Diversity, biogeography and integrative taxonomy of myriapods in Poland- progress report for Förderkreis für allgemeine Naturkunde (Biologie)

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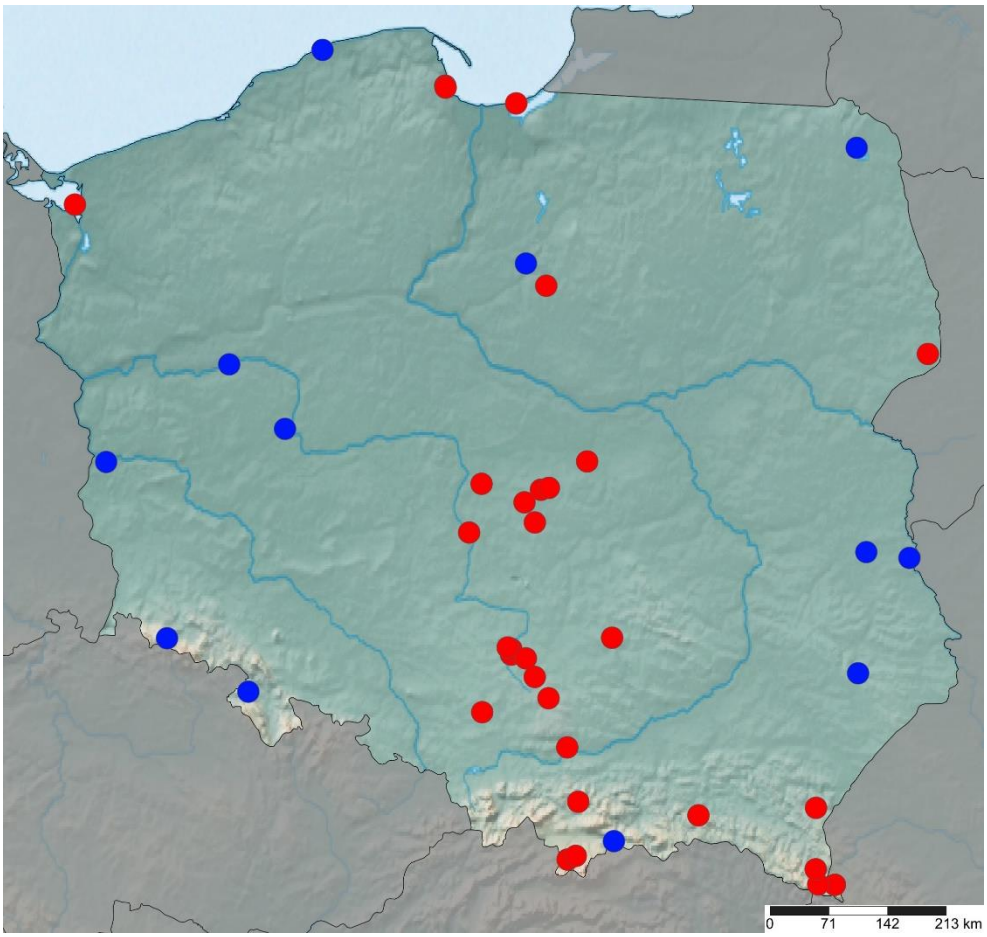
Since the application was approved and the funds were donated, a number of expeditions in search of myriapods took place to various places throughout Poland. We obtained myriapods from the localities listed in the table below:

No.	Location	Code	GPS Coordinates
1.	Beskid Niski	BEN	49.6118146, 21.2967419
2.	Beskid Wyspowy	BEW	49.707120, 19.995714
3.	Białowieża	BIA	52.7493096, 23.7798569
4.	Bytom	BYT	50.331859, 18.956487
5.	Chyleniec	CHY	52.037702, 20.092463
6.	Dobieszków	DOB	51.848064, 19.591799
7.	Gdynia	GDY	54.475870, 18.555739
8.	Gieczno	GIE	51.997125,19.443182
9.	Głęboka cave	GLE	50.575399, 19.525059
10.	Górzno	GOR	53.195139, 19.649885
11.	Janinów	JAN	51.860807, 19.678252
12.	Kliczków	KLI	51.3367832, 15.4393955
13.	Kościelisko	KOS	49.300063, 19.880369
14.	Kraków	KRA	50.087640, 19.876827
15.	Łódź	LOD	51.763699, 19.414476
16.	Mierzeja Wiślana	MIE	54.364395, 19.324787
17.	Muczny	MUC	49.1209, 22.7732
18.	Poddębice	POD	51.888074, 18.949281
19.	Przełęcz Wyżniańska	PRW	49.1234, 22.5927
20.	Psia cave	PSC	50.844884, 20.362253
21.	Sękocin	SEK1	52.099237, 20.886756
22.	Sękowiec	SEK2	49.2312, 22.5657
23.	Sieradz	SIE	51.560674, 18.815224
24.	Sokola Góra	SOK	50.729102, 19.270695
25.	Sopot	SOP	54.463784, 18.560718
26.	Towarna cave	TOC	50.768436 19.271016
27.	Tuszyn	TUS	51.628380, 19.526184
28.	Ustrzyki Dolne	USD	49.6645, 22.5693
29.	Zalew Szczeciński	ZAS	53.719464, 14.549358
30.	Ząb	ZAB	49.325835, 19.969173
31.	Zegar cave	ZEC	50.428917, 19.674361
32.	Zielona Góra	ZIG	50.778152, 19.232589
33.	Złoty Potok	ZLP	50.703530, 19.429255

The localites are shown on the map below. Red are ones that we obtained material from, blue are places still to visit.



The collected material turned out to be very useful for our research. We collected several species (approx. 50% of species recorded from Poland), some new to the Polish fauna (red colour in the table).

Full list is presented below:

No.	Species	Location code
	Chilopoda, Geophilomorpha, Geophilidae	
1.	*Geophilus carpophagus* (Leach, 1814)	ZAS
2.	*Geophilus electricus* (Linnaeus, 1758)	LOD, ZEC
3.	*Geophilus flavus* (De Geer, 1778)	BIA, BYT, GDY, LOD, POD

4.	*Geophilus truncorum* (Bergsöe et Meinert, 1867)	DOB, LOD
5.	*Pachymerium ferrugineum* (C. L. Koch, 1835)	CHY, GOR
6.	*Stenotaenia linearis* (C.L. Koch, 1835)	KRA
	Chilopoda, Geophilomorpha, Linotaeniidae	
7.	*Strigamia acuminata* (Leach, 1814)	BEN, JAN, LOD, POD, PRW, SEK2, TUS
8.	*Strigamia crassipes* (C. L. Koch, 1835)	BEN, LOD
	Chilopoda, Geophilomorpha, Schendylidae	
9.	*Schendyla nemorensis* (C. L. Koch, 1837)	BEN, BYT, GOR, LOD, POD, SOP
	Chilopoda, Lithobiomorpha, Lithobiidae	
10.	*Lithobius agilis* C. L. Koch, 1844	LOD
11.	*Lithobius borealis* Meinert, 1868	TUS
12.	*Lithobius burzenlandicus* Verhoeff, 1931	BEN
13.	*Lithobius calcaratus* C. L. Koch	POD
14.	*Lithobius crassipes* L. Koch, 1862	LOD, TUS
15.	*Lithobius curtipes* C. L. Koch, 1847	BEN, LOD, TUS
16.	*Lithobius cyrtopus* Latzel, 1880	BEN
17.	*Lithobius erythrocephalus* C. L. Koch, 1847	BEN, BEW, LOD, POD, PSC, TUS
18.	*Lithobius forficatus* (Linnaeus, 1758)	BEN, BEW, BIA, BYT, CHY, LOD, MIE, POD, ZAS, ZLP
19.	*Lithobius melanops* Newport, 1845	BYT, LOD
20.	*Lithobius microps* Meinert, 1868	BYT, LOD, POD, SOP, ZAS
21.	*Lithobius mutabilis* L. Koch, 1862	BEN, BEW, BIA, CHY, GLE, KOS, MIE, TUS, ZAB, ZEC, ZLP, ZIG
22.	*Lithobius muticus* C. L. Koch, 1847	BEN, BEW, PSC, ZEC, ZLP
23.	*Lithobius pelidnus* Haase, 1880	LOD
24.	*Lithobius* sp.	BEN

25.	*Lithobius tenebrosus* Meinert, 1872	BEN, BIA
	Chilopoda, Scolopendromorpha, Cryptoidae	
26.	*Cryptops hortensis* (Donovan, 1810)	LOD, POD, MIE
27.	*Cryptops parisi* Brolemann, 1920	BEN, BYT
	Diplopoda, Chordeumatida, Chordeumatidae	
28.	*Melogona voigti* (Verhoeff, 1899)	BYT
	Diplopoda, Chordeumatida, Craspedosomatidae	
29.	*Craspedosoma rawlinsii* Leach, 1816	BIA, KRA, LOD
30.	*Chelogona carpathica* (Latzel, 1882)	KOS
	Diplopoda, Chordeumatida, Mastigophorophyllidae	
31.	*Mastigophorophyllon saxonicum* Verhoeff, 1910	BIA
32.	*Mastigona bosniensis* (Verhoeff, 1887)	BEN
	Diplopoda, Glomerida, Glomeridae	
33.	*Glomeris hexasticha* Brandt, 1833	POD
34.	*Glomeris tetrasticha* Brandt, 1833	BEN, BEW, DOB, KRA, LOD
	Diplopoda, Julida, Blaniulidae	
35.	*Blaniulus guttulatus* (Fabricius, 1798)	BYT, LOD
36.	*Proteroiulus fuscus* (Am Stein, 1857)	BEN, BEW, BIA, LOD, POD
37.	*Choneiulus palmatus* (Nemec, 1895)	POD, SOP
38.	*Nopoiulus kochii* (Gervais, 1847)	POD
39.	*Archiboreoiulus/Boreoiulus*	BIA, BYT
	Diplopoda, Julida, Julidae	
40.	*Julus scandinavicus* Latzel, 1884	TUS
41.	*Ophyiulus pilosus* (Meinert, 1868)	LOD
42.	*Leptoiulus proximus* (Nemec, 1896)	BIA, DOB, KRA, LOD, POD
43.	*Leptoiulus trilobatus* (Verhoeff, 1894)	PRW, TUS
44.	*Xestoiulus laeticollis* (Porat, 1889)	BIA

45.	*Kryphioiulus occultus* (C. L. Koch, 1887)	LOD, POD, GDY
46.	*Cylindroiulus arborum* Verhoeff, 1928	POD
47.	*Cylindroiulus burzenlandicus* Verhoeff, 1907	BEN
48.	*Cylindroiulus caeruleocinctus* (Wood, 1864)	BYT, GDY, LOD, POD
49.	*Cylindroiulus latestriatus* (Curtis, 1845)	LOD, SOP
50.	*Cylindroiulus punctatus* (Leach, 1815)	SOP
51.	*Cylindroiulus* sp.	SOP
52.	*Unciger foetidus* (C. L. Koch, 1847)	BYT, GDY, LOD, POD, SOP
53.	*Unciger transsilvanicus* (Verhoeff, 1899)	SEK1
54.	*Brachyiulus* sp.	GIE
55.	*Megaphyllum projectum* Verhoeff, 1894	CHY, DOB, LOD, POD, TUS
56.	*Ommatoiulus sabulosus* (Linnaeus, 1758)	BIA, LOD, MIE, ZEC, ZIG
57.	*Rossiulus vilinensis* (Jawłowski, 1925)	BIA
	Diplopoda, Julida, Nemasomatidae	
58.	*Nemasoma varicorne* C. L. Koch, 1847	DOB
	Diplopoda, Polydesmida, Macrosternodesmidae	
59.	*Ophiodesmus albonanus* (Latzel, 1895)	GDY
	Diplopoda, Polydesmida, Paradoxosomatidae	
60.	*Oxidus gracilis* (C. L. Koch, 1847)	LOD
61.	*Strongylosoma stigmatosum* (Eichwald, 1830)	PSC, USD, ZEC
	Diplopoda, Polydesmida, Polydesmidae	
62.	*Polydesmus angustus* Latzel, 1884	BYT, KLI, KRA, SOP
63.	*Polydesmus complanatus* (Linnaeus, 1761)	BEN, BEW, BIA, DOB, KOS, KRA, LOD, MIE, POD, ZAS, ZAB
64.	*Polydesmus denticulatus* C. L. Koch, 1847	LOD, SOP

65.	*Polydesmus inconstans* Latzel, 1884	LOD
66.	*Polydesmus polonicus* Latzel, 1884	MUC
	Diplopoda, Polyxenida, Polyxenidae	
67.	*Polyxenus lagurus* (Linnaeus, 1758)	SIE
	Diplopoda, Polyzoniida, Polyzoniidae	
68.	*Polyzonium germanicum* Brandt, 1837	BEN, BEW, BIA, TUS

These are not all the taxa that we collected, only the identified ones. We also have some symphylans and pauropods, which were not yet reliably identified.

We are also preparing paper about large scale expansion of the millipede species *Polydesmus angustus* Latzel, 1884 in Poland, that was totally overlooked along with second record (first outdoors) of rare millipede *Ophiodesmus albonanus* (Latzel, 1895). The paper about this finds is being prepared now and the results will be presented at the conference this April (prove in attachments). Here are some of the figures that will be present (in this or similar form) in the final published manuscript:

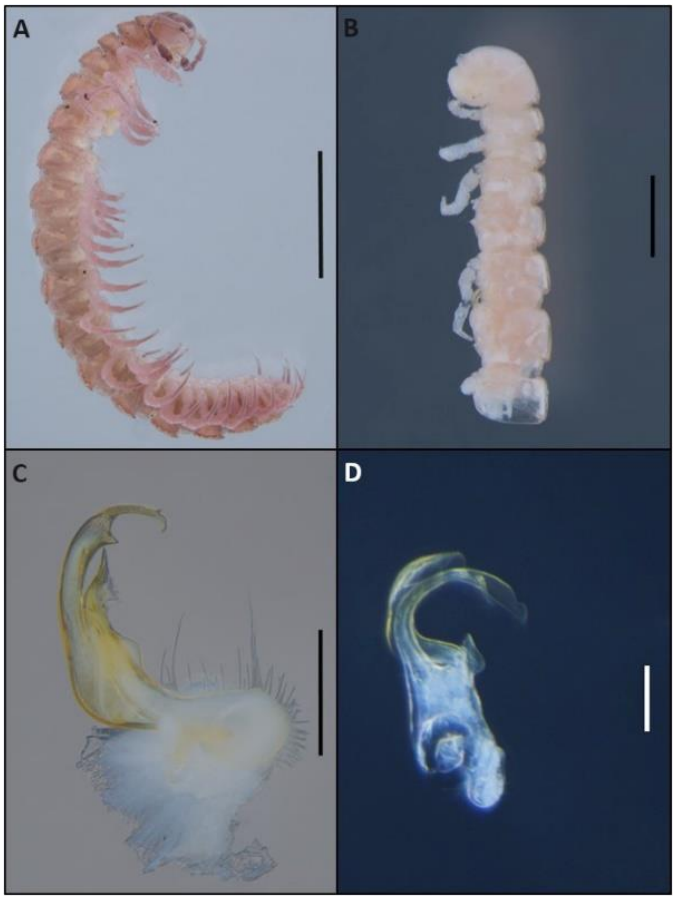


Fig. 1. Habitus of Polydesmus angustus and Ophiodesmus albonanus. (A) Habitus of P. angustus. (B) Habitus of O. albonanus. (C) Gonopods of P. angustus. (D). Gonopods of O. albonanus. Scale bars: A = 0.5 cm; B = 0.5 mm; C = 0.5 mm; D = 0.1 mm.

Fig. 2. Distribution of *Polydesmus angustus* (red) and *Ophiodesmus albonanus* (blue) in Poland, 1 – Gdynia, 2 – Sopot, 3 – Kliczków, 4 – Bytom, 5 - Kraków.

This year, we plan additional trips (blue dots on maps), so the species list will expand soon. Additionally we started preparing material for genetic analyses, also within the Horizon Europe - Biodiversity Genomics Europe project in which our team is a consortium member (190 specimens from 26 species). The rest of the material will be sequenced with the use of Oxford Nanopore Technology in our department. Therefeore, soon we will obtain molecular information that will be furtherly analysed.

When it comes to the funds approximately 380 € was spent on for travel costs, 270€ for accommodation and 100€ for the materials (chemicals etc.).