

Enchytraeus chaoyangensis*, a new terrestrial culture species (Enchytraeidae, Oligochaeta) from northeastern China

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(Received 7 December 1999, Accepted 11 January 2000)

Abstract – A new terrestrial enchytraeid species, *Enchytraeus chaoyangensis* n. sp., from a greenhouse in Chaoyang City, Liaoning Province of China, is described. It is close to *Enchytraeus variatus* Bouguenec et Giani, 1987, from laboratory cultures. The new species is characterized by the presence of 4–5 chaetal glands at each bundle, the medium-sized seminal vesicle, the patterns of clitellar glands and pharyngeal glands, the presence of accessory glands at the ectal pore of spermathecae and along the ectal duct, and the poorly developed and cylindrical ampullae.

Key words: Enchytraeidae, *Enchytraeus*, taxonomy, greenhouse, new species.

1. Introduction

Enchytraeus is one of the well-defined genera (Nielsen and Christensen 1959). Its members are widely distributed in marine, limnic and terrestrial habitats. In China, only two species of the genus, *Enchytraeus athecatus* Wang et al., 1999 and *Enchytraeus* sp., have been reported so far (Liang and Xie 1992, Wang et al. 1999). During the recent taxonomical investigations of Oligochaeta in north-eastern China, a terrestrial *Enchytraeus* species was found and considered to be new to science.

2. Material and methods

Worms were collected in September 1997. Specimens extracted by the wet-funnel method (O'Connor 1962) were fixed in 10% formalin. Whole worms or dissected specimens were stained in borax carmine or paracarmine and mounted

* This study was supported by a grant for systematic and evolutionary biology, the Chinese Academy of Sciences; Director Fund of the Institute of Hydrobiology, the Chinese Academy of Sciences (No. 980402); and the National Natural Science Foundation of China (NSFC) (No. 39670148).

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in Canada balsam. Measurements in the descriptions are based on fixed specimens. Types are deposited in the Specimen Room of Invertebrates, Institute of Hydrobiology, the Chinese Academy of Sciences, Wuhan, China.

3. Results

Description.

Body length 5.3–9.0 mm ($n=9$). Width 350 μm at IV, 590 μm at clitellum, 472 μm at XX. Segments 27–33 ($n=9$). Epidermal glands well developed, oval, 6–12 μm in size, 5–6 transverse rows per segment. Head pore large at 0/1. Chaetal formula: 2,3–2,3;2,3–2,3,4. Chaetae straight, with distinct ental hook, ca. 4–5 thick, 45–50 μm long in preclitellar region and 53–56 μm postclitellar, with 4–5 chaetal glands in the base of the chaetal bundle (Fig. 1G). Glands oval, each 15–20 μm by the major axis, with a distinct nucleus and evenly granulated (Fig. 1G). No supplementary chaetae. Clitellum over XII–XIII, distinctly elevated, clitellar gland cells irregularly distributed and poorly developed midventrally, large oblong granular cells (ca. 22 μm) interspersed with irregularly hyaline cells (Fig. 1E). Paired spermathecal pores in midlateral of 4/5. Paired male pores in midventral of XII. Both lateral and ventral chaetae of XII missing at maturity.

Brain at 0-I, oblong from dorsal view, slightly concave anteriorly and truncate posteriorly, 75–85 μm long and 60–66 μm wide (Fig. 1B). Pharynx in II–III, followed by a pair of postpharyngeal bulbs. Pharyngeal glands: 3 pairs at 4/5–6/7, all with distinct ventral lobes, the first and the third pairs connecting dorsally, the second pair separated. No secondary pharyngeal glands (Fig. 1A). One pair of unbranched peptonephridia in III–IV, with distinct canal, 1–2 loops coiled in 3/4 and gradually slenderized in IV (Fig. 1A and 1D). No detached chaetae in coelom. Chloragogen cells from V onwards, forming a dense layer except in clitellar region (Fig. 1A). Cell ca. 16 μm long and 30 μm high. Transition between oesophagus and intestine gradual. Dorsal vessel originating in XIII. 5 pairs preclitellar nephridia in 6/7–10/11. Preseptal part small, consisting of funnel only; postseptal part cylindrical, with well-developed nephridial tissue and canals, efferent duct terminal (Fig. 1H). Coelomocytes one type, ca. 14 μm long, elliptical or spindle, with distinct nucleus and evenly granulated (Fig. 1C).

Seminal vesicle: one pair, confined to XI, compact, medium-sized, occupying 1/3–1/2 of the coelom at XI. Testes: one pair in XI, unlobed, each with a slender shaft connecting with the body wall. Sperm funnel pear-shaped, 80–100 μm long and 60–66 μm wide; collar 54 μm wide and 10 μm high (Fig. 1F). Vasa deferentia medium long, confined to XII, irregularly coiled, ca. 16 μm wide. Penial bulbs: one pair, compact, ca. 66 μm long and 60 μm wide. Spermathecae in V. Ectal duct short, ca. 40 μm long and 20 μm wide, covering by many fine special gland cells in anterior part near the orifice, surrounded by 1–2 small gland cells. Ampulla immediately communicating with the posterior part of oesophagus in V, cylindrical, slightly wider than ectal ducts, ca. 80 μm long and 30 μm wide, with a distinct narrow lumen containing scattered spermatozoa (Fig. 1I).

Holotype

Mature whole mounted specimen.

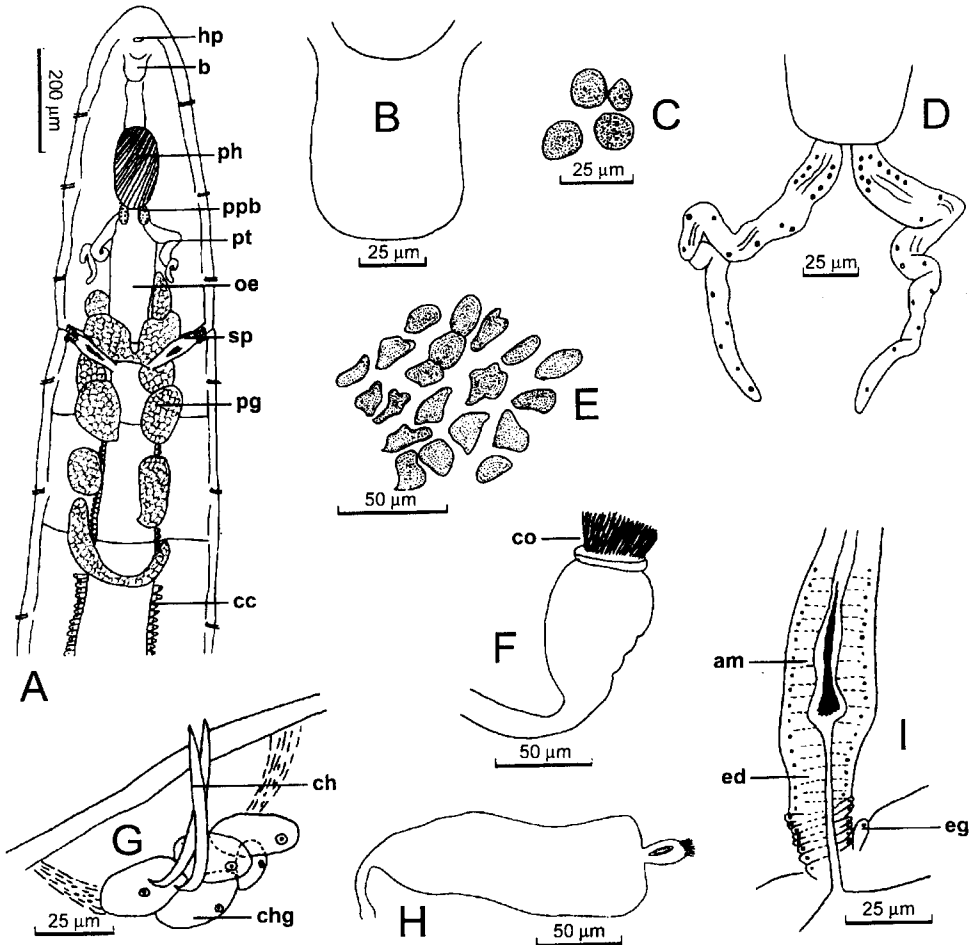


Fig. 1. *Enchytraeus chaoyangensis* n. sp.: A – dorsal view in anterior segments, B – brain, C – coelomocytes, D – peptonephridia, E – clitellar glands, F – sperm funnel, G – chaetae and chaetal glands within a bundle, H – nephridium, I – spermatheca (am – ampulla, b – brain, cc – chloragogen cells, ch – chaetae, chg – chaetal glands, co – collar, ed – ectal duct, eg – ectal glands, hp – head pore, oe – oesophagus, pg – pharyngeal glands, ph – pharynx, ppb – postpharyngeal bulbs, pt – peptonephridia, sp – spermatheca).

Type locality

Brown soils in greenhouse, under glass roots, with little litter and humus, pH 6.5–8.7, Chaoyang City, Liaoning Province, North-eastern region of China. Collected in September 1997.

Paratypes

Eight whole mounts, date and locality same as holotype.

Other examined materials

About ten mature and sixty immature specimens in 10% formalin from type locality.

Etymology

Named *chaoyangensis* for the type locality.

Remarks

Among the *Enchytraeus* species possessing chaetal glands, the new species appears to be similar to *Enchytraeus variatus* Bouguenec et Giani 1987, which also was found in laboratory cultures, by the presence of more than 2 chaetal glands per bundle, the number of chaetae, and the shape of ampullae. However, the new species differs from *E. variatus* in the patterns of the clitellar glands and the pharyngeal glands, the absence of supplementary chaetae in the base of chaetae and detached chaetae in the coelom, the larger size of the seminal vesicle (occupying 1/3–1/2 of XI), and the morphology of spermatheca (presence of ectal glands at the ectal pore and along the ectal ducts, and with a distinct ampulla slightly wider than the ectal duct). The other two species of the group, *E. bigeminus* Nielsen et Christensen, 1963, and *F. coronotus* Nielsen et Christensen, 1959, are basically bisetose, having less than 2 chaetal glands per bundle, and much developed spermathecal ampullae.

Acknowledgements – The authors are indebted to Mr. Z.F Wang for collecting the specimens.

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