Maślak and Barczyk 2011 |
| Paragamasus (Aderogamasus) alpestris (Berlese, 1904) | Barczyk and Madej 2014 |
| Paragamasus (Aderogamasus) simulis (Willmann, 1953) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) arcuatus | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) brevicornis | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) breviper (Berlese, 1905) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) digitulus (Karg, 1963) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) homopodoides (Adrias-Henriot, 1967) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) lapponicus (Trägardh, 1910) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) mediocris (Berlese, 1904) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) misellus (Berlese, 1903) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) runcatellus (Berlese, 1903) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) runciger (Berlese, 1904) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) truncus (Trägardh, 1910) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) vagabundus (Karg, 1965) | Barczyk and Madej 2014 |
| Paragamasus (Anidogamasus) wasmanni (Oudemans, 1902) | Barczyk and Madej 2014 |
| Parasitus loricatus (Wankel, 1861) [=Parasitus niveus] | Pax and Maschke 1935, Skalski 1967, Skalski 1973a, Skalski 1981 |
| Parasitus hortivagus (Berlese, 1903) | Barczyk and Madej 2014 |
| Parasitus kraepelini (Berlese, 1903) | Barczyk and Madej 2014 |
| Parasitus maschkeae (Willmann, 1936) | Skalski 1967 |
| Parazercon radiatus (Berlese, 1904) | Barczyk and Madej 2014 |
| Pergamasus (Pergamasus) barbarus (Berlese, 1904) | Barczyk and Madej 2014 |
| Pergamasus (Pergamasus) brevicornis (Berlese, 1903) | Barczyk and Madej 2014 |
| Pergamasus (Pergamasus) crassipes (Berlese, 1906) | Barczyk and Madej 2014 |
| Pergamasus (Pergamasus) mediocris (Berlese, 1904) | Barczyk and Madej 2014 |
| Pseudolaelaps pygmaeus (Muller, 1859) | Barczyk and Madej 2014 |
| Phaulodiaspis advena (Trägardh, 1992) | Dylewska and Błoszyk 2006, Skalski 1981 |
| Phthiracarus (Archiphthiracarus) bryobius Jacot, 1930 | Maślak and Barczyk 2011 |
| Piloculoma crassiclava (Berlese, 1914) | Maślak and Barczyk 2011 |
| Piloculoma teniscilava (Berlese, 1908) | Maślak and Barczyk 2011 |
| Poecilochirus carabi G. & R. Canestrini, 1882 | Barczyk and Madej 2014 |
| Porphotaspis lunulata Muller, 1859 | Barczyk and Madej 2014 |
| Procercon soldati (Muller, 1860) | Barczyk and Madej 2014 |
| Rhagidia reflexa var. volmsdorfensis † | Pax and Maschke 1935, Skalski 1935 |
| Quadroppia quadricarinata (Michael, 1885) | Maślak and Barczyk 2011 |
| Ramuella (Hemisperoptopina) furcata (Willmann, 1928) | Maślak and Barczyk 2011 |
| Rhodacarellus apophyseus (Karg, 1971) | Barczyk and Madej 2014 |
| Rhodacarellus silesiacus (Willmann, 1935) | Barczyk and Madej 2014 |
| Rhodacarus calcirulatus (Berlese, 1921) | Barczyk and Madej 2014 |
| Species                             | References                      |
|------------------------------------|---------------------------------|
| *Rhodacarus coronatus* Berlese, 1921 | Barczyk and Madej 2014          |
| *Rhodacarus mandibularis* Berlese, 1921 | Barczyk and Madej 2014          |
| *Scheloribates laevigatus* (Koch, 1835) | Maślak and Barczyk 2011        |
| *Sphaerozetes piriformis* (Nicolet, 1855) | Maślak and Barczyk 2011        |
| *Spinturnix murinus* Walckenaer † | Pax and Maschke 1935            |
| *Subiasella (Lampronnia) quadrimaculata* (Evans, 1952) | Maślak and Barczyk 2011        |
| *Suctobelba altivateri* Moritz, 1970 | Maślak and Barczyk 2011        |
| *Suctobelba lapidaria* Moritz, 1970 | Maślak and Barczyk 2011        |
| *Suctobelba trigona* (Michael, 1888) | Maślak and Barczyk 2011        |
| *Suctobelbella (Flagrosuctobelba) alloenasuta* Moritz, 1971 | Maślak and Barczyk 2011        |
| *Tectocephus similis* (Forsslund, 1941) | Maślak and Barczyk 2011        |
| *Tectocephus alatus* Berlese, 1913 | Maślak and Barczyk 2011        |
| *Undoloribates undulatus* (Berlese, 1914) | Maślak and Barczyk 2011        |
| *Veigaia cerva* (Kramer, 1876) | Barczyk and Madej 2014          |
| *Veigaia exigua* (Berlese, 1916) | Barczyk and Madej 2014          |
| *Veigaia kochi* (Trägårdh, 1901) | Barczyk and Madej 2014          |
| *Veigaia nemorensis* (Koch, 1839) | Barczyk and Madej 2014          |
| *Veigaia planicola* (Berlese, 1892) | Barczyk and Madej 2014          |
| *Veigaia transisalae* Oudemans, 1902 | Barczyk and Madej 2014          |
| *Vulgarogamasus knepelini* (Berlese, 1905) | Barczyk and Madej 2014          |
| *Vulgarogamasus machkreae* Willmann, 1936 | Barczyk and Madej 2014          |
| *Vulgarogamasus remberti* (Oudemans, 1912) | Barczyk and Madej 2014          |
| *Vulgarogamasus oudemansi* (Berlese, 1904) | Barczyk and Madej 2014          |
| *Zercon arcuatus* Trägårdh, 1931 | Barczyk and Madej 2014          |
| *Zercon baloghi* Sellnick, 1958 | Barczyk and Madej 2014          |
| *Zercon berlesi* Sellnick, 1958 | Barczyk and Madej 2014          |
| *Zercon curiosus* Trägårdh, 1910 | Barczyk and Madej 2014          |
| *Zercon fageticola* Halaskova, 1969 | Barczyk and Madej 2014          |
| *Zercon pellatus* Koch, 1836 | Barczyk and Madej 2014          |
| *Zercon romagniolus* Sellnick, 1944 | Barczyk and Madej 2014          |
| *Zercon storkani* Halaskova, 1969 | Barczyk and Madej 2014          |
| *Zercon triangularis* Koch, 1836 | Barczyk and Madej 2014          |
| *Zercon vacuus* Koch, 1839 | Barczyk and Madej 2014          |
| *Zerconopsis reniger* (Kramer, 1876) | Barczyk and Madej 2014          |
| *Zetorchestes micromythus micromythus* (Berlese, 1883) | Maślak and Barczyk 2011        |

**Araneae:**

| Araneae                                                                 | References                      |
|------------------------------------------------------------------------|---------------------------------|
| *Ageneta brunnea* (Blackwall, 1833)                                    | Sanocka-Wołoszynowa 1981        |
| *Ageneta rarestris* (C. L. Koch, 1836)                                  | Sanocka-Wołoszyn 1963           |
| (= *Meioneta rarestris* C. L. Koch, 1836 †)                             |                                 |
| *Agyneta subtilis* (Pickard-Cambridge, 1863)                            | Sanocka-Wołoszynowa 1981        |
| *Amaurobius fenestralis* (Ström, 1768)                                 | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981 |
| *Anguliphantes angulipalpis* (Westring, 1851) [ = *Leptophantes angulipalpis* †] | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981 |
| *Anguliphantes monticola* (Kulczynski, 1882) [ = *Leptophantes monticola* †] | Czajka and Hajduk 1978, Ochman 2004, Rozwalka et al. 2010, Sanocka-Wołoszynowa 1981, Skalski 1973a, Skalski 1981, 1994-1995, 1994a |
| *Azyphaena accentuata* (Walckenaer, 1802)                               | Sanocka-Wołoszyn 1963           |
| *Atraneus diadematus* Clerck, 1757                                      | Ochman 2004, Sanocka-Wołoszyn 1963, Skalski 1973a |
| *Batypipapectus negrinus* (Westring, 1851)                              | Sanocka-Wołoszynowa 1981        |
| *Callobius claustrarius* (Hahn, 1833) [ = *Amaurobius claustrarium* Hahn † ] | Sanocka-Wołoszyn 1963           |
| Species | References |
|---------|------------|
| *Centromerita bicolor* (Blackwall, 1833) | Sanocka-Wołoszynowa 1981 |
| *Centromerus cavernarum* (Koch, 1872) [= *Centromerus jacksoni* Denis, 1952 = *Tarancus cavernarum* Simon, 1884] | Ochman 2004, Pax 1937, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Skalski 1981 |
| *Centromerus sellarius* (Simon, 1884) | Sanocka-Wołoszynowa 1981 |
| *Centromerusylvaticus* (Blackwall, 1841) | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Wołoszyn and Wójcik 1964, |
| *Cicurina cicur* (Fabricius, 1793) [= *Cicurina cicurea* ‡] | Arndt 1921, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981 |
| *Clubiona brevipes* Blackwall, 1841 [= *Microclubiona brevipes* ‡] | Sanocka-Wołoszynowa 1981 |
| *Clubiona frutetorum* L. Koch, 1867 | Pax and Maschke 1935 |
| *Coelotes terrestris* (Wider, 1834) | Ochman 2004, Skalski 1973a |
| *Cryphoeca silvicola* (Koch, 1834) | Sanocka-Wołoszynowa 1981, Sobiepanek 1985 |
| *Cybaeus angustiarum* Koch, 1868 | Sanocka-Wołoszynowa 1981 |
| *Dicytium nigrum brevipes* (Blackwall, 1833) | Sanocka-Wołoszynowa 1981 |
| *Diplocephalus cristatus* (Blackwall, 1841) | Sanocka-Wołoszynowa 1981 |
| *Diplostyla concolor* (Wider, 1834) | Sanocka-Wołoszynowa 1981 |
| *Drassodes lapidosus* (Walcknaer, 1802) | Sanocka-Wołoszynowa 1963, Sanocka-Wołoszynowa 1981 |
| *Drassodes pubescens* (Thorell, 1856) | Sanocka-Wołoszynowa 1981 |
| *Eratigena atrica* (Koch, 1843) [= *Tegenaria atrica* ‡] | Sanocka-Wołoszynowa 1981 |
| *Erigone atra* Blackwall, 1833 | Sanocka-Wołoszynowa 1981 |
| *Erigone dentipalpis* (Wider, 1834) | Sanocka-Wołoszynowa 1981 |
| *Formiphanes lepithyphantes* (Strand, 1907) [= *Lepthyphantes piazi* ‡] | Błoszyk and Rozwalka 2008, Sanocka-Wołoszynowa 1981 |
| *Gnaphosa bicolor* (Hahn, 1833) | Sanocka-Wołoszynowa 1981 |
| *Goniatium rubens* (Blackwall, 1833) | Sanocka-Wołoszynowa 1981 |
| *Gongylidium rufipes* (Linnaeus, 1758) | Sanocka-Wołoszynowa 1981 |
| *Habnia paulli* Koch, 1841 | Ochman 2004, Sanocka-Wołoszynowa 1981 |
| *Harpactea hombergi* (Scopoli, 1763) | Błoszyk and Rozwalka 2008, Sanocka-Wołoszynowa 1981 |
| *Harpactea rubicunda* (Koch, 1838) | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981 |
| *Helophora insignis* (Blackwall, 1841) | Sanocka-Wołoszynowa 1981 |
| *Histopona torpida* (Koch, 1837) | Sanocka-Wołoszynowa 1981 |
| *Hypomma bituberculatum* (Wider, 1834) | Sanocka-Wołoszynowa 1981 |
| *Inermocoelotes inermis* (Koch, 1855) | Sanocka-Wołoszynowa 1981 |
| *Kaestneria dorsalis* (Wider, 1834) | Sanocka-Wołoszynowa 1981 |
| *Labulla thoracica* (Wider, 1834) | Czajka and Hajduk 1978, Hajduk and Ogorzałek 1970, Sanocka-Wołoszynowa 1981 |
| *Lepthyphantes leprosus* (Ohlert, 1865) | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Skalski 1973a, Wołoszyn and Wójcik 1964, |
| *Lepthyphantes minutus* (Blackwall, 1833) | Sanocka-Wołoszynowa 1981 |
| *Lepthyphantes nodifer* Simon, 1884 | Ochman 2004, Sanocka-Wołoszynowa 1981 |
| *Leptorhoptrum robustum* (Westring, 1851) | Sanocka-Wołoszynowa 1981 |
| *Liocranum rupicola* (Walckenaer, 1830) | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981 |
| *Linyphia triangularis* (Clerck, 1757) | Sanocka-Wołoszynowa 1981 |
| *Macargus rufus* (Wider, 1834) | Sanocka-Wołoszynowa 1981 |
| *Mansuphantes arciger* (Kulczyński, 1882) [= *Lepthyphantes arciger* ‡] | Błoszyk and Rozwalka 2008, Sanocka-Wołoszynowa 1981 |
| *Mansuphantes mansuetus* (Thorell, 1875) [= *Lepthyphantes mansuetus* ‡] | Błoszyk and Rozwalka 2008, Sanocka-Wołoszynowa 1981 |
| *Maso sundevalli* (Westring, 1851) | Czajka and Hajduk 1978, Sanocka-Wołoszynowa 1981 |
| Species                              | References                                                                                     |
|-------------------------------------|-----------------------------------------------------------------------------------------------|
| *Megalephyphantes nebulosus* (Sundevall, 1830) (=*Lepthyphantes nebulosus* ‡) | Arndt 1921, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Skalski 1973a, Wołoszyn and Wójcik 1964 |
| *Meta menardi* (Latreille, 1804)    | Błoszyk and Rozwałka 2008, Czajka and Hajduk 1978, Demel 1918, Dumnicka and Płotek 2013, Gubała 1996, Hajduk and Ogorzałek 1970, Kowalski 1955, Kur et al. 2016, Ochman 2004, Pax and Maschke 1935, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Skalski 1967, Skalski 1973a, Skalski 1981, Skalski 1994-1995, Sobiepanek 1985, Wołoszyn and Wójcik 1964 |
| *Metellina merianae* (Scopoli, 1763) | Arndt 1921, Czajka and Hajduk 1978, Sanocka-Wołoszyn 1963, Skalski 1981, Wołoszyn and Wójcik 1964 |
| *Metellina segmentata* (Clerck, 1757) (=*Meta reticulate* ‡) | Arndt 1921                                                                                     |
| *Micrargus herbigradus* (Blackwall, 1854) | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981                                               |
| *Microneta viaria* (Blackwall, 1841) | Sanocka-Wołoszynowa 1981                                                                      |
| *Nesticus cellulanus* (Clerck, 1757) | Błoszyk and Rozwałka 2008, Dumnicka and Płotek 2013, Ochman 2004, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Skalski 1973a, Wołoszyn and Wójcik 1964 |
| *Obscuriphanthos obscurus* (Blackwall, 1841) (= *Lepthyphantes obscurus* ‡) | Sobiepanek 1985                                                                               |
| *Oedothorax agrestis* (Blackwall, 1853) | Sanocka-Wołoszynowa 1981                                                                      |
| *Oedothorax apicatus* (Blackwall, 1850) | Sanocka-Wołoszynowa 1981                                                                      |
| *Oedothorax gibbosus* (Blackwall, 1841) | Sanocka-Wołoszynowa 1981                                                                      |
| *Palliduliphanthos pallidus* (O. Pickard-Cambridge, 1871) (= *Lepthyphantes pallidus* ‡) | Ochman 2004, Sanocka-Wołoszynowa 1981                                                          |
| *Pardosa agrestis* (Westring, 1861)   | Sanocka-Wołoszyn 1963                                                                         |
| *Pardosa monticola* (Clerck, 1757)    | Sanocka-Wołoszynowa 1981                                                                       |
| *Pardosa nigra* (Koch, 1834)          | Sobiepanek 1985                                                                               |
| *Pelecopsis parallela* (Wider, 1834)  | Sanocka-Wołoszynowa 1981                                                                       |
| *Pholcus opilionoides* (Schrank, 1781) | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Wołoszyn and Wójcik 1964                   |
| *Pheidolestes festivus* (Koch, 1835)   | Sanocka-Wołoszynowa 1981                                                                       |
| *Pocilometes pumila* (Blackwall, 1841) | Sanocka-Wołoszynowa 1981                                                                       |
| *Pocilometes variegata* (Blackwall, 1841) (= *Pocilometes globosus* ‡) | Sanocka-Wołoszynowa 1981                                                                      |
| *Porrhomma convexum* (Westring, 1851) | Błoszyk and Rozwałka 2008, Czajka and Hajduk 1978, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Wołoszyn and Wójcik 1964 |
| *Porrhomma egeria* Simon, 1884 (= *Porrhomma monavicum* Miller & Kratochvil, 1940 ‡) | Błoszyk and Rozwałka 2008, Demel 1918, Ochman 2004, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Skalski 1971, Skalski 1973a, Skalski 1981, Skalski 1994-1995, Skalski and Wójcik 1968, Wołoszyn and Wójcik 1964 |
| *Porrhomma pallidum* Jackson, 1913    | Ochman 2004, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Skalski 1973a, Wołoszyn and Wójcik 1964 |
| *Porrhomma pygmaeum* (Blackwall, 1834) | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981                                               |
| *Porrhomma rhenbaueri* (L. Koch, 1872) | Pax and Maschke 1935, Pax 1937                                                                  |
| *Robertus lividus* (Blackwall, 1836)   | Sanocka-Wołoszynowa 1981                                                                       |
| *Scotargus pilatus* Simon, 1913 (= *Macrargus strandi* (Schenkel, 1934) ‡) | Sanocka-Wołoszynowa 1981                                                                      |
| *Scotophaeus blackwalli* (Thorell, 1856) | Sanocka-Wołoszynowa 1981                                                                      |
| Species | References |
|---------|------------|
| *Segestria senoculata* (Linnaeus, 1758) | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981 |
| *Sosticus loricatus* (L. Koch, 1866) [= *Scotophaeus loricatus* L. Koch, 1866 ‡] | Sanocka-Wołoszyn 1963 |
| *Steatoda bipunctata* (Linnaeus, 1758) | Sanocka-Wołoszynowa 1981 |
| *Stemonyphantes lineatus* (Linnaeus, 1758) | Sanocka-Wołoszyn 1963 |
| *Syedra gracilis* (Menge, 1869) | Sanocka-Wołoszynowa 1981 |
| *Tegenaria domestica* (Clarck, 1757) | Arndt 1921, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Skalski 1973a, |
| *Tegenaria ferruginea* (Panzer, 1804) | Ochman 2004, Pax and Maschke 1935, Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Skalski 1973a |
| *Tegenaria silvestris* Koch 1872 | Błoszyk and Rozwałka 2008, Sanocka-Wołoszynowa 1981 |
| *Tenuiphantes alacris* (Blackwall, 1853) [= *Lepthyphantes alacris* ‡] | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981 |
| *Tenuiphantes cristatus* (Menge, 1866) [= *Lepthyphantes cristatus* ‡] | Sanocka-Wołoszynowa 1981 |
| *Tenuiphantes flavipes* (Blackwall, 1854) [= *Lepthyphantes flavipes* ‡] | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981, Wołoszyn and Wójcik 1964 |
| *Tenuiphantes mengei* (Kulczyński, 1887) [= *Lepthyphantes mengei* ‡] | Sanocka-Wołoszynowa 1981, Sobiepanek 1985 |
| *Tenuiphantes tenebricola* (Wider, 1834) [= *Lepthyphantes tenebricola* ‡] | Sanocka-Wołoszyn 1963, Sanocka-Wołoszynowa 1981 |
| *Tenuiphantes tenuis* (Blackwall, 1852) [= *Lepthyphantes tenuis* ‡] | Sanocka-Wołoszynowa 1981 |
| *Terenecus cavernarum* L. Koch † | Pax and Maschke 1935 |
| *Tetragnatha pinicola* L. Koch, 1870 | Sanocka-Wołoszynowa 1981 |
| *Tetranychus denticulata* (Olivier, 1789) | Sanocka-Wołoszynowa 1981 |
| *Theridion impressum* Koch, 1881 | Skalski 1973a |
| *Thyreosthenius parasiticus* (Westring, 1851) | Sanocka-Wołoszynowa 1981 |
| *Trochosa ruricola* (De Geer, 1778) | Sanocka-Wołoszynowa 1981 |
| *Zodarion germanicum* (C. L. Koch, 1837) | Sanocka-Wołoszyn 1963 |
| *Zora spinimana* (Sundeval, 1833) | Sanocka-Wołoszynowa 1981 |
| *Zygia montana* (Koch, 1834) | Sobiepanek 1985 |

**Opiliones:**

| Species | References |
|---------|------------|
| *Gyas annulatus* (Olivier, 1791) | Sobiepanek 1985 |
| *Ischyropsalis bellugi* (Panzer, 1794) | Błoszyk and Rozwałka 2008, Kocot-Zalewska and Rozwałka 2018, Sanocka-Wołoszynowa 1981 |
| *Ischyropsalis manicata* Koch, 1869 [= *Ischyropsalis milleri = Ischyropsalis dacica* Roewer, 1916‡] | Kowalski 1955, Skalski 1967, Sobiepanek 1985 |
| *Lacinius epippiatus* (Koch, 1835) | Sanocka-Wołoszynowa 1981 |
| *Leiobunum blackwalli* Meade, 1861 | Arndt 1921, Sanocka-Wołoszynowa 1981 |
| *Leiobunum rotundum* (Latreille, 1798) | Błoszyk and Rozwałka 2008, Sanocka-Wołoszynowa 1981 |
| *Leiobunum rupestre* (Herbst, 1799) | Arndt 1921, Kowalski 1955, Ochman 2004, Sanocka-Wołoszynowa 1981, Skalski 1967, Skalski 1973a, Sobiepanek 1985 |
| *Mitopus morio* (Fabricius, 1779) | Błoszyk and Rozwałka 2008, Sanocka-Wołoszynowa 1981, Sobiepanek 1985 |
| *Mitostoma chrysomelas* (Hermann, 1804) | Błoszyk and Rozwałka 2008, Sanocka-Wołoszynowa 1981 |
| *Nemastoma lugubre* (Müller, 1776) | Sanocka-Wołoszynowa 1981 |
| *Oligolophus tridens* (Koch, 1836) | Błoszyk and Rozwałka 2008, Sanocka-Wołoszynowa 1981 |
| *Opilio parietinus* (De Geer, 1778) | Błoszyk and Rozwałka 2008, Pax and Maschke 1935, Sanocka-Wołoszynowa 1981 |
| *Opilio saxatilis* Koch, 1839 | Sanocka-Wołoszynowa 1981 |
| *Paranemastoma kochi* (Nowicki, 1870) | Sobiepanek 1985 |
### Table 3. The checklist of other Arthropoda and invertebrates recorded in Polish caves.

| Species                                      | References                                                                 |
|----------------------------------------------|-----------------------------------------------------------------------------|
| **Collembola**                               |                                                                             |
| Anurida granaria (Nicolet, 1847)              | Pomorski 1992                                                              |
| Archaphorura serratoruberculata (Stach, 1933) | = Onychiurus serratoruberculata Stach, 1933‡                                |
| Arrhopalites bifidus Stach, 1945             | Pomorski 1992, Skalski 1971                                                |
| Arrhopalites principalis Stach, 1945         | Pomorski 1992, Stach 1956                                                  |
| Arrhopalites pygmaeus (Wankel, 1860)         | Demel 1918, Kowalski 1955, Pax and Maschke 1935, Ochman 2004, Skalski 1971,|  |
|                                               | Skalski 1973a, Skalski 1973b, Skalski 1981, Skalski and Wójcik 1968, Stach |
|                                               | 1919, Stach 1939, Wołoszyn and Wójcik 1964 Stach 1956                     |
| Arrhopalites sericus Gisin, 1947             | Ochman 2004, Pomorski 1996                                                  |
| Bonetogastrura cavicola (Börner, 1901)       | = Hypogastrura cavicola ‡                                                  |
|                                               | Ochman 2004, Pomorski 1992, Skalski 1971, Skalski 1973a, Skalski 1973b, |  |
|                                               | Skalski 1981                                                               |
| Ceratophylla armata (Nicolet, 1841)           | Kowalski 1955, Pomorski 1996, Skalski 1967                                 |
| Ceratophylla bengtsoni (Agren, 1904)          | Stach 1949                                                                 |
| Ceratophylla granulata Stach, 1949            | Kowalski 1955, Stach 1949                                                  |
| Ceratophylla michalinae Skarżyński, 2005     | Skarżyński 2005                                                            |
| Cryptopygus bipunctatus (Axelson, 1903)       | Pomorski 1996                                                              |
| Desoria fennica (Reuter, 1895) = Isotoma fennica ‡ | Kowalski 1955, Stach 1947                                               |
| Desoria hiemalis (Schoettl, 1893) = Isotoma hiemalis Schöttl, 1893 ‡ | Kowalski 1955 |

† – status of the species name is unclear, ‡ – name published in original paper

The remaining Arthropoda groups are represented as follows: Collembola 79 species, Diplura 1 species, Chilopoda 1 species, Diplopoda 8 species, Symphyla 1 species, Isopoda 9 species. Among other invertebrates recorded in Polish caves 11 species are represented by Oligochaeta and 20 species by Mollusca. Detailed list of species is presented in Table 3.
# Terrestrial invertebrate fauna of Polish caves

| Species                                                  | References                                                                 |
|----------------------------------------------------------|-----------------------------------------------------------------------------|
| *Desoria olivacea* (Tullberg, 1871) [= *Isotoma olivacea* ‡] | Kowalski 1955, Stach 1939, Stach 1947                                       |
| *Desoria violacea* (Tullberg, 1876) [= *Isotoma violacea* ‡] | Kowalski 1955, Stach 1947                                                   |
| *Deuterophorura cebennaria* (Gisin, 1956)                 | Kur et al. 2016                                                            |
| *Dicyrtomina ornata* (Nicolet, 1842)                      | Ochman 2004                                                                 |
| *Entomobrya multifasciata* (Tullberg, 1871)               | Stach 1963                                                                 |
| *Folsomia fimetaria* (Linnaeus, 1758)                     | Pomorski 1992, Stach 1939                                                   |
| *Folsomia lawrencei* Rusek, 1984                         | Ochman 2004, Pomorski 1992, Pomorski 1996                                  |
| *Folsomia candida* Willem, 1902 [= *Folsomia listeri* Bagnall, 1939 ‡] | Kur et al. 2016, Ochman 2004, Pomorski 1992, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968, Stach 1947 |
| *Folsomia quadrioculata* (Tullberg, 1871)                 | Kowalski 1955, Ochman 2004, Pomorski 1992, Pomorski 1996, Skalski 1973a, Skalski 1981, Stach 1919, Włołowszn and Wójcik 1964 |
| *Heteromurus nitidus* (Templeton, 1835)                   | Arndt 1921, Demel 1918, Kur et al. 2016, Pax and Maschke 1935, Pomorski 1992, Skalski 1981, Stach 1919, Włołowszn and Wójcik 1964 |
| *Hymenaphorura creatricis* Pomorski, 1990                | Pomorski 1992                                                              |
| *Hymenaphorura nosa* Pomorski, 1990                       | Pomorski 1992                                                              |
| *Hymenaphorura polonica* Pomorski, 1990                  | Pomorski 1992                                                              |
| *Hypogastrura arnata* (Nicolet, 1842)                     | Arndt 1921, Ochman 2004                                                    |
| *Hypogastrura purpurascens* (Lubbock, 1868)               | Ochman 2004, Pax and Maschke 1935, Pomorski 1992, Pomorski 1996             |
| *Isotoma notabilis* Schäffer, 1896                        | Kowalski 1955, Pomorski 1992, Skalski 1973a, Skalski 1981, Ochman 2004, Stach 1939, Stach 1947 |
| *Isotoma propinqua* Axelson, 1902                         | Skalski 1973a, Ochman 2004                                                  |
| *Isotomiella minor* (Schaffer, 1896)                      | Ochman 2004, Pomorski 1992, Skalski 1973a, Stach 1939, Stach 1947           |
| *Lepidocyrtus albus* Packard, 1873                        | Demel 1918, Stach 1919, Pax and Maschke 1935, Skalski 1973a, Stach 1939, Stach 1947 |
| *Lepidocyrtus cyaneus* Tullberg, 1871                     | Pax and Maschke 1935                                                       |
| *Lepidocyrtus lanuginosus* (Gmelin, 1788)                 | Pax and Maschke 1935                                                       |
| *Megalothorax incertus* Börner, 1903                      | Ochman 2004, Pomorski 1992, Skalski 1973a                                  |
| *Megalothorax minimus* Willem, 1900                       | Ochman 2004, Pomorski 1992, Skalski 1973a, Stach 1939, Stach 1957           |
| *Mesachorutes ojcoviensis* Stach, 1918                    | Skalski 1969, Skalski 1971, Skalski 1973a, Skalski 1981, Skalski 1994a, Skalski and Wójcik 1968, Stach 1919 |
| *Mesaphorura bylophila* Rusek, 1982                      | Ochman 2004, Pomorski 1992, Skalski 1973a                                  |
| *Mesaphorura krausbaueri* Börner, 1901                    | Pomorski 1992, Skalski 1973a                                                |
| *Mesogastrura ojcoviensis* Stach, 1919 [= *Troglogastrura ojcoviensis* ‡] | Demel 1918, Stach 1919, Stach 1949                                         |
| *Metaphorura affinis* (Börner, 1903)                      | Pomorski 1996, Ochman 2004                                                  |
| *Micranurida pygmaea* Börner, 1901                        | Pomorski 1992, Pomorski 1996, Ochman 2004, Stach 1949                      |
| *Neanura muscorum* (Templeton 1835)                      | Pomorski 1992                                                              |
| *Neelus murinus* Folsom, 1896                            | Stach 1957                                                                 |
| *Oligaphorura schoetti* (Lie-Petersen, 1896)              | Pomorski 1992, Skalski 1971                                                |
| *Onchopoda reyersdorffensis* (Stach, 1936)                | Pomorski 1992, Skalski 1971                                                |
| *Onychiurus ambulans* (Linnaeus, 1758)                    | Skalski 1971                                                              |
| *Onychiurus cebennarius* Gisin, 1956                      | Pomorski 1992                                                             |
| *Onychiurus denissi* Stach, 1934                          | Kowalski 1955, Pomorski 1992, Stach 1939, Stach 1954                      |

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**Species:** Desoria, Isotoma, Deuterophorura, Dicyrtomina, Entomobrya, Folsomia, Fo. lawrencei, Desoria violacea, Folsomia fimetaria, Folsomia candida, Folsomia quadrioculata, Heteromurus, Hymenaphorura, Hypogastrura, Isotoma, Isotomiella, Lepidocyrtus, Megalothorax, Mesachorutes, Mesaphorura, Metaphorura, Micranurida, Neanura, Neelus, Oligaphorura, Onchopoda, Onychiurus, *Onychiurus cebennarius* (Gisin, 1956).
| Species                                                                 | References                                                                 |
|------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Onychiurus fimetarius (Linnaeus, 1767)                                  | Arndt 1921, Kowalski 1955, Pax and Maschke 1935, Skalski 1967, Stach 1954 |
| Onychiurus granulosus Stach, 1930                                       | Kowalski 1955, Ochman 2004, Pomorski 1992, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968, Stach 1939, Stach 1954 |
| Onychiurus rectospinatus Stach, 1922                                     | Stach 1954                                                                |
| Onychiurus sibericus Tullberg, 1876 †                                   | Kowalski 1955, Stach 1954                                                 |
| Onychiurus scutarius Gisin, 1954                                        | Pomorski 1992                                                             |
| Onychiurus tuberculatus Moniez, 1891                                     | Stach 1954                                                                |
| Pogonognathellus flaveces (Tullberg, 1871)                              | Ochman 2004, Pomorski 1992                                                |
| Pogonognathellus longicornis (Muller, 1776) (= Tomocerus longicornis Lubbock ‡) | Pax and Maschke 1935                                                     |
| Protaphorura alborencens (Vogler, 1895) (= Onychiurus alborencens ‡)    | Skalski 1971, Skalski 1973a, Skalski 1973b, Skalski 1981, Skalski and Wójcik 1968, Stach 1939, Stach 1954 |
| Protaphorura armata (Tullberg, 1869) (= Onychiurus armatus ‡)           | Arndt 1921, Demel 1918, Gubała 1996, Kowalski 1955, Ochman 2004, Pax and Maschke 1935, Pomorski 1992, Pomorski 1996, Skalski 1967, Skalski 1969, Skalski 1973a, Skalski 1981, Skalski and Wójcik 1968, Sobiepanek 1985, Stach 1919, Stach 1939, Stach 1954, Wóllosyn and Wójcik 1964 |
| Protaphorura austriaca (Butschek, 1948)                                 | Pomorski 1992                                                             |
| Protaphorura campata (Gisin, 1952)                                      | Pomorski 1992                                                             |
| Protaphorura janosik Weiner, 1977                                       | Weiner 1990                                                               |
| Pseudoiella alba (Packard, 1873)                                       | Skalski 1973a                                                             |
| Pseudoiella petersoni Börner, 1901                                      | Pomorski 1992                                                             |
| Pseudisotoma monochaeta (Kos, 1942)                                     | Stach 1947                                                               |
| Pseudisotoma sensibili (Tullberg, 1876)                                 | Ochman 2004, Pomorski 1996                                                |
| Schaefferia emuconata Absolon, 1900                                     | Arndt 1921, Pomorski 1992, Skalski 1971, Stach 1939, Stach 1949           |
| Sinella hoefti Schaeffer, 1896 †                                       | Arndt 1921                                                                |
| Smintthurinus elegans (Fitch, 1863)                                     | Ochman 2004, Skalski 1973a                                                |
| Tetrodontophora bienanensis (Waga, 1842)                                | Arndt 1921, Kowalski 1955, Pax and Maschke 1935, Pomorski 1992            |
| Tomocerus flaveces (Tullberg, 1871)                                     | Kowalski 1955, Pax and Maschke 1935, Skalski 1973a, Skalski and Wójcik 1968, Stach 1939 |
| Tomocerus minor (Lubbock, 1862)                                         | Pomorski 1992                                                             |
| Tomocerus vulgaris (Tullberg, 1871)                                     | Arndt 1921, Kur et al. 2016                                               |
| Willenia intermedia Mills, 1934                                        | Pomorski 1992                                                             |
| Willowsia bukii (Lubbock, 1870)                                         | Ochman 2004, Pomorski 1996                                                |
| Willowsia nigromaculata (Lubbock, 1873)                                 | Ochman 2004, Pomorski 1996                                                |
| Xyrella boerneri Axelson, 1905                                          | Ochman 2004, Skalski 1973a                                                |
| Xyrella breviscuta (Tullberg, 1869)                                     | Stach 1949                                                               |
| **Diplura:**                                                           |                                                                          |
| Campodea staphylina Westwood, 1842                                      | Arndt 1921                                                                |
| **Chilopoda:**                                                         |                                                                          |
| Lithobius mutabilis Koch, 1862                                          | Kowalski 1955                                                             |
| Blaniulus gutturattu (Fabricius, 1798)                                  | Kur et al. 2016                                                           |
| Glomeris besisticha Brandt, 1833                                       | Kowalski 1955                                                             |
| Julius lucus Meinert, 1868                                             | Arndt 1921                                                                |
| Leptolaimus triobatus (Verhoeff, 1894)                                  | Pax and Maschke 1935, Pax 1937                                            |
| Mastigophorophyllon saxonicon Verhoeff, 1916                           | Pax and Maschke 1935                                                      |
| Mycogona germanica (Verhoeff, 1892) (= Orthochordeuma germanica ‡)     | Pax and Maschke 1935, Pax 1937                                            |
| Species | References |
|---------|------------|
| **Ochogona caroli** (Rothenbuhler, 1900) [= Ceratozoma caroli ‡] | Pax and Maschke 1935, Pax 1937 |
| Strongylosoma stigmatosum stigmatosum (Eichwald, 1830) | Sobiepanek 1985 |
| **Symphyla:** | |
| Scutigerella immaculata (Newport, 1845) | Kowalski 1955 |
| **Isopoda:** | |
| Cylasticus convexus (De Geer, 1778) | Kur et al. 2016, Pax and Maschke 1935, Pax 1937, Skalski 1973a |
| Hyloniscus vividus (Koch, 1841) | Pax and Maschke 1935, Pax 1937 |
| Mesoniscus graniger (Frivaldszky, 1865) | Piksa and Farkas 2007 |
| Porcellio spinicornis Say, 1818 | Skalski 1973a |
| Porcellio sahar Latreille, 1804 | Wołoszn and Wójcik 1964 |
| Porcellium conspersum (Koch, 1841) | Pax and Maschke 1935 |
| Protracheoniscus politus (Koch, 1841) [= Porcellio politus Koch, 1841 ‡] | Pax and Maschke 1935 |
| Trachelipus affinis (Koch, 1841) [= Trachelipus wächtleri (Strouhal, 1951) ‡] | Skalski 1967 |
| **Oligochaeta:** | |
| Achaeta eiseni (Vejdovsky, 1878) | Dumnicka 1977 |
| Buchholzia appendiculata (Buchholz, 1862) | Dumnicka 1977, Skalski 1981 |
| Dendrobaena alpina (Rosa, 1884) | Sobiepanek 1985 |
| Dendrodrilus rubidus (Savigny, 1826) [= Dendrobaena rubida (Savigny, 1826) ‡] | Dumnicka 1977 |
| Enchytraeus polonicus Dumnicka, 1977 | Dumnicka 1977, Skalski 1981, Skalski 1994a |
| Enchytraeus buchholzi Vejdovsky, 1878 | Dumnicka 1977, Skalski 1981 |
| Enchytraeus dominicus Dumnicka, 1976 | Dumnicka 1977, Skalski 1981, Skalski 1994a |
| Fridericia bulbosa (Rosa, 1887) | Dumnicka 1977, Skalski 1981 |
| Fredericia razeli (Eisen, 1872) | Kasprzak 1973 |
| Henlea ventriculosa (d’Udekem, 1854) | Dumnicka 1977 |
| Marionina argentea (Michaelis, 1889) | Dumnicka 1977 |
| **Mollusca:** | |
| Aegopinella nitens (Michaud, 1831) | Sobiepanek 1985 |
| Arion subfuscus (Draparnaud, 1805) | Ochman 2004, Skalski 1973a, Sobiepanek 1985 |
| Arianta arbustorum (Linnaeus, 1758) | Kowalski 1955 |
| Armiger crist a (Linnaeus, 1758) [= Gyraulus criste ‡] | Wołoszn and Wójcik 1964 |
| Cepaea hortensis (Müller, 1774) | Skalski 1973a |
| Chilostoma cingulella Rossmässler, 1837 [= Helicigona cingulella ‡] | Kowalski 1955, Sobiepanek 1985 |
| Chondrina clinta (Westerlund, 1883) | Kowalski 1955, Sobiepanek 1985 |
| Clasiolina dubia Draparnaud, 1805 | Sobiepanek 1985 |
| Cochlodina laminata (Montagu, 1803) | Skalski 1973a |
| Discus (Gonyosuchus) rotundatus (Müller, 1774) | Skalski 1973a |
| Helicella obvia (Menke, 1828) | Skalski 1973a |
| Helicigona faustina (Rossmässler, 1835) | Skalski 1973a |
| Helix pomatia Linnaeus, 1758 | Pax and Maschke 1935 |
| Isochrynomastoma isognomostomos (Schröter, 1784) | Skalski 1973a |
| Lacinia rica (Draparnaud, 1801) | Skalski 1973a |
| Lehmania marginata (Müller, 1774) | Sobiepanek 1985 |
| Limax cinereoniger Wolf, 1803 | Ochman 2004, Skalski 1973a |
| Monachoides incarnatus (Müller, 1774) [= Perforatella incarnata ‡] | Skalski 1973a |
| Oxychillus glaber (Rossmässler, 1835) | Dumnicka and Płotek 2013, Ochman 2004, Skalski 1973a, Skalski 1981 |
| Oxychilus depressus (Sterki, 1880) | Ochman 2004, Skalski 1973a, Skalski and Wójcik 1968 |

† – status of the species name is unclear, ‡ – name published in original paper
Summary

Based on presented data, it can be noticed that researchers’ interest in terrestrial invertebrate fauna, both historically and contemporarily, is relatively low in Poland. In the span of 100 years, just over 50 published papers have been focused on the terrestrial invertebrate fauna of Polish caves although the presence of 593 species has been reported. Such a low interest could be caused by the conviction that it is not worth involving in the research of fauna that lacks spectacular troglobionts. Once the fauna of Polish caves gains greater interest of academics from various groups, we will learn more about this most mysterious world.

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