
RESEARCH NOTES

НАУЧНЫЕ ЗАМЕТКИ

FIRST FINDING OF *MACYELLA APODEMI* (DIGENEA, PLEUROGENIDAE) IN RUSSIA

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This paper presents data on the trematode *Macyella apodemi* recorded for the first time in Russia. Three mature specimens have been found in the diverticula of the small intestine of *Apodemus uralensis* (Rodentia, Muridae) in the Mordovia State Nature Reserve (European Russia) in 2022. Here, a detailed morphological and morphometrical description of this digenean species is provided. *Apodemus uralensis* is noticed as a new host for *Macyella apodemi*.

Key words: *Apodemus*, Mordovia State Nature Reserve, parasitic worms, rodents, trematodes, Ural field mouse

The trematode *Macyella apodemi* Jourdan & Triquell, 1973 (Digenea, Pleurogenidae) is a very rare parasite of wood rodents, mainly mice. This species was first described by Jourdan & Triquell (1973) from the wood-dwelled species *Apodemus sylvaticus* (Linnaeus, 1758). Previously, findings of *Macyella apodemi* were known only from rodents in the Pyrenees (Jourdan & Triquell, 1973; Montoliu & Feliu, 1986; Ribas et al., 2005). Another species of the genus *Macyella* from rodents, *M. vassilevi* Jancev, 1974, was described from *Apodemus sylvaticus* in the Balkan Mountains (Jancev, 1974). Due to the high morphological similarity of these two species, Montoliu & Feliu (1986) proposed their synonymy. Kanarek et al. (2017) also agree with this opinion because they believe that morphological and morphometrical features of these *Macyella* species do not considerably differ. Unfortunately, molecular data have not been obtained from these digenean species yet.

The complex parasitological surveys of small mammals in the Mordovia State Nature Reserve were conducted in May and July of 2022–2023. In July 2022, three mature *Macyella apodemi* specimens were collected from the diverticula of the small intestine of one male of *Apodemus uralensis* (Pallas, 1811) in the vicinity of Taratinskiy cordon (54.746334° N, 43.085931° E) in the Mordovia State Nature Reserve (Republic of Mordovia, Russia). The prevalence of infection was 7.1% (one of 14 rodents), with mean an intensity of 0.21.

Trematodes were recovered from the small intestine of *Apodemus uralensis* and immobilised

by heating in a saline solution. Then, the trematode specimens were stained with acetic carmine, dehydrated, cleared in clove oil and mounted in Canada balsam. The line drawing of *Macyella apodemi* was made using a Levenhuk M500 BASE Digital Camera and RA-7 drawing tube attached to an MBI-9 light microscope. Morphological identification of this digenean species was carried out according the keys of Genov (1984) and Jourdan & Triquell (1973). A voucher specimen was deposited at the Institute of Ecology of the Volga River Basin RAS (Togliatti, Russia).

A morphological description of *Macyella apodemi* from *Apodemus uralensis* (based on three mature specimens) is provided below (see Fig. 1). Mean values are provided in parentheses. The body is pear-shaped with a length of 0.626–0.684 (0.653) mm and maximum width of 0.412–0.433 (0.422) mm at the level of the testes. Tegument is armed with small spines. Oral sucker is round, subterminal; its size is 0.083–0.087 (0.085) × 0.087–0.091 (0.089) mm. Prepharynx is indistinguishable. Pharynx size is 0.037–0.040 (0.039) × 0.034–0.038 (0.036) mm. Ventral sucker is pre-equatorial, slightly larger than the oral one; its size is 0.095–0.100 (0.097) × 0.099–0.112 (0.105) mm. Esophagus is short, with length of 0.067–0.079 (0.072) mm, almost reaching the ovary. Intestinal bifurcation is located at the level of the ovary. Intestinal branches are located laterally, reaching the level of the testes. The ends of the intestinal branches are indistinguishable, because they are hidden by the uterus loops filled with eggs.

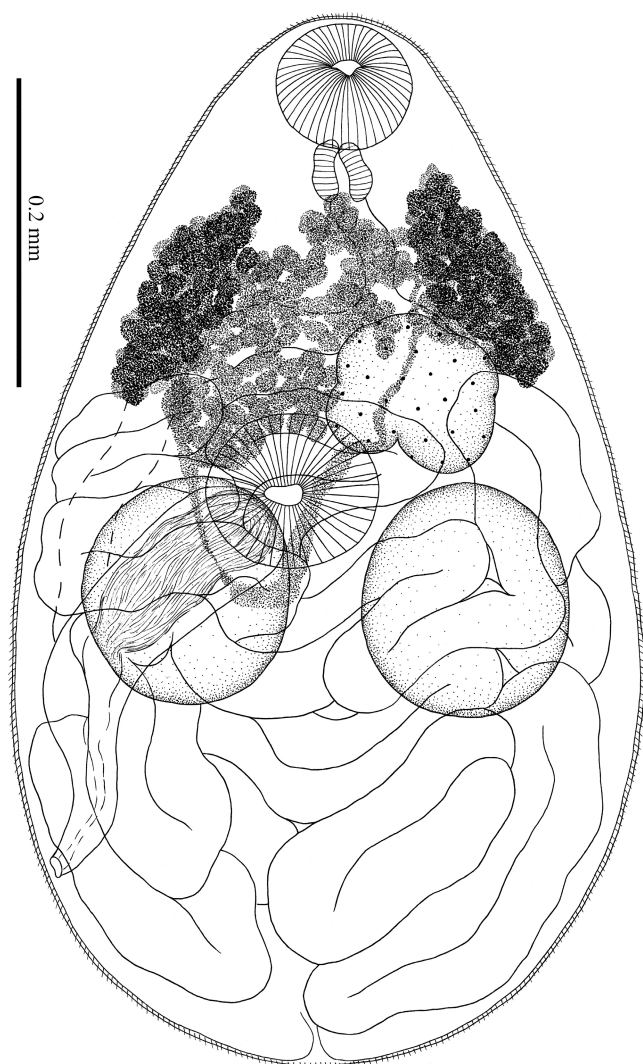


Fig. 1. The trematode *Macyella apodemi* from *Apodemus uralensis*; general view.

Testes are oval, located laterally at the posterior edge of ventral sucker, approximately at the same level. Sinistral testis size is 0.135–0.150 (0.144) × 0.119–0.133 (0.126) mm, dextral testis size is 0.141–0.152 (0.145) × 0.122–0.135 (0.129) mm. Sinister testis is more or less overlapped by the posterolateral edge of ventral sucker. Cirrus sac is elongated (0.283–0.315 (0.298) × 0.067–0.073 (0.070) mm), passes from the left body edge to the anterior edge of the left testis, by curving in an S-shape. Proximal end of cirrus sac may be more or less overlapped by posterolateral edge of ventral sucker. Seminal vesicle is convoluted and occupies all proximal part of cirrus sac. Genital pore opens ventrally at the left edge of body in its posterior third. Ovary is lobed; its size is 0.100–0.110 (0.105) × 0.087–0.112 (0.097) mm, located slightly anterior and lateral to ventral sucker. Vitellarium consists of irregularly shaped follicles located laterally in two compact groups. Vitelline fields extend from the pharynx level to the anterior edge of ventral sucker and on the dorsal side of the body they joined. Uterus

forms numerous loops and occupies the whole space from ventral sucker to the posterior body end. Uterus loops can rise to the level of vitellarium. Eggs are numerous and oval; their size is 0.024–0.029 (0.026) × 0.011–0.015 (0.013) mm.

All three *Macyella apodemi* specimens are similar in morphological and morphometric characteristics. The characteristic features of the species were always present. In general, these *M. apodemi* specimens correspond very well to the previous descriptions of this digenean species in the main morphological and morphometric characteristics (Jourdane & Triquell, 1973; Jancev, 1974; Montoliu & Feliu, 1986).

The finding of mature trematodes in *Apodemus uralensis* indicates that this rodent species is the final host for *Macyella apodemi*. The animal species become infected with this parasite by eating terrestrial insects (Genov, 1984). Thus, *M. apodemi* is recorded for the first time from rodents in Russia, while *A. uralensis* is noticed as a new trematode host.

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ПЕРВОЕ ОБНАРУЖЕНИЕ *MACYELLA APODEMI* (DIGENEA, PLEUROGENIDAE) В РОССИИ

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Трематода *Macyella apodemi* впервые зарегистрирована у грызунов фауны России. Три половозрелых экземпляра *M. apodemi* обнаружено в дивертикулах тонкого кишечника вида *Apodemus uralensis* в Мордовском государственном заповеднике (Европейская Россия) в 2022 г. В данной статье приведены морфологическое и морфометрическое описание этого вида дигеней. *Apodemus uralensis* отмечен в качестве нового хозяина для *M. apodemi*.

Ключевые слова: *Apodemus*, грызуны, малая лесная мышь, Мордовский государственный заповедник, паразитические черви, трематоды