

Contribution to the knowledge of centipedes and terrestrial isopods of the Moravskoslezské Beskydy Mts.

Příspěvek k poznání stonožek a suchozemských stejnonožců v Moravskoslezských Beskydech

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Abstract. In 2007-2009, altogether 7,094 individuals of centipedes and terrestrial isopods were caught using the method of pitfall traps at 38 localities in the area of the mountain range of the Smrk and Kněhyně hills, the Čeladenka valley and Čeladná-Podolánky surroundings, the Moravskoslezské Beskydy Mts. Among 18 species of centipedes there are two species newly recorded for the territory, *Lithobius biunguiculatus* Loksa, 1947 and *Lithobius pelidnus* Haase, 1880. Our data present the first investigation of terrestrial isopods in this territory. Till this time, 32 species of centipedes and 7 species of terrestrial isopods were reported for the territory of the Moravskoslezské Beskydy Mts. and 33 centipede and 13 terrestrial isopod species of the Beskydy PLA.

INTRODUCTION

The Beskydy Protected Landscape Area (PLA) is the largest PLA in the Czech Republic (1,160 km²). It lies in the south-eastern part of the Moravian-Silesian and eastern part of the Zlin regions, on the border with Slovakia. The whole area belongs to the flysch Outer Western Carpathians and comprises most of the Moravskoslezské Beskydy Mts. Range, large part of the Vsetinské vrchy Range and Moravian part of the Javorníky Range. This area is covered by mainly cultural forests as well as species rich meadows and pastures. Within the forests, covering 71 % of the whole area, spruce forests predominate. Primeval fir-beech forests are conserved in the small fragments only.

Centipedes (Chilopoda) and terrestrial isopods (Oniscidea) are important part of soil fauna in forest ecosystems. Terrestrial isopods participate in decomposition of dead organic matter, while centipedes are important predators of soil mezofauna (potworms, springtails, etc.), which abundances are related to food resource (ALBERT 1979; SCHEU & SCHAEFER 1998). In the Czech Republic up today, the occurrence of 67 species of centipedes and 43 species of terrestrial isopods is known (TUF & TUFOVÁ 2008; WYTWER & TAJOVSKÝ 2005; SASKA 2007). In the past, both groups were studied in the recent Beskydy PLA, nevertheless only centipedes were collected from the Moravskoslezské Beskydy Mts. range yet. The occurrence of 31 centipede species was confirmed from this (FOLKMANOVÁ 1954; WYTWER & TAJOVSKÝ 2005).

Centipedes as well as terrestrial isopods are used as bioindicators for assessment of environment quality (BILTON 1996; VAN STRAALLEN 1998; PAOLETTI & HASSALL 1999; SOUTY-GROSSET et al. 2005). Data used in this publication were obtained as a part of the

project evaluating the possibility of centipedes and terrestrial isopods as bioindicators of investigated forest types. The aim of this paper is to contribute to the knowledge of the fauna of centipedes and terrestrial isopods of the Moravskoslezské Beskydy Mts. as well as the Beskydy PLA.

MATERIAL AND METHODS

The centipedes and terrestrial isopods were collected using pitfall traps (standard glass jars, diameter 7 cm, 4% formaldehyde solution as killing and preserving agent). In total 190 pitfall traps were installed at 38 localities (5 traps per stand in span of 10 m, the minimum distance from the edge of the stand corresponded to the tree height). Traps were emptied each 6 weeks during May-October in the years 2007-2009. Material from 5 traps was taken together as aggregate sample, separately for each locality. Identification was carried out according to the keys of KOREN (1986, 1992), KACZMAREK (1979), FOLKMANOVÁ (1959), BROLEMANN (1930) and FRANKENBERGER (1959). Used nomenclature follows centipede webdatabase CHILOBASE (MINELLI et al. 2006) and Schmalzfuss's woodlice catalogue (SCHMALFUSS 2003).

The network of the permanent research localities (38 spruce and beech stands) was established on the mountain range of the Smrk and Kněhyně Mt., the Čeladenka valley and Čeladná-Podolánky surroundings (Natural forest area 40 Moravskoslezské Beskydy Mts.; Forest Districts Čeladná and Podolánky). Overall study area belongs to the cool climatic zone. The microclimate of monitored area can be characterized by mean air temperature 6.2 °C and mean annual rainfall 1,250 mm. The vegetation season takes 100-140 days. Heavy rains are characteristic for the area (July and August) (TOLASZ et al. 2007). Additional characteristics of localities (geographic coordinates, altitude and percentage of dominant trees) are given in Tab. 1.

RESULTS

Altogether 6,366 centipedes and 728 terrestrial isopods were collected using pitfall traps. Centipedes were represented by 18 species (Tab. 2, without 91 unidentifiable specimens of centipede larvae) and terrestrial isopods by 7 species (Tab. 3). Number of species at individual localities varied from 4 to 12 (mean 8.1) for centipedes and from 0 to 4 (mean 1.1) for terrestrial isopods. The localities inhabited by the highest number of centipede species (pure spruce localities numbers 4 and 17 with 12 and 11 species, respectively) differed from those localities with the highest number of terrestrial isopod species (beech forest at locality number 12 with 4 species; sycamore-beech locality number 25 with 3 species including two unique species, and spruce localities numbers 29 and 30, both with 3 species). The most frequent centipede species were *Lithobius cyrtopus*, *L. erythrocephalus*, *L. forficatus* and *L. mutabilis* (present at all localities). The most frequent terrestrial isopod was *Protracheoniscus politus* with occurrence at 24 localities.

The most remarkable localities with the highest number of rare species classified according to TUF & TUFOVÁ (2008) are localities numbers 4 and 25 (4 relic species). Whereas locality number 25 represents sycamore-beech wood type with 85 % dominance of beech (with records of *Lithobius burzenlandicus*, *Lepidoniscus minutus* and *Ligidium germanicum*), locality number 4 represents pure spruce wood (with relic species *Lithobius biunguiculatus*, *L. burzenlandicus* and *Geophilus insculptus*). Other species, presented rarely at studied localities, were *Lithobius piceus* and *Oniscus asellus*.

DISCUSSION

The first report about centipedes of the wider territory of the Beskydy was published by VALIŠ (1904). He found 10 species of centipedes (Tab. 4), mainly in the surroundings of the towns of Rožnov pod Radhoštěm, Štramberk, Horní Bečva (including the Šipka cave and the Radhošť Mt.), i.e. in neighbouring area of the Vsetínské vrchy Hills. Fifty years later FOLKMANOVÁ (1954) published results of her intensive research about myriapod fauna

mainly from the Moravskoslezské Beskydy Mts. Folkmanová collected about 900 centipedes from spruce forests during the year 1941-1949 representing 27 species (Tab. 4), 19 of them were not found by Vališ in the Vsetínské vrchy Hills before. Next study dealing with centipedes of this territory was published by Wytwer and Tajovský next half a century later (WYTWER & TAJOVSKÝ 2005). They analyzed communities of centipedes sampled by pitfall traps and extracted from soil samples in the years 1988-1993 and 1996-1997 at five stands on the localities Bílý kříž and Kněhyně. WYTWER & TAJOVSKÝ (2005) confirmed distribution of *Schendyla nemorensis* (as *Schendyla furcoides* Kaczmarek, 1962, synonymized later by DÁNYI & WYTWER (2008)) in the Moravskoslezské Beskydy Mts., reported by VALIŠ (1904) from Vsetínské vrchy Hills, too. They added another two species to the FOLKMANOVÁ's (1954) list: *Lithobius nodulipes* and *Stenotaenia sorrentina* (as *Clinopodes linearis abbreviatus* (Verhoeff, 1925) synonymized later by BONATO & MINELLI (2008)).

Until our research, 30 species of centipedes were reported for the Moravskoslezské Beskydy Mts. (plus *Strigamia crassipes* in the neighbouring Vsetínské vrchy Hills). Although we did not confirmed distribution of some geophilomorphs in the studied area (because they inhabit deeper soil layers and are sampled by pitfall traps rarely, the best method for their collection is combination of hand collecting and extraction of soil samples), we found two species of lithobiomorphs newly. *Lithobius biunguiculatus* is rare species known from some Moravian localities from unpublished records (TAJOVSKÝ in litt.) and from the Bílé Karpaty PLA (PAVELKOVÁ 2008). *Lithobius pelidnus* is the mountain species known e.g. from northern Moravia from the Jeseníky Mts. (FOLKMANOVÁ 1947) or the Rychlebské Mts. (FOLKMANOVÁ & LANG 1960).

The occurrence of some species, recorded historically by FOLKMANOVÁ (1954) and missing in the study of WYTWER & TAJOVSKÝ (2005), was actually reconfirmed: *Lithobius erythrocephalus*, *L. piceus*, *L. tenebrosus*, *L. austriacus* and *L. micropodus*; last two species are smaller centipedes living mainly in soil layers.

Terrestrial isopods were not reported of the territory from the Moravskoslezské Beskydy Mts. yet. Nevertheless, they were studied in surroundings of the Vsetínské vrchy Hills (FRANKENBERGER 1942, 1944; FLASAROVÁ 1958). In the first paper (FRANKENBERGER 1942) five species of terrestrial isopods were reported only (Tab. 5). The most interesting records were the Carpathian species *Hyloniscus mariae* and the mountain Eastern European species *Ligidium germanicum* (FRANKENBERGER 1959). Two years later, FRANKENBERGER (1944) reported in his review of Bohemian and Moravian woodlice two another species collected in the Vsetínské vrchy Hills: *Porcellium conspersum* and *Protracheoniscus politus* (probably plus widely distributed eurytopic *Trachelipus ratzeburgii* and *Trachelipus rathkii* without concrete localities in Moravia). In following paper of FLASAROVÁ (1958) concerning of knowledge Moravian-Silesian woodlice, three small endogeic species were newly reported from the Vsetínské vrchy Hills: *Hyloniscus riparius*, *Trichoniscus pusillus* and *T. noricus*. Two species, *T. ratzeburgii* and *T. rathkii*, are mentioned without concrete localities as widespread species again. In our research, we found 7 species of terrestrial isopods in the Moravskoslezské Beskydy Mts., beside them reported from the surrounding Vsetínské vrchy Hills, *Oniscus asellus* was found at one locality (pure spruce stand No. 29). *O. asellus* is north-western European species inhabiting in Central and Eastern Europe mainly synanthropic habitats (FRANKENBERGER 1959); his presence in artificial spruce forest is probably caused by introduction with seedlings. Presence of *T. ratzeburgii* on nine localities is the first confirmation of distribution of this adaptable species in studied area. Summarising, the distribution of 12 species of terrestrial isopods (of possible 16) in the Beskydy PLA was confirmed.

SUMMARY

Using the method of pitfall traps 7,094 individuals of 18 species of centipedes and 7 species of terrestrial isopods were recorded in 2007-2009 at 38 localities in the Moravskoslezské Beskydy Mts. Complementing previous studies, 32 centipede species and 7 species of terrestrial isopods are actually known from the Moravskoslezské Beskydy Mts. Based on our study we listed for the whole Beskydy PLA in total 33 species of centipedes and 13 species of terrestrial isopods, including 12 relic species of centipedes and 4 relic species of terrestrial isopods respectively.

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Tab. 1. List of studied localities, with additional characteristics

Tab. 1. Seznam zkoumaných lokalit a jejich charakteristiky

No. of locality	Position	Dominant tree (%)	Altitude
1	49°30'47.5''N, 18°20'37.1''E	S (95)	600
2	49°30'10.7''N, 18°20'51.5''E	B (55)	815
3	49°29'02.5''N, 18°21'08.7''E	B (80)	880
4	49°29'01.9''N, 18°21'23.0''E	S (100)	890
5	49°29'02.0''N, 18°22'33.3''E	B (50)	850
6	49°29'04.5''N, 18°22'16.0''E	B (60)	915
7	49°29'42.6''N, 18°21'03.0''E	B (50)	855
8	49°30'10.9''N, 18°23'04.4''E	S (100)	1010
9	49°30'15.5''N, 18°23'02.0''E	S (100)	1045
10	49°30'13.5''N, 18°24'14.2''E	S (80)	845
11	49°31'08.6''N, 18°23'19.9''E	S (65)	840
12	49°30'57.1''N, 18°22'54.4''E	B (25)	835
13	49°30'55.0''N, 18°22'22.1''E	S (80)	850
14	49°31'03.9''N, 18°21'55.9''E	S (60)	830
15	49°31'19.1''N, 18°22'09.4''E	S (100)	780
16	49°30'31.7''N, 18°19'24.3''E	S (88)	785
17	49°29'55.2''N, 18°20'26.1''E	S (100)	560
18	49°28'57.0''N, 18°20'38.2''E	S (100)	610
19	49°28'07.0''N, 18°21'19.6''E	S (100)	680
20	49°27'56.5''N, 18°21'04.6''E	S (100)	660
21	49°28'44.6''N, 18°22'43.3''E	B (95)	730
22	49°28'36.2''N, 18°22'54.0''E	S (100)	695
23	49°28'24.6''N, 18°24'59.5''E	S (99)	530
24	49°28'28.4''N, 18°25'01.5''E	S (85)	540
25	49°29'29.3''N, 18°21'00.6''E	B (85)	870
26	49°29'27.8''N, 18°20'58.1''E	S (90)	825
27	49°30'32.6''N, 18°18'13.2''E	B (80)	1015
28	49°30'40.6''N, 18°18'10.7''E	B (85)	1025
29	49°31'38.5''N, 18°23'12.9''E	S (100)	620
30	49°31'17.1''N, 18°18'57.4''E	S (95)	630
31	49°29'45.2''N, 18°21'34.2''E	S (95)	1100
32	49°30'18.9''N, 18°22'14.8''E	S (100)	1190
33	49°30'17.4''N, 18°22'08.1''E	S (90)	1220
34	49°30'08.5''N, 18°22'20.6''E	S (85)	1100
35	49°31'09.6''N, 18°19'13.2''E	B (100)	635
36	49°28'46.6''N, 18°23'39.6''E	S (98)	620
37	49°28'19.5''N, 18°23'34.9''E	S (100)	645
38	49°31'13.5''N, 18°18'06.6''E	S (60)	635

Abbreviations/Zkratky: S – Norway spruce/smrk; B – beech (and their percentage of dominance)/buk (a jejich dominance)

Tab. 2. Numbers of trapped centipedes at individual localities. Last column summarizes number of species at each locality, last row summarizes number of localities where species was recorded
 Tab. 2. Počty chytených stonožek na jednotlivých lokalitách. Poslední sloupec shrnuje počet druhů na každé lokalitě, poslední řádek počet lokalit, kde byl druh zaznamenán

No. of locality	<i>Lithobius austriacus</i>	<i>Lithobius biunguiculatus</i>	<i>Lithobius borealis</i>	<i>Lithobius burzenlandicus</i>	<i>Lithobius cyrtopus</i>	<i>Lithobius erythrocephalus</i>	<i>Lithobius forficatus</i>	<i>Lithobius microps</i>	<i>Lithobius mutabilis</i>	<i>Lithobius nodulipes</i>	<i>Lithobius pelidnus</i>	<i>Lithobius piceus</i>	<i>Lithobius tenebrosus</i>	<i>Geophilus flavus</i>	<i>Geophilus insculptus</i>	<i>Strigamia acuminata</i>	<i>Strigamia transsilvanica</i>	<i>Cryptops parisi</i>	Total number of species
1	71	-	-	-	28	69	49	4	42	4	4	-	5	-	-	2	-	-	10
2	-	-	-	-	32	10	65	1	75	13	-	-	-	2	-	2	-	1	9
3	-	-	-	-	19	12	76	9	36	2	-	-	-	-	-	4	-	-	7
4	-	1	-	1	25	38	155	4	66	2	-	-	10	-	1	3	-	3	12
5	2	-	-	-	5	63	152	6	61	-	-	-	-	-	-	20	-	-	7
6	-	-	-	-	7	18	72	2	122	-	-	1	-	-	-	10	-	1	8
7	-	-	-	-	15	10	18	4	30	-	-	-	-	1	-	6	-	-	7
8	-	-	-	-	13	49	141	2	87	4	-	-	1	-	-	-	-	2	8
9	-	-	-	-	2	57	126	1	79	3	-	-	-	-	-	-	-	1	7
10	-	-	-	-	15	28	151	5	141	4	-	-	-	-	-	2	-	3	8
11	-	-	-	-	9	79	100	5	21	3	-	-	-	1	-	-	-	-	7
12	-	-	-	-	1	4	41	3	64	8	-	-	-	1	-	2	1	1	10
13	-	-	-	-	7	53	70	2	40	4	-	-	2	1	-	3	-	1	10
14	-	-	1	-	4	2	6	-	75	-	5	-	6	-	-	2	-	-	8
15	-	-	-	-	15	20	21	12	39	1	-	-	-	-	-	4	-	-	7
16	-	-	-	-	9	62	23	2	33	1	2	-	2	-	-	5	-	-	9
17	-	-	2	-	13	16	29	3	27	3	1	-	3	1	-	-	-	2	11
18	-	-	-	-	12	11	12	7	43	-	-	-	-	3	-	-	1	-	7
19	-	-	-	-	1	25	11	4	10	-	-	-	-	-	-	1	-	-	6
20	-	-	-	-	3	7	2	1	19	-	3	-	3	-	-	-	-	-	7
21	-	-	-	-	2	51	74	9	69	3	-	-	-	-	-	4	-	2	8
22	22	-	-	-	3	40	29	1	81	-	-	-	-	1	-	4	-	2	9
23	1	1	-	-	2	8	6	7	15	2	-	-	-	-	-	1	-	-	9
24	1	-	-	-	5	37	4	18	61	4	-	-	-	1	-	-	-	-	8
25	-	-	-	1	15	18	44	-	71	6	-	-	-	1	-	6	-	-	8
26	-	-	-	-	5	32	37	3	45	5	2	-	1	-	-	10	-	-	9
27	1	1	-	-	14	1	109	5	109	1	-	-	-	1	-	4	-	-	10
28	-	-	-	-	18	14	74	9	83	2	1	-	-	1	-	1	-	1	10
29	-	-	-	-	8	21	32	2	15	3	-	-	-	-	-	6	-	-	7
30	-	-	-	-	24	29	96	7	43	-	2	-	-	-	-	1	-	-	7
31	-	-	-	-	25	30	125	3	61	4	-	-	-	-	-	-	-	-	6
32	-	-	-	-	11	32	52	5	38	-	1	-	-	-	-	1	-	1	8
33	-	-	-	-	32	12	25	6	38	-	-	-	-	1	-	4	-	-	7
34	-	-	-	-	7	10	42	-	27	-	-	-	-	-	-	-	-	-	4
35	-	-	-	-	3	2	39	5	38	-	-	-	3	-	-	1	-	2	8
36	3	-	1	-	6	13	10	-	17	-	-	-	-	1	-	1	-	1	9
37	5	-	-	-	3	19	29	-	33	-	-	-	-	1	-	-	-	1	7
38	-	-	2	-	3	59	63	5	54	-	-	-	-	-	-	-	-	-	6
	8	3	4	2	38	38	38	33	38	22	9	1	10	15	1	27	2	16	

Tab. 3. Numbers of trapped terrestrial isopods at individual localities. Last column summarizes number of species at each locality, last row summarizes number of localities where species was recorded

Tab. 3. Počty chycených suchozemských stejnonožců na jednotlivých lokalitách. Poslední sloupec shrnuje počet druhů na každé lokalitě, poslední řádek počet lokalit, kde byl druh zaznamenán

No. of locality	<i>Hyloniscus riparius</i>	<i>Lepidoniscus minutus</i>	<i>Ligidium germanicum</i>	<i>Ligidium hypnorum</i>	<i>Oniscus asellus</i>	<i>Protracheoniscus politus</i>	<i>Trachelipus ratzeburgii</i>	Total number of species
1	-	-	-	-	-	44	-	1
2	-	-	-	-	-	-	-	0
3	-	-	-	-	-	-	-	0
4	1	-	-	-	-	-	-	1
5	-	-	-	-	-	-	-	0
6	1	-	-	-	-	10	-	2
7	6	-	-	-	-	179	2	3
8	-	-	-	-	-	2	3	2
9	-	-	-	-	-	2	-	1
10	-	-	-	-	-	2	2	2
11	-	-	-	-	-	-	2	1
12	1	-	-	2	-	27	2	4
13	-	-	-	-	-	1	1	2
14	-	-	-	-	-	11	-	1
15	-	-	-	-	-	132	61	2
16	-	-	-	-	-	1	-	1
17	-	-	-	-	-	-	-	0
18	-	-	-	2	-	-	-	1
19	-	-	-	-	-	-	-	0
20	-	-	-	-	-	-	-	0
21	-	-	-	-	-	37	-	1
22	-	-	-	-	-	-	-	0
23	-	-	-	46	-	-	-	1
24	-	-	-	-	-	5	-	1
25	-	1	1	-	-	33	-	3
26	-	-	-	-	-	7	-	1
27	-	-	-	-	-	4	-	1
28	-	-	-	-	-	7	-	1
29	-	-	-	-	1	20	23	3
30	-	-	-	1	-	29	1	3
31	-	-	-	-	-	4	-	1
32	-	-	-	-	-	-	-	0
33	-	-	-	-	-	2	-	1
34	-	-	-	-	-	-	-	0
35	-	-	-	-	-	2	-	1
36	-	-	-	-	-	5	-	1
37	-	-	-	-	-	-	-	0
38	-	-	-	-	-	2	-	1
	4	1	1	4	1	24	9	

Tab. 4. Historical review of the knowledge of centipedes reported from the Beskydy PLA
 Tab. 4. Historický přehled poznání stonožek v CHKO Beskydy

Species/Area	Ecological classification	VALIŠ 1904	FOLKMANOVÁ 1954	WYTWER & TAJOVSKÝ 2005	Current study
		VH	MSB	MSB	MSB
<i>Clinopodes flavidus</i> C.L.Koch, 1847	A	-	+	-	-
<i>Cryptops parisi</i> Brolemann, 1920	A	+	+	+	+
<i>Geophilus flavus</i> (DeGeer, 1778)	E	+	+	+	+
<i>Geophilus insculptus</i> Attems, 1895	A	-	+	+	+
<i>Geophilus proximus</i> C.L.Koch, 1847	R	+	+	-	-
<i>Lamyctes emarginatus</i> Newport, 1844	E	-	+	-	-
<i>Lithobius austriacus</i> Verhoeff, 1937	A	-	+	-	+
<i>Lithobius biunguiculatus</i> Loksa, 1947	R	-	-	-	+
<i>Lithobius borealis</i> Meinert, 1868	A	+	+	+	+
<i>Lithobius burzenlandicus</i> Verhoeff, 1934	R	-	+	+	+
<i>Lithobius cyrtopus</i> Latzel, 1880	R	-	+	+	+
<i>Lithobius erythrocephalus</i> C.L.Koch, 1847	E	-	+	-	+
<i>Lithobius forficatus</i> Linnaeus, 1758	E	+	+	+	+
<i>Lithobius lapidicola</i> Meinert, 1872	A	-	+	-	-
<i>Lithobius latro</i> Meinert, 1872	R	-	+	+	-
<i>Lithobius lucifugus</i> L.Koch, 1862	R	-	+	-	-
<i>Lithobius lusitanus</i> Verhoeff, 1925	R	-	+	-	-
<i>Lithobius macilentus</i> L.Koch, 1862	A	-	+	-	-
<i>Lithobius micropodus</i> (Matic, 1980)	A	-	+	-	+
<i>Lithobius mutabilis</i> L.Koch, 1862	E	+	+	+	+
<i>Lithobius muticus</i> C.L.Koch, 1847	A	+	+	-	-
<i>Lithobius nodulipes</i> Latzel, 1880	R	-	-	+	+
<i>Lithobius pelidnus</i> Haase, 1880	R	-	-	-	+
<i>Lithobius piceus</i> L.Koch, 1862	A	-	+	-	+
<i>Lithobius salicis</i> Verhoeff, 1925	R	-	+	-	-
<i>Lithobius schuleri</i> Verhoeff, 1925	R	-	+	+	-
<i>Lithobius tenebrosus</i> Meinert, 1872	A	-	+	-	+
<i>Pachymerium ferrugineum</i> (C.L.Koch, 1835)	A	-	+	-	-
<i>Schendyla nemorensis</i> (C.L.Koch, 1836)	E	+	-	+	-
<i>Stenotaenia sorrentina</i> (Attems, 1903)	R	-	-	+	-
<i>Strigamia acuminata</i> (Leach, 1814)	E	+	+	+	+
<i>Strigamia crassipes</i> (C.L.Koch, 1835)	A	+	-	-	-
<i>Strigamia transsilvanica</i> (Verhoeff, 1928)	A	-	+	+	+
Number of species		10	27	15	18
Cumulative number of species in Beskydy PLA		10	29	31	33

Abbreviations/Zkratky: VH – Vsetínské Hills/Vsetínské vrchy; MSB – Moravskoslezské Beskydy Mts./Moravskoslezské Beskydy; (+) – presence/přítomnost druhu; (-) – absence/nepřítomnost druhu; R – relic species/reliktní druh; A – adaptable species/adaptabilní druh; E – eurytopic species/eurytopní druh. Ecological classification sensu TUF & TUFOVÁ (2008)/Ekologická klasifikace podle práce TUF & TUFOVÁ (2008)

Tab. 5. Historical review of the knowledge of terrestrial isopods reported from the Beskydy PLA
 Tab. 5. Historický přehled poznání suchozemských stejonožců v CHKO Beskydy

Species/Area	Ecological classification	FRANKENBERGER 1942	FRANKENBERGER 1944	FLASAROVÁ 1958	Current study
		VH	VH	VH	MSB
<i>Armadillidium vulgare</i> (Latreille, 1804)	E	-	-	?	-
<i>Cylisticus convexus</i> (De Geer, 1778)	A	-	-	?	-
<i>Hyloniscus mariae</i> Verhoeff, 1908	R	+	+	+	-
<i>Hyloniscus riparius</i> (C.L. Koch, 1838)	E	-	-	+	+
<i>Lepidoniscus minutus</i> (C.L. Koch, 1838)	A	+	+	+	+
<i>Ligidium germanicum</i> Verhoeff, 1901	R	+	+	+	+
<i>Ligidium hypnorum</i> (Cuvier, 1792)	E	+	+	+	+
<i>Oniscus asellus</i> Linnaeus, 1758	E	-	-	-	+
<i>Porcellio scaber</i> Latreille, 1804	E	-	-	?	-
<i>Porcellium conspersum</i> (C.L. Koch, 1841)	A	-	+	+	-
<i>Protracheoniscus politus</i> (C.L. Koch, 1841)	A	-	+	+	+
<i>Trachelipus difficilis</i> (Radu, 1950)	R	+	+	+	-
<i>Trachelipus rathkii</i> (Brandt, 1833)	E	-	?	?	-
<i>Trachelipus ratzeburgii</i> (Brandt, 1833)	A	-	?	?	+
<i>Trichoniscus noricus</i> Verhoeff, 1917	R	-	-	+	-
<i>Trichoniscus pusillus</i> Brandt, 1833	E	-	-	+	-
Number of species		5	7	10	7
Cumulative number of species in Beskydy PLA		5	7	10	12

Abbreviations/Zkratky: VH – Vsetínské vrchy Hills/Vsetínské vrchy; MSB – Moravskoslezské Beskydy Mts./Moravskoslezské Beskydy; (+) – presence/přítomnost druhu; (-) – absence/nepřítomnost druhu; ? – probably present (see text)/pravděpodobný výskyt (viz text); R – relic species/reliktní druh; A – adaptable species/adaptabilní druh; E – eurytopic species/eurytopní druh. Ecological classification sensu TUF & TUFOVÁ (2008)/Ekologická klasifikace podle práce TUF & TUFOVÁ (2008)