

NEW DATA ON THE SYSTEMATICS OF THE WATER MITE *ATURUS RARUS* TUZOVSKIJ, 1990
(ACARIFORMES: ATURIDAE)

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[Тузовский П.В. Новые данные к систематике водяного клеща *Aturus rarus* Tuzovskij, 1990 (Acariformes, Aturidae)]
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Ключевые слова: *Aturidae*, *Aturus rarus*, водяные клещи, описание

Summary. The first illustrated description of male and female of the water mite species *Aturus rarus* from running waters of Primorsky Krai of Russia is given.

Резюме. Приводится первое иллюстрированное описание самки и самца водяного клеща *Aturus rarus* из проточных вод Приморского края России.

INTRODUCTION

The water mite *Aturus rarus* is known from the deutonymph only [Tuzovsky, 1990]. The purpose of the present paper is to describe the male and female of the species.

MATERIALS AND METHODS

The examined materials (10 males, 15 females) were

collected in streams in the Asian part of Russia (leg. T. Vshivkova). Specimens were fixed in 3% formaldehyde solution. Most specimens were not dissected, preserving the natural shape of the body. In several females and males the gnathosoma was mounted in position that allowed the investigation of chelicerae and pedipalp in lateral view. All mite specimens were mounted in Hoyer's medium.

Idiosomal setae and lyriform organs are named

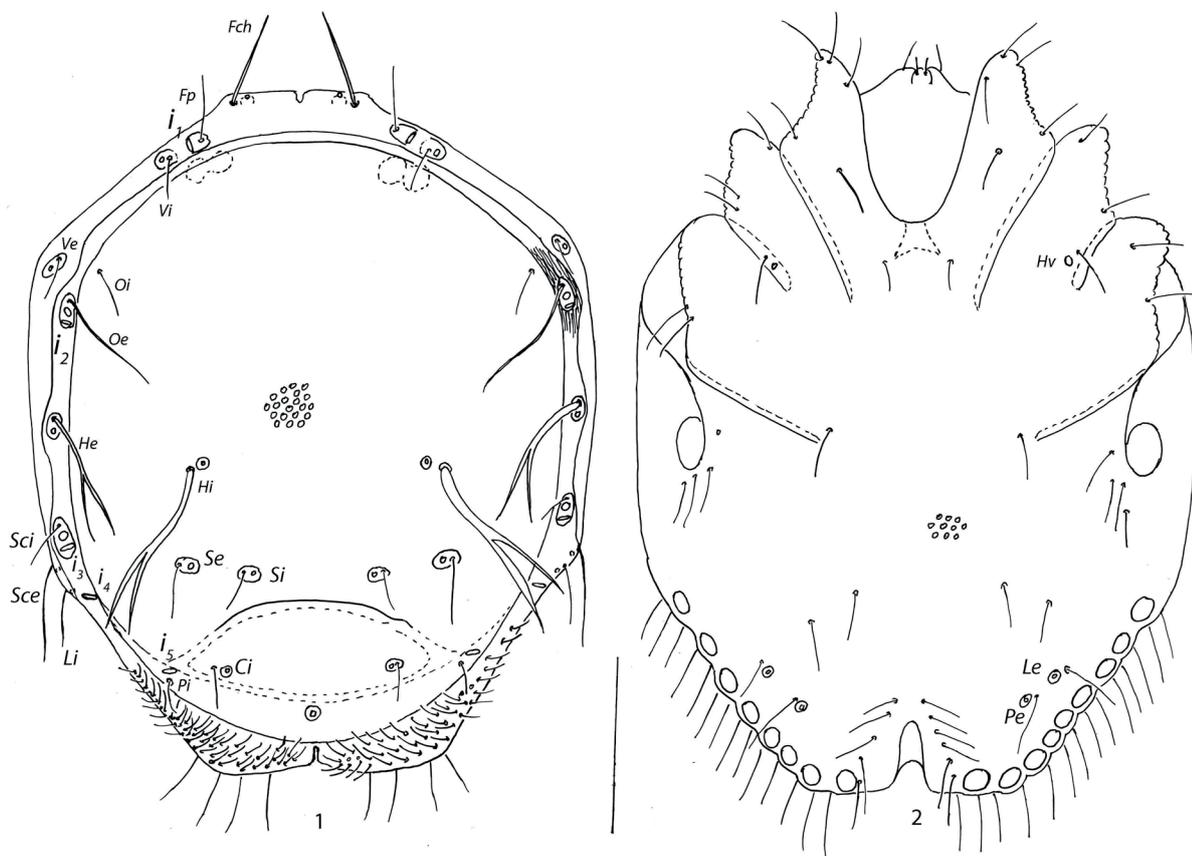


Fig. 1-2. *Aturus rarus* Tuzovskij, male: 1 – dorsal view, 2 – ventral view. Scale bar: 100 µm.

Рис. 1-2. *Aturus rarus* Tuzovskij, самец: 1 – дорсальная сторона, 2 – вентральная сторона. Шкала: 100 µm.

according to Tuzovskij [1987]: Fch – frontales chelicerae, 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 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; i1 – i5 – lyriform organs.

Furthermore, the following abbreviations are used: P-1-5, pedipalp segments (trochanter, femur, genu, tibia and tarsus); I-Leg. 1-6, first leg, segments 1-6 (trochanter, basifemur, telofemur, genu, tibia and tarsus) i.e. III-Leg. 4 = genu of third leg; L – length; n = number of specimens measured. The length of appendage segments was measured along their dorsal side; all measurements are given in μm .

Aturus rarus Tuzovskij, 1990
Figs 1-8

Material examined. 10 males and 15 females: Asia, Russia, Far East, Primorsky Krai, Ussuri Nature Reserve, Komarovka River: 1 male and 1 female 18.07.1983; 2 males and 4 females 19.07.1983; 4 females 31.05.1984; 3 males and 7 females 1.06.1984; 1 male and 1 female 15.07.1984; 1 male and 1 female 18.07.1984, 2 males and 2 females 20.09.1984 (leg. T.S. Vshivkova).

Description of male. Idiosoma dorsoventrally compressed, dorsal and ventral shields present, frontal margin straight with small, median incision (Fig. 1). Number of idiosomal setae is typical for the genus *Aturus* [Tuzovsky, 1987]. Setae Fp, Oi and Pi without glandularia, other idiosomal setae associated with glandularia. Setae Fch longer and thicker than proterosomal setae Fp, Vi, Ve and Oi. Setae Fch, Fp, Vi, Ve and the first pair of lyriform organs (i1) located on ventral shield dorsally. Dorsal shield very large, covering almost all dorsum; with curved transverse ridge and six pairs of setae: Oi, Hi, Si, Se, Ci and Pi; setae Hi very large and bifurcated, other setae thin and hair-like, bases of setae Ci and Pi located posterior to ridge. Setae Oe, He and Sci

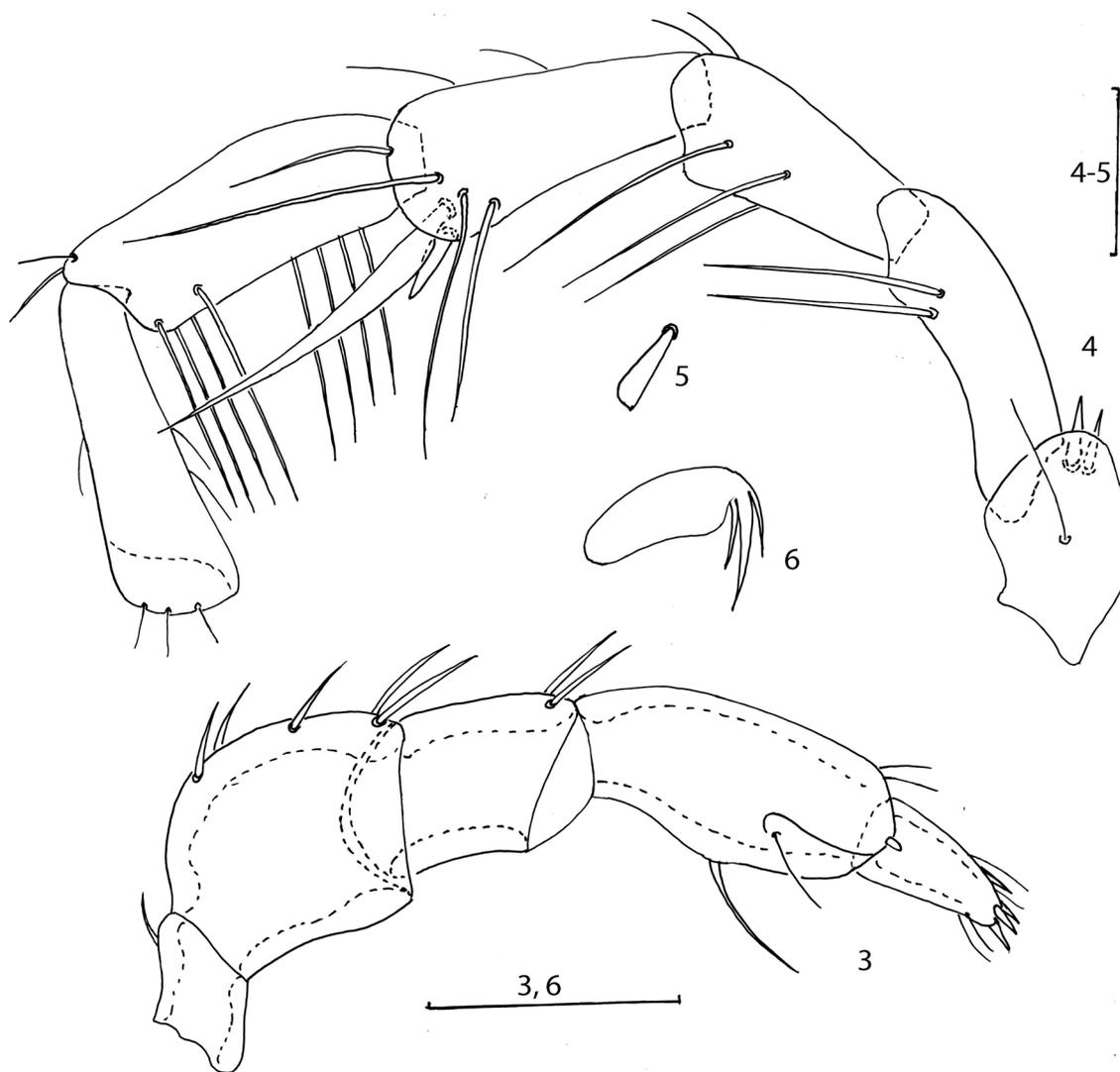


Fig. 3-6. *Aturus rarus* Tuzovskij, male: 3 – pedipalp, lateral view, 4 – leg IV, 5 – short sword-like seta on genu of leg IV, 6 – claw of leg IV. Scale bars: 50 μm .

Рис. 3-6. *Aturus rarus* Tuzovskij, самец: 3 – педипальпа, боковой вид, 4 – нога IV, 5 – короткая мечевидная щетинка на голени ноги IV, 6 – коготок ноги IV. Шкалы: 50 μm .

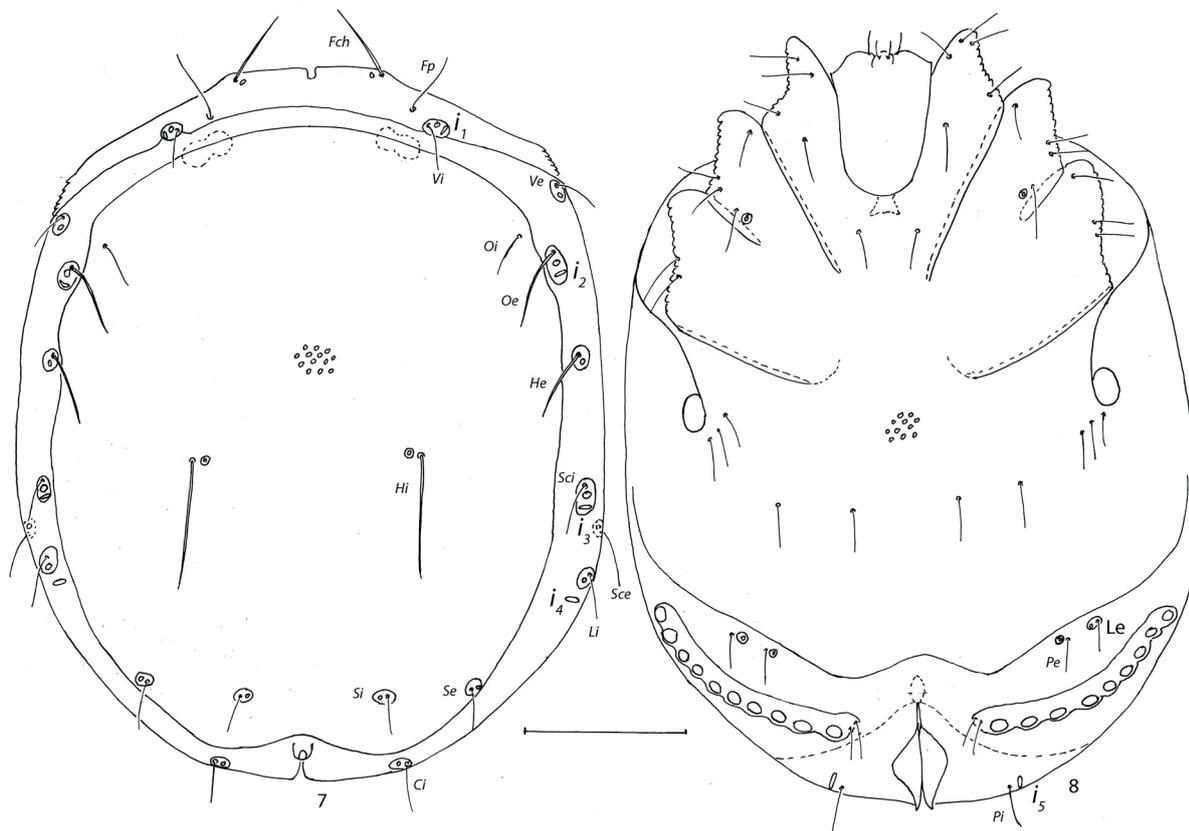


Fig. 7-8. *Aturus rarus* Tuzovskij, female: 7 – dorsal view, 8 – ventral view. Scale bar: 100 μ m.

Рис. 7-8. *Aturus rarus* Tuzovskij, самка: 7 – дорсальная сторона, 8 – вентральная сторона. Шкала: 100 μ m.

situated on smooth interscutal membrane. Setae Oe and He long and approximately subequal in length, but Oe simple, and setae He bifurcated. The second pair of slit organs (i2) located on sclerite bearing seta and glandularia Oe, i3 on sclerites bearing setae Sci, i4 on soft membrane posterior to setae Li, i5 on dorsal shield near setae Pi. Excretory pore opens near posterior end of dorsal shield. Dorsal shield is porous, nearly $\frac{3}{4}$ of anterior surface of dorsal shield with distinct porosity, but posterior to ridge porosity is poorly appreciable or not developed. Dorsal surface of ventral shield with 2-3 transverse rows of short, curved setae, and on posterior margin with several relatively long setae.

Ventral shield (Fig. 2) with deep median cleft and 8-9 genital acetabula along posterior margin of each side. Setae Le and Pe located near posterolateral margins of venter. Median cleft usually with 4, but sometimes with 3 or 5-6 thin setae on each side. A prominent curved ridge present on each side and extending anterolaterally from insertion of leg IV. Posterolateral margins of ventral shield with a few thin setae on each side. Capitulum elongate with short anchoral projection, anterior and posterior pairs of setae subequal.

Trochanter of pedipalp (Fig. 3) short with one dorsodistal seta. Femur with ventrodistal protrusion; bears five approximately subequal dorsal setae. Genu with two dorsodistal setae, its ventral margin slightly concave. Tibia moderately long with two ventral setae, short distolateral spine and two thin dorsodistal seta; proximal ventral setae thicker and longer than distal one.

Trochanter of leg IV (Fig. 4) with single thin, long seta and 2 short dorsodistal spines; basifemur slightly longer than telofemur. Genu expanded distally with 2 unequal sword-like setae, 4 relatively long unequal distal setae and 2 short, thin dorsal ones; long sword-like seta 3-4 times as long as short sword-like seta, the last pointed or with obtuse tip (Fig. 5). Tibia with 4 ventroproximal and 4 ventrodistal relatively long setae, and 2 short unequal dorsodistal setae; tarsus slightly shorter than tibia, with several thin, short setae. Claws (Fig. 6) with three pointed denticles, central denticle longer than external and internal denticles.

Measurements (n=10). Length of the body 360-390, width 250-290; length of dorsal shield 285-300, width 235-260; length of capitulum 75-80, width 54-60; length of pedipalpal segments (P-1-5) – 18-21, 48-52, 40-44, 60-64, 28-30; length of leg segments: I-Leg. 1-6 – 36-40, 50-60, 48-55, 64-68, 76-80, 75-88; II-Leg. 1-6 – 40-44, 55-60, 55-58, 70-76, 80-88, 85-95; III-Leg. 1-6 – 48-50, 68-73, 60-65, 88-93, 108-112, 100-110; IV-Leg. 1-6 – 75-85, 100-110, 84-95, 88-96, 115-120, 104-116.

Female. Idiosoma dorsoventrally compressed, dorsal and ventral shields present, frontal margin straight with small median incision (Fig. 7). Setae Fp, Oi and Pi without glandularia, other idiosomal setae associated with glandularia. Setae Fch and Oe longer and thicker than proterosomal setae Fp, Vi, Ve and Oi. Setae Vi and first pair of lyriform organs (i1) located on small platelets. Dorsal shield very large, covering almost all dorsum, without transverse ridge and bears four pairs of setae: Oi, Hi, Si

and Se. All idiosomal setae simple, bifurcated setae absent. Setae Ve, Oe, He, Sci, Sce, Le, Ci and Pi situated on smooth interscutal membrane, setae Hi longest, Oe and He longer and thicker than other hysterosomal setae. Second pair of slit organs (i2) located on sclerites bearing setae Oe, i3 on sclerites bearing setae Sci, i4 on soft interscutal membrane posterior to setae Li, i5 laterally to setae Pi dorsally or ventrally. Excretory pore opens in small tubercle posterior to distal end of dorsal shield.

Coxal shield (Fig. 8) large, covering about 4/5 ventral surface. Setae Le and Pe located on soft integument near posterior margin of coxal shield. Prominent curved ridge present on each side, extending anterolaterally from insertion of leg IV. Anterior genital sclerite slightly developed. Genital acetabula (8-10) located on narrow plates along posterior margin of each side, each genital plate provided with two median thin setae.

Legs IV not modified. Pedipalps are similar to those of male.

Measurements (n=10). Length of body 415-520, width 330-360; length of dorsal shield 350-385, width 280-300; length of capitulum 80-90, width 60-65; length of basal segment of chelicera 81-92, length of cheliceral stylet 24-28; length of pedipalpal segments (P-1-5) – 23-25, 51-55, 40-40, 60-65, 31-33; length of leg segments: I-Leg. 1-6 – 35-40, 52-56, 44-46, 56-60, 64-72, 75-80; II-Leg. 1-6 – 35-40, 52-56, 48-52, 60-65, 68-76, 75-85; III-Leg. 1-6 – 36-48,

58-62, 48-56, 70-84, 84-96, 84-96; IV-Leg. 1-6 – 60-68, 80-100, 72-80, 90-108, 100-112, 95-105.

Remarks. *Aturus rarus* is closely related to *A. sankyeriensis* Kim et Chung, 1995, which was described only on male from South Korea (Kim & Chung, 1995). The dorsal shield of the male *A. sankyeriensis* with numerous granules on surface, the dorsal surface of the ventral shield with single transverse row of small setae (Kim & Chung, 1995); in contrast, the dorsal shield of the male *A. rarus* is porous, the dorsal surface of the ventral shield with 2-3 transverse rows of small setae.

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