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RARE AND LOCALLY DISTRIBUTED HELMINTH SPECIES OF PALAEARCTIC: *KURILONEMA MARKOVI* (NEMATODA, RHABDIASIDAE), THE LUNG PARASITE OF THE JAPANESE FIVE-LINED SKINK, *EUMECES LATISCUTATUS* (REPTILIA, SAURIA, SCINCIDAE)

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Rare and Locally Distributed Helminth Species of Palaearctics: *Kurilonema markovi* (Nematoda, Rhabdiasidae), the Lung Parasite of the Japanese Five-lined Skink, *Eumeces latiscutatus* (Reptilia, Sauria, Scincidae). Kuzmin Y. I., Sharpilo V. P. — The nematode *Kurilonema markovi* Szczerbak et Sharpilo, 1969 is redescribed based on new material. The validity of the genus *Kurilonema* Szczerbak et Sharpilo, 1969 is confirmed and its improved diagnosis is provided. *Kurilonema* Szczerbak et Sharpilo, 1969 is compared with and differentiated from the closely related genus *Neoentomelas* Hasegawa, 1989 by the presence of 6 circumoral lips, and from *Entomelas* Travassos, 1930, first of all, by the absence of teeth on the bottom of buccal capsule. The affinities between *Kurilonema* and other genera of Rhabdiasidae are discussed.

Key words: Nematoda, Sauria, Scincidae, Rhabdiasidae, *Kurilonema*, *K. markovi*, *Eumeces latiscutatus*, Kunashir.

Редкие и локально распространенные виды гельминтов Палеарктики: *Kurilonema markovi* (Nematoda, Rhabdiasidae), паразит легких дальневосточного сцинка, *Eumeces latiscutatus* (Reptilia, Sauria, Scincidae). Кузьмин Ю. И., Шарпило В. П. — Приведено переописание нематоды *Kurilonema markovi* Szczerbak et Sharpilo, 1969 на основании изучения нового материала. Подтверждается валидность рода *Kurilonema* Szczerbak et Sharpilo, 1969 и приводится дополненный диагноз рода. Род *Kurilonema* дифференцируется от наиболее близкого рода *Neoentomelas* Hasegawa, 1989 по наличию 6 околоротовых губ, и от рода *Entomelas* Travassos, 1930, прежде всего, по отсутствию зубов на дне ротовой капсулы. Обсуждаются гипотетические родственные связи рода *Kurilonema* и других родов семейства Rhabdiasidae.

Ключевые слова: Nematoda, Sauria, Scincidae, Rhabdiasidae, *Kurilonema*, *K. markovi*, *Eumeces latiscutatus*, Кунашир.

Introduction

The nematodes of the family Rhabdiasidae Railliet, 1916 are common lung parasites of amphibians and some reptiles. The latter host group includes exceptionally representatives of the order Squamata. About 10 species of the family were found in snakes (Serpentes). One of these species belongs to the genus *Acanthorhabdias* Pereira, 1927, the others belong to the genus *Rhabdias* Stiles et Hassall, 1905. Parasites of lizards (Sauria) are more heterogeneous taxonomically. Various authors regarded them as belonging to the genera *Rhabdias* Stiles et Hassall, 1905, *Entomelas* Travassos, 1930, *Hexadontophorus* Kreis, 1940, *Neoentomelas* Hasegawa, 1989, *Paraentomelas* Sharpilo, 1976, *Pneumonema* Johnston, 1916 and *Kurilonema* Szczerbak et Sharpilo, 1969.

The genus *Kurilonema* Szczerbak et Sharpilo, 1969 was erected for one species, *K. markovi* Szczerbak et Sharpilo, 1969, found in the lungs of the Japanese five-lined skink, *Eumeces latiscutatus* (Hallowell) on Kunashir Island. The genus was differentiated from the genus *Rhabdias* Stiles et Hassall, 1905 by large barrel-shaped buccal capsule and absence of terminal needle on the tail, and from the genus *Entomelas* Travassos, 1930 by the absence of teeth (*onchia*) on the bottom of buccal capsule and by anterior end morphology (Szczerbak et Sharpilo, 1969). The specificity of *K. markovi* Szczerbak et Sharpilo, 1969 to scincid lizard was also taken into consideration in the differential diagnosis.

Baker (1980), in his revision of the genus *Entomelas* Travassos, 1930, considered the absence of teeth as "insufficient grounds to propose a new genus" (Baker, 1980, p. 88) and synonymised *Kurilonema* Szczerbak et Sharpilo, 1969 with *Entomelas* Travassos, 1930, reclassifying *K. markovi* Szczerbak et Sharpilo, 1969 as *E. markovi* (Szczerbak et Sharpilo, 1969) Baker, 1980.

Hasegawa (1989) described a rhabdiasid nematode *Neoentomelas asatoi* Hasegawa, 1989 from the Japanese ateucho-saurus, *Ateuchosaurus pellopleurum* (Hallowell) (Scincidae) from Ryukyu Archipelago, which he placed into a new genus *Neoentomelas* Hasegawa, 1989. The genus was differentiated from *Entomelas* Travassos, 1930 *sensu* Baker, 1980 and the obvious affinities between *N. asatoi* and *K. markovi* were not mentioned.

In our investigation on nematodes from the family Rhabdiasidae Railliet, 1916, we came to some conclusions which disagreed Baker's (1980) revision and synonymisations (see, for example, Kuzmin, 1996). In our opinion, the recent information on the morphology, host specificity and distribution of rhabdiasid nematodes allows to confirm the validity of the genus *Kurilonema* Szczerbak et Sharpilo, 1969. The specimens from type series of *K. markovi* were partially destroyed, as it follows from figure 1 in Szczerbak et Sharpilo (1969) and from our examination of type material. That is why we give in the present article the description of *K. markovi* Szczerbak et Sharpilo, 1969 based on new material and the additions to the diagnosis of the genus *Kurilonema* Szczerbak et Sharpilo, 1969. The affinities between the genus *Kurilonema* and other genera of the family Rhabdiasidae are briefly discussed.

Material and methods

Material collected from the type host, *Eumeces latiscutatus*, on Kunashir Island was investigated. A sample containing 30 specimens of *K. markovi* was used for morphological studies and compared with the type series (holotype and 8 paratypes). Eleven specimens were measured. Nematodes stored in 70% ethanol were washed in distilled water and clarified by gradual evaporation from a 10% solution of glycerol in 70% ethanol. All material studied is deposited in the helminthological collection of the Department of Parasitology, I. I. Schmalhausen Institute of Zoology (Kyiv, Ukraine).

Results

1. Description of *K. markovi* adult hermaphrodites from the lungs of *E. latiscutatus* (fig. 1). Small nematodes. Body slender, head end truncate, tail end tapering. Body length 1.77 (1.56–2.0)* mm, maximum width 85 (74–100). Body cuticle somewhat inflated in anterior body part, the inflation gradually decreasing posteriorly. Oral opening large, oval-shaped, with longer axis orientated laterally (fig. 1 C). Six lips small. Flat and narrow circumoral cuticular ring separates edge of oral opening from the lips. Buccal capsule large, almost spherical, 32 (30–34) deep and 35 (34–36) wide. Oesophagus club-shaped, 242 (210–274) long (14 (12–17)% of body length). Posterior bulb 38 (34–44) wide, containing bodies and cells of oesophageal glands. Nerve ring situated 86 (70–96) from anterior end of oesophagus (35 (30–39)% of oesophagus length). Excretory pore situated posteriorly to nerve ring. Excretory duct short, curved ventrally. Excretory glands narrow, comparatively short, widened posteriorly. Intestine wide, thick-walled. Genital system amphidelphic. Vulva at 0.98 (0.88–1.20) mm from anterior end (55.1 (48.9–60.2)% of general length). Vulva lips indistinct. Uteri tubular, each containing from 1 to 4 eggs arranged in one row. Ovaries reflexed, bending contrawards at oocyte growth zone. Rectum short, conical, with prominently sclerotised walls. Tail conical, 86 (80–94) long (4.9 (4.0–5.6)% of body length). Egg size 70–80×40 (after Szczerbak et Sharpilo, 1969).

2. Amendment to the differential diagnosis of the genus *Kurilonema* Szczerbak et Sharpilo, 1969.

Morphologically the genus *Kurilonema* Szczerbak et Sharpilo, 1969 resembles the genus *Neoentomelas* Hasegawa, 1989 (as it became clear after the description of the latter genus by Hasegawa, 1989) in the laterally elongated oral opening, spherical shape and relatively large size of the buccal capsule, comparatively small body size and small number of eggs in uteri of parasitic hermaphrodites. The species from the both genera are specific parasites of scincid lizards occurring in Eastern Palaearctic. *Kurilonema* Szczerbak et Sharpilo, 1969 may be distinguished from *Neoentomelas* Hasegawa, 1989

* Mean value followed by limits in parentheses. All measurements are in micrometers unless otherwise indicated.

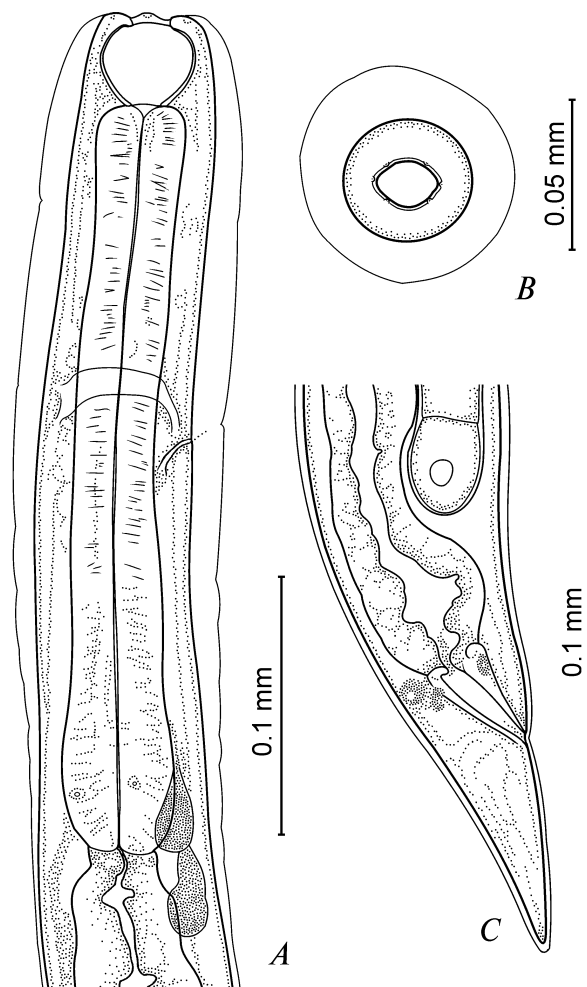


Fig. 1. *Kurilonema markovi*: A — anterior end; B — head end, apical view; C — posterior end.

Рис. 1. *Kurilonema markovi*: A — передний конец тела; B — головной конец апикально; C — хвостовой конец.

by six circumoral lips present in *K. markovi* Szczerbak et Sharpilo, 1969 versus two (dorsal and ventral) pseudolabia found in *N. asatoi* Hasegawa, 1989 (type and only species of *Neoentomelas* Hasegawa, 1989) (Hasegawa, 1989). *Kurilonema* Szczerbak et Sharpilo, 1969 resembles *Entomelas* Travassos, 1930 (Szczerbak et Sharpilo, 1969) in the relative size and shape of buccal capsule and may be distinguished from the latter genus by the absence of teeth on the buccal capsule bottom. *Kurilonema* Szczerbak et Sharpilo, 1969 may be distinguished from the other genera of the family Rhabdiasidae Railliet, 1916 (i. e. *Rhabdias* Stiles et Hassall, 1905, *Acanthorhabdias* Pereira, 1927 and *Pneumonema* Johnston, 1916) by comparatively larger size of the buccal capsule, which is of the same width or wider than the anterior end of oesophagus.

Discussion

The differentiation of species and genera of the family Rhabdiasidae is often characterised as rather complicated, mostly due to the morphological uniformity of this group and absence of mails in parasitic generation (Chu, 1936; Baker, 1978). Present knowledge on the morphology of different species suggests that it is the anterior end

morphology that may be used in most cases for adequate differentiation of species and higher taxa. From this point of view, presence or absence of teeth (*onchia*) must not be neglected and should be considered as one of important diagnostic characters. The teeth were so far observed in 6 rhabdiasid species, all belonging to the genus *Entomelas* Travassos, 1930. These species also possess comparatively large buccal capsule and parasitize lizards from the families Agamidae (1 species) and Anguidae (4 species) and anuran amphibians (1 species) from Ceylon, Western Palaearctic and South Africa, respectively. We propose here to consider the presence of teeth as diagnostic character for the genus *Entomelas*. From this point of view, *K. markovi* must not be included into *Entomelas*.

Close morphological and ecological affinities between *K. markovi* and *N. asatoi* allow, in our opinion, to hypothesise that the genera *Kurilonema* and *Neoentomelas* represent a separate lineage in the natural history of rhabdiasid nematodes, which might have evolved independently from *Rhabdias*-like and *Entomelas*-like rhabdiasids. Several monotype genera existing within the family Rhabdiasidae (*Acanthorhabdias*, *Kurilonema*, *Neoentomelas*, *Pneumonema*) possibly represent the relict taxa, the remains of ancient diversity of the group.

- Baker M. R.* Morphology and taxonomy of *Rhabdias* spp. (Nematoda: Rhabdiasidae) from reptiles and amphibians of southern Ontario // *Can. J. Zool.* — 1978. — **56**. — P. 2127–2141.
- Baker M. R.* Revision of *Entomelas* Travassos, 1930 (Nematoda: Rhabdiasidae) with a review of genera in the family // *System. Parasitol.* — 1980. — N 1–2. — P. 83–90.
- Chu T.* A review of the status of the reptilian nematodes of the genus *Rhabdias* with a description of *Rhabdias fuscovenosa* var. *catanensis* (Rizzo, 1902) new rank // *J. Parasitol.* — 1936. — **22**. — P. 130–139.
- Hasegawa H.* *Neoentomelas asatoi* gen. et sp. n. (Nematoda: Rhabdiasidae) from skinks of the Ryukyu Archipelago, Japan // *Proc. Helminthol. Soc. Washington.* — 1989. — **56**, 2. — P. 145–150.
- Kuzmin Y. I.* Some new data on the biology of rhabdiasid nematodes (Nematoda: Rhabdiasidae) // Abstract of the VII European Multicolloquium of Parasitology, 2–6 September, 1996, Parma, Italy. — *Parassitologia.* — 1996. — **38**, N 1–2. — P. 115.
- Shcherbak N. N., Sharpilo V. P.* Materials on systematics, ecology and parasite fauna of the reptiles of Kuril Islands. Communication 1. // *Vestnik Zoologii.* — 1969. — N 4. — P. 18–25. — [Материалы к систематике, экологии и паразитофауне пресмыкающихся Курильских островов. Сообщение 1 // *Вестн. зоологии*] (In Russian).