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A NEW SPECIES OF WATER MITES OF THE GENUS *MIDEOPSIS* NEUMAN (ACARIFORMES, MIDEOPSIDAE) FROM RUSSIA

НОВЫЙ ВИД ВОДЯНОГО КЛЕЩА РОДА *MIDEOPSIS* (ACARIFORMES, MIDEOPSIDAE) ИЗ РОССИИ

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Ключевые слова: Mideopsidae, *Mideopsis*, водяные клещи, самка, самец, личинка

ABSTRACT

An illustrated description of female, male and larva of the water mite *Mideopsis rossicus* **sp.n.** collected in the rivers of the Kemerovo and the Yaroslavl provinces of Russia is given.

РЕЗЮМЕ

Иллюстрированное описание самки, самца и личинки нового вида водяного клеща *Mideopsis rossicus* из проточных водоемов Кемеровской и Ярославской областей.

INTRODUCTION

The world fauna of the genus *Mideopsis* includes about 130 species [Viets, 1987]. Only 2 species of this genus, *M. orbicularis* (Müller, 1776) and *M. crassipes* Soar 1904, are known in the fauna of Russia and adjacent countries [Sokolow, 1940]. A new species of the genus was collected by the author in the rivers of the Kemerovo and the Yaroslavl provinces. This new species is described in the present paper.

MATERIAL AND METHODS

Holotype. Female, river Kondoma (inflow of the river Tom'), in the vicinities of the city of Novokuznetsk, Kemerovo Province, Russia, 15.08. 1973. The river bottom: pebble and sand, depth 1 m. The holotype is deposited in the collections of the Institute for Biology of Inland Waters of the Russian Academy of Sciences, Borok, Russia (slide No.4209).

Paratypes. 4 ♀♀, 3 ♂♂ are collected together with the holotype. 1 ♀, Kamenka river (inflow of the river Sit') near village Sit'-Pokrovskoye, Breytovo District, Yaroslavl Province, Russia, 19.06. 1975. The river bottom: stones, sand and detritus, depth 0.5 m.

The nomenclature of the body setae and lyriform organs follows that of Tuzovsky [1987]: **Fch** — setae of the cheliceral segment, **Fp** — setae of the pedipalp segment, **Vi** — verticales internae, **Ve** — verticales externae, **Oi** — occipitales internae, **Oe** — occipitales externae, **Hi** — humerales internae, **He** — humerales externae, **Hv** — humerales ventralia, **Sci** — scapulares internae, **Sce** — scapulares externae, **Li** — lumbales internae, **Le** — lumbales externae, **Si** —sacrales internae, **Se** — sacrales externae, **Ci** — caudales internae, **Pi** — praeanales internae, **Pe** — praeanales externae, **Ai** — anales internae, **Ae** — anales externae; i_1–i_5 — lyriform organs. The following designations are used further on: s — solenidion, ac — acanthoid seta; Tr — trochanter, Fe — femur, Ge — genu, Ti — tibia, Ta — tarsus; TMAS — transverse muscle attachment scars.

Mideopsis (Mideopsis) rossicus sp.n.

Female. The body flat and oval (Fig. 1), its posterior part wider than the anterior one. The frontal margin convex, with two small tubercles (eye lenses). Dorsal shield large, occupies the larger portion of the dorsal surface, with two long curved furrows, bears 4 pairs of setae (Oi, Hi, Sci, Li) and one pair of lyriform organs (i_4). Frontad and laterad to the dorsal shield the setae Fp, Vi, Ve, Sce, Le, Se and the first 3 pairs of lyriform organs (i_1–i_3) are located. All lyriform organs are slit-like.

Coxae of legs occupy 2/3 of the ventral surface (Fig. 2). Setae Fch are most close to the frontal edge of the body. Coxae I are fused in a way when the short suture line is noticeable only in their anterior part, capitular insicion is U-shaped. Coxae II bear setae and glandularia Hv at their posterior edge.

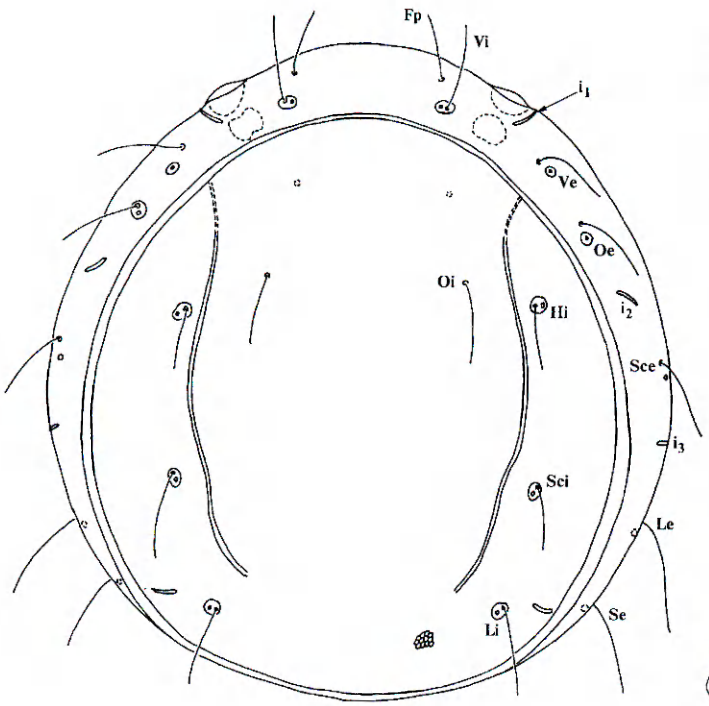

Fig.1. *Mideopsis rossicus* **sp.n.**, female: dorsal side.
Рис. 1. Самка *Mideopsis rossicus* **sp.n.**: дорсальная сторона.

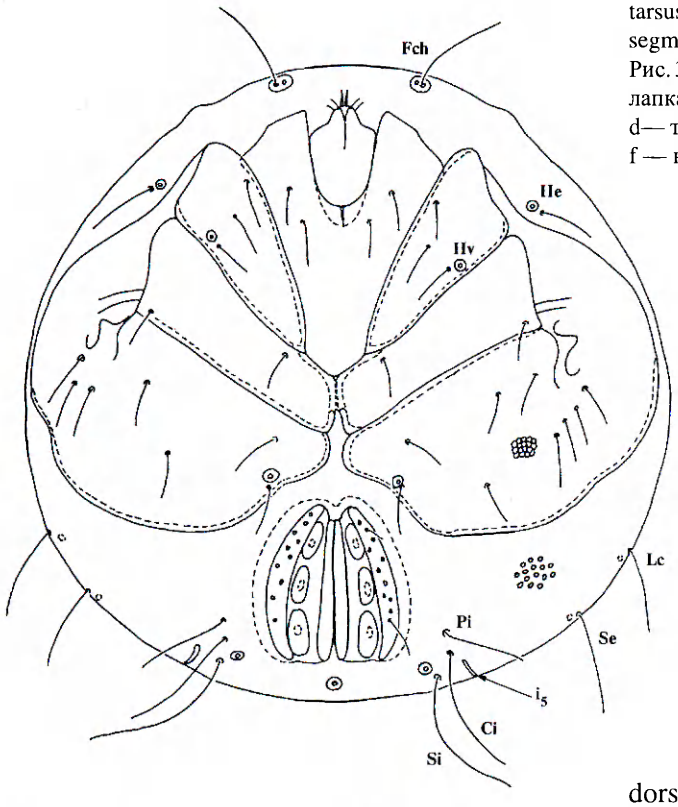

Fig. 2. *Mideopsis rossicus* **sp.n.**, female: ventral side.
Рис. 2. Самка *Mideopsis rossicus* **sp.n.**: вентральная сторона.

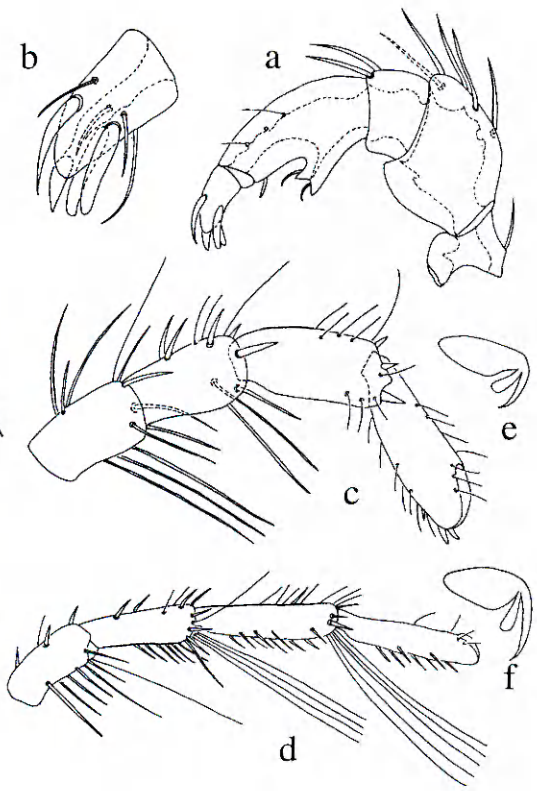

Fig. 3. *Mideopsis rossicus* **sp.n.**, female: a — pedipalp, b — tarsus of pedipalp, c — terminal segments of leg I, d — terminal segments of leg IV, e — claw of leg I, f — claw of leg IV.
Рис. 3. Самка *Mideopsis rossicus* **sp.n.**: a — педипальпа, b — лапка педипальпы, c — терминальные сегменты ноги I, d — терминальные сегменты ноги IV, e — коготок ноги I, f — коготок ноги IV.

Setae and glandularia He are situated laterad to these coxae. Anteromedial margins of coxae III are located close to each other, posteromedial margins of these coxae and medial margins of coxae IV are divided by a small distance. The external genital organ is large, acetabulae are narrow and oblong, their total length is a little shorter than that of the sexual opening; lateral sclerites bear 10–13 thin setae. Laterad and posteriad to genital organs the setae Si, Ci, Pi and the fifth pair of lyriform organs (i_5) are situated. Trichobothria Pi and Ci, as well as the setae Fp and Oi are without accompanying glandularia, whereas the other body setae have glandularia. The anal opening is located at the posterior end of the body.

Pedipalp. The trochanter is short, with one dorsal seta (Fig. 3, a). Femur is large, with convex ventral and dorsal sides; usually bears 4, occasionally 5, dorsal setae. Genu is short, with 2 dorsodistal setae. Tibia with convex dorsal edge, its ventral side has a short projection, which has two relatively large conical tubercles on its distal end, each bearing one short curved seta. The projection is directed

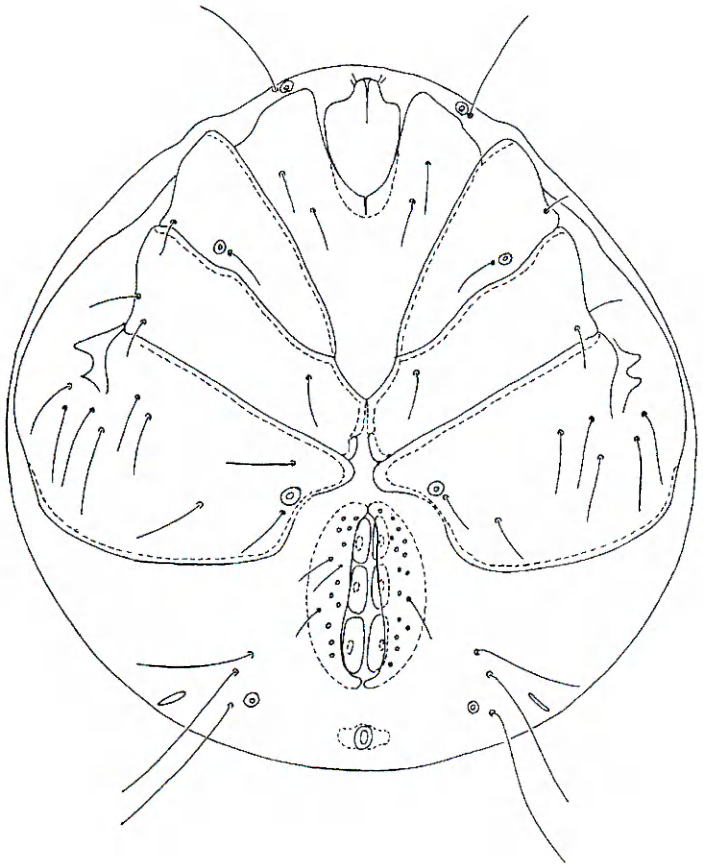

Fig. 4. *Mideopsis rossicus* **sp.n.**, male: ventral side.
Рис. 4. Самец *Mideopsis rossicus* **sp.n.**: вентральная сторона.

under a sharp angle to a tibia longitudinal axis. Tarsus bears one solenidion, 3 thin and 4 thick setae (Fig. 3, b).

Anterior 2 pairs of legs without swimming hairs, but with numerous thin and thick setae of various form and size (Fig. 3, c). Tarsi of legs I have convex ventral margin; their dorsal margin is straight. Legs III–IV with long swimming hairs (Fig. 3, d). The number of swimming hairs is as follows: 0–1 at telofemur of legs III–IV, 4–5 at genu and tibia of legs III–IV. The claws of legs I are not similar in shape to those of legs II–IV. The external tooth of the claws I (Fig. 3, e) is only a little longer than the internal tooth whilst in other claws the internal tooth is almost twice as short as the external one (Fig. 3,f).

Measurements, μm. Body: length 730–780, width 720–760; dorsal shield: length 645–695, width 590–635; genital sclerites: length 165–175, width 25–30; lengths of the pedipalp segments: 30–36, 54–60, 35–48, 60–80, 24–27; lengths of the leg segments:

I — 60–80, 70–90, 65–75, 70–75, 75–90, 95–115;

II — 65–80, 90–105, 70–85, 85–95, 100–110, 115–120;

III — 65–80, 95–105, 70–80, 95–110, 120–130, 125–135;

IV — 90–95, 120–135, 95–105, 125–135, 150–160, 150–160.

Male is similar to female and differs from the latter by the structure of genital organs (Fig. 4). The genital opening is long, narrow and without lateral sclerites, 14–19 thin setae are present on each side of the genital opening.

Measurements, μm. Body: length 645–780, width 635–750; dorsal shield: length 565–695, width 545–625; genital opening: length 130–150, width 30–35; lengths of the pedipalp segments: 30, 60, 40, 65. 25; lengths of the leg segments:

I — 60–80, 80–90, 65–75, 70–80, 75–95, 105–125;

II — 70–80, 90–100, 70–80, 80–95, 90–125, 120–135;

III — 65–80, 90–105, 70–80, 100–110, 120–130, 120–135;

IV — 80–95, 90–125, 90–105, 105–125, 130–145, 115–145.

Larva. Dorsal shield oval, covers all dorsum in not engorged larvae (Fig. 5,a) and bears 4 pairs of setae (Fp, Vi, Oi, Hi). Anteromedial edges of the dorsal shield are weakly concave. Setae Fp and Oi are branched and usually split into 3, sometimes 2 branches, the other body setae are simple. Setae Fch, He, Sci and the first 2 pairs of lyriform organs (i_1–i_2) are located on the soft interscutal membrane.

The border between all coxae of legs is distinct (Fig. 5, b). Coxae III with extremely developed lateral projections, with the setae Oi on their anterolateral edges. Anterior margin of coxae I is straight or weakly concave and almost 3 times shorter than posterior margins; external setae are longer than the internal ones. Setae on coxae II long and thick, almost twice as long as the setae on coxae III. Posteromedial apodemae of coxae I and II have approximately identical form and size. TMAS are well developed and located in the anteromedial angles of coxae III. In the posterior part of a body the setae Sce, Li, Le, Si, Se, Ci, Pi, Pe and 3 pairs of lyriform organs (i_3–i_5) are situated on the soft interscutal membrane. Setae Ci is very long and thick, setae Pi and Pe are the shortest and thin. All lyriform organs are ring-shaped.

Anal plate is very small, roundish-triangular in form. It has more or less developed anterior hypo-

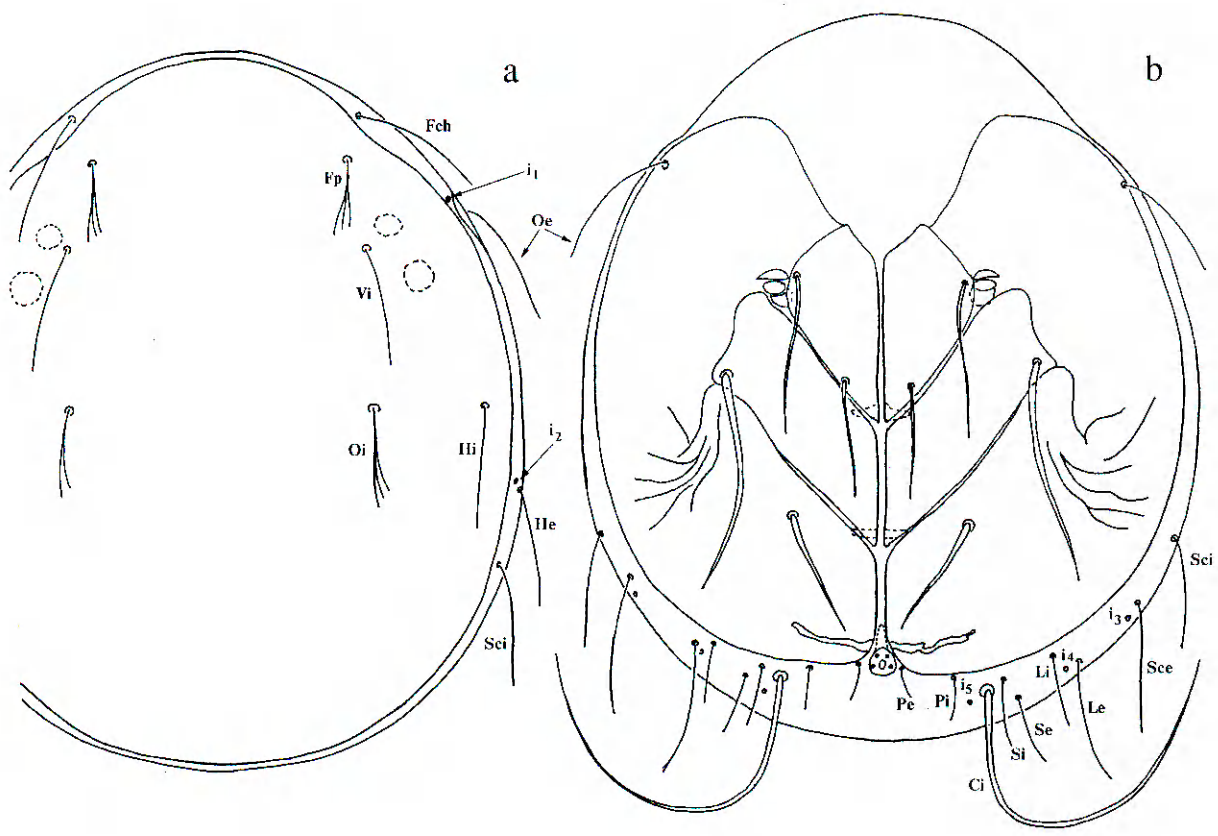

Fig. 5. *Mideopsis rossicus* **sp.n.**, larva: a — dorsal side, b — ventral side.
Рис. 5. Личинка *Mideopsis rossicus* **sp.n.**: а — дорсальная сторона, б — вентральная сторона.

dermic projection (Fig. 6,a–b). Anal opening is located in the posterior part of a plate. Setae Ai and Ae are of identical length.

The basal segment of the chelicera is large, gradually tapering to the distal end. The mobile digit of the chelicera is small, having the crescent form (Fig. 6, c).

Pedipalps: short, height of the first three segments exceeds their width (Fig. 6,d). Trochanter is very short and without setae; femur with one distolateral seta; genu bears 2 setae (long and short); tibia with 3 thin setae and a large dorsodistal thorn; tarsus small, bears 1 solenidion and 6 simple setae, one of which is very long and with lobed basis.

The form and arrangement of setae on the leg segments are shown on figures 6e, 6f and 7a. The total number of setae on legs, excluding eupathids, is as follows (the number specialized setae is shown in brackets):

Leg	Tr	F	Ge	Ti	Ta
I	1	7	5 (s)	9 (2s)	14 (s, ac)
II	1	7	5 (s)	11 (2s)	14 (s, ac)
III	1	6	5 (s)	10 (s)	10

Tibiae of legs II–III with 1 long swimming seta, tarsi of legs II–III with 2 long swimming setae.

Empodium thick and short, with two distolateral dents; ambulacrae long, thin and without distolateral dents (Fig. 6, g).

Measurements, μm. Dorsal shield: length 280–290, width 235–245; length of the anal plate with projection 20–23, its width 10–15; length of the basal segment of the chelicerae 50–55, length of the mobile digit 13; length of the segments of chelicera 6, 30–34, 22–24, 12–16; length of the leg segments:

I — 25–30, 24–32, 22–25, 35–40, 40–45,
II — 30–35, 30–32, 28–32, 45–50, 55–60,
III — 30–35, 32–35, 30–33, 48–51, 58–62.

DISCUSSION

Mideopsis rossicus is most closely related to *M. crassipes* and easily distinguishable from the latter by the structure of the pedipalps in adult mites. In *M. crassipes* the ventral side of the pedipalpal femur is convex only in the dorsal part; tibia with a long ventral projection, bearing 2 tiny tubercles, the projection is directed along the parallel longitudinal axis of a segment. In *M. rossicus* the ventral side of the femur pedipalp in similarly convex along the segment; tibia of the pedipalp with a short projection, bears rather large 2 tubercles, the projection is directed at the sharp angle to a longitudinal axis of a segment.

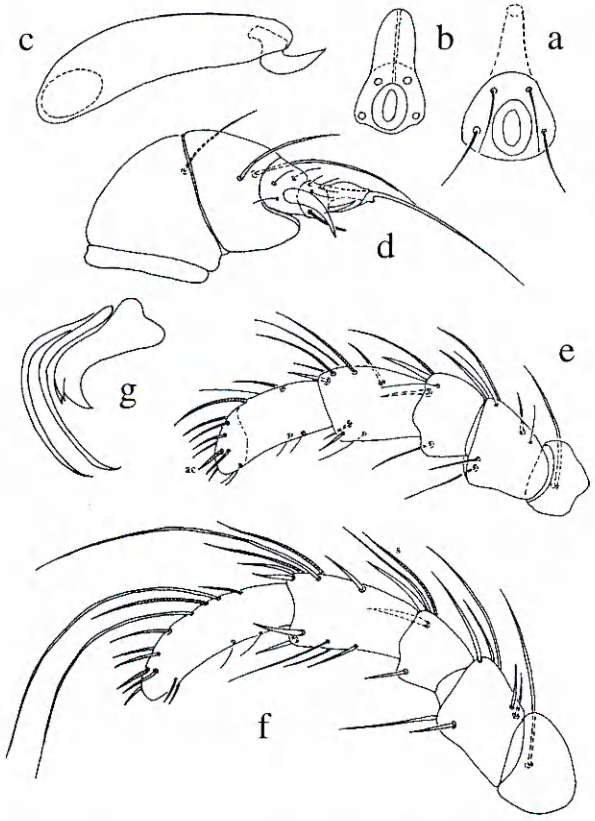

Fig. 6. *Mideopsis rossicus* **sp.n.**, larva: a–b — anal plate, c — chelicera, d — pedipalp, e — leg I, f — leg II, g — claws of leg I.
Рис. 6. Личинка *Mideopsis rossicus* **sp.n.**: a–b — анальная пластинка, c — хелицера, b — педипальпа, e — нога I, f — нога II, g — коготки ноги I.

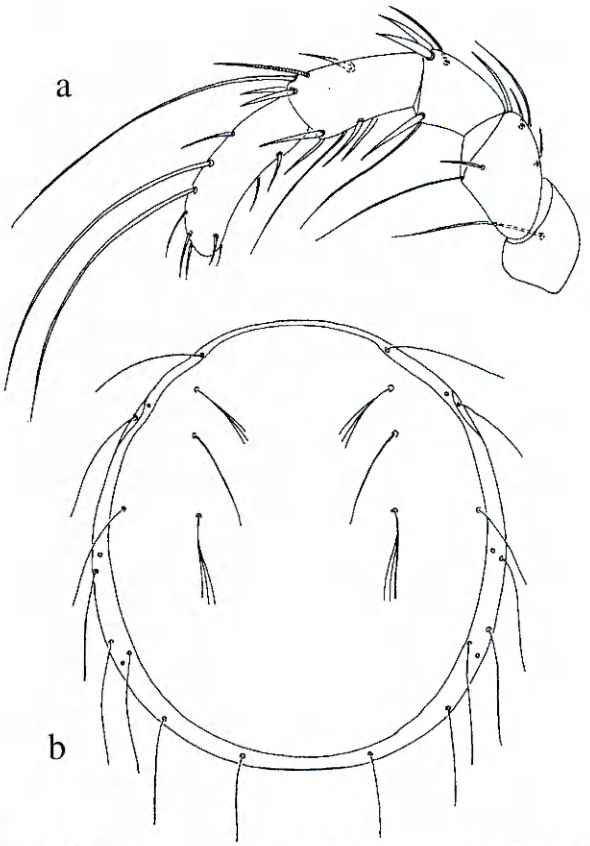

Fig. 7. Larvae of the genus *Mideopsis*: a — leg III of *M. rossicus* **sp.n.**, b — dorsal side of *M. orbicularis*.
Рис. 7. Личинки рода *Mideopsis*: a — нога III *M. rossicus* sp.n., b — дорсальная сторона *M. orbicularis*.

The dorsal shield in the larva *M. crassipes* bears 6 pairs of setae: Fch, Fp, Vi, Oi, Oe, Hi [Smith, 1978]. Only 4 pairs of setae (Fp, Vi, Oi, Hi) are present on the dorsal shield of the larva in *M. rossicus*.. Both species differ by the form and the length of setae on coxae and free segments of legs.

In the larval diagnosis of the genus *Mideopsis* [Smith, 1978; Wainstein, 1980] it is stated that the dorsal shield bears 5 pairs of setae: Fch, Fp, Vi, Oi and Hi. Only 4 pairs of setae were noted being originated on the dorsal shield of the larva of *M. orbicularis* (Fig. 7, b), as well as in the larva of *M. rossicus*. Most probably the researchers placed the setae Fch on the dorsal shield erroneously, as these setae originate very close to the anterior part of the shield.

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