

Results of the field surveys on terrestrial isopods (Isopoda, Oniscidea) in the Drava basin, Croatia

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Abstract: Field surveys in the main habitat types (floodplain forests, oak forests and river banks) along Drava river resulted 5649 isopod specimens belonging to 19 species, with several new species to the area as well. The most frequent species were common European and cosmopolitan species: *Hyloniscus riparius*, *Armadillidium vulgare* and *Trachelipus rathkii* found in 91%, 80% and 75% of the sites, respectively. It is worthy of note that *Trichoniscus steinboeckii*, a new species for the Croatian fauna was also found in the area. The species composition was found to be similar among the main habitat types, ranging from 69 to 74%. Species classification indicated high naturalness for the oak forests followed by the river bank and the floodplain forests. As a conclusion, we found no great differences in the compositions of isopod faunas living on the two sides of the Drava. However, the high proportion of non-native species draws our attention to the perturbing effects of human activity in the area.

1. Introduction

Running from the Alps to the Danube, Drava river connects Italy, Austria, Slovenia, Croatia, Hungary and Serbia. It is the historical borderline between Croatia and Hungary on an approximately 200 kilometre long section. This section, however, possesses a great natural heritage like unique indigenous floodplain forests harbouring native plants and animals in great diversity. Conservation biological surveys in the area began on the Hungarian side with the establishment of Duna-Drava National Park in the 1990s. Along with botanical and zoological studies, a four year long faunistic research on isopods has taken place between the years 1996 and 1999. Field surveys resulted 23 species in 19 sites from the Drava area, including new and rare species as well. According to the results published in several articles (FARKAS 1995, 1998a, b, c; FARKAS & VADKERTI 2001; VADKERTI & FARKAS 2002) we have a sound knowledge about the isopod fauna on the Hungarian side. Faunistic data of the terrestrial Isopod fauna of Croatia are given in KARAMAN (1965-66, 1966), PLJAKIĆ (1970) and POTOČNIK (1989). However, no data had

been published from the Croatian side of Drava until 2004, when 11 species were described from the Croatian Baranja (FARKAS & KRČMAR 2004). Hence, prior to the DRAVA-INTERECO project, the isopod fauna of the Croatian side of Drava river was practically unknown.

The project was carried out between 2006 and 2007 including field surveys on vegetation and fauna. The primary goal was a field data assessment to enable the establishment of new protected areas. Moreover, the preparation of the monitoring protocol for isopods also had been determined. Besides data assessment, the project aimed at deepening responsibility for the environment within local population in Croatia.

To describe the primary status of the observed area, we began with a faunistic survey defining the isopod assemblages of typical habitats and their presence-absence relationships. From the results we were able to attempt the conservation biological evaluation of the Croatian side of the Drava floodplain. Here we present the results and data of the faunistic studies on woodlice, acquired in 2007.

2. Methods

Hungarian scientists ranged over the Drava basin led by Croatian nature conservation co-workers during January and February 2007. Sites suitable for sampling had been designated and registered. Altitude and latitude data were acquired by using hand GPS and the GoogleEarth software (<http://earth.google.com/>). A total of 141 sampling sites representing the characteristic habitats of the area were chosen including wetland willow and oak gallery forests, meadows, riparian and synanthropic habitats (Table 1.). Samplings were carried out from March until December. Every sampling site was visited 3-4 times during the year. The main collecting technique was manual sampling but at some places pitfall trapping was applied, too. Only one or two demonstrative individuals of each species in every sampling site were kept.

For the evaluation of naturalness of isopod assemblages, considering the limitations of this approach, we applied the categories of HORNUNG et al. (2007) that are based on the known distribution and habitat preferences of species in Hungary.

To compare species composition of different habitat types we applied Sørensen index for similarity (PODANI 1997): $SOR = 2a/(2a+b+c)$, where "a" = species occurring in both habitats; "b" = number of species that occur exclusively in habitat 1.; "c" = number of species that occur exclusively in habitat 2.

Hierarchical cluster analysis was performed to reveal similarities between habitat preferences of species. We used binary data and applied Jaccard index with Ward method in the open source R statistical software package (R DEVELOPMENT CORE TEAM 2005).

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Table 1. List of sampling sites

No.	Locality	Habitat	Elevation	Altitude	Longitude
1.	Legrad	river bank	129	48° 18' 04.33"	16° 52' 23.24"
2.	Legrad	river bank	129	46° 17' 58.39"	16° 52' 26.27"
3.	Legrad	river bank, builing	128	46° 17' 55.35"	16° 52' 28.22"
4.	Legrad	river bank, debris, rotting log	130	46° 17' 50.41"	16° 52' 40.62"
5.	Legrad	floodplain forest	131	46° 17' 57.47"	16° 52' 20.33"
6.	Legrad	floodplain forest	130	46° 17' 49.22"	16° 52' 30.43"
7.	Legrad	river bank, near restaurant	127	46° 17' 51.83"	16° 52' 53.76"
8.	Legrad	river bank, debris	126	46° 17' 41.67"	16° 53' 11.46"
9.	Legrad	groveforest	129	46° 17' 43.25"	16° 53' 05.41"
10.	Legrad	gravel reef with <i>Myricaria germanica</i>	129	46° 17' 34.99"	16° 53' 06.29"
11.	Botovo	floodplain, shrubs	122	46° 14' 00.33"	16° 56' 51.04"
12.	Botovo	willow grove	126	46° 14' 08.93"	16° 56' 47.83"
13.	Botovo	pitfall trap site	127	46° 14' 08.31"	16° 56' 39.91"
14.	Botovo	willow grove	126	46° 14' 12.78"	16° 56' 28.66"
15.	Botovo	carex swamp	126	46° 14' 20.53"	16° 56' 25.07"
16.	Gabajeva Greda	oak forest 3. pitfall trap site	126	46° 08' 46.08"	17° 00' 36.24"
17.	Repaš	oak forest	129	46° 10' 46.7"	17° 05' 19.74"
18.	Repaš	oak forest	134	46° 10' 48.5"	17° 05' 49.97"
19.	Repaš	oak forest	132	46° 10' 23.5"	17° 05' 16.16"
20.	Repaš	oak forest	122	46° 09' 57.3"	17° 05' 23.18"
21.	Repaš	oak forest	122	46° 09' 58.52"	17° 05' 38.18"
22.	Repaš	oak forest	134	46° 09' 12.38"	17° 06' 54.77"
23.	Repaš	oak forest	132	46° 09' 10.67"	17° 07' 22.31"
24.	Repaš	oak forest	133	46° 09' 07.45"	17° 07' 51.16"
25.	Repaš	oak forest	128	46° 08' 39.53"	17° 09' 28.03"
26.	Repaš	4th pitfall trap site	131	46° 08' 35.35"	17° 05' 49.05"
27.	Repaš	oak forest	121	46° 08' 31.63"	17° 07' 06.44"
28.	Repaš	oak forest	131	46° 08' 39.71"	17° 06' 56.17"
29.	Repaš	oak forest	128	46° 08' 29.88"	17° 06' 56.17"
30.	Repaš	oak forest	127	46° 08' 34.78"	17° 05' 43.74"
31.	Repaški most	willow grove	113	46° 07' 39.89"	17° 04' 18.37"
32.	Repaški most	river bank	112	46° 07' 38.57"	17° 04' 14.29"
33.	Repaški most	river bank	116	46° 07' 42.84"	17° 03' 59.74"
34.	Molve Grede	oak forest	115	46° 06' 15.86"	17° 03' 18.65"
35.	Molve Grede	oak forest	132	46° 06' 31.22"	17° 04' 34.59"
36.	Molve Grede	between Molve and Novo Virje	124	46° 05' 57.53"	17° 04' 19.15"
37.	Novo Virije	oak forest	133	46° 05' 38.84"	17° 06' 38.79"
38.	Drenovica	cemetery, forest	130	46° 05' 37.94"	17° 07' 48.67"
39.	Drenovica	cemetery, forest	130	46° 05' 44.85"	17° 07' 32.46"
40.	Drenovica	shore of small pond	126	46° 05' 16.75"	17° 08' 22.98"
41.	Drenovica	oak forest	120	46° 04' 41.2"	17° 10' 21.2"
42.	Novo Virije	restaurant	110	46° 05' 52.59"	17° 11' 07.68"
43.	Novo Virije	river bank	111	46° 05' 56.2"	17° 11' 02.77"
44.	Novo Virije	wetland forest	114	46° 06' 08.65"	17° 10' 43.95"
45.	Novo Virije	river bank	113	46° 06' 34"	17° 10' 20.69"
46.	Novo Virije	river bank	113	46° 06' 17.93"	17° 11' 19.86"
47.	Novo Virije	wetland forest	113	46° 06' 09.74"	17° 11' 49.67"
48.	Lijepa Greda	oak forest	124	46° 04' 15.95"	17° 12' 31.86"
49.	Lijepa Greda	oak forest	123	46° 04' 22.3"	17° 12' 58.47"
50.	Lijepa Greda	oak forest	125	46° 04' 01.73"	17° 13' 20.66"
51.	Brodić	oak forest	121	46° 01' 03.84"	17° 15' 04.91"
52.	Brodić	oak forest	122	46° 01' 15.43"	17° 14' 47.08"
53.	Brodić	oak forest	125	46° 02' 29.03"	17° 14' 06.85"

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No.	Locality	Habitat	Elevation	Altitude	Longitude
54.	Brodíć	oak forest	126	46° 02' 53.84"	17° 12' 56.23"
55.	Brodíć	oak forest	126	46° 01' 28.74"	17° 13' 17.86"
56.	Pitomača	oak forest	121	45° 57' 59.28"	17° 16' 22.36"
57.	Starogradački Marof	secondary bush	105	45° 57' 18.7"	17° 19' 03.38"
58.	Starogradački Marof	river bank	105	45° 57' 26.7"	17° 19' 12.99"
59.	Starogradački Marof	river bank	103	45° 57' 44.8"	17° 19' 40.38"
60.	Starogradački Marof	secondary bush	107	45° 57' 31.92"	17° 19' 46.28"
61.	Starogradački Marof	secondary bush	105	45° 57' 23.14"	17° 19' 38.58"
62.	Starogradački Marof	anabranch of Drava	105	45° 57' 17.3"	17° 19' 53.74"
63.	Okrugljača	river bank	103	45° 56' 33.84"	17° 22' 03.01"
64.	Okrugljača	river bank	103	45° 56' 37.92"	17° 22' 10.08"
65.	Okrugljača	river bank	102	45° 56' 44.96"	17° 22' 24.84"
66.	Okrugljača	floodplain forest	104	45° 56' 50.12"	17° 22' 39.7"
67.	Veliko Polje	floodplain forest	99	45° 56' 24.28"	17° 29' 55.9"
68.	Veliko Polje	floodplain forest	99	45° 56' 23.02"	17° 30' 05.11"
69.	Veliko Polje	floodplain forest	99	45° 56' 19.26"	17° 30' 13.26"
70.	Veliko Polje	floodplain forest	100	45° 56' 14.17"	17° 30' 36.52"
71.	Veliko Polje	floodplain forest, river bank	99	45° 56' 15.84"	17° 31' 02.89"
72.	Bekovar-Noví Gradac	floodplain	100	45° 56' 00.5"	17° 32' 50.29"
73.	Bekovar-Noví Gradac	floodplain	100	45° 59' 02.4"	17° 33' 01.44"
74.	Bekovar-Noví Gradac	river bank swamp	105	45° 56' 02.15"	17° 33' 09.88"
75.	Bekovar-Noví Gradac	river bank swamp	101	45° 56' 01.37"	17° 33' 27.45"
76.	Bekovar-Noví Gradac	wetland forest	101	45° 56' 05.02"	17° 33' 36.56"
77.	Bekovar-Noví Gradac	river bank	99	45° 56' 10.95"	17° 33' 56.42"
78.	Bekovar-Noví Gradac	wetland forest	103	45° 55' 54.48"	17° 34' 17.86"
79.	Bekovar-Noví Gradac	river bank, dead wood	100	45° 56' 07.67"	17° 34' 34.04"
80.	Detkovac oxbow	river bank swamp	98	45° 53' 03.31"	17° 36' 33.62"
81.	Detkovac oxbow	reed	99	45° 53' 07.25"	17° 36' 44.55"
82.	Detkovac oxbow	groveforest	99	45° 53' 08.45"	17° 36' 36.82"
83.	Detkovac oxbow	groveforest	99	45° 54' 04.59"	17° 36' 21.84"
84.	Detkovac oxbow	thin shrub edge at river bank	100	45° 53' 55.51"	17° 36' 12.89"
85.	Detkovac oxbow	carex swamp	101	45° 54' 12.01"	17° 36' 21.17"
86.	Detkovac oxbow	floodplain forest	107	45° 54' 31.65"	17° 36' 23.28"
87.	Detkovac oxbow	river bank	103	45° 54' 42.87"	17° 36' 19"
88.	Detkovac oxbow	river bank	101	45° 54' 36.44"	17° 36' 43"
89.	Detkovac oxbow	shrubs near the village	102	45° 53' 32.77"	17° 35' 33.55"
90.	Detkovac oxbow	reed	98	45° 52' 49.32"	17° 37' 06.57"
91.	Detkovac oxbow	reed	99	45° 52' 40.54"	17° 37' 36.61"
92.	Detkovac oxbow	river bank, shrubs	97	45° 53' 05.55"	17° 38' 07.46"
93.	Budakovac	river bank	101	45° 52' 09.86"	17° 38' 35.07"
94.	Budakovac	river bank	100	45° 51' 52.61"	17° 38' 49.59"
95.	Budakovac	shrubs, floodplain	101	45° 52' 01.35"	17° 38' 30.6"
96.	Budakovac	river bank	99	45° 51' 25.09"	17° 38' 51.64"
97.	Budakovac	reed between croplands	97	45° 51' 27.7"	17° 38' 26.27"
98.	Budakovac	backwater, reed	96	45° 51' 20.03"	17° 37' 48.28"
99.	Budakovac	reed	97	45° 51' 11.63"	17° 37' 37.12"
100.	Budakovac	swamp	97	45° 51' 05.12"	17° 37' 30.92"
101.	Budakovac	river bank, urbanised	99	45° 50' 48.62"	17° 37' 41.28"
102.	Budakovac	willow grove	101	45° 50' 53.25"	17° 37' 58.56"
103.	Vaška-Županijski kanal	grove	99	45° 49' 10.92"	17° 40' 01.36"
104.	Vaška-Županijski kanal	river bank, debris	99	45° 49' 03.27"	17° 40' 12.88"
105.	Vaška-Županijski kanal	grove forest	98	45° 50' 02.24"	17° 40' 38.27"
106.	Vaška	floodplain forest	101	45° 50' 08.24"	17° 41' 28.65"

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No.	Locality	Habitat	Elevation	Altitude	Longitude
107.	Vaška	river bank forest	104	45° 50' 10.62"	17° 41' 43.52"
108.	Vaška	floodplain forest	105	45° 50' 02.7"	17° 41' 51.2"
109.	Vaška	river bank	103	45° 50' 11.63"	17° 42' 02"
110.	Vaška	wetland forest	105	45° 49' 54.78"	17° 42' 10.2"
111.	Sopje	floodplain forest	98	45° 49' 22.24"	17° 44' 24.83"
112.	Sopje	river bank	98	45° 49' 17.6"	17° 44' 44.06"
113.	Sopje	river bank	100	45° 49' 09.34"	17° 45' 04.03"
114.	Sopje	floodplain forest	101	45° 48' 50.81"	17° 45' 17.13"
115.	Gornje Predrijevo	river bank	102	45° 48' 47.21"	17° 46' 50.26"
116.	Gornje Predrijevo	river bank	100	45° 48' 32.76"	17° 47' 37.16"
117.	Gornje Predrijevo	floodplain forest	100	45° 48' 33.33"	17° 46' 58.19"
118.	Gornje Predrijevo	floodplain forest	100	45° 48' 16.71"	17° 47' 33.42"
119.	Noškovci-Predrijevačka bara	reed	92	45° 47' 42.99"	17° 48' 08.08"
120.	Noškovci-Predrijevačka bara	reed	93	45° 47' 29.46"	17° 48' 55.22"
121.	Noškovci	river bank	97	45° 48' 04.5"	17° 49' 15.36"
122.	Noškovci	floodplain forest	100	45° 48' 09.98"	17° 49' 39.09"
123.	Noškovci	river bank	96	45° 48' 24.99"	17° 49' 28.65"
124.	Noškovci	wetland forest	98	45° 48' 04.68"	17° 49' 44.19"
125.	Noškovci	river bank	95	45° 47' 32.23"	17° 49' 39.97"
126.	Noškovci	wetland forest	102	45° 47' 45.83"	17° 49' 23.25"
127.	Ilmin Dvor	floodplain forest	94	45° 46' 47.71"	17° 52' 57.38"
128.	Martinci Miholjački	floodplain forest	92	45° 47' 15.3"	17° 54' 45.39"
129.	Martinci Miholjački	river bank	91	45° 47' 08.14"	17° 56' 01.88"
130.	Podravska Moslavina	river bank	90	45° 47' 26.8"	17° 57' 25.12"
131.	Podravska Moslavina	river bank	88	45° 47' 14.84"	17° 58' 27.04"
132.	Donji Miholjac	river bank	96	45° 46' 49.95"	18° 07' 03.99"
133.	Donji Miholjac	wetland forest	91	45° 46' 55.52"	18° 07' 26.88"
134.	Donji Miholjac	river bank	95	45° 47' 06.4"	18° 08' 26.8"
135.	Donji Miholjac	grove	90	45° 47' 10.7"	18° 09' 02.24"
136.	Donji Miholjac	grove	86	45° 46' 58.64"	18° 09' 15.93"
137.	Donji Miholjac	backwater, reed	88	45° 46' 24.88"	18° 09' 00.42"
138.	Donji Miholjac	river bank	90	45° 46' 56.51"	18° 11' 02.92"
139.	Donji Miholjac	grove	90	45° 47' 01.98"	18° 11' 30.56"
140.	Donji Miholjac	river bank	90	45° 47' 10.28"	18° 11' 34.99"
141.	Donji Miholjac	wetland forest	87	45° 46' 52.3"	18° 11' 47.67"

3. Results and discussion

3.1. Faunistic data

The research resulted in 5649 individuals belonging to 19 terrestrial species. The list below gives the identification number of a sampling site (**bold**) where a species was found and the dates of samplings. (ID numbers are given in Table 1.).

Ligiidae

1. *Ligidium germanicum* Verhoeff, 1901

1: 05.V.2007., 09.VII.2007., **18:** 25.III.2007., **19:** 06.VII.2007., **23:** 19.VII.2007., 23.IX.2007., **25:** 11.III.2007., **26:** 10.VI.2007., **27:** 15.IX.2007., **30:** 15.IX.2007., **35:** 21.VII.2007., **36:** 04.III.2007., 20.V.2007., 21.VII.2007., **38:** 04.III.2007., 05.V.2007., 16.VI.2007., 14.XI.2007., **39:** 04.III.2007., 05.V.2007., 16.VI.2007., 14.XI.2007., **41:** 20.V.2007., **47:** 10.VI.2007., 05.X.2007., **50:** 10.VI.2007., **51:** 23.XI.2007., **52:** 13.V.2007., 23.XI.2007., **54:** 04.IX.2007., 12.XII.2007., **56:** 25.III.2007., 12.V.2007., 15.VIII.2007., **67:** 29.VIII.2007., **83:** 20.V.2007., **110:** 23.II.2007., **114:** 20.VII.2007.

Trichoniscidae

2. *Hyloniscus riparius* (C.L. Koch, 1838)

1: 05.V.2007., 09.VII.2007., 03.X.2007., **2:** 03.III.2007., 05.V.2007., 09.VII.2007., 03.X.2007., **3:** 01.IX.2007., **4:** 02.VI.2007., **5:** 07.IV.2007., 05.VIII.2007., **6:** 02.VI.2007., 01.IX.2007., **7:** 07.IV.2007., 09.VII.2007., 03.X.2007., 05.XII.2007., **11:** 11.III.2007., 19.V.2007., 07.VII.2007., **12:** 11.III.2007., 19.V.2007., 07.VII.2007., 23.XI.2007., **13:** 11.III.2007., 19.V.2007., 07.VII.2007., 23.XI.2007., **14:** 11.III.2007., 07.VII.2007., **15:** 19.V.2007., 07.VII.2007., 23.XI.2007., **16:** 03.VI.2007., 01.IX.2007., **17:** 18.III.2007., 06.VII.2007., **18:** 25.III.2007., **19:** 13.V.2007., 06.VII.2007., **20:** 09.IV.2007., 18.VII.2007., 15.IX.2007., **21:** 13.V.2007., **22:** 02.VI.2007., **23:** 19.VII.2007., **24:** 11.III.2007., 19.VII.2007., **25:** 07.VII.2007., 14.XI.2007., **26:** 10.VI.2007., **27:** 23.XI.2007., **28:** 02.VI.2007., **29:** 19.V.2007., **30:** 11.III.2007., **31:** 07.X.2007., **32:** 15.IV.2007., **33:** 11.III.2007., 07.IV.2007., 07.X.2007., **34:** 21.VII.2007., **35:** 04.III.2007., **36:** 04.III.2007., 20.V.2007., 21.VII.2007., **37:** 04.III.2007., 14.XI.2007., **39:** 16.VI.2007., **40:** 10.III.2007., 20.V.2007., 21.VII.2007., **41:** 10.III.2007., 20.IX.2007., **42:** 15.IV.2007., 07.VII.2007., 05.XII.2007., **43:** 04.III.2007., 15.IV.2007., 07.VII.2007., **44:** 03.III.2007., 19.V.2007., 21.VII.2007., **45:** 19.V.2007., 21.VII.2007., 03.X.2007., **46:** 11.III.2007., 02.VI.2007., 05.VIII.2007., **47:** 17.III.2007., 14.IV.2007., 10.VI.2007., **48:** 14.IV.2007., 10.VI.2007., **49:** 14.IV.2007., 10.VI.2007., **50:** 14.IV.2007., **51:** 13.V.2007., 10.VIII.2007., **52:** 24.III.2007., 13.V.2007., 10.VIII.2007., **53:** 04.IX.2007., **55:** 16.VI.2007., 04.IX.2007., **56:** 12.V.2007., 15.VIII.2007., 23.XI.2007., **57:** 06.V.2007., 05.X.2007., **58:** 18.III.2007., 06.V.2007., **59:** 18.III.2007., 21.VII.2007., **61:** 21.VII.2007., **62:**

21.VII.2007., **63:** 10.III.2007., 09.IV.2007., **64:** 10.III.2007., 09.VI.2007., **65:** 10.III.2007., 09.IV.2007., 09.VI.2007., **66:** 10.III.2007., 09.IV.2007., 09.VI.2007., **67:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., **68:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., **69:** 28.VII.2007., 29.VIII.2007., **70:** 07.IV.2007., 28.VII.2007., **71:** 23.XI.2007., **74:** 29.VIII.2007., **75:** 25.III.2007., **76:** 03.VI.2007., 29.VIII.2007., 14.XI.2007., **78:** 25.III.2007., 03.VI.2007., 29.VIII.2007., **80:** 20.V.2007., **81:** 20.V.2007., **82:** 04.III.2007., 20.V.2007., 30.VII.2007., **83:** 04.III.2007., 20.V.2007., 30.VII.2007., 15.XI.2007., **85:** 20.V.2007., 30.VII.2007., **86:** 03.VI.2007., 25.VIII.2007., **87:** 03.VI.2007., 25.VIII.2007., **88:** 25.VIII.2007., **89:** 11.III.2007., 03.VI.2007., **90:** 18.III.2007., **91:** 18.III.2007., 20.V.2007., 30.VII.2007., **92:** 30.VII.2007., **93:** 05.IX.2007., **94:** 05.V.2007., 20.VII.2007., **95:** 05.V.2007., 05.IX.2007., **96:** 20.VII.2007., 05.IX.2007., **98:** 05.IX.2007., **99:** 25.III.2007., 05.V.2007., 20.VII.2007., **100:** 05.V.2007., 20.VII.2007., 05.IX.2007., **101:** 05.V.2007., 20.VII.2007., **102:** 09.VI.2007., 19.VIII.2007., **103:** 09.VI.2007., 19.VIII.2007., **104:** 15.XI.2007., **105:** 08.IV.2007., 09.VI.2007., 19.VIII.2007., 15.XI.2007., **106:** 05.VIII.2007., **107:** 06.V.2007., 05.VIII.2007., 09.X.2007., **108:** 06.V.2007., 09.VII.2007., 09.X.2007., **109:** 06.V.2007., 09.VII.2007., 09.X.2007., **110:** 23.II.2007., 06.V.2007., 09.VII.2007., 09.X.2007., **111:** 05.V.2007., 20.VII.2007., **112:** 05.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **113:** 05.III.2007., 05.V.2007., 20.VII.2007., **114:** 05.V.2007., 20.VII.2007., 05.IX.2007., **115:** 16.VI.2007., 30.VIII.2007., 07.XII.2007., **116:** 16.VI.2007., 30.VIII.2007., **117:** 16.VI.2007., 30.VIII.2007., 07.XII.2007., **118:** 16.VI.2007., 30.VIII.2007., 07.XII.2007., **119:** 15.VII.2007., 02.IX.2007., **120:** 15.VII.2007., 02.IX.2007., **121:** 15.VII.2007., 02.IX.2007., **122:** 15.VII.2007., 02.IX.2007., **123:** 08.IV.2007., 15.VII.2007., 02.IX.2007., **124:** 04.III.2007., 20.V.2007., 21.VII.2007., **125:** 20.V.2007., 21.VII.2007., **126:** 04.III.2007., 21.VII.2007., **127:** 20.V.2007., 21.VII.2007., 05.X.2007., **128:** 20.V.2007., 21.VII.2007., 05.X.2007., **129:** 20.V.2007., 21.VII.2007., **130:** 20.V.2007., 20.VII.2007., **131:** 20.V.2007., 20.VII.2007., **132:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., **133:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., **134:** 09.VI.2007., 10.VIII.2007., 15.XI.2007., **135:** 09.VI.2007., 10.VIII.2007., **136:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., **137:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., **138:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **139:** 14.IV.2007., 10.VIII.2007., **140:** 09.VI.2007., 10.VIII.2007., **141:** 09.VI.2007., 10.VIII.2007., 15.XI.2007.

3. *Trichoniscus steinboeckii* Verhoeff, 1931

16: 18.III.2007., 01.IX.2007., **18:** 25.III.2007., 09.IV.2007., **23:** 19.VII.2007., **24:** 19.V.2007., 19.VII.2007., **25:** 07.VII.2007., **26:** 10.VI.2007., **28:** 15.IX.2007., **29:** 19.V.2007., **41:** 20.IX.2007., **48:** 10.VI.2007., **50:** 14.IV.2007., 10.VI.2007., **51:** 10.VIII.2007., **52:** 13.V.2007., 23.XI.2007., **53:** 16.VI.2007., 04.IX.2007., **54:** 16.VI.2007., 04.IX.2007., **56:** 12.V.2007., 15.VIII.2007., **57:** 18.III.2007., 06.V.2007., **133:** 09.VI.2007.

4. *Haplophthalmus danicus* Budde-Lund, 1880

57: 21.VII.2007., **60:** 21.VII.2007., **67:** 07.IV.2007., 28.VII.2007., **89:** 25.VIII.2007., **105:** 09.VI.2007., **108:** 06.V.2007., 09.VII.2007., **111:** 20.VII.2007., **122:** 02.IX.2007., **124:** 20.V.2007.

5. *Haplophthalmus montivagus* Verhoeff, 1941

16: 03.VI.2007., 01.IX.2007., **17:** 18.III.2007., 09.IV.2007., **23:** 19.VII.2007., **24:** 19.VII.2007., **25:** 15.IV.2007., 07.VII.2007., **26:** 04.VIII.2007., **27:** 15.IX.2007., **29:** 19.V.2007., **34:** 20.V.2007., **38:** 04.III.2007., 16.VI.2007., **39:** 05.V.2007., 16.VI.2007., 14.XI.2007., **50:** 10.VI.2007., **51:** 23.XI.2007., **52:** 23.XI.2007., **53:** 04.IX.2007., **56:** 12.V.2007.

Platyarthridae

6. *Platyarthrus hoffmannseggii* (Budde-Lund, 1893)

17: 18.III.2007., **19:** 25.III.2007., 13.V.2007., **25:** 15.IV.2007., **42:** 15.IV.2007., **45:** 21.VII.2007., **89:** 03.VI.2007., **124:** 20.V.2007.

Philoscidae

7. *Lepidoniscus minutus* (C.L. Koch, 1838)

17: 09.IV.2007., 06.VII.2007., **18:** 13.V.2007., **19:** 25.III.2007., 06.VII.2007., **23:** 09.IV.2007., 19.VII.2007., **24:** 19.V.2007., 19.VII.2007., 12.XII.2007., **25:** 07.VII.2007., **26:** 10.VI.2007., 04.VIII.2007., **27:** 02.VI.2007., **28:** 02.VI.2007., 15.IX.2007., **29:** 15.VIII.2007., **30:** 19.V.2007., **34:** 03.X.2007., **35:** 20.V.2007., 21.VII.2007., **37:** 05.V.2007., **38:** 14.XI.2007., **39:** 05.V.2007., 14.XI.2007., **41:** 21.VII.2007., **47:** 10.VI.2007., 05.X.2007., **48:** 17.III.2007., **50:** 10.VI.2007., **51:** 13.V.2007., 10.VIII.2007., **53:** 16.VI.2007., **54:** 24.III.2007., 12.XII.2007., **56:** 15.VIII.2007.

Oniscidae

8. *Oniscus asellus* Linnaeus, 1758

14: 19.V.2007., 07.VII.2007., **17:** 06.VII.2007., **42:** 15.IV.2007.

Trachelipodidae

9. *Porcellium collicola* Verhoeff, 1907

1: 03.III.2007., 05.V.2007., 09.VII.2007., **2:** 05.V.2007., 03.X.2007., **4:** 24.III.2007., 14.XI.2007., **7:** 09.VII.2007., **8:** 02.VI.2007., **12:** 07.VII.2007., **13:** 19.V.2007., 07.VII.2007., 23.XI.2007., **14:** 11.III.2007., 19.V.2007., **15:** 11.III.2007., 19.V.2007., **16:** 03.VI.2007., 01.IX.2007., **17:** 18.III.2007., **19:** 25.III.2007., 23.XI.2007., **20:** 18.VII.2007., 15.IX.2007., **22:** 18.III.2007., **23:** 23.IX.2007., **26:** 04.VIII.2007.,

12.XII.2007., **28:** 15.IX.2007., 23.XI.2007., **31:** 07.X.2007., **32:** 15.IV.2007., **33:** 07.X.2007., **34:** 20.V.2007., **35:** 21.VII.2007., 03.X.2007., **36:** 04.III.2007., 20.V.2007., 21.VII.2007., **37:** 05.V.2007., **40:** 10.III.2007., 20.V.2007., 21.VII.2007., 20.IX.2007., **42:** 15.IV.2007., 07.VII.2007., **43:** 04.III.2007., 15.IV.2007., 07.VII.2007., **44:** 03.X.2007., **45:** 03.III.2007., 19.V.2007., 21.VII.2007., 03.X.2007., **46:** 05.VIII.2007., 07.XII.2007., **47:** 17.III.2007., 14.IV.2007., 10.VI.2007., **49:** 17.III.2007., 14.XI.2007., **50:** 17.III.2007., 14.XI.2007., **52:** 10.VIII.2007., **53:** 24.III.2007., 16.VI.2007., **54:** 16.VI.2007., 04.IX.2007., **57:** 06.V.2007., **58:** 21.VII.2007., **59:** 06.V.2007., 05.X.2007., **60:** 21.VII.2007., 05.X.2007., **61:** 18.III.2007., 06.V.2007., 21.VII.2007., **62:** 18.III.2007., 03.VI.2007., 21.VII.2007., 05.X.2007., **63:** 05.X.2007., **64:** 9.VI.2007., **65:** 09.VI.2007., 05.X.2007., **66:** 10.III.2007., 09.IV.2007., 09.VI.2007., 05.X.2007., **67:** 28.VII.2007., 29.VIII.2007., **68:** 28.VII.2007., 29.VIII.2007., **69:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., **70:** 05.XII.2007., **71:** 28.VII.2007., **72:** 25.III.2007., 03.VI.2007., 29.VIII.2007., 14.XI.2007., **73:** 03.VI.2007., **74:** 25.III.2007., 03.VI.2007., 29.VIII.2007., 14.XI.2007., **75:** 03.VI.2007., 29.VIII.2007., 14.XI.2007., **76:** 25.III.2007., **77:** 14.XI.2007., **78:** 29.VIII.2007., **79:** 03.VI.2007., 14.XI.2007., **80:** 30.VII.2007., 15.XI.2007., **81:** 30.VII.2007., 15.XI.2007., **82:** 30.VII.2007., **83:** 30.VII.2007., **84:** 30.VII.2007., **86:** 03.VI.2007., 25.VIII.2007., **87:** 11.III.2007., 05.XII.2007., **88:** 03.VI.2007., 25.VIII.2007., 05.XII.2007., **89:** 25.VIII.2007., **90:** 20.V.2007., **91:** 30.VII.2007., **92:** 20.V.2007., 30.VII.2007., 05.X.2007., **95:** 25.III.2007., **97:** 20.VII.2007., **98:** 05.V.2007., 20.VII.2007., **99:** 05.IX.2007., **100:** 20.VII.2007., **101:** 25.III.2007., 20.VII.2007., **102:** 08.IV.2007., 09.VI.2007., **103:** 09.VI.2007., 19.VIII.2007., **104:** 09.VI.2007., 19.VIII.2007., **106:** 06.V.2007., 05.VIII.2007., 10.X.2007., **108:** 06.V.2007., 09.VII.2007., 09.X.2007., **114:** 20.VII.2007., **117:** 16.VI.2007., 30.VIII.2007., 07.XII.2007., **118:** 14.IV.2007., 16.VI.2007., 30.VIII.2007., 07.XII.2007., **122:** 08.IV.2007., 02.IX.2007., 05.XII.2007., **124:** 20.V.2007., 21.VII.2007., **126:** 20.V.2007., 21.VII.2007., **127:** 20.V.2007., 21.VII.2007., 05.X.2007., **128:** 20.V.2007., 21.VII.2007., 05.X.2007., **132:** 09.VI.2007., 10.VIII.2007., **133:** 09.VI.2007., 10.VIII.2007., 15.XI.2007., **135:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **137:** 09.VI.2007., 15.XI.2007.

10. *Trachelipus nodulosus* (C.L. Koch, 1838)

3: 02.VI.2007., 01.IX.2007., 14.XI.2007., **42:** 04.III.2007., 15.IV.2007., **45:** 21.VII.2007., 03.X.2007., **46:** 05.VIII.2007., **57:** 18.III.2007., 06.V.2007., 21.VII.2007., 05.X.2007., **58:** 18.III.2007., 06.V.2007., 05.X.2007., **59:** 06.V.2007., 21.VII.2007., **60:** 18.III.2007., 06.V.2007., 21.VII.2007., **61:** 18.III.2007., 06.V.2007., 21.VII.2007., **62:** 05.X.2007. **72:** 25.III.2007., 03.VI.2007., 29.VIII.2007., 14.XI.2007., **73:** 25.III.2007., 03.VI.2007., 14.XI.2007., **89:** 11.III.2007., 25.VIII.2007., 05.XII.2007., **96:** 05.V.2007., 20.VII.2007., **98:** 25.III.2007., **101:** 20.VII.2007., 05.IX.2007., **130:** 20.V.2007., 20.VII.2007., 23.XI.2007., **131:** 16.II.2007., 20.V.2007., 20.VII.2007., 23.XI.2007., **135:** 09.VI.2007.

11. *Trachelipus rathkii* (Brandt, 1833)

1: 03.III.2007., 05.V.2007., 09.VII.2007., 03.X.2007., **2:** 03.III.2007., 05.V.2007., 09.VII.2007., **3:** 17.III.2007., 01.IX.2007., **4:** 24.III.2007., 14.XI.2007., **5:** 24.III.2007.,

07.IV.2007., 5: 05.VIII.2007., 05.XII.2007., **6:** 17.III.2007., 02.VI.2007., 01.IX.2007., 7: 07.IV.2007., 09.VII.2007., **7:** 03.X.2007., 05.XII.2007., **8:** 17.III.2007., 01.IX.2007., 14.XI.2007., 9: 02.VI.2007., 03.X.2007., **10:** 09.VII.2007., **11:** 11.III.2007., 19.V.2007., 07.VII.2007., 23.XI.2007., **12:** 11.III.2007., 19.V.2007., 07.VII.2007., 23.XI.2007., **13:** 11.III.2007., 19.V.2007., 07.VII.2007., 23.XI.2007., **14:** 11.III.2007., 19.V.2007., 07.VII.2007., 23.XI.2007., 15: 11.III.2007., 19.V.2007., 07.VII.2007., 23.XI.2007., 19: 25.III.2007., 22: 18.III.2007., 02.VI.2007., 05.X.2007., **31:** 15.IV.2007., 07.X.2007., **32:** 15.IV.2007., 07.X.2007., **33:** 11.III.2007., 07.IV.2007., 07.X.2007., **36:** 21.VII.2007., **37:** 16.VI.2007., 40: 10.III.2007., 20.V.2007., 21.VII.2007., **41:** 21.VII.2007., **42:** 04.III.2007., 07.VII.2007., 05.XII.2007., **43:** 15.IV.2007., 07.VII.2007., 05.XII.2007., **44:** 19.V.2007., 21.VII.2007., 03.X.2007., **45:** 03.III.2007., 19.V.2007., 21.VII.2007., 03.X.2007., **46:** 11.III.2007., 02.VI.2007., 05.VIII.2007., 07.XII.2007., **49:** 17.III.2007., 14.IV.2007., 10.VI.2007., **49:** 14.XI.2007., **52:** 24.III.2007., 10.VIII.2007., **57:** 21.VII.2007., 05.X.2007., **58:** 05.X.2007., **59:** 21.VII.2007., 05.X.2007., **61:** 21.VII.2007., **62:** 18.III.2007., 03.VI.2007., 05.X.2007., **63:** 10.III.2007., 09.IV.2007., 09.VI.2007., 05.X.2007., **64:** 10.III.2007., 09.VI.2007., 05.X.2007., **65:** 10.III.2007., 09.IV.2007., 09.VI.2007., 05.X.2007., **66:** 10.III.2007., 09.IV.2007., 09.VI.2007., 05.X.2007., **67:** 28.VII.2007., 29.VIII.2007., 05.XII.2007., **70:** 28.VII.2007., 29.VIII.2007., **71:** 29.VIII.2007., **72:** 29.VIII.2007., **73:** 03.VI.2007., 29.VIII.2007., **74:** 03.VI.2007., 29.VIII.2007., 14.XI.2007., **75:** 03.VI.2007., 29.VIII.2007., 14.XI.2007., **77:** 25.III.2007., 03.VI.2007., 29.VIII.2007., 14.XI.2007., **78:** 03.VI.2007., 29.VIII.2007., **79:** 25.III.2007., 03.VI.2007., **80:** 04.III.2007., 20.V.2007., 30.VII.2007., 15.XI.2007., **81:** 04.III.2007., 20.V.2007., 30.VII.2007., **82:** 30.VII.2007., **83:** 30.VII.2007., **84:** 20.V.2007., **85:** 04.III.2007., 20.V.2007., 30.VII.2007., 15.XI.2007., **86:** 11.III.2007., 03.VI.2007., **87:** 11.III.2007., 03.VI.2007., 25.VIII.2007., 05.XII.2007., **88:** 03.VI.2007., 05.XII.2007., **90:** 18.III.2007., 20.V.2007., 30.VII.2007., 05.X.2007., **91:** 18.III.2007., 20.V.2007., 30.VII.2007., 05.X.2007., **92:** 18.III.2007., 20.V.2007., 30.VII.2007., 05.X.2007., **93:** 05.V.2007., 20.VII.2007., 05.IX.2007., **94:** 25.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **95:** 25.III.2007., 05.V.2007., 20.VII.2007., **96:** 25.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **97:** 05.V.2007., 20.VII.2007., **97:** 05.IX.2007., **98:** 05.V.2007., 20.VII.2007., 05.IX.2007., **99:** 05.V.2007., 20.VII.2007., **100:** 25.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **101:** 25.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **102:** 08.IV.2007., 09.VI.2007., **102:** 19.VIII.2007., 10.X.2007., **103:** 08.IV.2007., 09.VI.2007., 19.VIII.2007., 10.X.2007., **104:** 08.IV.2007., 09.VI.2007., 19.VIII.2007., 15.XI.2007., **105:** 08.IV.2007., 09.VI.2007., 19.VIII.2007., 15.XI.2007., **106:** 24.II.2007., 06.V.2007., 05.VIII.2007., 10.X.2007., **107:** 24.II.2007., 06.V.2007., 05.VIII.2007., 09.X.2007., **108:** 06.V.2007., 09.VII.2007., **109:** 23.II.2007., 06.V.2007., 09.VII.2007., 09.X.2007., **110:** 23.II.2007., 06.V.2007., 09.VII.2007., 09.X.2007., **111:** 05.V.2007., 20.VII.2007., 05.IX.2007., **112:** 05.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., 05.III.2007., **113:** 05.V.2007., 20.VII.2007., 05.IX.2007., **114:** 05.V.2007., 20.VII.2007., **116:** 30.VIII.2007., 07.XII.2007., **117:** 14.IV.2007., 16.VI.2007., 30.VIII.2007., 07.XII.2007., **118:** 14.IV.2007., 16.VI.2007., 30.VIII.2007., 07.XII.2007., 08.IV.2007., 15.VII.2007., 02.IX.2007., **119:** 05.XII.2007., **120:** 08.IV.2007., 15.VII.2007., 02.IX.2007., 05.XII.2007., **121:** 08.IV.2007., 15.VII.2007., **121:** 02.IX.2007., 05.XII.2007., **122:** 08.IV.2007., 15.VII.2007., 02.IX.2007., 05.XII.2007., **123:** 08.IV.2007., 15.VII.2007., 02.IX.2007., 05.XII.2007., **125:** 04.III.2007., 20.V.2007., 21.VII.2007., 05.X.2007., **126:**

04.III.2007., 21.VII.2007., **127:** 04.III.2007., 20.V.2007., **128:** 04.III.2007., 20.V.2007., 21.VII.2007., 05.X.2007., **129:** 04.III.2007., 20.V.2007., 21.VII.2007., 05.X.2007., **132:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **134:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **135:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **136:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **137:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **138:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **139:** 09.VI.2007., 10.VIII.2007., **140:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **141:** 09.VI.2007., 10.VIII.2007.

12. *Trachelipus ratzeburgii* (Brandt, 1833)

2: 09.VII.2007., **5:** 24.III.2007., 07.IV.2007., 05.VIII.2007., **6:** 17.III.2007., 02.VI.2007., 01.IX.2007., 05.XII.2007., **8:** 17.III.2007., 02.VI.2007., **11:** 11.III.2007., 19.V.2007., 07.VII.2007., 23.XI.2007., **12:** 11.III.2007., 19.V.2007., 07.VII.2007., **14:** 07.VII.2007., **16:** 18.III.2007., 03.VI.2007., 01.IX.2007., 12.XII.2007., **17:** 18.III.2007., 09.IV.2007., 06.VII.2007., 12.XII.2007., **18:** 25.III.2007., 09.IV.2007., 13.V.2007., 05.X.2007., **19:** 25.III.2007., 13.V.2007., 06.VII.2007., 23.XI.2007., **20:** 09.IV.2007., 18.VII.2007., 15.IX.2007., **21:** 18.III.2007., 13.V.2007., 23.XI.2007., **22:** 05.X.2007., 12.XII.2007., **23:** 09.IV.2007., 19.VII.2007., 23.IX.2007., 12.XII.2007., **24:** 11.III.2007., 19.V.2007., 19.VII.2007., 12.XII.2007., **25:** 11.III.2007., 15.IV.2007., 07.VII.2007., 14.XI.2007., **26:** 25.III.2007., 10.VI.2007., 04.VIII.2007., 12.XII.2007., **27:** 18.III.2007., 02.VI.2007., 15.IX.2007., 23.XI.2007., **28:** 02.VI.2007., 15.IX.2007., 23.XI.2007., **29:** 04.III.2007., 19.V.2007., 15.VIII.2007., 05.XII.2007., **30:** 11.III.2007., 19.V.2007., 05.XII.2007., **34:** 04.III.2007., 20.V.2007., 21.VII.2007., 03.X.2007., **35:** 04.III.2007., 20.V.2007., 03.X.2007., **36:** 21.VII.2007., **37:** 04.III.2007., 05.V.2007., 16.VI.2007., 14.XI.2007., **38:** 04.III.2007., 05.V.2007., 16.VI.2007., 14.XI.2007., **39:** 04.III.2007., 05.V.2007., 14.XI.2007., **41:** 10.III.2007., 20.V.2007., 21.VII.2007., 20.IX.2007., **43:** 04.III.2007., 07.VII.2007., **44:** 03.III.2007., 19.V.2007., 21.VII.2007., 03.X.2007., **47:** 17.III.2007., 14.IV.2007., 10.VI.2007., 05.X.2007., **48:** 17.III.2007., 14.IV.2007., 10.VI.2007., 14.XI.2007., **49:** 14.IV.2007., 10.VI.2007., 14.XI.2007., **50:** 17.III.2007., 14.IV.2007., 10.VI.2007., 14.XI.2007., **51:** 24.III.2007., 13.V.2007., 10.VIII.2007., 23.XI.2007., **52:** 24.III.2007., 10.VIII.2007., **53:** 24.III.2007., 16.VI.2007., 04.IX.2007., 12.XII.2007., **54:** 24.III.2007., 16.VI.2007., 12.XII.2007., **55:** 24.III.2007., 16.VI.2007., 04.IX.2007., 12.XII.2007., 25.III.2007., **56:** 23.XI.2007., **63:** 10.III.2007., 09.IV.2007., 09.VI.2007., 05.X.2007., **64:** 10.III.2007., 09.VI.2007., **66:** 10.III.2007., **67:** 07.IV.2007., **68:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., 05.XII.2007., **69:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., 05.XII.2007., **70:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., 05.XII.2007., **71:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., **76:** 25.III.2007., 03.VI.2007., 29.VIII.2007., 14.XI.2007., **77:** 03.VI.2007., 29.VIII.2007., **78:** 29.VIII.2007., **79:** 29.VIII.2007., **82:** 20.V.2007., 30.VII.2007., 15.XI.2007., **83:** 20.V.2007., 30.VII.2007., **84:** 04.III.2007., 20.V.2007., 30.VII.2007., 15.XI.2007., **86:** 25.VIII.2007., 05.XII.2007., **93:** 25.III.2007., 05.V.2007., 20.VII.2007., **94:** 20.VII.2007., 05.IX.2007., **102:** 09.VI.2007., 19.VIII.2007., **103:** 08.IV.2007., 09.VI.2007., **105:** 09.VI.2007., 19.VIII.2007., 15.XI.2007., **107:** 24.II.2007., **108:** 09.VII.2007., **110:** 09.VII.2007., **111:** 05.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **112:** 20.VII.2007., **113:** 20.VII.2007., 05.IX.2007., **114:** 05.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **115:** 14.IV.2007., 16.VI.2007., 30.VIII.2007.,

07.XII.2007., **116:** 14.IV.2007., 16.VI.2007., 30.VIII.2007., **123:** 02.IX.2007., **124:** 04.III.2007., 20.V.2007., 21.VII.2007., 05.X.2007., **125:** 04.III.2007., 20.V.2007., 21.VII.2007., **126:** 20.V.2007., 21.VII.2007., 05.X.2007., **129:** 04.III.2007., 20.V.2007., 21.VII.2007., 05.X.2007., **132:** 14.IV.2007., **133:** 09.VI.2007., 10.VIII.2007., 15.XI.2007., **136:** 14.IV.2007., 09.VI.2007., **139:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **141:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007.

Cylisticidae

13. *Cylisticus convexus* (De Geer, 1778)

3: 17.III.2007., 01.IX.2007., **7:** 09.VII.2007., **14:** 19.V.2007., 07.VII.2007., **31:** 15.IV.2007., **44:** 03.X.2007., **52:** 23.XI.2007., **66:** 05.X.2007., **68:** 29.VIII.2007., **81:** 30.VII.2007., **89:** 03.VI.2007., **101:** 05.V.2007., 05.IX.2007., **111:** 05.V.2007., **119:** 08.IV.2007., 15.VII.2007., **127:** 21.VII.2007., **132:** 09.VI.2007., 10.VIII.2007., 15.XI.2007.

Agnaridae

14. *Protracheoniscus politus* (C.L. Koch, 1841)

16: 03.VI.2007., 01.IX.2007., 12.XII.2007., **17:** 18.III.2007., 09.IV.2007., **18:** 09.IV.2007., 13.V.2007., **19:** 25.III.2007., 13.V.2007., 06.VII.2007., 23.XI.2007., **20:** 09.IV.2007., 15.IX.2007., **21:** 13.V.2007., 23.XI.2007., **22:** 02.VI.2007., **23:** 19.VII.2007., **24:** 19.V.2007., 19.VII.2007., 12.XII.2007., **25:** 15.IV.2007., 07.VII.2007., 14.XI.2007., **26:** 25.III.2007., 10.VI.2007., 04.VIII.2007., 12.XII.2007., **27:** 02.VI.2007., 15.IX.2007., 23.XI.2007., **28:** 18.III.2007., 02.VI.2007., 15.IX.2007., **29:** 04.III.2007., 19.V.2007., 15.VIII.2007., 05.XII.2007., **30:** 19.V.2007., 15.IX.2007., **34:** 20.V.2007., 21.VII.2007., 03.X.2007., **35:** 20.V.2007., 21.VII.2007., **37:** 04.III.2007., 05.V.2007., 14.XI.2007., **38:** 05.V.2007., 16.VI.2007., **39:** 04.III.2007., 14.XI.2007., **41:** 20.V.2007., 21.VII.2007., 20.IX.2007., **47:** 14.IV.2007., 10.VI.2007., **48:** 17.III.2007., 14.IV.2007., 10.VI.2007., 14.XI.2007., **49:** 10.VI.2007., 14.XI.2007., **50:** 17.III.2007., 14.IV.2007., 10.VI.2007., 14.XI.2007., **51:** 13.V.2007., 10.VIII.2007., **52:** 13.V.2007., 10.VIII.2007., 23.XI.2007., **53:** 16.VI.2007., 04.IX.2007., 12.XII.2007., **54:** 24.III.2007., 16.VI.2007., 04.IX.2007., 12.XII.2007., **55:** 24.III.2007., 16.VI.2007., 04.IX.2007., 12.XII.2007., **56:** 25.III.2007., 12.V.2007., 15.VIII.2007., 23.XI.2007., **122:** 15.VII.2007.

Porcellionidae

15. *Porcellio spinicornis* Say, 1818

60: 06.V.2007., **89:** 25.VIII.2007.

16. *Porcellionides pruinosus* (Brandt, 1833)

3: 02.VI.2007., 01.IX.2007., 14.XI.2007., **14:** 07.VII.2007., 23.XI.2007., **42:** 15.IV.2007., 07.VII.2007., **60:** 18.III.2007., 06.V.2007., 05.X.2007., **61:** 06.V.2007., **89:** 03.VI.2007.

Armadillidiidae

17. *Armadillidium versicolor* Stein, 1859

1: 05.V.2007., 03.X.2007., **2:** 09.VII.2007., **4:** 24.III.2007., 01.IX.2007., **6:** 02.VI.2007., **7:** 07.IV.2007., 09.VII.2007., **8:** 17.III.2007., 02.VI.2007., 14.XI.2007., **31:** 15.IV.2007., 07.X.2007., **32:** 15.IV.2007., 07.X.2007., **33:** 07.X.2007., **45:** 19.V.2007., **46:** 11.III.2007., 02.VI.2007., **58:** 18.III.2007., 06.V.2007., 21.VII.2007., 05.X.2007., **59:** 18.III.2007., 21.VII.2007., 05.X.2007., **62:** 03.VI.2007., 21.VII.2007., 05.X.2007., **63:** 09.VI.2007., **64:** 05.X.2007., **65:** 10.III.2007., 09.VI.2007., 05.X.2007., **71:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., 23.XI.2007., **77:** 29.VIII.2007., 14.XI.2007., **79:** 25.III.2007., 03.VI.2007., 29.VIII.2007., 14.XI.2007., **84:** 04.III.2007., 20.V.2007., 30.VII.2007., 15.XI.2007., **88:** 11.III.2007., 03.VI.2007., 25.VIII.2007., **93:** 25.III.2007., 05.V.2007., 20.VII.2007., **94:** 05.IX.2007., **95:** 20.VII.2007., 05.IX.2007., **11V:** 08.IV.2007., 09.VI.2007., 19.VIII.2007., 15.XI.2007., **1V:** 19.VIII.2007., **107:** 06.V.2007., 05.VIII.2007., 09.X.2007., **109:** 23.II.2007., 06.V.2007., 09.VII.2007., **112:** 20.VII.2007., 05.IX.2007., **113:** 05.V.2007., 20.VII.2007., **132:** 10.VIII.2007., **134:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., **138:** 09.VI.2007., 10.VIII.2007., **140:** 14.IV.2007., 09.VI.2007., 10.VIII.2007.

18. *Armadillidium vulgare* Latreille, 1804

1: 03.X.2007., **3:** 02.VI.2007., 14.XI.2007., **5:** 05.VIII.2007., **7:** 05.XII.2007., **8:** 01.IX.2007., **11:** 19.V.2007., 12: 07.VII.2007., 23.XI.2007., **13:** 11.III.2007., 07.VII.2007., **14:** 11.III.2007., 19.V.2007., 23.XI.2007., 15: 07.VII.2007., 16: 18.III.2007., 03.VI.2007., **17:** 18.III.2007., 09.IV.2007., 12.XII.2007., **19:** 25.III.2007., 13.V.2007., 20: 18.VII.2007., 15.IX.2007., **21:** 23.XI.2007., **22:** 18.III.2007., **24:** 12.III.2007., **25:** 13.III.2007., 07.VII.2007., **26:** 12.XII.2007., **28:** 18.III.2007., 23.XI.2007., **29:** 05.XII.2007., **30:** 05.XII.2007., **33:** 07.IV.2007., **34:** 04.III.2007., **34:** 21.VII.2007., **35:** 03.X.2007., **36:** 04.III.2007., 20.V.2007., 21.VII.2007., **37:** 16.VI.2007., **37:** 14.XI.2007., **39:** 16.VI.2007., **39:** 14.XI.2007., **40:** 10.III.2007., 20.V.2007., 21.VII.2007., 20.IX.2007., **41:** 10.III.2007., 20.V.2007., **42:** 04.III.2007., 15.IV.2007., 07.VII.2007., 05.XII.2007., **43:** 15.IV.2007., 07.VII.2007., 05.XII.2007., **44:** 19.V.2007., 21.VII.2007., 03.X.2007., **45:** 19.V.2007., **46:** 02.VI.2007., 05.VIII.2007., 07.XII.2007., **47:** 14.IV.2007., **48:** 17.III.2007., 10.VI.2007., 14.XI.2007., **49:** 17.III.2007., 14.IV.2007., 10.VI.2007., **50:** 14.IV.2007., 10.VI.2007., **51:** 24.III.2007., 13.V.2007., 10.VIII.2007., **52:** 13.V.2007., 23.XI.2007., **53:** 24.III.2007., 12.XII.2007., **54:** 12.XII.2007., **55:** 24.III.2007., 16.VI.2007., 04.IX.2007., **57:** 18.III.2007., 06.V.2007., 21.VII.2007., 05.X.2007., **59:** 18.III.2007., **60:** 18.III.2007., 06.V.2007., 21.VII.2007., 05.X.2007., **61:** 18.III.2007., 06.V.2007., 21.VII.2007., 05.X.2007., **64:** 05.X.2007., **66:** 10.III.2007., 09.IV.2007., 09.VI.2007., 05.X.2007., **67:** 07.IV.2007., 28.VII.2007., 29.VIII.2007.,

05.XII.2007., **68:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., 05.XII.2007., **69:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., 05.XII.2007., **70:** 07.IV.2007., 28.VII.2007., 29.VIII.2007., 05.XII.2007., **72:** 03.VI.2007., 29.VIII.2007., **73:** 25.III.2007., 03.VI.2007., 29.VIII.2007., 14.XI.2007., **76:** 03.VI.2007., 29.VIII.2007., **77:** 03.VI.2007., **78:** 25.III.2007., 03.VI.2007., 29.VIII.2007., **79:** 14.XI.2007., **80:** 04.III.2007., 20.V.2007., 30.VII.2007., 15.XI.2007., **81:** 04.III.2007., 20.V.2007., 30.VII.2007., 15.XI.2007., **82:** 04.III.2007., 20.V.2007., 30.VII.2007., 15.XI.2007., **83:** 04.III.2007., 20.V.2007., 15.XI.2007., **84:** 30.VII.2007., **86:** 14.III.2007., 03.VI.2007., 25.VIII.2007., 05.XII.2007., **87:** 25.VIII.2007., **89:** 15.III.2007., **89:** 03.VI.2007., 25.VIII.2007., 05.XII.2007., **90:** 30.VII.2007., 05.X.2007., **91:** 20.V.2007., 30.VII.2007., 05.X.2007., **92:** 18.III.2007., 20.V.2007., 05.X.2007., **94:** 25.III.2007., 05.V.2007., **95:** 05.V.2007., **96:** 25.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **97:** 25.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **98:** 25.III.2007., 05.V.2007., 20.VII.2007., **99:** 25.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **100:** 20.VII.2007., **101:** 25.III.2007., 05.V.2007., 20.VII.2007., **102:** 10.X.2007., **103:** 08.IV.2007., 09.VI.2007., 19.VIII.2007., 10.X.2007., **106:** 24.II.2007., 06.V.2007., 05.VIII.2007., 10.X.2007., **108:** 23.II.2007., 06.V.2007., 09.VII.2007., 09.X.2007., **110:** 06.V.2007., 09.VII.2007., 09.X.2007., **111:** 05.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **112:** 05.V.2007., **113:** 05.III.2007., 05.V.2007., **114:** 05.III.2007., 05.V.2007., **114:** 20.VII.2007., 05.IX.2007., **115:** 14.IV.2007., 16.VI.2007., 30.VIII.2007., 07.XII.2007., **116:** 14.IV.2007., 16.VI.2007., 07.XII.2007., **117:** 14.IV.2007., 16.VI.2007., 30.VIII.2007., 07.XII.2007., **118:** 16.VI.2007., 30.VIII.2007., 07.XII.2007., **119:** 15.VII.2007., 02.IX.2007., 05.XII.2007., **120:** 08.IV.2007., 15.VII.2007., 02.IX.2007., 05.XII.2007., **121:** 08.IV.2007., 15.VII.2007., 02.IX.2007., 05.XII.2007., **122:** 15.VII.2007., 02.IX.2007., 05.XII.2007., **123:** 15.VII.2007., 02.IX.2007., 05.XII.2007., **124:** 04.III.2007., 21.VII.2007., 05.X.2007., **125:** 05.X.2007., **126:** 20.V.2007., 21.VII.2007., 05.X.2007., **127:** 04.III.2007., 20.V.2007., 21.VII.2007., 05.X.2007., **128:** 04.III.2007., 21.VII.2007., 05.X.2007., **130:** 16.II.2007., 20.V.2007., 20.VII.2007., 23.XI.2007., **131:** 16.II.2007., 20.V.2007., 20.VII.2007., 23.XI.2007., **132:** 09.VI.2007., 10.VIII.2007., 15.XI.2007., **133:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **134:** 15.XI.2007., **135:** 14.IV.2007., 09.VI.2007., 10.VIII.2007., 15.XI.2007., **136:** 09.VI.2007., 10.VIII.2007., 15.XI.2007., **137:** 10.VIII.2007., **138:** 15.XI.2007., **139:** 9.VI.2007., 10.VIII.2007., 15.XI.2007., **141:** 14.IV.2007., **141:** 10.VIII.2007.

19. *Armadillidium zenckeri* Brandt, 1833

13: 19.V.2007., 07.VII.2007., **15:** 19.V.2007., 07.VII.2007., **40:** 20.V.2007., 21.VII.2007., **74:** 25.III.2007., 03.IV.2007., 29.VIII.2007., 14.XI.2007., **75:** 25.III.2007., 03.IV.2007., 29.VIII.2007., **80:** 20.V.2007., 30.VII.2007., **85:** 04.III.2007., 20.V.2007., 30.VII.2007., 15.XI.2007., **90:** 20.V.2007., **100:** 25.III.2007., 05.V.2007., 20.VII.2007., 05.IX.2007., **137:** 14.IV.2007., 09.IV.2007., 10.VIII.2007.

3.2. Frequency of species in the Drava basin

H. riparius was found in 91% of the 141 sampling sites. This species has the highest occurrence rate among the collected species. This small secretive isopod does not prefer any of the vegetation types. It could have been found in every habitat type including synanthropic ones. It likes permanently wet, humid places and never leaves its shelter. The species belonged to the group of the most frequent species in the Hungarian side of the Drava basin, too.

The frequency of *A. vulgare* was also high. It turned up in 80% of the sampling sites. It lives on every continent and known as one of the most widely distributed species in the world. Its sclerotic cuticle protects this woodlouse from desiccation and provides ability to leave its shelter and spread. Similarly to the previous species it has no specific habitat and it is able to consume a wide range of different plants. Its reproduction strategy is iteroparous. It proved to be the most common species in South-Transdanubia

T. rathkii was sampled in 75% of the sampling sites. This species is often found in wetland willow-poplar forests but it likes disturbed and synanthropic sites, too. *T. rathkii* turned up in huge abundances by pitfall trapping in riverine forests of the Drava lowland in Hungary. This is the fourth most frequent species in that region. It appeared regularly also in coastal habitats of the river very close to the waterside. Its abundant colonies were found at the bank of Drava in organic debris and reed vegetation. This isopod species has adapted to the annual floods. Along with *H. riparius*, *T. rathkii* is often one of the first isopods that colonises the floodplains after major floods. In Central Europe this species is a dominant member of assemblages in floodplains (e.g. FARKAS 1998d; TUF & TUFOVÁ 2005), but it is adapted to such harsh environments as sodic plains in Hungary (VILISICS et al. 2005). As a common and widely distributed isopod, *T. rathkii* is known from natural and urban habitats from west, north and east from the Alps. From Europe it has also been introduced to North America. It is also a typical woodlouse in urban environments, parks and gardens.

P. collicola came up in the 66% of the sampling sites. At present very little is known about this species. It may be one of the most common isopod species of Central Europe by the results of systematic samplings in Hungary (FARKAS 2006). Similarly to the previous species *P. collicola*, too, lacks definite habitat preference. It could be found in dry oak and wet riverine forests just like in meadows and synanthropic sites. Occasionally turns up multitudinous. Its ecology is lesser-known.

The frequency of *T. ratzeburgii* reached 57%. This impressive and typically sylvicolous isopod has a wide European distribution from England to Eastern Europe (SCHMALFUSS 2003). In Central Europe it is a common woodlouse in natural oak, beech and willow forests, occurring mainly under the bark of dead trees (e.g. TUF & TUFOVÁ 2005). In Western Europe it is ordinary in coniferous woods. This species was one of the most frequent species in the Repaš forest.

A. versicolor was sampled in 25% of the sampling sites. This Eastern European species often occurs in sites under natural or anthropogenic disturbance (e.g. NAVRÁTIL 2007; HORNUNG et al. in prep), however HUDÁKOVÁ and MOCK (2006) proved its occurrence from undisturbed habitats in the Western Carpathians in Poland. Recent surveys provided further evidence for its distribution both in willow-poplar groves, and in human settlements (Esztergom, Budapest, Szigetszentmárton) along the Danube (VILISICS unpubl).

Abundant colonies were found on the riverbank often together with *T. rathkii*. Due to the lack of distribution data this isopod was considered as rare and obscure, until recent surveys revealed its occurrence in several places in Transdanubia. Supposedly, more sampling efforts will result in more data of this species, proving a much broader distribution area in Hungary.

P. politus was found in 23% of the 141 sampling places. Similarly to *T. ratzeburgii* it highly favours woodlands, especially oak and beech forests. This species is a common and often dominant member of the soil fauna of Central- and Eastern-European deciduous forests (e.g. TUF & TUFOVÁ 2005; VILISICS & FARKAS 2004), but it's also sensitive to human disturbance. It occurs mainly in moist and humid habitats within leaf litter and under logs.

Lepidoniscus minutus turned up in 16% of the sampling sites. The distribution of this isopod is restricted between North-Eastern Italy, Southern Germany, Southern Poland, Hungary and Northern Greece, including the rest of the countries laying within this area (SCHMALFUSS 2003). The species is widely distributed in the Pannonian region particularly in natural oak and beech forests (FARKAS 2005; FARKAS & VILISICS 2006; VILISICS 2007). One can find it under fallen bark and logs, even in dry habitats. Since this isopod has no published data from anthropogenic habitats, assumingly it has a low tolerance for human perturbation, therefore its presence is a good indicator for naturalness. Despite its wide distribution, *L. minutus* occurs in low densities and abundance.

The most remarkable species of the isopod fauna is *Trichoniscus steinboeckii* that occurred in 13% of the sampling places. Field surveys in Repaš forest provided evidences for the occurrence of this isopod for the first time in Croatia. The species has been first described from Steiermark, central Austria as an Alpine endemic isopod (STROUHAL 1947). The Austrian sampling localities lay on high elevations above 1000 metres a.s.l. Extensive field samplings in the past three years in Hungary revealed a much broader distribution of this minute isopod, including natural habitats in every major mountainous area of Transdanubia. So far we have no evidence on its occurrence in floodplains or lowlands (VILISICS 2005; FARKAS & VILISICS 2006; VILISICS 2007; HORNING et al. in prep), however, the known Hungarian localities did not exceed 600 metres of elevation above sea level either. The typical habitat for the species can be described as humid ravines in natural deciduous (oak or beech) forests. We suppose that rivers connecting with the Alps may be a key factor in the distribution of this autochthonous species. The species was rather abundant in Repaš forest, creeping within moist leaf litter and under bark of fallen trees.

The frequency of the remainder species is equal or under 11%. Among them *A. zenckeri* is a notable species characteristic in *Carex* meadows where it is often multitudinous.

The distribution of the other species is strongly influenced by human activity. Buildings, ruins, mounds of debris, garbage heaps could help their settling. *Oniscus asellus* the common European sow-bug is one of them. This is a dominant species all over Europe from the Atlantic coast to Central Europe and Scandinavia (GRUNER 1966; MEINERTZ 1964; SCHMALFUSS 2003) in natural and disturbed areas as well, but not in the Mediterranean basin. Introduced to the New World, the species is frequent in some parts of the USA, too (unpublished, <http://bugguide.net>, 01.16.2008). Despite its wide European distribution, the species has sporadic occurrences in the Pannonian biogeographical region (FORRÓ & FARKAS 1998). Faunistic data also suggest that *O. asellus*, although a rare species, shows preference for anthropogenic habitats and we cannot consider it as a native species.

Field surveys at the Drava river proved the occurrence of this isopod, however the sampling sites were restricted to heaps of illegally deposited debris and trash, adjacent to the road at Botovo.

3.3. Isopod assemblages of typical habitat types

The majority of the 141 sampling sites, 83%, took place in riverine groves, oak forests and the coast of Drava river and some at stagnant waters. Isopod assemblages in the main habitat types can be described as follows:

In the riverine groves (willow and poplar forests) samples were taken at 41 sites. At this habitat type 17 isopod species were found, five of them turning up in 70% of the sample areas. The typical species of riverine groves are *A. vulgare* and *H. riparius*, both found in 90% of the samples. These are followed by *T. rathkii* with 83% and *P. collicola* with 76%.

The common species were the same in willow forests as in the last analysis taking into account all of the sample areas. These were followed by *T. ratzeburgii* with also a high occurrence of 71%. The wetlands are subject to annual floods during the regular fluctuation of water levels. During such momentous periods the majority of the soil fauna is destroyed. Following the flood, the inundation areas are re-colonised by species possessing fast colonisation abilities (e.g. TUF 2003).

Some species (*H. danicus*, *C. convexus*, *L. germanicus*, *T. nodulosus*, *A. versicolor*) not native in the area were found only in 7-15% of the willow-poplar forests. Another seven species were found characteristically only from one sample area.

In the oak forests not as many species were found as in the other areas: we have found 13 species. Unambiguously, the most common species in riverine oak forests was *T. ratzeburgii*, found at all (32) of the sample areas in oak forests. The species *P. politus* showed similar frequency, occurring in 97% of the sample areas. Data from recent surveys and from the Croatian Baranja (FARKAS & KRČMAR 2004) prove that both species are common in wetland oak forests.

Two generalist species (*H. riparius*, *A. vulgare*) – besides oak forests – occurred in most habitats in high frequencies.

Among species indicating natural oak forests two less known and rather rare isopods, *L. minutus* and *L. germanicum* with high frequencies (75%, 53%, respectively) were present. *T. steinboecki*, new to the Croatian fauna, was found in the oak forest as well. We found individuals of this species in the oak forest and on the riverside too. In addition to the numerous mentioned four species (*T. rathkii*, *A. vulgare*, *H. riparius*, *P. collicola*), *A. versicolor* can be noted for its frequent appearance.

3.4. Composition of isopod assemblages

According to the Sørensen index of similarities (Table 2.) we can consider the three observed habitat types relatively alike, with similarities between 69 and 74%. The evaluation of naturalness of isopod assemblages revealed that the highest percentage (77%) of native species was found in the oak forest, followed by the river bank (70%) and the willow forests (53%), respectively (Fig. 1.).

Table 2. Sørensen index for similarity indicates values of similarities between isopod assemblages in different habitats

	Willow	Oak	River bank
Willow	-	0.73	0.69
Oak	-	-	0.74
River bank	-	-	-

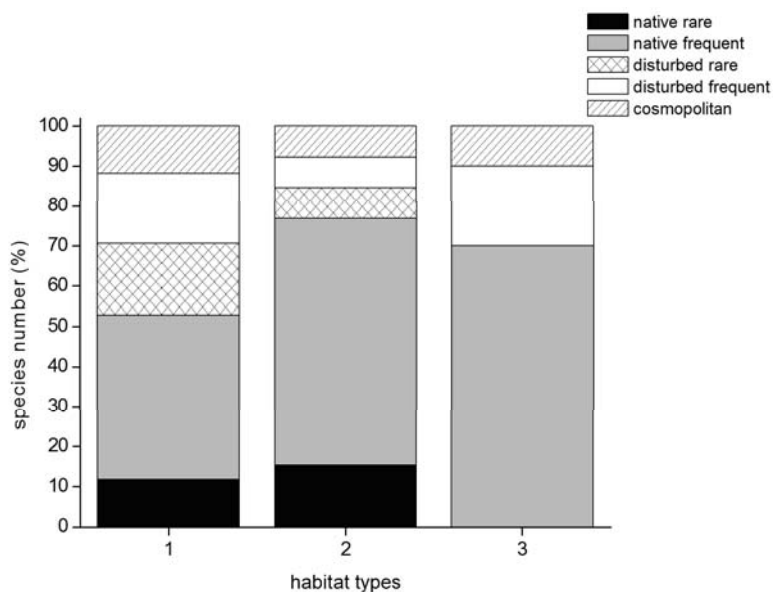


Fig.1. Composition of different categories of naturalness within three habitat types (1: willow forest, 2: oak forest, 3: river bank)

The bulk of the isopods proved to be native frequent, in other words native generalist species (e.g. *T. rathkii*, *P. collicola*), but we found a few rare native ones as well (*A. zenckeri*, *T. steinboeckii*). Species typical in disturbed habitats occurred in each area, their highest proportion (47%) was found in the willow forest. This might indicate an ongoing degradation process. On the contrary, the low number of non-native species indicate a relatively high natural value for the oak forest.

The dendrogram upon similarities of isopods (Fig. 2.) revealed three distinct species groups. The first group consists of four species occurring exclusively in the willow forest. The second smallest group of 5 species was formed by isopods occurring in the oak forest, but not on the river bank. The third and largest group included 10 species that were found in each of the three habitat types. According to the analyses we can conclude that the isopod fauna of the observed habitat types are rather homogenous with a few specialist species preferring one certain habitat. As a conclusion we assume that there is no great difference between the composition of isopod faunas living on either side of the Drava. The same species were found to be the most frequent ones and the structures of the

assemblages were also similar. The prominent absence of rare Alpine and Illyric isopods such as *Hyloniscus vividus*, *Calconiscellus karawankianus*, *Protracheoniscus franzi* and *Porcellium recurvatum* known from the Hungarian side might account for either human degradation or insufficient sampling efforts in the area.

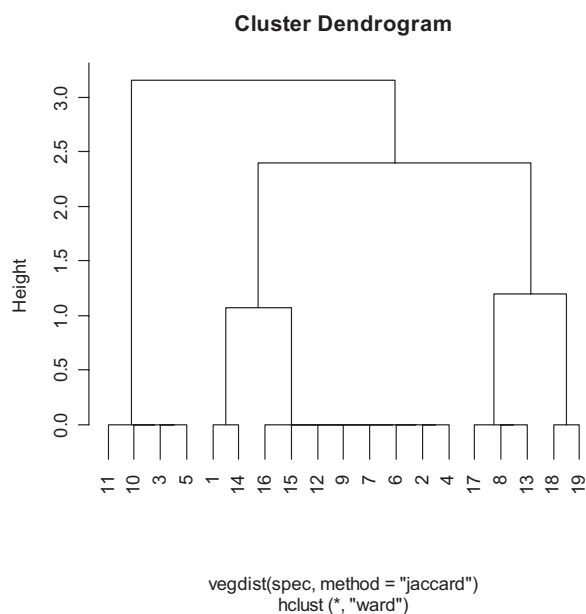


Fig. 2. The hierarchical cluster analysis shows similarities between the species according to their presence in the observed habitats. 1: *Armadillidium versicolor*, 2: *Armadillidium vulgare*, 3: *Armadillidium zenckeri*, 4: *Cylisticus convexus*, 5: *Haplophthalmus danicus*, 6: *Hyloniscus riparius*, 7: *Ligidium germanicum*, 8: *Oniscus asellus*, 9: *Platyarthrus hoffmannseggii*, 10: *Porcellio spinicornis*, 11: *Porcellionides pruinosus*, 12: *Porcellium collicola*, 13: *Protracheoniscus politus*, 14: *Trachelipus nodulosus*, 15: *Trachelipus rathkii*, 16: *Trachelipus ratzeburgii*, 17: *Trichoniscus steinboeckii*, 18: *Haplophthalmus montivagus*, 19: *Lepidoniscus minutus*

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