

Fauna, Distribution, Habitat Preference and Abundance of Woodlice (Oniscidea) in Latvia

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Department of Zoology and Animal Ecology, Faculty of Biology, University of Latvia, 4 Kronvalda Blvd., LV-1586, Rīga, Latvia, e-mail: adalia@lanet.lv

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Abstract: In total, 20 woodlice species are known in the territory of Latvia. *Haplophthalmus danicus* is recorded for the first time. Distribution, habitat preference and abundance data of species are presented.

Keywords: Isopoda, Oniscidea, fauna, distribution, abundance, Latvia.

Introduction

Woodlice (Isopoda, Oniscidea) are common invertebrates in Latvia. The population density of woodlice can be high in favourable conditions, and thus they could play an important role in the decomposition of detritus.

These terrestrial crustaceans were investigated in Latvia for long time. W.Herold (1927) studied Latvian and Estonian fauna in 1924-1928. He recorded 14 species. The data from Latvia were fragmentary. Later G.Glikmanis (1935) investigated the fauna and habitat preference of woodlice in Latvia in 1927-1933. He added 5 new species to the fauna of Latvia. G.Glikmanis developed graduate theses in Latvian. The results of the research were not published. Thus the information was not available for the wider scientific public. No specimens mentioned in the theses are deposited in the museums of Latvia. Most obvious the collection was lost and there is no possibility to prove the correctness of identification in line with modern taxonomy on Oniscidea. All later publications (Tauriņš, Ozols 1957, Spuris 1974) were based on these theses.

Up to now 19 species of woodlice are known in Latvia. The fauna and population density of woodlice need to be thorough investigated because of their significant role in decomposition of plant litter.

Methods

The main faunistic investigations of woodlice have been performed in 2003-2007 by the author. Different methods were used: pitfall trapping (diameter of the opening 7.5 cm, 10, 15 or 30 traps were arranged on transect in the investigated habitats, exposition period lasted 7, 14 or 28 days); sampling and sieving of litter in different forests; direct searching of woodlice in the dead wood; accidental sampling in various habitats. The abundance of woodlice (ind./trapweek) was calculated for data obtained by use of pitfall traps. The material collected by other methods could not be used to characterise abundance, because number of recorded individuals depended on sample size, collection season and experience of researcher. The materials collected by numerous other researchers were also investigated.

To estimate habitat preference and relative abundance, the faunal data were analysed taking into consideration presence of species in particular habitats and number of collected individuals. In all cases the number of collected specimens depended on sampling effort and obtained data cannot be used for deeper ecological analysis. The relative occurrence of woodlice in the particular habitat type was expressed in three classes: 1 – rare (single individuals in one or few localities); 2 – common (several individuals in few to many localities); 3 – very common (numerous individuals in numerous localities).

The woodlice were preserved in 80% ethyl alcohol and stored in Eppendorf vials or larger plastic vials depending of sample size. The species were identified by use of keys (Gruner 1966, Hopkin 1991). A collection of investigated woodlice is deposited in the Department of Zoology and Animal Ecology, Faculty of Biology, University of Latvia.

Abbreviations used in the text: R. – references; M. – collected material; distr. – district (underlined); ind. – individual(s); n. – numerous individuals. The species were listed by their taxonomy (Gruner 1966), the localities – alphabetically by districts (underlined) and toponyms, the recording dates – chronologically. Data about habitats and number of collected individuals were added. The author collected the majority of the material, except if mentioned otherwise in the text.

Results

Fauna and distribution

Ligiidae

Ligidium hypnorum CUVIER, 1792

R. Herold 1927, Glikmanis 1935, Tauriņš, Ozols 1957.

M. Aizkraukle distr.: Aizkraukle bog, Liepu island, 21.10.2006, lime tree forest, 5 ind., leg. K.Vilks; Nereta-Aizkraukle crossroad, 15.10.2006, poplar forest, 4 ind.; Pērse river valley, 08.10.2005, calcareous deciduous forest, n (7) ind.; Skrīveri, 09.10.2005, oak forest, 1 ind. Cēsis distr., Lodesmuiža, 18.06-04.07.1997, pine forest, 1 ind., wet spruce forest, 4 ind., 3-8.07.2004, deciduous flood forest, 12 ind., wet spruce forest, 16 ind., 01-06.07.2006, pitfalls, birch-white alder forest, 1 ind., wet birch-white alder forest, 22 ind.; Sproģi lake, Bāba island, 29.05-26.06.2004, deciduous forest, 62 ind.; Sproģi lake, Inesieši peninsula, 25.08-05.09.2003, deciduous forest, 3 ind., 29.05-26.06.2004, deciduous forest, 13 ind.; Sproģi lake, Jēkuļu island, 29.05-26.06.2004, deciduous forest, 152 ind.; Sproģi lake, Nadziņš peninsula, 29.05-26.06.2004, deciduous forest, 4 ind. Dobele distr.: Apškalni, 11.05.2003, deciduous forest, 1 ind. Jēkabpils distr.: Sauka, 15.10.2006, wet deciduous forest, 1 ind. Krāslava distr.: Ezernieki, 08.10.2005, oak forest, 3 ind. Kuldīga distr.: Alsunga, 22.10.2006, oak-pine forest, 4 ind.; Īvande, 22.10.2006, deciduous forest, 1 ind., Jūrkalne, Muižupīte valley, 22.10.2006, deciduous forest,

5 ind.; Kuldīga, Venta river coast, 22.10.2006, deciduous forest, 7 ind.; Rudbārži, 16.10.2005, deciduous forest, n (5) ind.; Šķervelis river valley, 28.05.2005, deciduous flood forest, 1 ind. Liepāja distr.: Lišķi, 16.10.2005, broadleaved forest, 4 ind., Rucava, 29.05-27.06.1997, wet spruce forest, 4 ind., 16.10.2005, calcareous black alder forest, n (5) ind., spruce-deciduous forest, 2 ind., 28.10.2006, calcareous wet birch forest, 4 ind.; Rucava, Līgupīte river coast, 16.10.2005, deciduous floodplain forest, 2 ind. Limbaži distr.: Tūja, 03.10.2003, mixed forest, 3 ind.; Vitrupe river valley, 07.10.2006, deciduous floodplain forest, 8 ind. Madona distr.: Gaiziņkalns, 12.10.2003, deciduous forest, 2 ind.; Vestiena, 15.07.2006, deciduous park, 1 ind. Rīga city: Bierīņi, Mārupīte river coast, 01-09.07.2004, pitfalls, deciduous forest, 8 ind., 01.07.2004, rotten black alder wood, 4 ind. Rīga distr.: Babīte, 13.05.2007, rotten birch wood, 1 ind.; Dauda river valley, 05.09.2003, deciduous forest, 2 ind., leg. M.Kalniņš; Ķemeri, 12.10.2005, black alder flood forest, n (15) ind.; Ķemeri, Krāčkalni, 05.04.2006, mixed floodplain forest, 1 ind., Lielie Kangari, 30.04-27.05.2006, pitfalls, mixed wet calcareous forest, 66 ind.; Tumšupe river coast, 27.05.2005, white alder forest, 2 ind. Saldus city: Ciecere river valley, 22.10.2005, deciduous forest, n ind.; Zvārde, Kērklīņu church, 13.05.2006, deciduous forest, 1 ind., deciduous park, 1 ind. Talsi distr.: Dundaga, 28.10.2006, deciduous park, 10 ind.; Kolka, 11-18.07.2004, pitfalls, wet meadow, 4 ind.; Slītere National Park, 11-18.07.2004, broadleaved forest, 114 ind., black alder forest, 15 ind., calcareous fen, 16 ind., wet spruce forest, 57 ind., wet meadow, 4 ind.; Slītere, 29.04.2004, broadleaved forest, 1 ind., 18.07.2004, broadleaved forest, 1 ind.; Stikli, 29.06.2005, rotten oak wood, 1 ind. Tukums distr.: Apšuciems, 07.05.2003, calcareous fen, 5 ind.; Kandava, 16.10.2005, calcareous deciduous forest, n (60) ind.; Kanieris lake coast, 12.06.2005, deciduous forest, n ind., mixed forest, 3 ind. Valka distr.: Rauza river valley, 13-17.08.2006, mixed floodplain forest, 1 ind., leg. G.Akmentiņš. Ventspils distr.: Rīva river mouth, 28.10.2006, deciduous forest, 3 ind.

Remarks. The species is very common in the

moist to wet deciduous, mixed and spruce forests, floodplain forests, and wet calcareous meadows and fens as well. Litter dwelling. W. Herold (1927) and G. Glikmanis (1935) recorded the species in numerous localities all around Latvia in the appropriate habitats.

Trichoniscidae

Haplophthalmus mendei (ZADDACH, 1844)

R. Glikmanis 1935 (*H. mengii*), Tauriņš, Ozols 1957.

M. Aizkraukle distr.: Pērse river valley, 08.10.2005, calcareous deciduous forest, 1 ind. Alūksne distr.: Vireši, Randatu cliffs, 17.08.2006, calcareous deciduous forest, 3 ind. Rīga distr.: Doles sala, 20.08.2007, calcareous deciduous forest, 2 ind.

Remarks. The species is rare. Woodlice definitely prefer calcareous deciduous forests in the river valleys with dolomite outcrops. W. Herold (1927) reported species from Koknese (Daugava river valley), G. Glikmanis (1935) – from Pērse river valley at Koknese, (Daugava river valley) and from Abava river valley at Kandava and Kalnamuiža (Venta river valley).

Haplophthalmus danicus BUDDE-LUND, 1879

M. Kuldīga distr.: Alsunga, 22.10.2006, oak-pine forest, 7 ind. Rīga city: Botanical garden of University of Latvia, 04.05.2003, in greenhouses, 1 ind., Kronvalda park, 27.10.2004, deciduous park, 6 ind. Tukums distr.: Pļieņciems dune, 10.07.2005, rotten birch wood, 1 ind.

Remarks. The species is new to the fauna of Latvia and is very rare, probably synanthropic. The species was found in the botanical garden, near the settlement and near the graveyard.

Hyloniscus riparius (C.L.KOCH, 1838)

R. Glikmanis 1935 (*H. vividus* Verh.), Tauriņš, Ozols 1957 (= *H. vividus* Verh.).

M. Liepāja distr.: Grobiņa, 18.10.2003, deciduous park, 10 ind., Pērkone, 21.09.2003, deciduous forest in the dune slack, 1 ind.

Remarks. The species is rare in Latvia. G. Glikmanis (1935) has found species in Paurupe and Bārta river valleys, Rucava and Pape (all in Liepāja district), but always in wet habitats. In accordance with historical and

recent data the species is restricted to utmost South-West of Latvia.

Trichoniscus pusillus BRANDT, 1833

R. Herold 1927 (*T. elisabethae* var. *estoniensis* HEROLD, 1926 nov. var.), (*T. (Syloniscus) pusillus coelebs* (VERHOEFF), Glikmanis 1935 (*T. elisabethae*, *T. pusillus coelebs* VERHOEFF, 1917), Tauriņš, Ozols 1957 (= *T. pusillus coelebs* VERH.).

M. Aizkraukle distr.: Aizkraukle bog, Liepu island, 21.10.2006, lime tree forest, 5 ind., leg. K. Vilks; Nereta-Aizkraukle crossroad, 15.10.2006, poplar forest, 2 ind.; Skrīveri, 09.10.2005, oak forest, n (20) ind.; Stukmaņi, 08.10.2005, young calcareous deciduous forest, n ind. Alūksne distr.: Vireši, Randatu cliffs, 12.07.2006, rotten deciduous wood, 7 ind. Cēsis distr.: Kazu ravine, 29.10.2005, calcareous deciduous forest, 2 ind., mixed forest, 5 ind. Daugavpils distr.: Balta river, 08.10.2005, white alder floodplain forest, 4 ind.; Medumi, 15.10.2006, deciduous forest, 2 ind.; Pilskalnes Siguldiņa, 15.10.2006, deciduous forest, 5 ind., rotten deciduous wood, 1 ind. Jēkabpils distr.: Aknāste, 15.10.2006, rotten deciduous wood, 1 ind.; Laukezers, 16.12.2006, black alder forest, 2 ind.; Sauka, 15.10.2006, wet deciduous forest, 4 ind. Jelgava distr.: Vilce, 01-28.05.2006, pitfalls, broadleaved floodplain forest, 28 ind., 17.06.2006, rotten deciduous wood, 3 ind., rotten oak wood, 1 ind. Krāslava distr.: Ezernieki, 08.10.2005, oak forest, 4 ind. Kuldīga distr.: Alsunga, 22.10.2006, oak-pine forest, 5 ind.; Diļļu meadows, 27.06-24.07.2004, pitfalls, calcareous meadow, 26 ind.; Īvande, 22.10.2006, deciduous forest, 1 ind.; Jūrkalne, Muižupīte river valley, 22.10.2006, deciduous forest, 7 ind.; Venta river coast at Kuldīga, 22.10.2006, deciduous forest, 3 ind.; Rudbārži, 16.10.2005, deciduous forest, n (14) ind.; Venta river bank opposite Letiža, 12.05.2007, rotten deciduous wood, 1 ind. Liepāja distr.: Lišķi, 16.10.2005, broadleaved forest, 7 ind.; Pape, 02.10.2004, lake litter, 5 ind.; Rucava, 16.10.2005, calcareous black alder forest, 2 ind., spruce-deciduous forest, 8 ind., 28.10.2006, calcareous wet birch forest, 6 ind.; Rucava, Līgupīte river coast, 16.10.2005, deciduous floodplain forest, 10 ind.; Rucava, Sventāja river valley, 16.10.2005, white alder

floodplain forest, n (20) ind.; Vītiņi meadows, 27.06-24.07.2004, pitfalls, calcareous lake floodplain meadow, 7 ind. Limbaži distr.: Randu meadows, 07.10.2007, black alder forest, 1 ind.; Vitrupe river valley, 07.10.2006, deciduous floodplain forest, 9 ind. Preiļi distr.: Jāņupe river valley, 09.10.2005, white alder floodplain forest, 4 ind.; Jaunaglona, 09.10.2005, deciduous park, 1 ind. Rīga city: Krēmeri, 29.04.2006, small leaved forest, 13 ind.; Mārupīte river coast, 01.07.2004, rotten black alder wood, 1 ind.; Nordeķi park, 24.09.2005, deciduous park, 6 ind. Rīga distr.: Doles sala, 20.08.2007, calcareous deciduous forest, 6 ind.; Ķekava, 26.05.2005, white alder forest, 4 ind.; Ķemeri, 12.10.2005, black alder floodplain forest, n (10) ind.; Lielie Kangari, 30.04-27.05.2006, pitfalls, mixed wet calcareous forest, 5 ind., 27.05.2006, rotten deciduous wood, 5 ind.; Salaspils, 07.10.2004, deciduous forest, n (10) ind., 22.09.2005, wet calcareous pine forest, n (13) ind., 10.10.2005, deciduous forest, n (15) ind., 27.09.2006, wet calcareous pine forest, 3 ind.; Tumsupe river valley, 27.05.2005, white alder floodplain forest, 8 ind. Salduš city: Ciecere river valley, 22.10.2005, deciduous forest, n (20) ind. Salduš distr.: Zvārde, Īves, 11.06.2006, calcareous meadow, 3 ind.; Zvārde, Zvārde church, 13.05.2006, black alder forest, 4 ind. Talsi distr.: Dundaga, 28.10.2006, deciduous park, 6 ind.; Slītere, 11-18.07.2004, pitfalls, broadleaved forest, 7 ind., wet spruce forest, 3 ind. Tukums distr.: Čūžu bog, 21.05-18.06.2005, pitfalls, calcareous fen overgrown with *Potentillafruticosa*, 32 ind.; Kandava, 16.10.2005, calcareous deciduous forest, 4 ind.; Kanieris lake coast, 12.06.2005, deciduous forest, 1 ind., mixed forest, 1 ind.; Pliņciems dune, 10.07.2005, rotten birch wood, 2 ind.; Slampe, 20.10.2006, deciduous forest, 6 ind. Valmiera distr.: Mellupīte river mouth, 29.10.2005, broadleaved forest, 7 ind. Ventspils distr.: Rīva river mouth, 28.10.2006, deciduous forest, 2 ind.

Remarks. The species is very common, prefers different deciduous forests, particularly wet and calcareous ones, can be found also in wet calcareous meadows and rotten wood, rarely – in coniferous forests, but absents in dry habitats and bogs. Usually it is abundant. W.Herold

(1927) and G.Glikmanis (1935) stated that species is widely distributed and mentioned numerous localities. The species is parthenogenetic, because there are only 1-2 males per 1000 females. G.Glikmanis discovered males attributed to the species *T. elisabethae* Herold, 1923. At the same time he stated that *T. elisabethae* had the same habitat requirements as *T. caelebs* and can be found in the same locality. All recently recorded individuals belonged to *T. elisabethae*.

Oniscidae

Oniscus asellus LINNAEUS, 1758

R. Herold 1927, Glikmanis 1935, Tauriņš, Ozols 1957.

M. Aizkraukle distr.: Koknese, 16.06.2003, deciduous park, 2 ind., 11.10.2003, rotten deciduous wood, 1 ind. Bauska distr.: Jumprava, 01.07.2004, broadleaved forest, 3 ind. Dobele distr.: Annenieki, 27.06.2003, deciduous park, 1 ind.; Tērvete, 09.08.2006, rotten deciduous wood, 6 ind. Jelgava distr.: Vilce, 01.05.2006, rotten ash wood, 2 ind. Kuldīga distr.: Alsunga, 21.07.2006, rotten elm wood, 1 ind., 22.10.2006, oak-pine forest, 5 ind., rotten oak wood, 3 ind.; Īvande, 22.10.2006, deciduous forest, 4 ind.; Lēnas, 17.09.2006, rotten deciduous wood, 1 ind.; Rudbārži, 16.10.2005, deciduous forest, n (4) ind.; Skruna, 10.05.2003, coast of fish pond, 1 ind.; Venta river coast at Kuldīga, 22.10.2006, deciduous forest, 14 ind. Liepāja distr.: Aizvīķi, 18.10.2003, deciduous park, 2 ind.; Embūte, 11.05.2003, deciduous forest, 5 ind.; Ilģi, 27.06.2003, deciduous park, 2 ind.; Lišķi, 16.10.2005, broadleaved forest, 3 ind.; Medze, 24.07.2005, deciduous park, 8 ind.; Pāvilsta, 20.09.2003, rotten willow wood, 1 ind.; Pērkone, 18.09.2005, deciduous forest in the dune slack, 4 ind.; Rucava, 16.10.2005, deciduous tree stump, n ind.; Tosmare, 10.05.2003, black alder forest, 4 ind.; Ulmale, 17.05.2003, rotten deciduous wood, 2 ind. Limbaži distr.: Rozēni, Īvandes, 06.06.2006, rotten deciduous wood, 2 ind. Ogre distr.: Pārogre, 08.05.2003, rotten ash wood, 1 ind., 04.05.2004, rotten poplar wood, 2 ind. Rīga city: Bieriņi, Mārupīte river coast, 01.07.2004, rotten black alder wood, 12 ind., 01-09.07.2004, pitfalls, deciduous forest, 2 ind.; Botanical

garden, 04.05.2003, in greenhouses, 1 ind., 15-29.11.2004, pitfalls, in greenhouses, 7 ind.; Nordeķi park, 24.09.2005, deciduous park, 2 ind., 08.10.2005, deciduous park, n (11) ind.; Strazdumuiža, 02.06.2005, deciduous park, 4 ind. Rīga distr.: Gauja, 10.01.2006, garden, 2 ind.; Jūrmala, Majori, 08.01.2004, dunes, 2 ind.; Ķemeru, 12.10.2005, in spruce stump, 3 ind. Saldus distr.: Saldus, Ciecere river valley, 22.10.2005, deciduous forest, n ind., 26.05.2006, rotten elm wood, 3 ind.; Sātiņi fish ponds, 10.05.2003, coast of fish pond, 1 ind.; Zvārde, Kērklīņu church, 13.05.2006, deciduous forest, 5 ind. Talsi distr.: Dundaga, 28.10.2006, deciduous park, 10 ind.; Kolka, 18.07.2004, rotten pine wood, 2 ind., 22.07.2004, ruins, 10 ind.; Nogale, 15.08.2003, deciduous park, 3 ind.; Talsi, 04.09.2005, deciduous park, 2 ind.; Talsu pauguraine, 14.05.2003, deciduous forest, 3 ind. Tukums distr.: Čūžu bog, 21.05-18.06.2005, pitfalls, calcareous fen overgrown with *Potentilla fruticosa*, 4 ind.; Slampe, 20.10.2006, deciduous forest, 1 ind. Ventspils distr.: Rīva river mouth, 28.10.2006, deciduous forest, 5 ind.; Užava, 17.05.2003, pine forest, 1 ind.

Remarks. The species is definitely attracted by dead wood of different deciduous, rarely coniferous, trees. This species is common in Latvia, but restricted to the central and Western Latvia. W.Herold (1927) and G.Glikmanis (1935) reported species from numerous localities.

***Philoscia muscorum* SCOPOLI, 1763**

R. Herold 1927 (*Ph. muscorum* var. *sylvestris* Dahl, 1916), Glikmanis 1935 (*Ph. muscorum* (Scop.) 1763 var. *sylvestris* Dahl, 1916), Tauriņš, Ozols 1957.

M. Liepāja distr.: Grobiņa, 18.09.2005, deciduous park, 8 ind.; Pērkone, 18.09.2005, deciduous forest in the dune slack, 8 ind.

Remarks. Species is restricted to utmost South-West of Latvia. Rare species and prefers dune slacks and deciduous forests. W.Herold (1927) reported species from Dunalka, G.Glikmanis (1935) from – Bārta, Jēči at Jaunlutriņi.

Cylisticidae

***Cylisticus convexus* (DEGEER, 1778)**

R. Herold 1927, Glikmanis 1935, Tauriņš,

Ozols 1957.

M. Liepāja distr.: Rucava, 16.10.2005, deciduous tree stumps, n ind.; Ziemepe, 18.09.2005, rotten deciduous wood, 11 ind. Preiļi distr.: Jaunaglona, 09.10.2005, deciduous park, 6 ind. Saldus distr.: Sātiņi quarries, 10.05.2003, coast of fish pond, 10 ind. Talsi distr.: Kolka, 22.07.2004, in ruins, n (10) ind.

Remarks. The species is distributed sporadically all over territory of Latvia. It was found in rotten deciduous trees lying on ground or in stumps. Populations are rich in individuals under favourable conditions. W.Herold (1927) and G.Glikmanis (1935) reported species from numerous localities.

Trachelipodidae

***Trachelipus rathkii* (BRANDT, 1833)**

R. Herold 1927 (*Porcellio* (*Tracheoniscus*) *rathkei*), Glikmanis 1935 (*Tracheoniscus rathkei*), Tauriņš, Ozols 1957 (*Tracheoniscus rathkei*).

M. Aizkraukle distr.: Aizkraukle bog, 30.08.2003, deciduous forest, 3 ind.; at Odzes lake, 12.10.2003, deciduous forest, 5 ind.; Ērberģe, 15.10.1006, deciduous forest, 8 ind.; Koknese, 16.06.2003, deciduous park, 9 ind., 11.10.2003, rotten deciduous wood, 2 ind.; Krasti, Mūrmuiža graveyard, 15.10.2006, rotten lime tree wood, 3 ind.; Nereta-Aizkraukle crossroad, 15.10.2006, poplar forest, 6 ind.; Pērse river valley, 08.10.2005, calcareous deciduous forest, n (9) ind., elm floodplain forest, n ind.; Skrīveri, 30.08.2003, deciduous forest, 8 ind., 09.10.2005, oak forest, 2 ind., 26.06.2005, rotten deciduous wood, n (10) ind.; Stukmaņi, 08.10.2005, young calcareous deciduous forest, n ind. Alūksne distr.: Gaujiena, 17.08.2006, rotten deciduous wood, 9 ind.; Vireši, Randatu cliffs, 12.07.2006, calcareous deciduous forest, 3 ind, rotten deciduous wood, 3 ind. Bauska distr.: Jumprava, 01.07.2004, broadleaved forest, 2 ind.; Ozoldārzs, 30.08.2003, broadleaved forest, 5 ind., 23.11.2003, broadleaved forest, 4 ind.; Skaistkalne, 22.06.2003, calcareous mixed forest, 3 ind. Cēsis distr.: Cēsis city, 18.05.2003, dolomite quarry, 2 ind., 28.07.2003, 4 ind., 10.07.2003, deciduous park, 4 ind.; Kvēpene, 08.07.2007, deciduous forest, 1 ind.; Līgatne, 11.07.2003, in mosses on poplar stump, 3 ind.,

rotten deciduous wood, 1 ind.; Lodesmuiža, 14.07.2003, on buildings, 3 ind., 01-06.07.2006, pitfalls, cultivated meadow, 2 ind., leg. I.Bodnieks, G.Ūsele, 29.06.2005, rotten deciduous wood, n (20) ind.; Sproģi lake, all ind. collected by pitfalls in deciduous forests, Akmens island, 31.07-14.08.2003, 67 ind., 29.05-26.06.2004, 73 ind., Bāba island, 31.07-14.08.2003, 79 ind., 29.05-26.06.2004, deciduous forest, 59 ind., Inesieši peninsula, 25.08-05.09.2003, 30 ind., 29.05-26.06.2004, 9 ind., Jēkuļu island, 31.07-14.08.2003, 29 ind., 29.05-26.06.2004, 23 ind., Mīlestības island, 31.07-14.08.2003, 73 ind., 29.05-26.06.2004, 107 ind., Nadziņš peninsula, 29.05-26.06.2004, 20 ind., Siena island, 31.07-14.08.2003, 153 ind., 29.05-26.06.2004, 144 ind., Žīdītes island, 31.07-14.08.2003, 9 ind., 29.05-26.06.2004, 24 ind., leg. L.Irša; Strīķupe river mouth, 01.10.2006, rotten deciduous wood, 1 ind.; Ungurmuiža, 06.06.2006, rotten oak wood, 2 ind., 24.03.2007, rotten oak wood, 3 ind. Daugavpils distr.: Balta river, 08.10.2005, white alder floodplain forest, n ind.; Dinaburga hill fort, 08.10.2005, deciduous tree stump, 4 ind.; Medumi, 15.10.2006, deciduous forest, 7 ind., rotten black alder wood, 11 ind.; Pilskalnes Siguldiņa, 15.10.2006, deciduous forest, 2 ind., rotten deciduous wood, 1 ind. Dobeles distr.: 27.06.2003, deciduous park, 7 ind., Annenieki, 16.08.2007, deciduous park, 4 ind.; Apškalni, 11.05.2003, deciduous forest, 4 ind.; Lielaucē park, 11.06.2006, rotten deciduous wood, 8 ind.; Svētaine and Skujaine river valley, 09.08.2006, calcareous fen, 1 ind.; Tērvete, 09.08.2006, rotten deciduous wood, 6 ind. Jēkabpils distr.: Aknīste, 15.10.2006, rotten deciduous wood, 6 ind.; Laukezers, 16.12.2006, black alder forest, 4 ind., rotten poplar wood, 5 ind.; Sauka, 15.10.2006, wet deciduous forest, 4 ind.; Trepe, 08.10.2005, young deciduous forest, n (20) ind. Jelgava distr.: Dalbe, 23.04.2003, rotten white alder wood, 2 ind.; Glūda, 27.06-24.07.2004, pitfalls, cultivated grassland, 1 ind.; Vilce, 01.05.2006, broadleaved floodplain forest, 12 ind., 01-28.05.2006, pitfalls, broadleaved floodplain forest, 73 ind., 17.06.2006, rotten oak wood, 1 ind.; Zaļenieki, 01.10.2003, deciduous forest, 6 ind. Krāslava distr.: Ezernieki, 08.10.2005, oak forest, 7 ind. Kuldīga distr.: Alsunga, 21.07.2006, rotten elm tree wood, 1 ind., 22.10.2006, oak-pine forest, 2 ind.; Diļļu meadows, 27.06-24.07.2004, calcareous meadow, 141 ind.; Jūrkalne, Muižupīte valley, 22.10.2006, deciduous forest, 13 ind.; Kuldīga, Venta river coast, 22.10.2006, deciduous forest, 8 ind.; Lēnas, 17.09.2006, rotten deciduous wood, 6 ind.; Riežupe, 09.08.2006, rotten deciduous wood, 1 ind.; Rudbārži, 16.10.2005, deciduous forest, n (1) ind.; Skruna, 10.05.2003, pond coast, 1 ind.; Venta river bank opposite Letiža, 12.05.2007, rotten deciduous wood, 6 ind. Liepāja distr.: Aizvīķi, 18.10.2003, deciduous park, 5 ind.; Durbe, 18.10.2003, deciduous park, 4 ind.; Grobiņa, 18.10.2003, deciduous park, 1 ind.; Ilģi, 27.06.2003, deciduous park, 4 ind.; Lišķi, 16.10.2005, broadleaved forest, 2 ind.; Luknas, 18.10.2003, deciduous forest, 4 ind.; Medze, 19.06.2004, rotten aspen wood, 3 ind., 24.07.2005, deciduous park, 6 ind.; Pape, 02.10.2004, lake litter, 4 ind., 16.10.2006, under the bark of burned pines, 6 ind.; Pērkone, 21.09.2003, deciduous forest in the dune slack, 2 ind. 18.09.2005, 4 ind.; Rucava, 16.10.2005, calcareous black alder forest, 1 ind., deciduous tree stump, n ind., 28.10.2006, calcareous wet birch forest, 3 ind.; Rucava, Līgupīte river coast, 16.10.2005, deciduous floodplain forest, 2 ind.; Rucava, Sventāja river plain, 16.10.2005, white alder floodplain forest, 2 ind.; Tosmare, 10.05.2003, black alder forest, 11 ind.; Ulmale, 17.05.2003, rotten deciduous wood, 2 ind.; Vītiņi meadows, 27.06-24.07.2004, pitfalls, calcareous lake floodplain meadow, 190 ind.; Ziemeupe, 18.09.2005, dunes, 4 ind., rotten wood in dune forest, 7 ind. Limbaži distr.: Augstroze, 30.06.2007, rotten aspen wood, 2 ind.; Randu meadows, 18-25.08.2006, pitfalls, wet coastal meadow, 75 ind., dry coastal meadow, 66 ind., dry pasture, 18 ind., wet pasture, 3 ind., leg. K.Vilks, 07.10.2007, black alder forest, 4 ind.; Riebezers, 09.06.2007, deciduous forest, 4 ind.; Rozēni hill fort, 06.06.2006, rotten deciduous wood, 5 ind.; Tūja, 03.10.2003, mixed forest, 2 ind.; Vitrupe river valley, 07.10.2006, deciduous floodplain forest, 6 ind. Madona distr.: Aiviekste, 02.08.2004, rotten deciduous wood, 7 ind.; Barkava, 26.06.2004, abandoned grassland, 7 ind.; deciduous forest, n (11) ind.; Vestiena, 02.08.2004, rotten deciduous wood, 12 ind., 15.07.2006, deciduous park, 4 ind. Ogre

distr.: Aviekste river mouth, 01.05.2005, white alder floodplain forest, 13 ind.; Glāžušķūnis, 01.05.2005, rotten ash wood, 3 ind.; Jumprava, 11.10.2003, rotten apple tree wood, 4 ind.; Lobes krogs, 08.10.2006, rotten deciduous wood, 1 ind.; Ogre, 06.05.2003, oxbow coast, 1 ind.; Pārogre, 17.04.2003, mushrooms in deciduous park, 2 ind. Preiļi distr.: Jāņupe river valley, 09.10.2005, white alder floodplain forest, 2 ind.; Jaunaglona, 09.10.2005, deciduous park, n ind.; Jersika, 11.10.2003, deciduous forest, 4 ind.; Preiļi, 09.10.2005, deciduous park, n ind. Rīga city: Beberbeķi, 05.10.2003, black alder forest, 3 ind.; Bierīni, 30.03.2007, compost, 10 ind.; Bierīni, Mārupīte river coast, 01.07.2004, rotten black alder wood, 8 ind., 01-09.07.2004, pitfalls, deciduous forest, 9 ind.; Dārziņi, 04.05.2003, garden, 8 ind.; Kleisti, 08.04.2007, old dump, 16 ind.; Krēmeri, 29.04.2006, small-leaved forest, 8 ind., 29.04-21.05.2006, pitfalls, small-leaved forest, 81 ind.; Mangaļsala 16.05.2003, pine forest, 7 ind., 31.08.2004, pine forest, 11 ind.; Nordeķi park, 24.09.2005, deciduous park, n (15) ind., 08.10.2005, 8 ind.; Skanstes str., 29.06.2003, orchards, 16 ind.; Strazdumuiža, 02.06.2005, deciduous park, 4 ind.; Šampētera forest, 06.07.2003, rotten deciduous wood, 1 ind. Rīga distr.: Babīte, 05.06.2003, pine forest, 1 ind., 13.05.2007, rotten birch wood, 3 ind., 16.05.2007, pine-deciduous forest, 4 ind., 18.05.2007, moist deciduous clear cut, 2 ind.; Baloži, 20.09.2006, moist birch forest, 4 ind.; Darmšate Pines, 14-28.05.2006, pitfalls, pine forest, 9 ind.; Daugmale hill fort, 22.06.2004, calcareous meadow, 3 ind.; Doles sala, 02.06.2003, deciduous park, 4 ind., 20.08.2007, calcareous deciduous forest, 6 ind.; Galkalne, 06.06.2003, pine forest, 1 ind.; Gauja, 10.01.2006, garden, 3 ind.; Jaunciems, 28.06.2003, deciduous forest, 8 ind.; Jūrmala, Majori, 08.01.2004, dunes, 1 ind.; Ķekava, 26.05.2005, white alder forest, 8 ind.; Ķemeri, 19.09.2003, black alder forest, 3 ind., 12.10.2005, in spruce stump, 5 ind., black alder flood forest, 2 ind.; Lielie Kangari, 18.06.2006, rotten poplar wood, 1 ind., Lielie Kangari, 30.04.2006, mixed forest, 6 ind., 30.04-27.05.2006, pitfalls, mixed wet calcareous forest, 1 ind., 27.05.2006, rotten deciduous wood, 7 ind.; Liepāja road 25th km, 11.04.2007,

rotten birch wood, 3 ind.; Mežmuiža springs, 06.06.2003, broadleaved forest, 4 ind., 01.07.2003, deciduous forest, 1 ind.; Salaspils, 12.09.2003, rotten deciduous wood, 3 ind., 22.09.2005, wet pine forest, 3 ind., 10.10.2005, deciduous forest, n (8) ind., 27.09.2006, pine forest, 2 ind.; Tumšupe river coast, 27.05.2005, white alder forest, 13 ind., 22.08.2007, 2 ind.; Turaida, 12.07.2003, rotten deciduous wood, 3 ind. Saldus city: Ciecere river valley, 22.10.2005, deciduous forest, n ind. Saldus distr.: Sātiņi fish ponds, 10.05.2003, pond coast, 5 ind., 13.05.2006, rotten deciduous wood, 3 ind.; Zvārde, Zvārde church, 13.05.2006, black alder forest, 4 ind. Talsi distr.: Dundaga, 22.07.2003, deciduous park, 4 ind., 28.10.2006, 2 ind.; Kolka, 23.07.2003, rotten pine wood, 2 ind., 11-18.07.2004, pitfalls, dunes, 1 ind., pitfalls, dune meadow, pitfalls, 7 ind., pine forest, pitfalls, 2 ind., wet meadow, 2 ind., 22.07.2004, ruins, 4 ind., 15.07.2005, pine forest, 1 ind., 17.07.2005, dry meadow, n ind.; Nogale, 15.08.2003, deciduous park, 2 ind.; Slītere, 29.04.2004, broadleaved forest, 6 ind., 11-18.07.2004, pitfalls, black alder forest, 1 ind., broadleaved forest, 2 ind., 18.07.2004, broadleaved forest, 6 ind., 20.07.2004, broadleaved forest, 6 ind.; Stikli, 28.06.2005, mixed forest, 3 ind., 29.06.2005, rotten oak wood, 2 ind.; Talsi, 04.09.2005, deciduous park, 7 ind.; Talsu pauguraine, 14.05.2003, deciduous forest, 4 ind., deciduous forest, 3 ind. Tukums distr.: Apšuciems, 07.05.2003, calcareous fen, 2 ind.; Čūžu bog, 21.05.-18.06.2005, pitfalls, calcareous fen overgrown with *Dasiphora fruticosa*, 310 ind.; Engure, 16.05-13.06.2003, pitfalls, calcareous fen, n ind.; Kandava, 25.06.2005, rotten deciduous wood, 1 ind., 16.10.2005, calcareous deciduous forest, n (8) ind.; Kanieris lake coast, 12.06.2005, deciduous forest, n ind., mixed forest, 5 ind., 12.10.2005, calcareous fen, 4 ind.; Lestene, Priedulāji, 11.09-23.09.2007, pitfalls, mesophytous meadow, 42 ind., burned mesophytous meadow, 21 ind.; Milzkalns, 23.06.2003, rotten willow wood, 1 ind.; Plieņciems dune, 10.07.2005, pine forest, 11 ind., rotten birch wood, 20 ind., 12.10.2005, calcareous pine forest, 6 ind.; Plieņciems, 07.04.2006, calcareous fen, 2 ind.; Pūre church, 21.05.2005, rotten wood of *Aesculus hippocastanum*, 5 ind.; Slampe,

20.10.2006, deciduous forest, 10 ind.; Zentene, 12.06.2005, deciduous park, 6 ind. Valmiera distr.: Mellupīte river mouth, 29.10.2005, broadleaved forest, 2 ind. Ventspils distr.: Irbe river valley, 14.05.2003, rotten pine wood, 1 ind.; Pope, 31.07.2003, *Molinia caerulea* meadows, 2 ind.; Rīva river mouth, 28.10.2006, deciduous forest, 5 ind.; Usma, 13.08.2006, rotten deciduous wood, 2 ind.

Remarks. The species is numerous in the rotting deciduous wood, in the soil of deciduous forests, deciduous floodplain forests, calcareous fens and along water bodies. Less numerous species is in the cultivated meadows, coniferous forests, very dry and very wet habitats. Fewer individuals were collected in the Eastern and Northern parts of Latvia. W.Herold (1927) and G.Glikmanis (1935) reported species as common and widely distributed, particularly in wet habitats connected with water bodies.

***Porcellium conspersum* KOCH, 1841**

R. Herold 1927, Glikmanis 1935, Tauriņš, Ozols 1957.

M. Jelgava distr.: Vilce, 01-28.05.2006, pitfalls, broadleaved floodplain forest, 20 ind.

Remarks. The species is rare and connected mostly with calcareous deciduous forests. Previously species was found in the western and central part of Latvia and along Daugava River. W.Herold (1927) and G.Glikmanis (1935) reported species from numerous localities in Western Latvia and along Daugava river valley.

Armadillidiidae

***Armadillidium nasutum* BUDDE-LUND, 1879**

R. Glikmanis 1935 (*A. nasutum*).

M. Aizkraukle distr.: Skrīveri, 26.06.2005, rotten deciduous wood, 1 ind., 30.08.2003, deciduous forest, 1 ind. Daugavpils distr.: Nīcgale forests, 11.10.2003, rotten aspen wood, 3 ind. Liepāja distr.: Medze, 24.07.2005, deciduous park, 4 ind. Limbaži distr.: Tūja, 03.10.2003, mixed forest, 2 ind. Ogre distr.: Jumprava, 11.10.2003, rotten apple tree wood, 10 ind. Rīga city: Botanical garden of University of Latvia, 04.05.2003, in greenhouses, 5 ind, 15-29.11.2004, pitfalls, in greenhouses, 3 ind. Rīga distr.: Plakanciems, 01.10.2003, black alder forest, 1 ind., leg. D.Trušelis. Talsi distr.: Slītere, 16-20.07.2000,

broadleaved forest, 19 ind., 20.07.2004, rotten deciduous wood, 3 ind., 29.07.2004, broadleaved forest, 4 ind.; Stikli, 29.06.2005, rotten oak wood, 1 ind; Vidale, 24.07.2006, rotten deciduous wood, 1 ind. Tukums distr.: Antiņciems, 19.09.2003, calcareous fen, 5 ind.; Pļieņciems dune, 10.07.2005, pine forest, 9 ind., rotten pine wood, n (30) ind., 12.10.2005, calcareous pine forest, n (7) ind.; Sēme, 12.06.2005, deciduous park, 4 ind. Ventspils distr.: Zīras, 21.09.2003, rotten pine wood, 1 ind.

Remarks. The species is rather rare in Latvia and occurs in calcareous forests in association with rotten wood. G.Glikmanis (1935) reported species from 11 localities in Western and Central Latvia.

***Armadillidium pictum* BRANDT, 1833**

R. Herold 1927, Glikmanis 1935.

M. Aizkraukle distr.: Aizkraukle bog, 30.08.2003, deciduous forest, 10 ind. Kuldīga distr.: Šķervelis river valley, 09.08.2006, deciduous floodplain forest, 1 ind. Liepāja distr.: Medze, 24.07.2005, deciduous park, 1 ind.; Rucava, 16.10.2005, spruce-deciduous forest, n (11) ind., 28.10.2006, calcareous wet birch forest, 6 ind.; Rucava, Līgupīte river valley, 16.10.2005, deciduous floodplain forest, 9 ind. Rīga city: Botanical garden of University of Latvia, 15-29.11.2004, pitfalls, greenhouses, 1 ind. Talsi distr.: Slītere, 16.07.2000, broadleaved forest, 2 ind., 11-18.07.2004, broadleaved forest, 2 ind., 20.07.2004, broadleaved forest, 7 ind.

Remarks. The species is rather rare in Latvia and occurs in the litter of calcareous deciduous forests and in association with rotten deciduous wood. Mostly distributed in the Central and Western Latvia. W.Herold (1927) reported species from Pērse river valley, G.Glikmanis (1935) – from Kalnamuiža.

***Armadillidium pulchellum* ZENKER, 1799**

R. Herold 1927, Glikmanis 1935.

M. Aizkraukle distr.: Aizkraukle bog, Liepu island, 21.10.2006, lime tree forest, 11 ind., leg. K.Vilks; Ozolkalni, 30.08.2003, deciduous forest, 1 ind.; Skrīveri, 30.08.2003, deciduous forest, 1 ind., 26.06.2005, rotten deciduous wood, 1 ind. Bauska distr.: Jumprava,

09.11.2005, calcareous broadleaved forest, 6 ind. Daugavpils distr.: Nīcgale forests, 11.10.2003, rotten aspen wood, 3 ind. Kuldīga distr.: Diļļu meadows, 27.06-24.07.2004, pitfalls, calcareous meadow, 176 ind.; Rudbārži, 16.10.2005, deciduous forest, n (16) ind.; Šķervelis river valley, 09.08.2006, deciduous floodplain forest, 1 ind.; Venta river bank opposite Letiža, 12.05.2007, rotten deciduous wood, 10 ind. Liepāja distr.: Medze, 24.07.2005, deciduous park, 3 ind.; Rucava, 29.05-27.06.1997, pine forest, 1 ind., 28.10.2006, calcareous wet birch forest, 1 ind. Limbaži distr.: Tūja, 03.10.2003, mixed forest, 2 ind. Ogre distr.: Glāžušķūnis, 01.05.2005, rotten ash wood, n (13) ind.; Jumprava, 11.10.2003, rotten apple tree wood, 10 ind. Rīga distr.: Babīte, 16.05.2007, rotten birch wood, 3 ind.; Lielie Kangari, 30.04-27.05.2006, pitfalls, mixed wet calcareous forest, 1 ind.; Plakanciems, 01.10.2003, black alder forest, 1 ind., leg. D.Trušelis. Saldus distr.: Ciecere river valley, 22.10.2005, deciduous forest, 4 ind., 26.05.2006, rotten elm tree wood, 3 ind. Talsi distr.: Slītere, 18.07.2004, broadleaved forest, 1 ind. Tukums distr.: Pliņciems dune, 11.06.2005, rotten pine wood, 14 ind., 10.07.2005, pine forest, 9 ind., rotten pine wood, n (30) ind., 12.10.2005, calcareous pine forest, n (7) ind.; Sēme, 12.06.2005, deciduous park, 4 ind.

Remarks. The species is rather common and distributed in the whole Latvia, but is most common in the Central and Western districts and along the Daugava and Lielupe rivers. Prefers calcareous meadows and deciduous forests. Individuals can be found both in rotten wood and litter. Locally could form abundant populations. W.Herold (1927) and G.Glikmanis (1935) reported species from numerous localities.

***Armadillidium zenckeri* BRANDT, 1833**

R. Herold 1927, Glikmanis 1935.

M. Talsi distr.: Dundaga, 28.10.2006, deciduous park, 1 ind. Tukums distr.: Antņiņciems, 19.09.2003, calcareous fen, 5 ind.; Kaņieris lake coast, 16.04.2005, calcareous deciduous forest, 2 ind., 12.10.2005, calcareous fen, 10 ind.

Remarks. The species is rather rare in Latvia and definitely prefers calcareous deciduous

forests. W.Herold (1927) and G.Glikmanis (1935) reported species from numerous localities.

***Armadillidium opacum* (KOCH, 1841)**

R. Herold 1927, Glikmanis 1935.

M. Liepāja distr.: Rucava, Līgupīte river coast, 16.10.2005, deciduous floodplain forest, 4 ind. Rīga city: Botanical garden of University of Latvia, 15-29.11.2004, pitfalls, greenhouses, 1 ind. Talsi distr.: Slītere, 16.07.2000, broadleaved forest, 7 ind., 18.07.2004, broadleaved forest, 1 ind., 20.07.2004, broadleaved forest, 1 ind., rotten deciduous wood, 3 ind., 29.07.2004, broadleaved forest, 4 ind., 24.07.2006, broadleaved forest, 7 ind.; Stikli, 29.06.2005, rotten oak wood, 1 ind.

Remarks. The species is rare and prefers deciduous calcareous forests. W.Herold (1927) found species in Talsi, G.Glikmanis (1935) – in Koknese.

Porcellionidae

***Porcellio scaber* LATREILLE, 1804**

R. Herold 1927 (*P. (Euporcellio)*), Glikmanis 1935, Tauriņš, Ozols 1957.

M. Cēsis distr.: Lodesmuiža, 14.07.2003, on buildings, 1 ind. Jēkabpils distr.: Sēlpils, Auzāni, 26.12.2004, in buildings, 1 ind., leg. D.Čakstiņa. Kuldīga distr.: Jūrkalne, 22.10.2006, pine forest, 2 ind.; Jūrkalne, Muižupīte valley, 22.10.2006, deciduous forest, 3 ind. Liepāja distr.: Durbe, 18.10.2003, deciduous park, 1 ind.; Grobiņa, 18.10.2003, deciduous park, 1 ind.; Medze, 19.06.2004, rotten aspen wood, 1 ind.; Pape, 21.09.2003, dunes, 4 ind., 02.10.2004, Pape lake litter, 8 ind., 16.10.2005, under the bark of burned pines, n (10) ind.; Pāvilosta, 20.09.2003, rotten willow wood, 3 ind.; Pērkone, 21.09.2003, deciduous forest in the dune slack, 2 ind., 18.09.2005, dunes, 3 ind., deciduous forest in the dune slack, 8 ind.; Ulmale, 17.05.2003, rotten deciduous wood, 5 ind.; Ziemepe, 28.08.2004, dunes, 4 ind., 18.09.2005, dunes, n (11) ind., rotten wood in dune forest, 5 ind. Limbaži distr.: Tūja, 03.10.2003, mixed forest, 1 ind. Rīga city: Botanical garden of University of Latvia, 15-29.11.2004, pitfalls, in greenhouses, 6 ind.; Dārziņi, 04.05.2003, garden, 2 ind.; Dzegužkalns, 20.05.2007, cellar, 1 ind., leg.

E.Parele; Kronvalda park, 27.10.2004, deciduous park, 3 ind.; Ķīpsala, 15.04.2007, in buildings, 1 ind.; Mārupīte river coast, 01.07.2004, rotten black alder wood, 1 ind.; Nordeķi park, 24.09.2005, deciduous park, 3 ind., 08.10.2005, deciduous, park, n (20) ind.; Skanstes str., 29.06.2003, orchards, 4 ind.; Strazdumuiža, 02.06.2005, deciduous park, 4 ind. Rīga distr.: Gauja, 10.01.2006, garden, 1 ind.; Jūrmala, Majori, 08.01.2004, dunes, 4 ind. Saldus city: Ciecere river valley, 22.10.2005, deciduous forest, 1 ind. Talsi distr.: Kolka, 11-18.07.2004, pitfalls, dune meadow, 2 ind., rotten pine wood, 1 ind., 22.07.2004, ruins, 4 ind.; Slītere, 11-18.07.2004, pitfalls, dry meadow, 10 ind., wet meadow, 2 ind., foredune, 1 ind., pine forest, 1 ind. Tukums distr.: Apšuciems, 13.06.2003, rotten aspen wood, 1 ind.; Plieņciems dune, 10.07.2005, pine forest, 4 ind., rotten birch wood, 2 ind., 12.10.2005, calcareous pine forest, 1 ind.; Ragaciems, 09.08.2003, garden, 6 ind. Ventspils distr.: Užava, 17.05.2003, pine forest, 7 ind.

Remarks. The species mostly prefers dry habitats, more common in the Maritime Lowland than inlands. W.Herold (1927) and G.Glikmanis (1935) reported species from numerous localities.

***Porcellio spinicornis* SAY, 1818**

R. Herold 1927 (*P. (Euporcellio) pictus*), Glikmanis 1935 (*P. pictus* BRANDT).

M. Bauska distr.: Jumprava, 01.07.2004, broadleaved forest, 2 ind. Cēsis distr.: Cēsis, 10.07.2003, deciduous park, 1 ind.; Lodesmuiža, 14.07.2003, on buildings, 3 ind. Jēkabpils distr.: Sēlpils, Auzāni, 26.12.2004, in the house, 1 ind., leg. D.Čakstiņa. Kuldīga distr.: Rudbārži, 16.10.2005, deciduous forest, 1 ind. Liepāja distr.: Embūte, 11.05.2003, deciduous forest, 3 ind.; Grobiņa, 18.10.2003, deciduous park, 1 ind.; Lišķi, 16.10.2005, broadleaved forest, 8 ind.; Ziemepe, 22.06.2007, on buildings, 1 ind. Preiļi distr.: Preiļi, 09.10.2005, deciduous park, 1 ind. Rīga city:

Elvīras str., in the house, 03.10.2005, cellar, 1 ind., leg. E.Vimba; Kronvalda park, 06.06.2007, on buildings, 1 ind.; Strazdumuiža, 02.06.2005, deciduous park, 1 ind. Rīga distr.: Doles sala, 20.08.2007, calcareous deciduous forest, 6 ind.

Saldus city: Ciecere river valley, 22.10.2005, deciduous forest, 10 ind., 26.05.2006, rotten elm tree wood, 3 ind. Saldus distr.: Zvārde, Kērklīņu church, 13.05.2006, deciduous forest, 1 ind. Talsi distr.: Kolka, 23.07.2003, rotten pine wood, 1 ind. Tukums distr.: Apšuciems, 13.06.2003, rotten aspen wood, 1 ind.; Pūre church, 21.05.2005, rotten wood of *Aesculus hippocastanum*, 1 ind.; Sēme, 12.06.2005, deciduous park, 2 ind.

Remarks. The species is rather rare, prefers deciduous forests and tend to be synanthropic. Individuals were not found in natural forests outside settlements. W.Herold (1927) and G.Glikmanis (1935) reported species from numerous localities in the Daugava river valley.

***Porcellio dilatatus* BRANDT, 1833**

R. Glikmanis 1935.

M. Tukums distr.: Plieņciems dune, 10.07.2005, rotten pine wood, 1 ind.

Remarks. The species is rare in Latvia. The ecological data are insufficient. G.Glikmanis (1935) recorded species in Rīga and Jaunjelgava.

***Porcellio laevis* LATREILLE, 1804**

R. Glikmanis 1935 (*Porcellio*).

Remarks. No recent records. The species is rare in Latvia. The ecological data are insufficient. G.Glikmanis (1935) recorded species in Rīga and Aizpute.

***Porcellionides pruinosus* (BRANDT, 1833)**

R. Herold 1927 (*Porcellio (Metoponorthus)*), Glikmanis 1935 (*Porcellio (Metoponorthus)*), Tauriņš, Ozols 1957 (*Metoponorthus*).

Remarks. No recent records. The species is rare and distributed sporadically in the whole Latvia. W.Herold (1927) and G.Glikmanis (1935) reported species from numerous localities.

Habitat preference, occurrence and relative density of woodlice in the habitats

Woodlice selected habitats specific for particular species and every species occurred more frequently in the definite habitats (Table 1).

Table 1. Occurrence of the woodlice species in various habitats.
 Explanations: 1 – rare; 2 – common; 3 – very common; ? – data deficient.

Habitats	Species																		
	<i>Ligidium hypnorum</i>	<i>Haplophthalmus menzei</i>	<i>H. danicus</i>	<i>Hyloniscus riparius</i>	<i>Trichoniscus pusillus</i>	<i>Oniscus asellus</i>	<i>Philoscia muscorum</i>	<i>Cylisticus convexus</i>	<i>Trachelipus rathkii</i>	<i>Porcellium conspersum</i>	<i>Armadillidium nasutum</i>	<i>A. pictum</i>	<i>A. pulchellum</i>	<i>A. zenckeri</i>	<i>A. opacum</i>	<i>Porcellio scaber</i>	<i>P. spinicornis</i>	<i>P. dilatatus</i>	<i>P. laevis</i>
Broadleaved forests	2	1		3	3	1	1	3	1	2	2	2	1	2	1	1	?	?	2
Small-leaved forests	2		1	1	2	2	1	1	3			1				1	1		
Wet deciduous forests	3	1		2	2	1			2	1		1	1		1				
Pine forests					1	1			1		1		1			2	1	1	
Spruce forests	1				1	1			2										
Mixed forests	1				2	1			2										
Settlements and parks	1		2	1	1	1	1	2	2		1	1	1	1	1	2	3		
Dunes									1							2			
Dry meadows									1							1			
Mesophytous meadows					1				1										
Wet meadows	1				2				1										
Calcareous meadows and fens	1				3				3					2					
Peat moss bogs																			

Abundance of epigeic woodlice species is presented in the Table 2. Collecting of numerous samples in the particular habitat at

different localities showed high variability in abundance of woodlice.

Table 2. Abundance of woodlice (ind./trap week) in different habitats in Latvia.

Habitat	Species and abundance (ind./trapweek)							Total /Variation of total
	<i>Ligidium hypnorum</i>	<i>Trachelipus rathkii</i>	<i>Armadillidium pulchellum</i>	<i>Armadillidium pictum</i>	<i>Trichoniscus pusillus</i>	<i>Oniscus asellus</i>	<i>Porcellio scaber</i>	
Forests								
Black alder forest	1.5	0.1						1.6
Broadleaved floodplain forest		1.8			0.7		0.5	3.0
Broadleaved forest	11.4	0.2		0.2	0.7			12.5
Deciduous floodplain forest	0.6							0.6
Deciduous forest	0.1-3.8	0.2-7.7				0.2		0.5-11.7
Mixed wet calcareous forest	1.7	0.1	0.1		0.1			2.0
Small-leaved forest		2.6						2.6
Wet birch-white alder forest	1.1							1.1
Wet spruce forest	0.8-5.7	0.3						1.1-6.0
Pine forest		0.2-0.5					0.1	0.3-0.6
Meadows								
Burned mesophytous meadow		1.4						1.4
Calcareous lake floodplain meadow		1.6			0.1			1.7
Calcareous meadow		1.2	1.5		0.2			2.9
Cultivated meadow		0.1						0.1
Mesophytous meadow		2.7						2.7
Wet meadow	0.4	0.2					0.2	0.8
Fens								
Calcareous fen	1.6	1.5-2.6			0.3			3.4-4.5
Coastal habitats								
Wet coastal pasture		0.6						0.6
Dry coastal meadow		5.1					1	6.1
Dry coastal pasture		1.3						1.3
Dune meadow		0.7					0.2	0.9
Dunes		0.1-0.2					0.1-1.1	0.2-1.3

Discussion

Fauna and distribution

In total, 20 species of woodlice are known in Latvia. *Haplophthalmus danicus* is recorded for the first time. The number of recorded species decreases from the Western part of Latvia to the Eastern part. Western part of Latvia is rich with calcareous forests, meadows and fens, and climate is rather mild in comparison with the Eastern part. That explains higher species diversity in the Western Latvia. Two species – *Hyloniscus riparius* and

Philoscia muscorum – are restricted to the South-West of Latvia. Daugava river valley rich with calcareous habitats is another important boarder of distribution of woodlice. For example, species of the genus *Armadillidium* mostly are distributed in the valley of this river and southwards. In the North of Latvia only widely distributed and ecologically plastic species were recorded, for example, *Trachelipus rathkii*. Negative results of the searching of woodlice could give good proof for this statement, but unfortunately they were not documented. *Porcellio scaber* has specific

distribution: these woodlice are common and numerous in the Maritime Lowland along the Baltic Sea coast, but become rare in inlands.

In comparison with the other Northern European countries (Silfverberg 1999) the species diversity in natural habitats of Latvia is known completely. Some more species could be found in the greenhouses and hatcheries.

The woodlice fauna in Latvia are mostly represented by typical West and Middle European species (Gruner 1966) with some exceptions. *Haplophthalmus danicus* is Holarctic species, *Porcellionides pruinosus* Palaearctic – species. *Philoscia muscorum* and *Hyloniscus riparius* are the South to Central European species and thus restricted to the South-West of Latvia. *Cylisticus convexus* is originally Pontic species and is distributing rapidly. The southern and Atlantic species have tendency to live in the synanthropic habitats as graveyards and parks, for example, *Porcellio dilatatus*, *Cylisticus convexus* and *Haplophthalmus danicus*.

Habitat preference and abundance of woodlice in the habitats

The woodlice prefer mostly different deciduous forests where the highest species diversity was stated. Calcareous moderately wet deciduous forests have the highest diversity of woodlice. Daugava and Venta river valleys were most important in maintaining high species diversity, while Lielupe and Gauja river valleys was less important. The microhabitats of the species were mostly dead wood. That explains the occurrence of species sometimes in the inappropriate habitats, e.g., pine forests. Deciduous parks in the settlements in some respect imitate deciduous forests, thus explains high species diversity in the parks. Open habitats like meadows and fens with no trees usually have less number of species and possessed mostly ubiquitous species, like *Trachelipus rathkii*. Raised bogs are the single habitat where woodlice were not found.

The abundance can be estimated for larger in size woodlice, like *Porcellio* species or *Trachelipus rathkii* and some other soil dwelling species. *Trachelipus rathkii* is the most common epigeic woodlice and is distributed commonly in a wide variety of habitats.

Ligidium hypnorum has rather high abundance in different forest habitats, particularly in the moderately wet or wet forests. This species is absent in pine forests, most probably because of acid soil conditions. Small in size woodlice *Trichoniscus pusillus* cannot be trapped efficiently by use of pitfall traps. Direct observations indicated that these woodlice are common, but are not true epigeic species. They usually try to shelter in the detritus. The species connected with decaying wood like *Oniscus asellus* or *Armadillidium* species usually present in the pitfall traps in an insignificant numbers. These records do not reveal the actual abundance of saproxylic woodlice. Really, the pitfall trapping can be used only for monitoring of two species, *Trachelipus rathkii* in different habitats and *Ligidium hypnorum* in different deciduous forests.

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