

## Notes on the Enchytraeids (Oligochaeta) of the USSR

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The Enchytraeids extracted from 10 soil samples collected in the USSR have been identified. Of the 25 species found, six are described here, and some others are discussed. New taxa are: *Henlea ghilarovi* sp.n., *Bryodrilus cejkai* sp.n., *B. chernovi* sp.n., *Punahenlea* gen.n., *Punahenlea dicksoni* sp.n., *P. palmeni* sp.n., *P. taimyrensis* sp.n.

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### 1. Introduction

My colleagues Dr. N. Zalesskaja and Dr. D.S. Krivolutzky sent me soil samples collected from various parts of the USSR in 1977. The worms were extracted by the wet funnel method and identified alive (see Nielsen & Christensen 1959, 1961 and Nurminen 1970, 1973 a). Twenty-five species were found, and the new genus *Punahenlea* and six new species are described. Type specimens will be deposited in the collections of the Zoological Museum of the University of Helsinki.

### 2. Sampling localities

1. White Sea, Kandalaksha Bay, Isle of Besymianny. Sand on the shore, *Plantago maritima*, *Tripolium maritima*, *Co-hlevaria arctica*, *Puccinellia maritima*. Leg. Y. Byzova 21.VIII. 1977.

2. White Sea, Kandalaksha Bay, Isle of Riashkov. Heap of wrack. Leg. Y. Byzova 18.VIII. 1977.

3. Rostov Oblast. Grove on steppe, *Acer negundo*, *Pyrus*, *Syringa*, *Salix*. Leg. N. Zalesskaja X. 1977.

4. Moscow Oblast. Piceetum oxalidosum. Leg. N. Zalesskaja 1977.

5. Maritime Province (Primorskiy Krai), Upper Ussuri Station ca. 35 km NE of Chuguyevka. Litter of *Ulmus* wood in valley of mountain stream. Leg. G. Kurcheva 14.IX. 1977.

6. Maritime Province (Primorskiy Krai), Upper Ussuri Station. Litter of *Picea* and *Abies* forest with *Dryopteris* and *Pleurozium*. Leg. G. Kurcheva 14.IX. 1977.

7. Maritime Province (Primorskiy Krai). Leg. G. Kurcheva X. 1977.

8. Taymyr Peninsula, Kresty village. Tundra with frost-holes, *Betula nana*, *Carex ensifolia*, mosses. Leg. Y. Chernov VIII. 1977.

9. Taymyr Peninsula, Kresty village. Moss bog, *Calliergon giganteum*, *Drepanocladus revolvens*. Leg. Y. Chernov VIII. 1977.

10. Yenisey Bay, environs of Dikson settlement. Tundra with frost-holes, *Salix polaris*, *Dryas punctata*, mosses. Leg. Y. Chernov VII. 1977.

### 3. List of species with descriptions of new taxa

*Mesenchytraeus* sp. More or less immature specimens of two or three large *Mesenchytraeus* species were found in the samples from localities 9 and 10, but paucity of material prevented their closer identification.

*Cernosvitoviella atrata* (Bretsch.) 1903. Loc. 9.

*Cognettia sphagnetorum* (Vejd.) 1877. Loc. 4.

*C. glandulosa* (Mich.) 1888. Locs. 8, 9.

*Henlea perpusilla* Friend 1911 augm. Cern. 1937. Locs. 5, 9, 10.

*H. heletropha* Steph. 1922. Loc. 10.

*H. nasuta* (Eisen) 1878. Locs. 5, 8, 10.

*H. ventriculosa* (Udek.) 1854. Locs. 3, 5.

*H. glandulifera* Nurm. 1970. Loc. 10.

*H. ochracea* (Eisen) 1878 augm. Welch 1919, Nurm. 1973. Loc. 5.

#### *Henlea ghilarovi* sp.n.

Large stout species, 25—30 mm long. Number of segments 54—61. Setae straight, 4,5—3:5,6—4. Cutaneous glands in rows, inconspicuous. Clitellum extending over XII-1/2XIII, glands in regular rows. Lymphocytes discoid, of usual *Henlea* type. Transition between oesophagus and intestine sudden, with no diverticula. Dorsal vessel originating in anterior third of segment IX as a pulsating expansion, smaller expansions present in VIII and VII (Fig. 2); blood colourless. Three pairs of septal glands. Brain slightly incised posteriorly. Sperm funnel rather large, about three times as long as wide, collar broader than body of funnel (Fig. 1). Spermatheca with spindle-shaped ampulla, ectal duct of

medium length, with no glands at the ectal orifice (Fig. 3).

Locs. 9, 10.

Named after the famous Soviet soil biologist M.S. Ghilarov.

In essential characteristics this species resembles *Henlea heleoetropa*, originally described from Spitsbergen; however, *H. ghilarovi* is considerably larger and more robust.

*Bryodrilus ehlersi* Ude 1892. Loc. 10.

*B. borealis* Cejka 1912, which was found on Taymyr and New Siberian Islands (Cejka 1912), is very similar to *B. ehlersi*. The most conspicuous separating characteristic is the gland at the ectal opening of the spermatheca. As, unfortunately this collection of worms did not contain any specimens of *B. borealis*, a close comparison of the oesophageal diverticula was not possible.

#### ***Bryodrilus cejkai* sp.n.**

Large species, up to 30 mm long, yellowish. Number of segments 61–81. Cutaneous glands small, in irregular rows, occasionally yellow or yellow-brown. Clitellum extending over XII-1/2XIII, the small clitellar glands in regular rows. Setae slightly sigmoid, 3,4–3:5,6–3,4,5. Brain longer than wide, indented posteriorly. Nephridia of *Henlea* type. Three pairs of septal glands. Chloragogen cells present from segment VII. Four oesophageal appendages present in VI, pulsating in living specimens; they contain several small chambers (Fig. 5). Gradual transition between oesophagus and intestine. Lymphocytes discoid, thick and yellowish, present in large numbers. Dorsal vessel arising exceptionally far behind clitellum, at XIX/XX; blood colourless. Seminal vesicle absent. Sperm funnel small (Fig. 4). Spermatheca simple, ampulla spindle-shaped, ectal duct without glands at the ectal orifice. Ental ducts joining before communicating with the oesophagus.

Loc. 5.

#### ***Bryodrilus chernovi* sp.n.**

Large stout species, ca. 30 mm long, yellowish. Number of segments 52–70. Cutaneous glands small, in regular rows, occasionally yellowish. Clitellum extending over XII-1/2XIII, with small glands in regular rows. Setae slightly sigmoid, 4,5–4:5,6–3,4,5,6. Brain longer than wide, indented posteriorly. Nephridia of *Henlea* type. Three pairs of septal glands. Four oesophageal appendages present in segment VI, pulsating in living specimens; they contain large cavities (Fig. 6). Gradual transition between oesophagus and intestine. Lymphocytes discoid, yellowish, present in large numbers. Dorsal vessel arising in XIII; blood colourless (Fig. 8). Seminal vesicle present in X-XI, giving that region a brown tinge. Sperm funnel large, ca. six times as long as wide, with a wide collar (Fig. 7). Spermatheca with long ectal duct without glands at the ectal orifice, pear-shaped ampulla of medium size. Ental ducts joining before communicating with the oesophagus.

Locs. 9, 10.

These two new *Bryodrilus* species differ from those described previously in size, origin of dorsal vessel, and presence of a seminal vesicle. Only *B. cockerelli* Bell 1947 from Amagu, Siberia, is of the same size, but it differs from these in the form of the spermatheca and the origin of the dorsal vessel. *B. arctica* (Bell 1962) sensu Holmquist 1968 from Alaska also possesses a seminal vesicle, but the spermatheca differs in shape and has glands at its origin.

#### ***Punahenlea* gen.n.**

Setae straight, nodulus absent. Head pore at 0/I. Dorsal pores absent. Oesophagus expanding rather abruptly into intestine. Intestinal diverticula present or absent at the transition. Peptonephridia absent, but oesophageal appendages present in segment VI. Nephridia with well-developed interstitial tissue. Dorsal vessel arising in the anteclitellar region; blood red or colourless. Brain slightly longer than wide and more or less incised posteriorly. Lymphocytes of one size only, discoid. Seminal vesicle present, egg sac absent. Spermathecae simple, with or without glands at the ectal orifice. Ental ducts of spermathecae joining before becoming attached to the oesophagus.

This genus strongly resembles the Holarctic genus *Henlea*: the lymphocytes and nephridia are similar, oesophageal appendages are present and there may be intestinal diverticula at the transition between the oesophagus and intestine; even the dorsal vessel originates in the same region. The distinguishing characters of this genus are the presence of a well-developed seminal vesicle and commonly red blood (Table 1).

One species of this genus is named after the Professor of Zoology, now the Chancellor of the University of Helsinki, Ernst Palmén, who in 1965 brought me soil samples from the vicinity of Lake Baikal. In these samples the first specimens of the genus *Punahenlea* were detected, though then remaining unnamed (Nurminen 1973b). Now I have the opportunity to name the species then described as *Punahenlea irkutensis*.

#### ***Punahenlea dicksoni* sp.n.**

Small species, 10–13 mm long, pinkish owing to the colour of the blood. Segments (28) 35–45. Cutaneous glands small, inconspicuous. Clitellum extending over XII-1/2XIII, glands small, dark, in regular rows. Setae straight, 2,3–2:3,4–2. Nephridia and lymphocytes of *Henlea* type. Chloragogen cells brownish, nucleated,

Table 1. Characters of *Punahenlea* species.

|                               | <i>P. dicksoni</i> | <i>P. irkutensis</i> | <i>P. palmeni</i>     | <i>P. taimyrensis</i> |
|-------------------------------|--------------------|----------------------|-----------------------|-----------------------|
| No. of segments               | 35—45              | ca. 50               | 52—55                 | ca. 60                |
| Origin of dorsal vessel       | IX                 | IX                   | VIII                  | IX                    |
| Colour of blood               | red                | colourless           | colourless or reddish | colourless or reddish |
| Oesophageal appendages        | large, pulsating   | small                | small                 | small                 |
| No. of intestinal diverticula | 4                  | 2                    | 0                     | 4                     |
| Presence of seminal vesicle   | +                  | +                    | +                     | +                     |
| Sperm funnel                  | small              | large                | large                 | large                 |
| Ectal glands of spermatheca   | —                  | +                    | —                     | +                     |

present from segment VI. Three pairs of septal glands. Oesophageal appendages present in VI; they are elongated, containing chambers and pulsating as in the genus *Bryodrilus*. Four intestinal diverticula present at transition between oesophagus and intestine in VIII. Dorsal vessel originating in IX as a conspicuous expansion; smaller expansions present in a few forward segments (Fig. 9); blood red. Seminal vesicle present in X-XI, giving the region a brown tinge. 1—2 eggs present at a time. Spermatheca simple, with no glands at the ectal orifice. Ampulla spindle-shaped, ental ducts joining before communicating with the oesophagus. Sperm funnel small, with long and coiling vas deferens.

Loc. 10.

#### *Punahenlea palmeni* sp.n.

Medium-sized species, 13—16 mm long, often pinkish owing to the colour of the blood. Segments 52—55. Cutaneous glands in transverse rows. Clitellum extending over XII-1/2XIII, clitellar glands in transverse rows. Setae straight, 4—4:4,5,6—4. Nephridia and lymphocytes of *Henlea* type. Chloragogen cells present from VI, brownish in colour. Three pairs of septal glands. Oesophageal appendages present in VI, small, globular in form. No diverticula at transition between oesophagus and intestine. Dorsal vessel originating in segment VIII as a pulsating expansion; blood colourless or faintly red (Fig. 12). Seminal vesicle present in X-XI, giving the region a brown tinge. Sperm funnel ca. five times as long as wide, with wide collar (Fig. 11). Spermatheca without glands at ectal orifice, ampulla pear-shaped and ental ducts joining before communicating with the oesophagus (Fig. 10). (One of the specimens studied possessed two complete sets of spermathecae in the same segment.)

Loc. 10.

#### *Punahenlea taimyrensis* sp.n.

Large species, ca. 25 mm long, stout. Segments about 60. Cutaneous glands in transverse rows. Clitellum extending over XII-1/2XIII, glands arranged in rows. Setae straight, 4,5—4:5,6—5,6. Nephridia and lymphocytes of *Henlea* type. Three pairs of septal glands. Small oesophageal appendages present in VI. Two pairs of intestinal diverticula present at transition between oesophagus and intestine. Dorsal vessel originating in IX as a pulsating expansion (Fig. 15); blood colourless or faintly red. Seminal vesicle present in X-XI, deeply brown. Sperm funnel large, about four times as long as wide, collar as wide as body of funnel (Fig. 14). Spermatheca large, with longish glands at the ectal orifice. Ampulla elongated, ental ducts joining before communicating with the oesophagus (Fig. 13).

Loc. 10.

*Fridericia bulbosa* (Rosa) 1887. Loc. 10.

*F. callosa* (Eisen) 1878. Locs. 8, 10.

*F. ratzeli* (Eisen) 1872. Locs. 3,4,10.

*Enchytraeus buchholzi* Vejd. 1879. Locs. 3,6.

*E. minutus* N.&C. 1961. Locs. 3,6,7.

*E. albidus* Henle 1837. Locs. 1,2.

*Lumbricillus rivalis* Lev. 1883 augm. Ditlev. 1904. Loc. 1.

*L. lineatus* (O.F. Müller) 1774. Loc. 1.

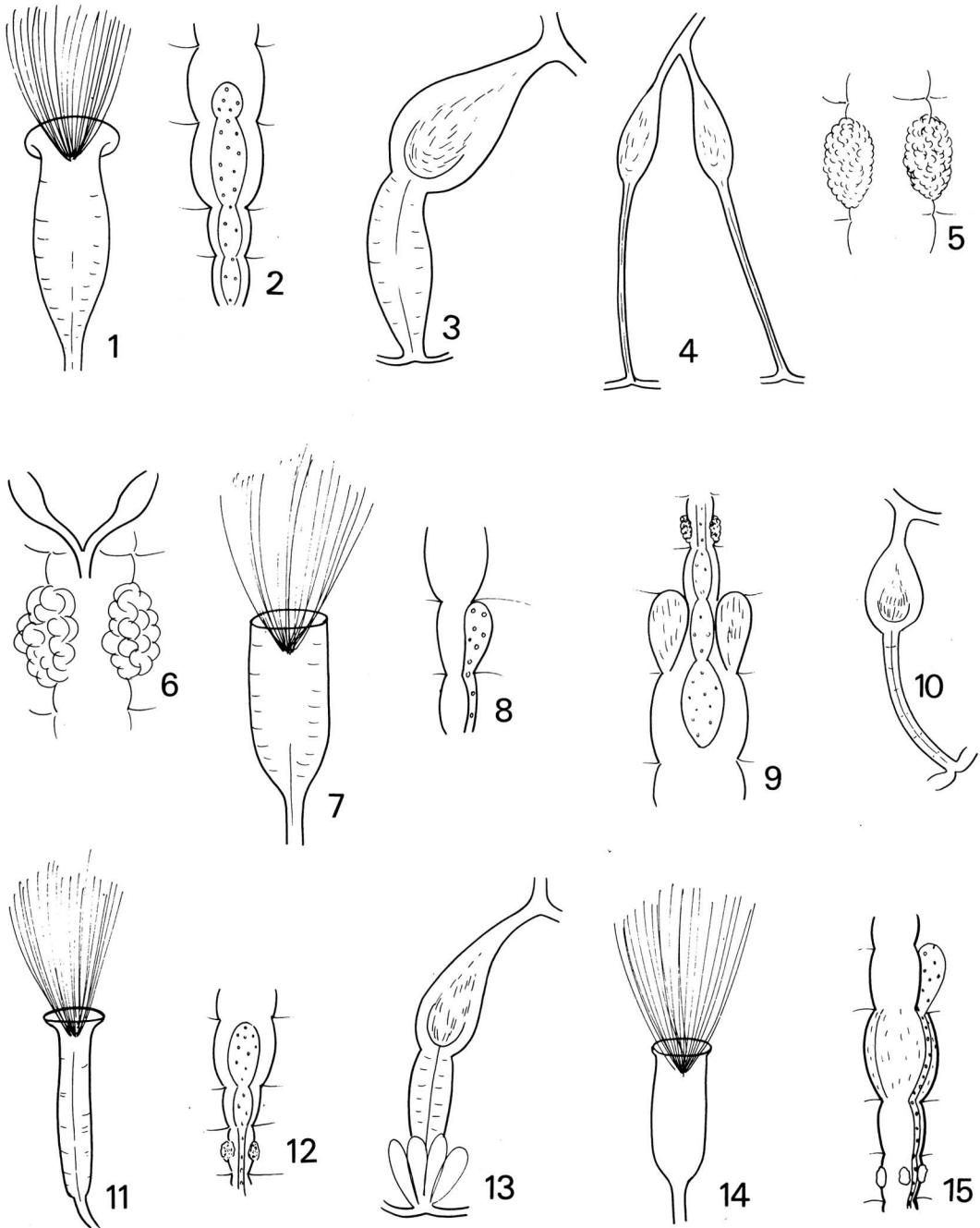
#### 4. Discussion

Earlier accounts of the Enchytraeidae of the USSR were discussed in Nurminen (1973b). Subsequently, reports concerning the northern parts of the country have been published by Shurova (1974) and Timm & Popčenko (1978).

Shurova listed the *Lumbricillus* species from the intertidal zone of the Kurile Islands. She reported *L. annulatus* Eisen 1904 and *L. mirabilis* Tynen 1969 and augmented their descriptions, mentioned *L. nipponicus* (Yamaguchi) 1937, and described four new species: *L. kurilensis*, *L. alaricus*, *L. orientalis* and *L. rufulus*.

Timm & Popčenko described two new species: *Mesenchytraeus tetrapodus* Timm and *M. viivi* Timm, further they reported *Mesenchytraeus armatus* (Lev.) 1885, *Cernosvitoviella atrata* (Bretsch.) 1903, *Cognettia* sp., *Fridericia* sp., *Enchytraeus albidus* Henle 1837, *Lumbricillus lineatus* (O.F. Müller) 1774 and *Marionina subterranea* (Knöll.) 1935. The material was collected from the Murmansk region on the Kola Peninsula in coastal waters and ca. 80 inland waters.

The fact that even small collections of Enchytraeids from the northern parts of the USSR yield several new species proves that the vast Eurasian continent still offers ample scope for



Figs. 1—15. — *Henlea ghilarovi*: 1, sperm funnel. 2, origin of dorsal vessel. 3, spermatheca. — *Bryodrilus cejkai*: 4, sperm funnels. 5, oesophageal appendages in VI. — *Bryodrilus chernovi*: 6, spermatheca and oesophageal appendages. 7, sperm funnel. 8, origin of dorsal vessel. — *Punahenlea dicksoni*: 9, origin of dorsal vessel, intestinal and oesophageal appendages. — *Punahenlea palmeni*: 10, spermatheca. 11, sperm funnel. 12, dorsal vessel and oesophageal appendages. — *Punahenlea taimyrensis*: 13, spermatheca. 14, sperm funnel. 15, origin of dorsal vessel, intestinal and oesophageal appendages.

taxonomic work. Most species, however, are the common Holarctic ones (Nurminen 1973b, c). It is especially interesting to find species described by Gustav Eisen, which were collected a hundred years ago during a voyage preparatory to the

famous discovery of the Northeast passage by the Finnish explorer N.A.E. Nordenskiöld.

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