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LARVAL MORPHOLOGY OF *UNIONICOLA MARKOVENSIS* TUZOVSKIJ, 1990 (ACARI, HYDRACHNIDIA, UNIONICOLIDAE)

P. V. Tuzovskij

[Тузовский П.В. Морфология личинки *Unionicola markovensis* Tuzovskij, 1990 (Acari, Hydrachnidia, Unionicolidae]
Institute for Biology of Inland Waters of the Russian Academy of Sciences, Borok, Nekouz Distr., Yaroslavl Prov., 152742, Russia. E-mail: tuz@ibiw.yaroslavl.ru
Институт биологии внутренних вод РАН, Борок, Некоузский район, Ярославская область, 152742, Россия. E-mail: tuz@ibiw.yaroslavl.ru

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Ключевые слова: *Unionicolidae, Unionicola markovensis, водяной клещ, морфология, личинка*

Summary: The first illustrated description of the larva of the water mite *Unionicola markovensis* is given.

Резюме**:** Первое иллюстрированное описание личинки водяного клеща *Unionicola markovensis.*

INTRODUCTION

The larva of *Unionicola markovensis* was previously unknown. Larvae of the family Unionicolidae are known to parasitize the abdominal region and legs of imagoes of Chironomidae (Diptera), and, rarely, the abdomen of Leptoceridae (Trichoptera) [Smith, Oliver 1986]. The aim of this paper is to describe the larva of *Unionicola markovensis.*

MATERIAL AND METHODS

Specimens were collected by the author in the lakes of Asian part of Russia. To obtain the larvae, water mites were placed into laboratory. Eggs and larvae obtained from a female were kept individually in glass or transparent plastic vessels of 10–15 mm in diameter, and a height of 15 mm.

Idiosomal setae are named according to Tuzovskij [1987; 1990]: *Fch* – frontales chelicerarum, *Fp* – frontales pedipalporum, *Vi* – verticales internae, *Ve* – verticales externae, *Oi* – occipitales internae, *Oe* – occipitales externae, *Hi* – humerales internae, *He* – humerales externae, *Hv* – humerales ventralia, *Sci* – scapulares

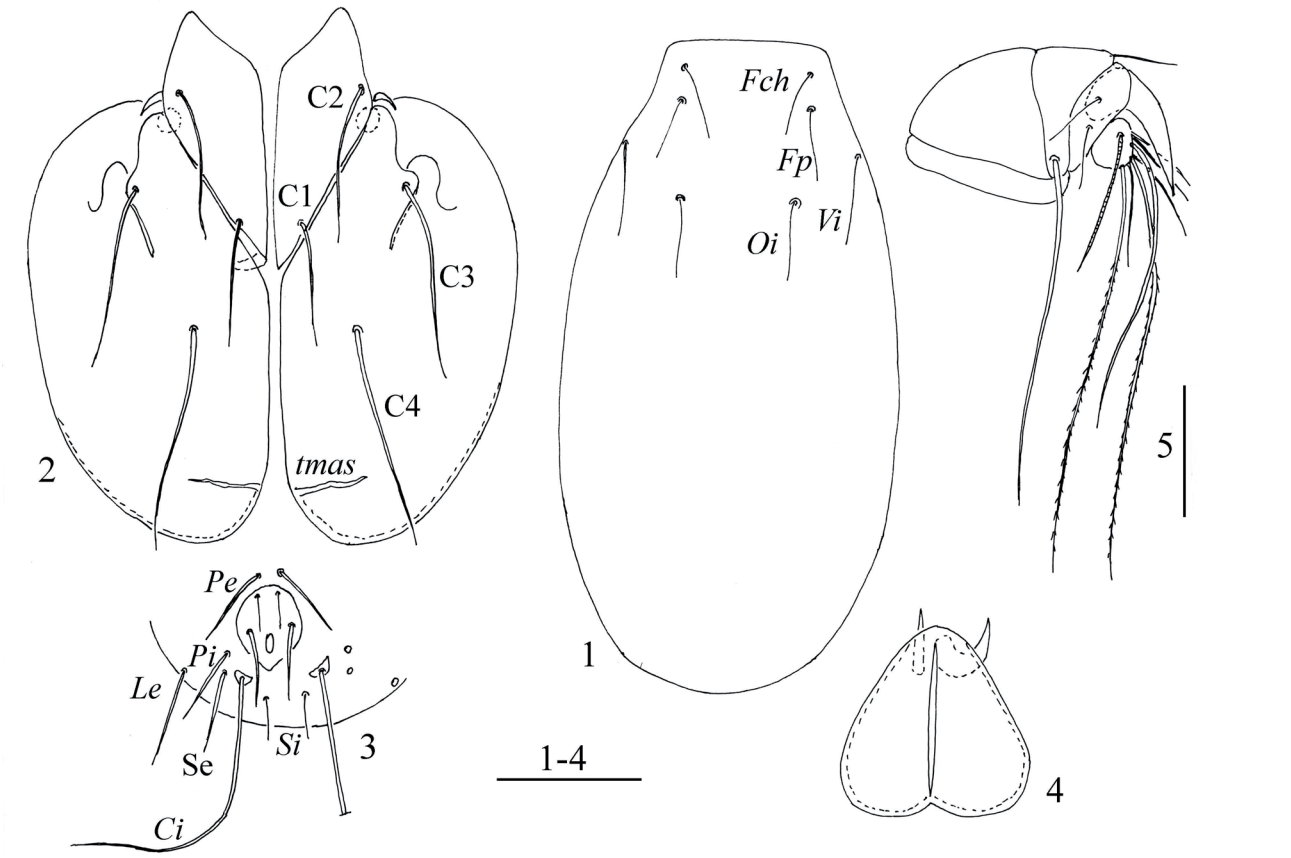

Fig. 1-5. *Unionicola markovensis* Tuzovskij, 1990, larva: *1* – dorsal shield; *2* – coxal plates, ventral view; *3* – posterior part of venter; *4* – chelicerae, dorsal view; *5* – pedipalp, lateral view. Scale bars: 1-4 = 50 μm, 5 = 20 μm.

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.

Furthermore, the following abbreviations are used: P–1–5, pedipalp segments (trochanter, femur, genu, tibia and tarsus); I–Leg–1–5 , first leg, segments 1–5 (trochanter, femur, genu, tibia and tarsus) i.e. III–Leg–3 = genu of third leg; C1 – coxal setae located posteromedially on coxa I, C2 – coxal seta located posterolaterally on coxa I, C3 – coxal seta located posterolaterally on coxa II, C4 – coxal seta located anteriorly on coxa III, s – solenidion, ac – acanthoid seta; L – length; W – width, *tmas* – transverse muscle attachment scar located on coxa III posteromedially, n = number of specimens measured; all measurements are given in μm.

Unionicola (*Unionicola*) *markovensis* Tuzovskij, 1990
(Figs 1–11)

Material examined. Larvae (n = 3) were reared from single female collected in a small lake near village Agrobasa, Tenkinsky District, Magadan Province, 14 July 1979. The duration of the embryonic period was 14 days at room temperature.

Diagnosis. Dorsal plate elongated (L/W ratio 1,9–2,0), excretory pore plate longer than wide; basal segments of chelicerae nearly as long as wide; thickened seta on I-Leg-3 and both thickened setae on II-Leg 3 and III-Leg-3 pectinate; II–Leg-4 with two greatly thickened setae.

Larva. Idiosoma flat, dorsal shield in unengorged larvae covering almost whole dorsum. Dorsal shield (Fig.1) elongate, L/W ratio 1,9-2,0, truncate anteri-

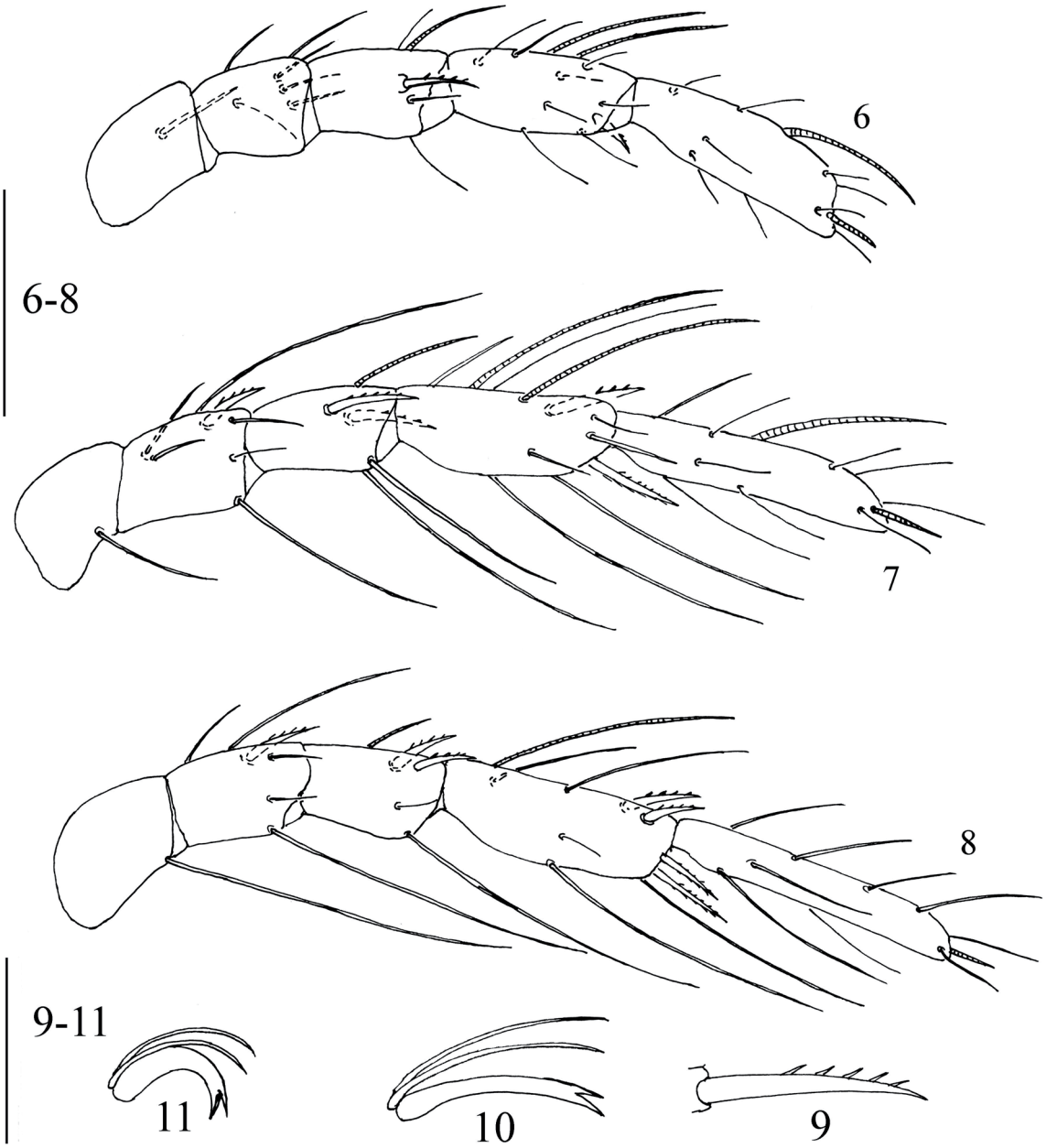

Fig. 6-11. *Unionicola markovensis* Tuzovskij, 1990, larva: *6* – leg I; *7* – leg II; *8* – leg III; *9* – pectinate seta; *10* – claws of leg III; *11* – claws of leg I. Scale bars: 6-8 = 50 μm, 9-11 = 20 μm.

orly, rounded posteriorly and bearing four pairs of setae (Fch, Fp, Vi, Oi), all these setae thin and approximately equal in length. Surface of dorsal shield with short, punctuate scale-like patterns. Setae *Oe, Hi, He, Sci, Sce, Li and Le* situated in soft integument:

Coxal plates moderately large and elongate (Fig. 2), plates III with well developed transverse muscle attachment scar (*tmas*) on each side. Coxal setae C1 short and extending slightly beyond bases C4; C4 long thickened, much heavier than C1, and extending slightly to posterior margin of coxal plates III, C3 longer than C2 but shorter than C4.

Excretory pore plate longer than wide, L/W ratio 1.2-1.4, rounded anteriorly, narrow posteriorly (Fig. 3); setae Ai short, thin, located anteriorly close to each other; Ae long, much heavier than Ai, located laterally slightly posteriorly to middle of plate and extending well beyond posterior margin of excretory pore plate; excretory pore placed posteromedial to Ae. Setae Si very short and thin; Se, Pi and Pe nearly subequal and much longer than Si; Ci very long and located on small bases.

Chelicerae (Fig. 4) short and very heavy, basal segments of chelicerae as long as wide, fused to each other; cheliceral stylets very small and hidden in anterior region of chelicerae.

Pedipalps (Fig.5) very short and stocky: P-1 without setae; P-2 without setae but sometimes its bases are visible; P-3 with very long ventral seta and short dorsodistal one; P-4 with two subequal short, thin setae; P-5 with rather long solenidion, two very long setae, one seta moderately long, and remaining setae relatively short and thin.

Legs 5-segmented. Shape and arrangement of setae on legs segments as shown in Figs 6–8. Total number of leg setae, excluding eupathidia, as follows (specialized setae indicated in parenthesis): I– Leg-1–5: 1, 7, 5(s), 11 (2s), 11(s, ac); II–Leg-1–5: 1, 7, 5(s), 11 (2s), 11(s, ac); III–Leg-1–5: 1, 6, 5(s), 10 (s), 10(ac). Number of thickened setae from trochanter to tarsus: I–Leg: 0, 0, 1, 1, 0; II–Leg: 0, 1, 2, 2, 0; III–Leg: 0, 1, 2, 4, 0. I–Leg-1 and II–Leg-1 each with relatively short seta, and III–Leg-1 each with long seta. Solenidion on I-Leg-3 shorter than both solenidia on I-Leg-4. Thickened seta on I-Leg-3 and both thickened setae on II-Leg 3 and III-Leg-3 pectinate (Fig.9). Solenidion on II–Leg-3 shorter than both solenidia on II-Leg-4, proximal solenidion on II-Leg-4 located proximally to middle of segment, and distal solenidion located near middle of segment. Solenidion on III-Leg-3 very short and located near middle of segment, solenidion on III-Leg-4 long and located proximally to middle of segment. Acanthoid seta on tarsi I to III comparatively long and setose. Claws of legs III (Fig. 10) larger than claws of legs I and II (Fig. 11). Lateral claws nearly as long as central claw; central claw hook-like, lateral claws sickle-shaped.

Measurements (n=3). Length of dorsal plate 240–248, width 124–128; length of medial edges of coxae I 83-87, length of medial edges of coxae II+III 108–120; length of excretory pore plate 25–29, width 20–23; length of basal segments of chelicerae 48–52, their width 50-52; length of cheliceral stylet 16; length of pedipalpal segments (P–1–5): 6-7, 25–29, 13–16, 8–10, 5–6; length of legs segments: I–Leg-1–5: 26-28, 20-28, 26-32, 28-30, 40-44, 48-52, II–Leg-1–5: 30-32, 24-28, 28-32, 44-48, 58-60; III–Leg-1–5: 35-37, 28-30, 28-32, 46-49, 62-65.

Remarks. The described larva is similar to *U.* (*Unionicola*) *crassipes* (Müller, 1776), but the posterior margin of the coxal plates II+III rounded (Fig. 2), P-3 with two subequal setae (Fig. 5), I-Leg-3 with thick pectinate seta (Fig. 9). In contrast, in the larva of *U. crassipes* the posterior margin of the coxal plates II+III with projection, P-3 with two unequal setae, I-Leg-3 with thick serrate-dentate seta [Wainstein, 1980].

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