

A new species of *Fridericia* (Oligochaeta : Enchytraeidae) found in a spring in the Sudety mountains (Poland)

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Keywords : Oligochaeta, Enchytraeidae, *Fridericia*, new species, Sudety Mts, Poland, spring

A new species, *Fridericia dissimilis* n. sp., found during a study of the aquatic oligochaete fauna in the region of Śnieżnik Massive (Sudety Mts, south-western Poland) is described. The species belongs to the *Fridericia* group of species characterised by asymmetrical spermathecae with a single diverticulum, but it is easily distinguished from other species by, the enormous size of the gland at the ectal orifice of the spermatheca and the shape of ampulla, and by the shape of the brain and seminal vesicles.

Une nouvelle espèce de *Fridericia* (Oligochaeta : Enchytraeidae) trouvée dans une source des Monts Sudètes (Pologne)

Mots clés : Oligochaeta, Enchytraeidae, *Fridericia*, nouvelle espèce, Monts Sudètes, Pologne, source.

Une espèce nouvelle, *Fridericia dissimilis* n. sp. a été trouvée au cours d'une étude de la faune d'oligochètes aquatiques dans la région du massif de Śnieżnik (Monts Sudètes, sud-ouest de la Pologne) est décrite. Cette espèce appartient au groupe d'espèces possédant des spermathèques asymétriques avec un seul diverticule, mais elle est facilement différenciée d'autres espèces par les traits suivant : la dimension de la glande située à la base du canal de la spermathèque ainsi que, par la forme du «cerveau» et de la vésicule séminale.

1. Introduction

The knowledge of the aquatic oligochaetes fauna of Sudety Mts is relatively poor. The first study was carried out by Hrabe (1937) on the Śnieżnik Massif ; subsequent reports were published by Kasprzak (1973 a, b). The new species described herein, was found during a survey of the oligochaete fauna inhabiting the surface and subterranean waters in the same region.

The genus *Fridericia* is mainly found in terrestrial habitats, but some species live on the bottom of water bodies (Kasprzak 1986), especially in small ones like springs or streams, where the contact with the surround-

ing soils is large. The search for *Fridericia dissimilis* n. sp. in the soil around the Kletno spring did not yield results. So far, this species has been found in the aquatic environment only. This spring dries up in the dry years, and perhaps at such times *Fridericia dissimilis* lives in the soil.

2. Description of species

Material examined : The holotype and 3 paratypes whole mounted in Canada balsam, are kept in the collection of Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, Kraków.

Further material examined : 3 mature specimens, mounted in Canada balsam.

Etymology : From Latin, dissimilar to other species due to the unusual shape of spermatheca.

Type locality : Sudety Mts, Śnieżnik Massive, near Kletno village, (50° 15' N, 16° 52' E) altitude about 750 m, small, intermittent spring no 2 (according to

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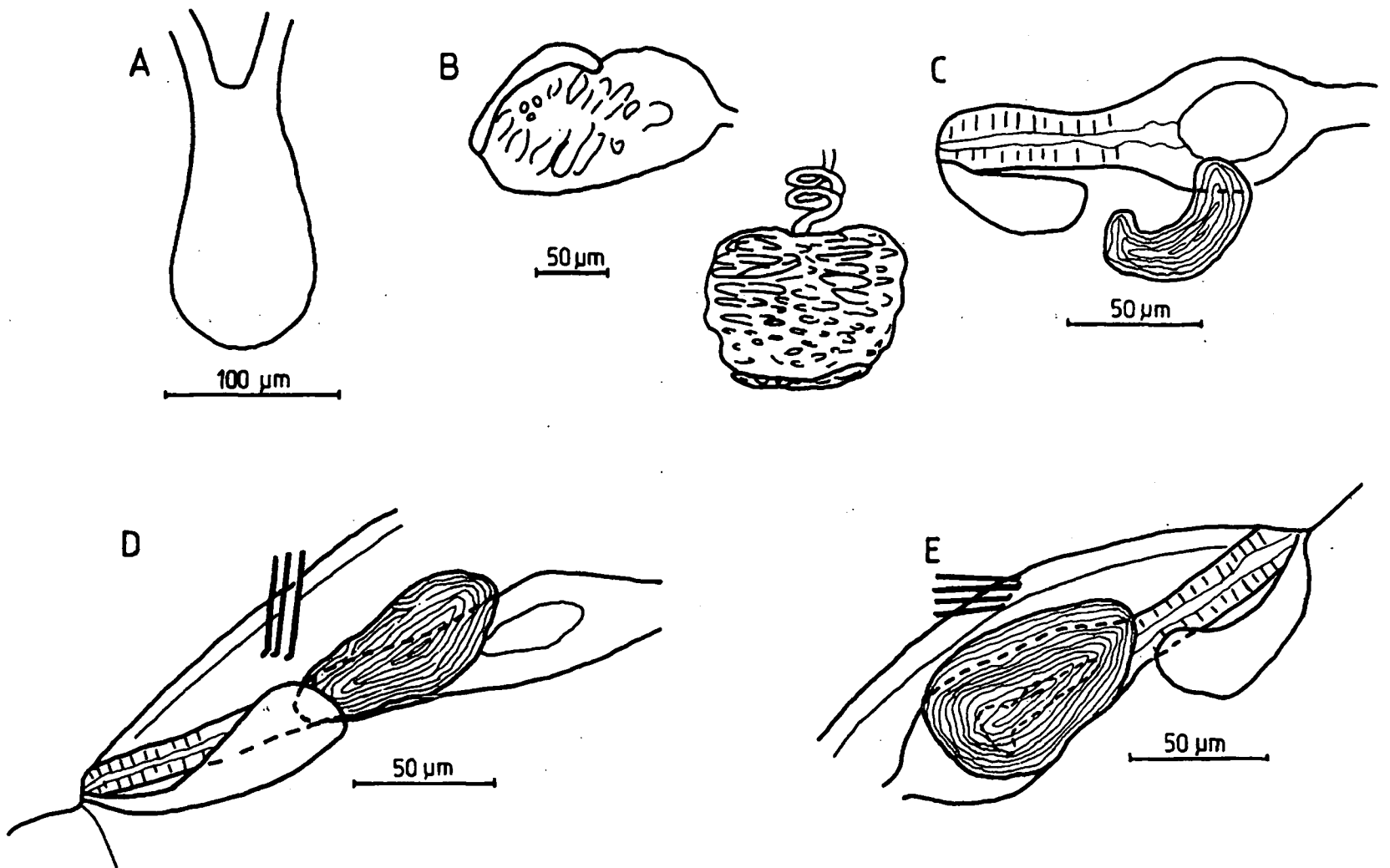


Fig. 1. *Fridericia dissimilis* n. sp. : A - brain, B - sperm funnel, C - E - spermathecae, C - lateral view, D - E dorsal view.
 Fig. 1. *Fridericia dissimilis* n. sp. : A - cerveau, B - spermathèques, C - vue latérale, D-E - vue ventrale.

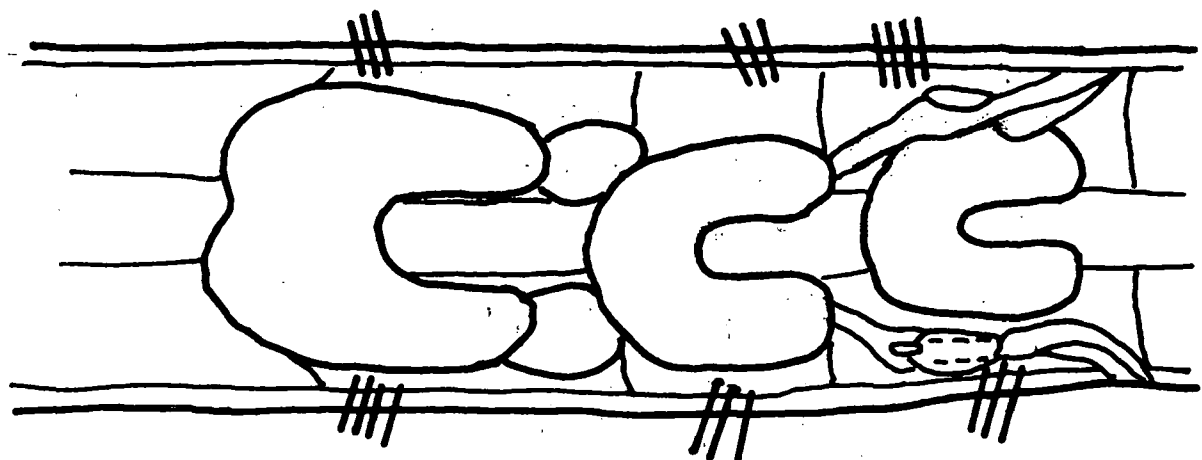


Fig. 2. *Fridericia dissimilis* n. sp. : location and shape of pharyngeal glands (schematic).
 Fig. 2. *Fridericia dissimilis* n. sp. : emplacement et dessin schématique des glandes pharyngiennes.

Table 1. Distinguishing characters of *Fridericia* species with one spermathecal diverticulum.Tableau 1. Caractères distinctifs des espèces de *Fridericia* avec spermathèque à un seul diverticule.

Species	setal formula	peptonephridia	glands at ectal orifice of spermatheca	ectal duct of spermatheca	sperm funnel width: length	seminal vesicles	septal glands
<i>F. monopera</i> Cognetti	2-2: 2-2	unbranched (type a)	1 large gland 1/3 of length of ectal duct	short, 1.5 times longer than diverticulum	1: 1-1.5	?	?
<i>F. anomala</i> Košel	2-2: 2-2	unbranched (type a)	1 small gland	narrow, long, 3-3.5 times longer than diverticulum	1: 1.5-2	absent	all pairs united dorsally
<i>F. singula</i> Niel. & Christ.	4-4,2 : 4-4,2	unbranched (type a)	absent	narrow, 3 times longer than diverticulum	1: 1.5	well developed	?
<i>F. asymmetricoides</i> Kasprzak	3,4-4,3,2: 2,3,4-4,2	branched (type c)	absent	medium, 2-2.5 longer than diverticulum	1: 2-3	absent	third pair elongated with ventral lobes
<i>F. deformis</i> Möller	2,3,4-2,3,4: 3,4-2,3,4	unbranched (type a)	1 big gland	short, wide 1.5-2 times longer than diverticulum	1:3	present in XII	united dorsally in IV
<i>F. dissimilis</i> sp.n.	3,4-2,3: 3,4,(5)-2,3,4	unbranched (type a)	1 enormously big, same length as ectal duct	short, wide about the same length as diverticulum	1: 1-1.5	small in XI	united dor- sally, last with ventral lobes

Ciezkowski 1989), bottom clayey with stones. Leg. E. Dumnicka, collected 2 May 1996.

The following description is based on material preserved with 4 % formalin, then stained in alcohol. Length of body 5 - 7 mm, number of segments 32 - 38, diameter of body in segment V : 270 - 290 μ m, in clitellar segments 310 - 350 μ m. Setae straight, with a well developed ental hook, 40 - 46 μ m in the preclitellar segments and 43 - 51 μ m long in the postclitellar segments, within a bundle the inner ones are shorter and a little thinner than the outer ones. The setal formula is as follows : 3,4 - 2,3 : 3,4 (5) - 2,3,4. Sometimes there are two setae in ventral bundles of segment II and terminal segments.

In preclitellar segments cutaneous glands small, irregularly outlined, arranged in 3 - 4 transverse rows per segment. In the postclitellar part of body such glands are smaller and less visible. Brain two times longer than wide (Fig. 1A), concave anteriorly and rounded or

almost flat posteriorly. Peptonephridia seems to be unbranched (type a), ending in the segment V. Pharyngeal glands at 4/5 - 6/7, all pairs united dorsally, last pair elongated, with well developed ventral lobes (Fig. 2). Chloragogen cells from segment V. Chylus cells present from segment XV. Coelomocytes nucleated, look granular, 18 - 25 μ m long, with small nuclei ; anucleate celomocytes very shiny, 5 - 7 μ m long, abundant in postclitellar segments.

Clitellum over XII - 1/2 XIII, a little elevated, with gland cells arranged irregularly. Seminal vesicle small, occupying a limited part of segment XI. Sperm funnels large, barrel shaped, with collar of about the same width as funnel (Fig. 1B). Heads of the spermatozoa 80 - 100 μ m long, but in some specimens longer and a little twisted. Sperm duct tightly coiled. Penial bulb small (diameter : 70 - 90 μ m). One gland, as long as ectal duct, present at the ectal orifice of each spermatheca (Fig. 1C-E). Ectal duct of about the same length as am-

pulla; most often ampullae are thick-walled, sac-shaped, but in some cases they are a little reduced, oval and very small (Fig. 1D). Sperm was never observed in ampullar lumen, where sometimes mucus concentrations were present. Only one diverticulum present, completely filled with sperm, arising from ectal part of the ampulla. Diverticulum is oval-shaped, or more elongated with sperm coiled in almost regular ball. Ampulla passes gradually into a short ental duct of the same width as ectal duct. Ental ducts join oesophagus separately.

3. Discussion

Fridericia dissimilis n. sp. belongs to a group of species, characterised by having the spermatheca with one asymmetrical diverticulum. This group consists of six species (including the new one). The six species differ from each other by some morphological and anatomical structures (see Table 1), but the main distinguishing feature is the shape of the spermatheca. Three species - *F. monopera* Cognetti 1903, *F. anomala* Kosel, 1975 and *F. deformis* Möller, 1971 - have a single gland at the ectal orifice of the spermatheca, but in *F. dissimilis* n. sp. this gland is distinctly larger than in these other species. The shape of the ampulla and diverticulum and the proportions between particular parts of the spermatheca are also characteristic for each of these species (Table 1). In *F. asymmetricoides* Kasprzak, 1972 and *F. singula* Nielsen & Christensen, 1961 diverticulum looks like a protrusion of the ampulla. The remaining species (*F. deformis*, *F. anomala* and *F. monopera*) have the diverticulum freely floating in the coelom, as in *F. dissimilis* but, *F. anomala*, like *F. singula* differs from the new species by having the ental

ducts of the spermathecae united before joining the oesophagus; *F. monopera* has a long, finger-shaped diverticulum and *F. deformis* has the sperm coiled like a figure eight.

Accompanying fauna: Larvae of Plecoptera and Chironomidae, Oligochaeta: *Cognettia sphagnetorum*, *Mesenchytraeus armatus* and Enchytraeidae genn. spp. juv. In the soil around the spring: Enchytraeidae genn. spp. juv., *Henlea* spp., *Cognettia sphagnetorum*, *Fridericia* sp. juv.

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