

ON THE TAXONOMIC STATUS OF THE WATER MITE *HYDRACHNA KISSELEWI* SOKOLOW, 1928 (ACARI: HYDRACHNIDAE)

P.V. Tuzovskij

[Тузовский П.В. О систематическом статусе водяного клеща *Hydrachna kisselewi* Sokolow, 1928 (Acari: Hydrachnidae)]
Institute for Biology of Inland Waters of the Russian Academy of Sciences, Borok, Nekouz District, Yaroslavl Province,
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

Key words: *Hydrachnidae*, *Hydrachna kisselewi*, water mite, morphology, male, deutonymph, Adygea, Russia

Ключевые слова: *Hydrachnidae*, *Hydrachna kisselewi*, водяной клещ, морфология, самец, дейтонимфа, Адыгея, Россия

Summary: An illustrated redescription of male and deutonymph of the water mite *Hydrachna kisselewi* from North Caucasus is given.

Резюме: Иллюстрированное переписание самца и дейтонимфы водяного клеща *Hydrachna kisselewi* из Северного Кавказа.

INTRODUCTION

Among the materials from the North Caucasus sent to me for identification I found a rare water mite species *Hydrachna kisselewi* Sokolow, 1928, that was known formerly only from Central Asia [Sokolow 1928, 1940]. The species description, especially male and deutonymph, was very brief and insufficiently illustrated. Some researchers [Lundblad, 1956, 1962; K.H. Viets, 1956; K.O. Viets, 1987] consider *H. kisselewi* as a junior synonym of *Hydrachna processifera* Koenike, 1903. The aim of this paper is to describe the morphology of male and deutonymph of *H. kisselewi* and to discuss the taxonomic status of this species.

MATERIALS AND METHODS

The material was sampled with a common hand net 250 µm mesh size. Specimen was fixed in 4 % formalin. Mites were mounted in Hoyer's medium.

Idiosomal setae are named according to Tuzovskij [1987]. 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 the third leg; L – length, W – width; H – height; n = number of specimens measured. The length of appendage segments was measured along their dorsal side; all measurements are given in µm.

Family Hydrachnidae Leach, 1815

Genus *Hydrachna* Müller, 1776

***Hydrachna kisselewi* Sokolow, 1928**

(Figs 1-18)

Material examined. Male and deutonymph collected in small pond of Majkop-city, Republic Adygea

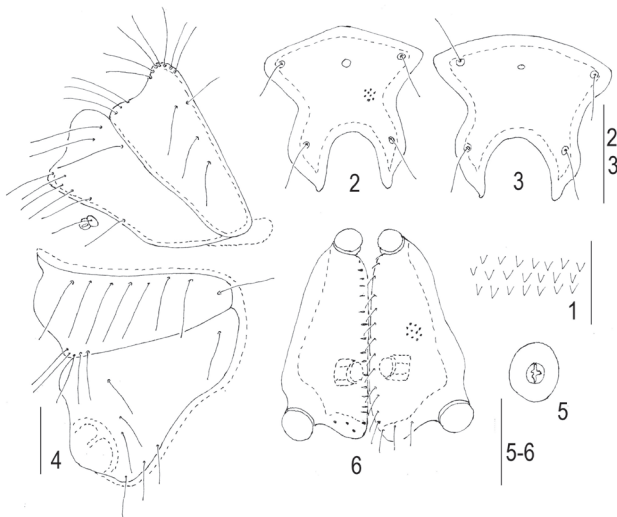
(North Caucasus), 18 July 2012, leg. V. Manzhurina and Yu. Saprykina.

Diagnosis. Male: P-1 longer than P-2; median eye not developed; coxal plate IV with narrow, pointed anteromedial process; genital field heart-shaped, deeply indented anteriorly, ejaculatory complex with rectangular proximal chamber, long curved proximal arms and short straight distal arms; capitulum slightly curved ventrally.

Deutonymph: acetabular plate with numerous small acetabula, single rosette acetabula and two to three thin, short setae; coxal plate IV with narrow pointed anteromedial process.

Male. Idiosoma spherical. Integument soft, with short papillae rounded distally (Fig. 1). Number and position of idiosomal setae typical for genus *Hydrachna* [Tuzovskij, 1987]. Setae *Fch* (Fig. 2) slightly longer than other idiosomal setae associated with glandularia (Fig. 3). Trichobothria *Fp* and *Oi* short and not associated with glandularia. Anterior portion of dorsum (Fig. 4) with two pairs of unequal sclerites; anterior pair of sclerites very small oval and bearing *Fp*; posterior pair large, elongate and bearing *Oi*. Lateral eyes in capsules, median eye not developed.

Coxal plates (Fig. 5) in four groups, coxal plates I, III-IV with a single seta each, coxal plate II without seta. Coxal plate II with short, wide posteromedial apodeme. Coxal plate III with straight, oblique medial margin directed anterolaterally, anterior and medial margins forming obtuse anteromedial corner. Coxal plates IV large, with concave medial margins embracing genital field, posteromedial corner broadly rounded, with well developed posterolaterally directed secondary sclerotization, and two narrow subcutaneous processes (pointed anteromedial and obtuse posterolateral). Excretory pore surrounded by a scler-



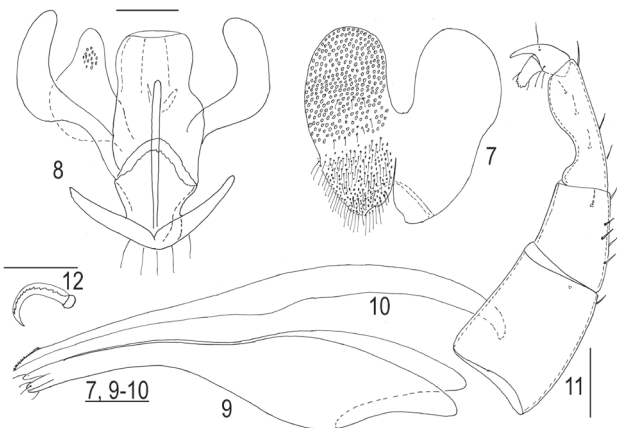
Figs 1–6. *Hydrachna kisselewi* Sokolow, 1928, male: 1 – fragment of integument, 2 – seta *Fch*, 3 – seta *He*, 4 – anterior part of dorsum; 5 – coxal plates, 6 – excretory pore. Scale bars: 1 = 50 μ m; 2, 3 = 100 μ m; 4–6 = 200 μ m

otized ring (Fig. 6).

Genital field (Fig. 7) heart-shaped, deeply indented anteriorly, laterally slightly narrowed at the level of anterior edge of gonopore; anterior portion bearing numerous minute acetabula and a few scattered fine setae, and posteriorly directed gonopore flanked by two groups of numerous short, fine setae in the posterior part. Ejaculatory complex (Fig. 8) with rectangular proximal chamber, long curved proximal arms, short straight distal arms, well developed posterior keel and narrow anterior keel.

Capitulum (Fig. 9) curved ventrally with a long rostrum. Chelicerae very slender, pointed distally and with a few teeth dorsodistally (Fig. 10).

Pedipalp stout (Fig. 11): P-1 large elongate with parallel dorsal and ventral margins, one dorsodistal and one mediolateral short setae; P-2 shorter than P-1, with five dorsal and one lateral short setae; P-3 thin, long, with concave ventral margin proximally, but over most part of segment slightly convex, dorsal



Figs 7–12. *Hydrachna kisselewi* Sokolow, 1928, male: 7 – genital plate, 8 – ejaculatory complex, 9 – capitulum, 10 – chelicera, 11 – pedipalp, 12 – claw. Scale bars: 7, 9–10 = 200 μ m, 11 = 100 μ m, 12 = 50 μ m

margin straight, with three dorsal and three lateral setae; P-4 short, with strong dorsodistal claw, one mediolateral and two ventral setae; P-5 short with several short distal spines and setae.

All legs segments bearing numerous, rather uniform, setae distributed all over the segment surface; numerous long swimming setae on the posterior surface II–IV–Leg–4/5, II–IV–Leg–6 much shorter than II–IV–Leg–5, but IV–Leg–6 shorter than II/III–Leg–6, I–Leg–5/6 subequal in length. Claws of all legs simple, minute with supraclaw platelet (Fig. 12).

Measurements (n=1). Coxal field L 1250, W 1190; anterior dorsal platelets L 75, W 50; posterior dorsal platelets L 200–250, W 110–120; genital plate L 600, W 660; capitulum L 1430, rostrum L 560; chelicera L 1560; pedipalpal segments (P–1–5) L/H: 325/275, 265/210, 335/100, 140/60, 75/37; leg segments L: I–Leg–1–6: 160, 285, 225, 300, 285, 285; II–Leg–1–6: 200, 375, 275, 350, 475, 350; III–Leg–1–6: 200, 360, 275, 600, 525, 335; IV–Leg–1–6: 360, 360, 325, 650, 510, 235.

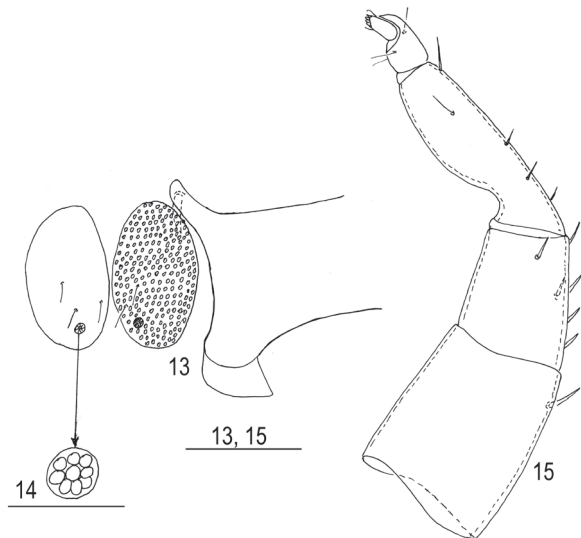
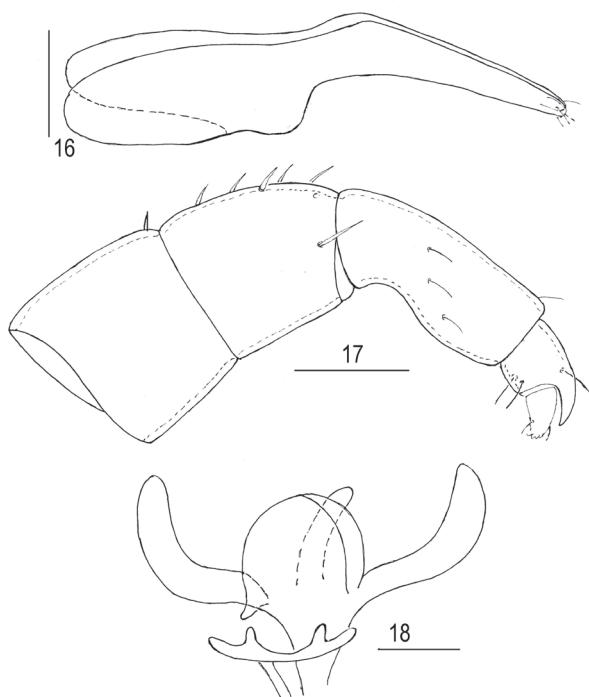


Fig. 13–15. *Hydrachna kisselewi* Sokolow, 1928, deutonymph: 13 – genital field, 14 – rosette acetabula, 15 – pedipalp. Scale bars: 13, 15 = 200 μ m, 14 = 50 μ m

Deutonymph. Similar to male, differing mainly in smaller size, external structure of genital field and pedipalp. Gonopore is absent, acetabular plates elongate oval with numerous minute acetabula and two to three thin, short setae (Fig. 13). In addition, each acetabular plate with rosette acetabula (Fig. 14) near posterior margin of plate. Pedipalp rather slender (Fig. 15): P-1 slightly longer than P-2, with single dorsodistal seta, P-2 with one mediolateral and five dorsal setae, P-3 thin, long with concave ventral margin proximally, but over most part of segment convex; dorsal margin straight or slightly concave, with one lateral and five dorsal setae; P-4 short, with strong dorsodistal claw, one mediolateral and two ventral setae.

Measurements (n=1). Coxal field L 875, anterior dorsal sclerites L 75, W 50; posterior dorsal sclerites



Figs 16–18. *Hydrachna processifera* Koenike, 1903, male: 16 – chelicera, 17 – pedipalp, 18 – ejaculatory complex. Scale bars: 16 = 200 μ m, 117–118 = 100 μ m

L 125, W 55–75; genital plate L 305, W 200; capitulum L 1060, pedipalpal segments (P–1–5) L/H: 255/225, 245/175, 330/100, 130/60, 62/25; leg segments L: I–Leg-1–6: 125, 185, 140, 225, 235, 235; II–Leg-1–6: 140, 210, 160, 325, 350, 300; III–Leg-1–6: 150, 260, 160, 325, 350, 300; IV–Leg-1–6: 240, 275, 220, ?, ?, ?.

Remarks. The present species is similar to *Hydrachna processifera* Koenike, 1903. It differs from *H. processifera* in the following characters (character states of the adults of *H. processifera* are given after [Sokolow, 1940; Lundblad, 1956; Davids et al., 2007] and are indicated in parenthesis): the dorsum without free sclerites, Fig. 4 (with two pairs of free minute sclerites), the pointed medial process inserted to the coxal plates IV, Fig. 5 (to the coxal plates III), the median eye absent, Fig. 4 (present), the capitulum slightly curved ventrally, Fig. 9 (well curved ventrally, Fig. 13); P-1 longer than P-2, Fig. 11 (P-1 shorter than P-2, Fig. 14), ejaculatory complex with rectangular proximal chamber, distal arms rather long without additional processes, Fig. 8 (with hemispherical proximal chamber, distal arms short with two processes each, Fig. 15).

The deutonymph of *H. processifera* is characterized by the following features: the subcutaneous medial process is inserted to the coxal plate III; the

acetabular plate with five to seven short, thin setae and without the rosette acetabula; the total number of setae on P-1-2: 3, 9 [Tuzovskij, 1990]. In contrast, in the deutonymph of *H. kisselewi* the subcutaneous medial process is inserted to the coxal plate IV (Fig. 13); the acetabular plate with two to three short, thin setae and with the rosette acetabula (Fig. 14); the total number of setae on P-1-2: 1, 6 (Fig. 15).

Thus, the morphology of male and deutonymph *H. kisselewi* well differs from that of *H. processifera*, and *H. kisselewi* should be considered as a full species.

Habitat. Standing waters.

Distribution. Asia: Uzbekistan, Bukhara city [Sokolow 1928, 1940]; Europe, Russia (North Caucasus, Adygea).

ACKNOWLEDGEMENTS

The author expresses sincere gratitude to V. Manzhurina and Yu. Saprykina for supplying the material for this work.

REFERENCES

- Davids C., Di Sabatino A., Gerecke R., Gledhill T., Smith H. & Hammen H. van der, 2007. 7. Acari: Hydrachnidia. Süßwasserfauna von Mitteleuropa, 7/2-1. Elsevier, Spectrum Akademischer Verlag. P. 241–376.
- Lundblad O., 1956. Zur Kenntnis süd- und mitteleuropäischer Hydrachnellen. Arkiv för Zoologi, 10. S. 1–306.
- Lundblad O., 1962. Die Hydracarinae Schwedens. II. Arkiv för Zoologi, 14 (1). S. 1–635.
- Sokolow I.I., 1928. Zur Kenntnis der Hydracarinae von Buchara. Zoologische Jahrbücher, Systematik, 54 (5–6). S. 467–486.
- Sokolow I.I., 1940. Hydracarina – vodyanye kleshchi. Chast' I. Hydrachnellae. Fauna SSSR (novaya seriya No 20. Paukoobraznye, 5 (2) [Hydracarina – the aquatic mites. Part I. Hydrachnellae. Fauna of the USSR. (nouv. ser., no 20), Arachnides, 5(2)]. Publisher: Nauka, Moscow-Leningrad, P. 1–511. (in Russian)
- Tuzovskij P.V., 1987. Morfologiya i postembrional'noye razvitiye vodyanykh kleshchej [Morphology and Post-embryonic Development in Water Mites]. Nauka, Moscow. 172 p. (in Russian).
- Tuzovskij P.V., 1990. Opredelitel' deutonymfov vodyanykh kleshchej [Key to water mites deutonymphs]. Nauka, Moscow. 238 p. (in Russian).
- Viets, K.H., 1956. Die Milben des Süßwassers und des Meeres. Hydrachnellae et Halacaridae (Acari). Zweiter und dritter Teil: Katalog und Nomenklator. Jena: G. Fischer. S. 1–870.
- Viets, K.O., 1987. Die Milben des Süßwassers (Hydrachnellae und Halacaridae [part], Acari. 2: Katalog. Sonderbände des Naturwissenschaftlichen Vereins in Hamburg, 8. S. 1–1012.