

Mesenchytraeus kuehnelti sp. n., a new enchytraeid species (Oligochaeta: Enchytraeidae) from a Sphagnum-bog in Hungary

By
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Abstract. *Mesenchytraeus kuehnelti* sp. n. is described from a *Sphagnum*-bog in Hungary. The most important characters of the new species are: length 9–15 mm, segments (30)–40–50, 5 pairs of septal glands. The ampulla of spermatheca is a thin-walled sac with a rugged surface, and connected with the oesophagus. The new species is similar to *M. pelicensis* but differs from it by the pear-shaped sperm funnel with collar. The atrium is well developed, with four distinct atrial glands.

In the years 1987–1989 the enchytraeid fauna of some *Sphagnum*-bogs in Hungary was investigated. The *Sphagnum*-bogs in Hungary can be regarded as special biotops and their fauna is till now completely unknown. This paper gives the description of a new enchytraeid species found in one of these bogs. Further detailed results of the investigations will be published in a future work.

Material and methods

Thirty-seven specimens have been examined. In addition to the identification of living worms, some specimens were stained in neutral red, borax carmine and paracarmine. The fixed material was examined in clove oil. Animals were fixed in Bouin and stored in 70% ethanol.

Size data given in the description of the new species refer to living material.

Mesenchytraeus kuehnelti sp. n.

Diagnosis. Medium-sized species, length 9.3–15.2 mm, diameter 0.4–0.6 mm, segments (30)–40–50. Colour whitish-yellow. Setae sigmoid with nodulus, 4–5 in the lateral bundles and 4–6 in the ventral bundles. There are few number of cutaneous glands on the surface of the segments. Clitellum over 1/2 XI–XIII or XII–XIII. Brain as long as wide, lymphocytes are elliptical, granulated. Five pairs of septal glands, lobed. Nephridia in all respects corresponding with the genus. Dorsal vessel originating in XIII, blood colourless. Vesicula seminalis absent. Sperm funnel small, pear-shaped with distinct collar, sperm duct short and expanding into a well developed

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atrium. The atrium has four atrial glands. The ectal duct of spermatheca of rather loose structure, ampulla thin-walled with a rugged surface and communicating with the oesophagus.

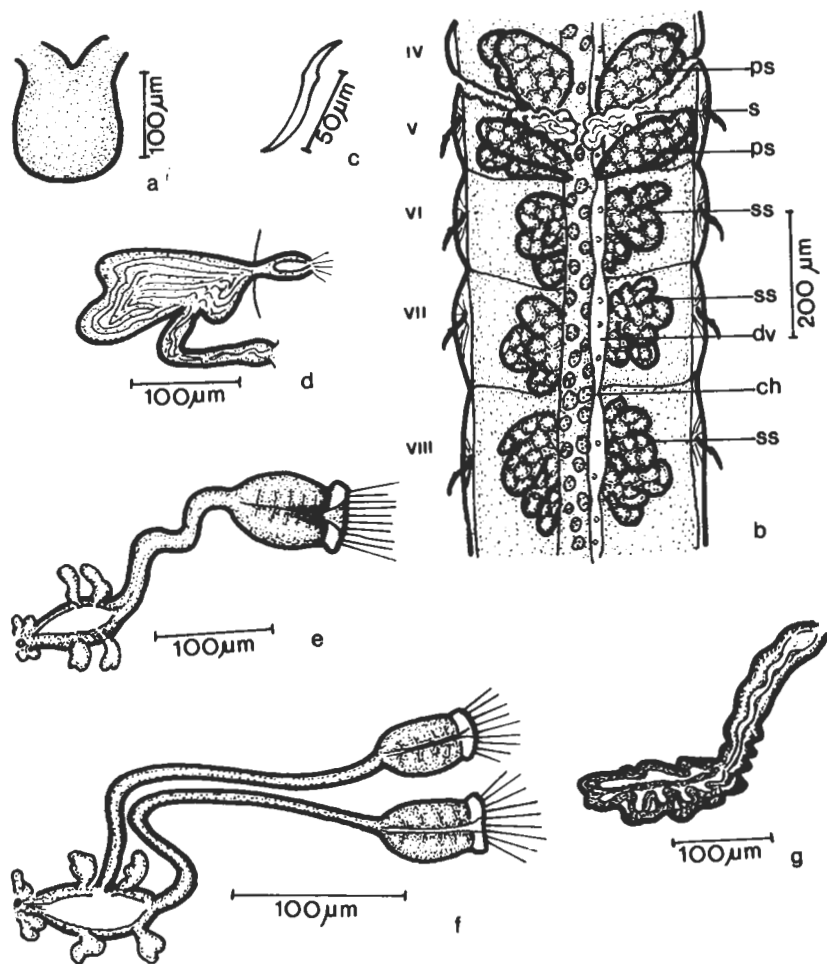


Fig. 1. *Mesenchytraeus kuehmelti* sp. n. a=brain; b=IV-VIII, dorsal view (s=spermatheca, ps=primary septal glands, ss=secondary septal glands, ch=chloragogen cell, dv=dorsal vessel); c=seta; d=nephridium; e=sperm funnel; f=abnormality of sperm funnels (see in the text); g= spermatheca

External characters. Medium-sized species. Holotype: length 13.7 mm, diameter 0.59 mm, segments 47. Paratypes: length 9.3–15.2 mm, diameter 0.4–0.6 mm, at clitellum 0.6–0.7 mm, segments (30)–40–50. Head pore near the tip of the prostomium. Dorsal pores absent. Colour whitish-yellow and transparent. Setae sigmoid, with nodulus (Fig. 1c), 60–84 μm long: (2,3) 4,5–5,4 (3,2):(4), 5, 6–4, 5, 6, (7, 3, 2). Cutaneous glands arranged in 2–3 transverse rows. Clitellum extending over $\frac{1}{2}$ XI–XIII or XII–XIII, gland cells irregularly arranged.

Internal characters. Brain (Fig. 1a) as long as wide, rounded or truncate posteriorly and incised anteriorly. The lymphocytes are elliptical, 16–28 μm long, granulated,

black in transmitted light. Five pairs of septal glands, primary septal glands at IV/V and V/VI, compact, with 1–2 lobes, secondary glands in VI–VIII, with more lobes (Fig. 1b). In some specimens one of the fifth pair of glands absent. Nephridia (Fig. 1d) practically without interstitial tissue, anteseptale consisting of nephrostome and a thin stalk connecting with the postseptale, which have three lobes, efferent duct originating near the septum. Dorsal vessel originating in XIII (in one specimen in XIV). Blood colourless. Chloragogen cells present from V, their size 10–17 μm , yellowish brown, forming thin layer on gut.

Vesicula seminalis absent. Sperm funnel small, pear-shaped with regular collar of about the same width as the body of the funnel, 1.5–2 times longer than wide, its length 60–90 μm (Fig. 1e). Sperm duct short, approximately three times longer than funnel and expanding ectally into a well developed atrium. The atrium with four atrial glands (Fig. 1e), the male pore surrounded by some irregular glands. Out of the 37 examined specimens two had two pairs of sperm funnels, two on each side, each having a separate duct connected with the same atrium (Fig. 1f). Spermatheca same as in *M. pelicensis*: ectal duct 4–5 times longer than wide of rather loose structure; ampulla an elongate thin-walled sac of about the same length as the ectal duct and communicating with the oesophagus. Surface of ampulla rugged. Spermatheca often pulsating (Fig. 1g).

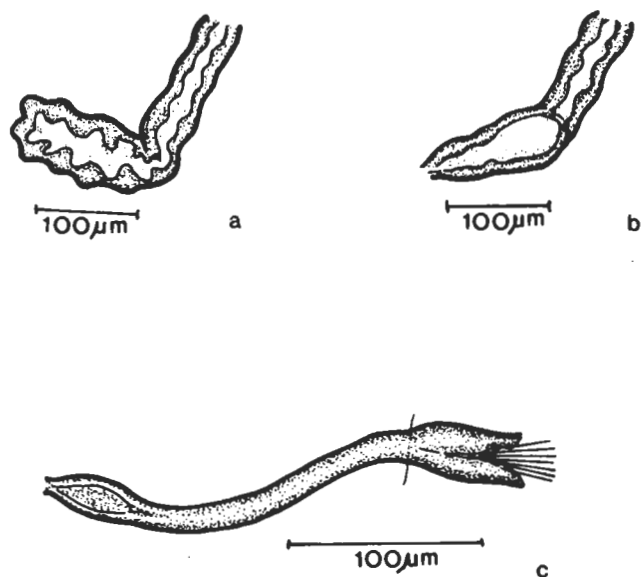


Fig. 2. *Mesenchytraeus pelicensis*. a and b=spermatheca; c=sperm funnel

Comparison with related species

The new species belongs to that group of *Mesenchytraeus* species whose ampulla of spermatheca is thin-walled and is connected with the oesophagus. The surface of the ampulla is rugged, with loose structure, the spermatheca is often pulsating. *M. gaudens* COGNETTI, 1903 differs from the new species because it is smaller (6–8 mm long) and it has only four pairs of septal glands (Tab. 1). In *M. glandulosus* (LEV, 1884) the ectal duct of spermatheca is very short, and the ampulla is of different shape (Tab. 1). In addition, the species has seven pairs of septal glands, more setae, and

remarkably greater number of cutaneous glands. *M. kuehnelti* sp. n. is closely related to *M. pelicensis* NIELSEN and CHRISTENSEN 1959 in the form of the spermatheca (Fig. 1g and Fig. 2a—b), and by the five pairs of septal glands, but differs from it in the shape of the sperm funnel (pear-shaped with well developed collar), and especially in the well developed atrium with the four distinct atrial glands (Tab. 1). NIELSEN and CHRISTENSEN (1959) did not describe this organ in the case of *M. pelicensis*. According to ISSEL (1905), however, the sperm funnel is bell-shaped, there is no atrium, only a slight dilatation: "I padiglioni dei deferenti a canale chiuso completamente sino alla bocca, sono trasparenti e piccolissimi (70 μ di lunghezza in individui di media statura); la loro forma (Fig. 11) ricorda una campana la cui bocca sia tagliata obliquamente o meglio una corolla di *Digitalis purpurea*; si potrebbero quindi chiamare digitaliformi... Al padiglione segue un condotto di grosso calibro che lo supera in lunghezza di circa quattro volte; allo sbocco esterno non si osserva un atrio ben distinto ma soltanto una lievissima dilatazione." The results of my investigations on *M. pelicensis* originating from a Lusulo-Quercetum in Hungary support Isssel's description regarding the sperm funnel. The sperm funnel is "digitaliform", the sperm duct is two to three times longer than the body of the funnel, the atrium is weakly developed and it has no glands (Fig. 2c).








	<u><i>M. gaudens</i></u>	<u><i>M. glandulosus</i></u>	<u><i>M. pelicensis</i></u>	<u><i>M. kuehnelti</i></u>
length mm	6-8	10-12	12-17* 20-25***	9-15
segments	35-50	40-42-45-50	43-52 ^b 36-56***	30-40-50
colour	yellowish-white	yellow or light red	greyish-white	whitish-yellow
cutaneous glands	large number	very large number	few number	few number
setae	$\frac{3-4}{4-6} - \frac{3}{3-4}$	$\frac{3-5}{6-10} - \frac{5-7}{6-7}$	$\frac{2-4}{4-6} - \frac{2-4}{3-6}$	$\frac{2-5}{4-6} - \frac{5-2}{4-6-7-2}$
septal glands	4 pairs	7 pairs	5 pairs	5 pairs
clitellum	1/2 XI-XIII	1/2 XI-1/2 XII	1/2 XI-1/2 XIII	1/2 XI-XII XII-XIII
sperm funnel		"digitaliform"		
atrium	****	?	*	
spermatheca				

Table 1. Comparison of *Mesenchytraeus kuehnelti* sp. n. with three similar species (* after ISSEL, ** after COGNETTI, *** NIELSEN and CHRISTENSEN, **** after DITLEVSEN)

Type-locality: *Sphagnum*-bog "Kismohos" of Kelemér, NE-Hungary. Sites of sampling: a) *Sphagnum* spp., b) shoot base of *Eriophorum* spp., c) *Betula pubescens*, and shoot of *Dryopteris cristata*; leg. K. DÓZSA-FARKAS and J. NAGY. The pH-value of the water 6.1–6.6.

Holotype: M. 1. in 70% ethanol; 2. 5. 1988. Paratypes: P. 22. 1. Three specimens in ethanol; 2. 10. 1987. — P. 22. 2. Twenty specimens; 2. 5. 1988. — P. 22. 3. Two specimens, with two sperm funnels; 2. 5. 1988. — P. 22. 4. Eleven specimens, juvenils, in ethanol; 2. 10. 1987. — The type material is deposited at the Department of Systematic Zoology and Ecology of the L. Eötvös University, Budapest.

The name was given in honour of the late Prof. Dr. W. KÜHNELT.

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