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Bratislavia palmeni (Munsterhjelm, 1905) (Naididae) and *Peipsidrilus pusillus* Timm,1977 (Tubificidae) two rare Oligochaeta species new to the Austrian fauna

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With 8 figures and 1 table

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Two rare species of Oligochaeta, *Bratislavia palmeni* and *Peipsidrilus pusillus* were collected in the catchment of the river Waldaist in Upper Austria. Both species are new to the fauna of Austria. Site- and habitat description as well as notes on their distribution are given and additionally taxonomical characteristics of the Austrian specimens are added.

1 Introduction

During the EU-funded project Euro-limpacs (contract number GOCE-CT-2003-505540), an Integrated Project designed to assess the effects of future global change on Europe's freshwater ecosystems, some sites in the river Waldaist (Upper Austria) were sampled to investigate the role of increasing sandy substrate on the composition and diversity of benthic macro-invertebrate communities. To demonstrate the interrelation between substrate composition and benthic invertebrate assemblages about 200 microhabitat-specific samples were taken and analysed.

2 Catchment characteristics

The river Waldaist is located in the north-eastern part of Upper Austria (Fig. 1). The human population density in the catchment of the river Waldaist (275.6 km²) is with 31 inhabitants/km² very low and agrarian economy is mainly based on forestry and grassland for cattle breeding; the share of forested areas is about 49 %, 30.5 % is used as grassland and about 15 % as cropland (Amt der Oberösterreichischen Landesregierung, 1997). Wastewater load is very low due to the small number of inhabitants. Four local purification plants clean the waste water of approximately 2,900 inhabitants (including commercial waste water about 8,000 inhabitant equivalents), but there is no direct inlet of treated

water into the river. The only important input of nutrients is caused by the runoff of manure and drainage measures. Consequently the nutrient load is very low and the water quality shows mostly pristine conditions concerning organic pollution (orthophosphate: < 0.2 mg/l, P-total: < 0.2 mg/l, nitrate: < 1.5 mg/l (Amt der Oberösterreichischen Landesregierung, 1997).

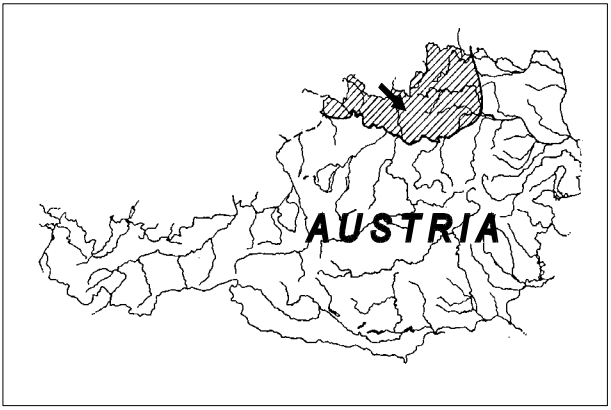

Fig. 1: Location of the investigated catchment in Austria. Shaded area: Bioregion Granite- and Gneis Region of the Bohemian Massif in Austria

3 Results and discussion

In total 28 taxa of Oligochaeta were identified in the river Waldaist (Tab. 1).

Tab. 1: List of species found in river Waldaist

NAIDIDAE
Bratislavia palmeni (Munsterhjelm, 1905)
Dero obtuse D´Udekem, 1855
Nais alpina Sperber, 1948
Nais christinae Kasprzak, 1973
Nais elinguis O. F. Müller, 1773
Nais stolci Hrabě, 1981
Nais variabilis Piguet, 1906
Slavina appendiculata (D´Udekem, 1855)
TUBIFICIDAE
Aulodrilus japonicus Yamaguchi, 1953
Limnodrilus hoffmeisteri Claparède, 1862
Limnodrilus udekemianus Claparède, 1862
Peipsidrilus pusillus Timm,1997
Psammoryctides barbatus (Grube, 1861)
Rhyacodrilus coccineus (Vejdovský, 1879)
Tubifex ignotus (Štolc, 1886)
Tubifex tubifex (O. F. Müller, 1774)
LUMBRICULIDAE
Bythonomus lemani (Grube, 1879)
Lumbriculus variegatus (O. F. Müller, 1774)
Rhynchelmis sp.

Stylodrilus brachystylus Hrabě, 1928
Stylodrilus heringianus Claparède, 1862
PROPAPPIDAE
Proppapus volki Michaelsen, 1916
ENCHYTRAEIDAE
Achaeta sp.
Cognettia sphagnetorum (Vejdovský, 1877)
Enchytraeidae g. sp.
Fridericia sp.
HAPLOTAXIDAE
Haplotaxis gordioides (Hartmann, 1821)
LUMBRICIDAE
Eiseniella tetraedra (Savigny, 1826)

Remarkable findings are the following two species new to the Austrian fauna.

1. ***Bratislavia palmeni*** **(Munsterhjelm, 1905)**

Synonyms: *Pristina elegans* Finogenova, 1966, *Pristina napocensis* Pop, 1973

The genus *Bratislavia* was described by Košel (1976) for *Pristina elegans* described Finogenova, 1966. Description of *Bratislavia palmeni* according Košel (1976) as follows: eyes absent, prostomium rounded, without proboscis. The colour of body rose, pigment absent. Dorsal setae beginning in III. segment, in bundles 1-2 hair and 1-3 needles double pointed setae (Fig. 2). Hair setae smoothed 160-320 μm long. Needles 68-78 μm long with almost parallel very long tooth, distal is slightly longer than proximal. Ventral setae in front segments 4-6 per bundle (Fig. 2) with equally long teeth, after clitellum (4) 5-6 (7) setae. In posterior segments in bundles 2-4 setae. Stomach dilating slowly. Chloragogen cells beginning from VI. segment.

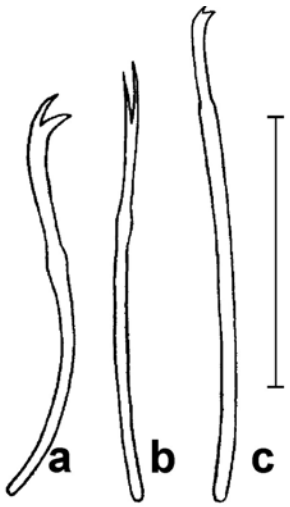

Fig. 2: *Bratislavia palmeni* a) ventral seta in segment VII, b) dorsal seta in segment VII, c) Penial seta (scale 50 µm) after Košel (1976)

Fig. 3: Sampling site Waldaist near Haslach, flooded meadow

Material examined: Waldaist near Haidmühle, 04.07.2005, 1 specimen; mikrolithal/akal, current 0.5 m/s, depth 0.15-0.2 m. Waldaist near Haslach, 28.07.2005, 5 specimens, flooded meadow with sedges located (depth 0,1 m, no current) very close to the river and seems to confirm the ecological preference of the species for that particular habitat (Fig. 3).
Description of the material: Length of hair setae 251-319 μm, needles are 59-74 μm, long ventral setae in front 4 per bundle, after clitellum 4 setae are present.
Distribution: The species is known so far from Russia (Finogenova, 1966) where it was found in the littoral zone of the Balbanty Lake in the Tundra; in Romania Pop (1973) found it in marshes in the surrounding of Cluj. Records from Slovakia (Košel, 1976) comprise a carp pond, one drainage canal and a small pool (altitude 129 m a. s.l.). All three localities are temporarily drying out. Austria: Waldaist/Danube.

2. *Peipsidrilus pusillus* **Timm, 1997**
The species was described from the sublittoral zone of Lake Peipsi-Pihkva (Pskovsko-Chudskoe). After Timm (1997) *Peipsidrilus pusillus* has a length of 6-8 mm, the thickness of the genital region is up to 0.20-0.35 mm and the number of segments varies between 33-48. Prostomium as long as wide or a little shorter, roundly conical. Ordinary setae developed as crotches with two

equal teeth only (Fig. 4a). Length of setae 24-48 μm, thickness 1.5 μm usually the setae of II smallest. There are 2-6 setae per bundle and only 2 per bundle in IX; the postclitellar bundles contain 1-2 setae. In XI the ventral bundles are lacking, replaced by male pores on obtuse papillae. Behind them, in the intersegmental furrow XI/XII hardly noticeable female pores are situated. In every ventral bundle of X in typical case a spermathecal seta of *Potamothrix* type, 41-53 μm long, sitting in a stout muscular follicle (Fig. 4b). Sometimes in place of it a single crotchet with a length of 35 μm and with distal tooth twice longer than proximal one was observed, or two ordinary crotchets.

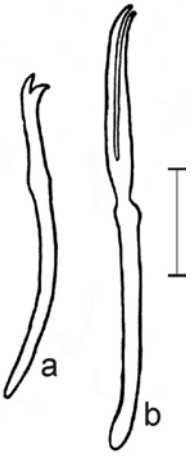

Fig. 4: *Peipsidrilus pusillus* a) ventral seta, b) spermathecal seta (scale 10 μm) after Timm (1977)

Body wall thin and transparent. No chromophilous glands on the oesophagus in the subsequent segments. The chloragogen tissue on the oesophagus has start in V or VI.

The oval spermathecal pores lie closely behind and above the spermathecal setae. Clitellum, weakly developed in the examined specimens, is lying on XI-XII. Internal sexual organs are situated in segments typical of the family. Testes lie in X; large ovaries in XI. Sperm funnels are attached to the ventral part of dissepiment X/XI. They are thin-walled, narrow, 35μm long and 20 μm high. Sperm ducts 8-11 μm wide, much longer than atria. Atria tiny, nestling close to the lateral body wall. The ejaculatory duct is longer than the ampulla (about 50 μm) and nearly as wide as the sperm duct (9-10 μm); it discharges into the proximal end of the penis. No prostate glands. Hrabě (1981) from his material and Finogenova (1982) from the typus-material recognized that small prostate glands were present and mouth in the central part of the atrium ampulla. Penes are equipped with characteristic chitinous sheaths, distinctly visible in whole mounts. The penial sheath is mushroom-shaped and 30 μm long (Figs. 5a, b).

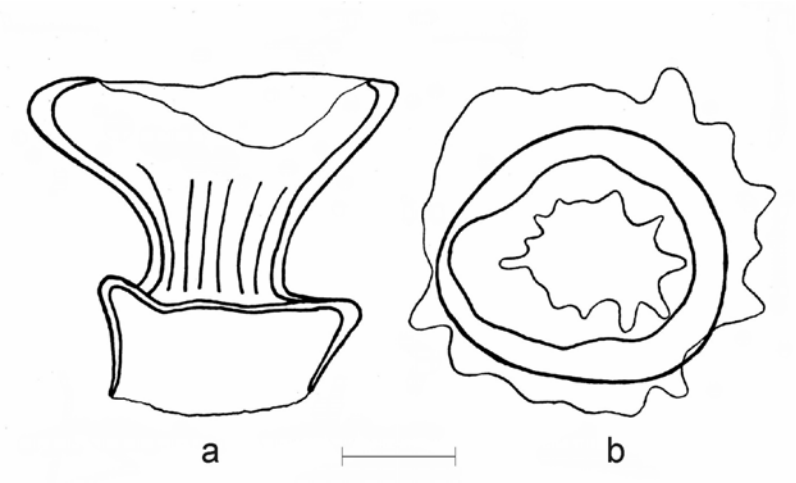

Fig. 5: *Pepsidrilus pusillus* a) lateral view of penial shealth, b) apical view of penial sheath (scale 10µm) after Timm (1977)

Material examined: Waldaist near Haidmühle, 04-07-2005, 30 specimens, psammal/pelal, current < 0.1 m/s, depth 0.10-0.15 m (Fig. 6).

Fig. 6: Sampling site Waldaist near Haidmühle, psammal/pelal

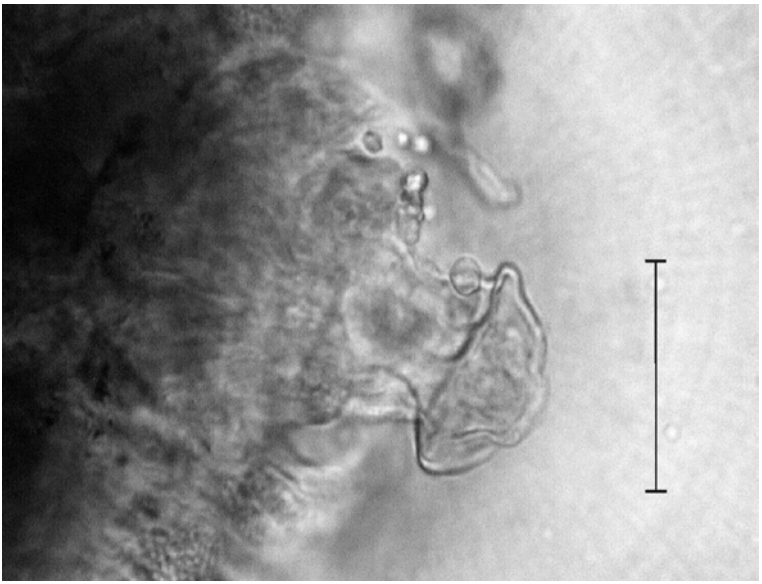

Fig. 7: *Peipsidrilus pusillus*. Lateral view of penial shealth (scale 30 µm)

Description of the material: Small smooth, pink worms, without any hair and pectinate setae. Anterior ordinary setae (same type in ventral a dorsal bundle) 3-6 per bundle, 41-48 μm long, with equal short teeth (in II. segment 3, in III. 4, in IV. 4-6 in V. 5, in VI. 6. According Hrabě (1997) in II segment 2 setae in bundle, in III. 3, in IV. 4 in V. and VI. 5 setae, after clitellum at most 2 setae. According Timm (1997), the most numerous also in VI. segment 6 setae. Single thin spermathecal setae of Potamothrix type lacking in ventral bundles of X. segments, of same specimens in X. segment is one ordinary type seta 35-37 μm long. Also in Hrabě (1981) material, spermathecal setae of Potamothrix type was absent, he supposed that they fall out before the sexual period is finished. In XI. segment ventral setae absent. Thick-walled and mushroom-shaped penial sheaths in XI. segment is 30 μm long. (Figs. 7, 8). Length of body 3-5 mm, numbers of segment 32-35.
Distribution: Estonia: Lake Peipsi-Pihkva, Czech Republic: Ploučnice stream (Elbe river catchment), Austria: Waldaist/Danube

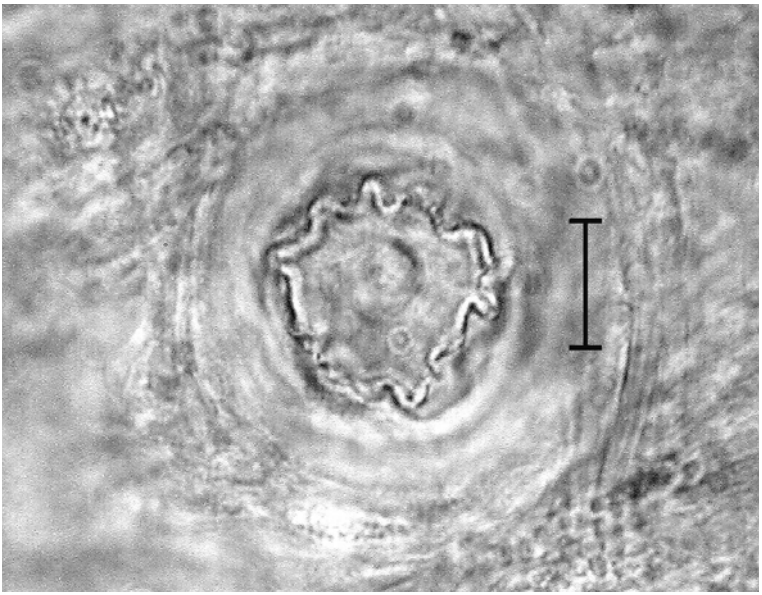

Fig. 8: *Peipsidrilus pusillus.* Apical view of penial shealth (scale 10 µm)

References

Amt der Oberösterreichischen Landesregierung (ed.) (1996): Waldaist, Feldaist und Aist, Untersuchungen zur Gewässergüte. Stand 1992-1995.- Gewässerschutzbericht 14/1996, 119 pp., Linz

Finogenova, N. P. (1966): Maloshchetinkovye chervi Vachutkinych ozer.- In: Gidrobiologicheskoe izuchenye I rybochoz. Osvojenije ozer krajnego severa SSSR: 63-70, Izd. Nauka, Moskva

Finogenova, N. P. (1982): Revizija rodov Peipsidrilus Timm, 1977 i Umbadrilus Timm, 1978 (Tubificidae, Oligochaeta).- In Limnologiceskie issledovanija na zalive Onezskogo ozera Bol'soe Onego199-203, Leningrad

Hrabě, S. (1981): Vodní málostetinatci (Oligochaeta) Ceskoslovenska.- Acta Universitatis Carolinae Biologica 1979: 1-167, Praha

Košel, V. (1976): Bratislavia gen. nov. a new genus for Pristina elegans Finogenova, 1966 (Oligochaeta: Naididae).- Biologia, Bratislava 31: 105-108, Bratislava

Pop, V. (1973): Deux espèces nouvelles de Pristina (Naididae, Oligochaeta) et leurs affinities.- Studia Universitatis Babe s-Bolyai Series Biologia 1: 79-89, Cluj

Timm, T. (1977): Peipsidrilus pusillus gen. n. sp. n. (Oligochaeta, Tubificidae).- Eesti NSV Teaduste Akadeemia Toimetised - Biologia 26: 279-283, Tallinn

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