

DEUTONYMPHAL MORPHOLOGY OF THE WATER MITE *SPERCHON CRASSIPALPIS* MARSHALL (ACARI: HYDRACHNIDIA, SPERCHONTIDAE)

P.V. Tuzovskij

[Тузовский П.В. Дейтонимфальная морфология водяного клеща *Sperchon crassipalpis* Marshall (Acari, Hydrachnidia: Pionidae)]

Institute for Biology of Inland Waters Russian Academy of Sciences, 152742, Borok, Nekouzskii District, Yaroslavl Province, Russia. E-mail: tuz@ibiw.yaroslavl.ru

Институт биологии внутренних вод РАН, 152742, Борок, Некоузский район, Ярославская область, Россия. E-mail: tuz@ibiw.yaroslavl.ru

Key words: Hydrachnidia, Sperchontidae, *Sperchon*, *Palpisperchon*, water mites, morphology, deutonymph

Ключевые слова: Hydrachnidia, Sperchontidae, *Sperchon*, *Palpisperchon*, водяные клещи, морфология, дейтонимфа

Summary. The study presents a detailed description of the deutonymph of water mite *Sperchon crassipalpis* Marshall, 1933.

Резюме. Детальное описание дейтонимфы водяного клеща *Sperchon crassipalpis* Marshall, 1933.

INTRODUCTION

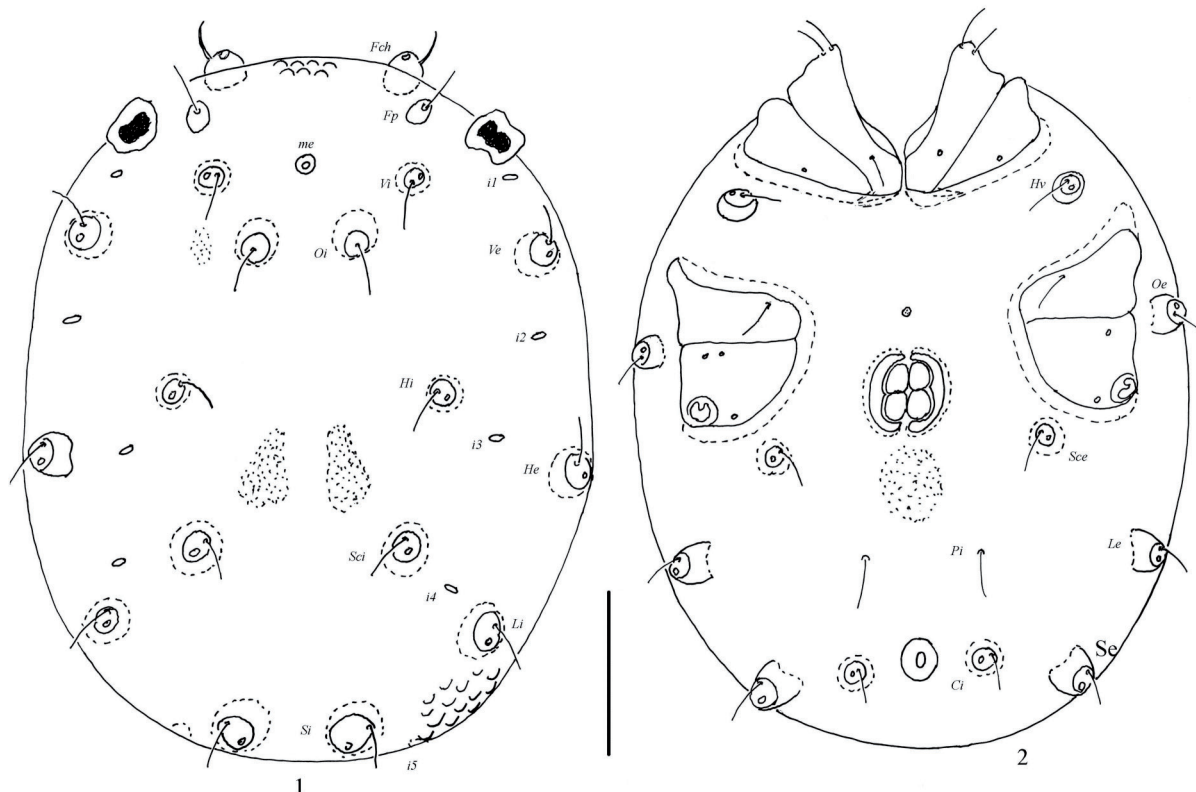
The water mite *Sperchon crassipalpis* Marshall, 1933 is only known from adults [Marshall, 1933; Cook 1974; Wainstein, 1976]. The purpose of the present paper is to describe its deutonymph.

MATERIAL AND METHODS

The examined material (three deutonymph) was collected by T.S. Vshivkova in the Komarovka River

of the Primorskii Krai of Russia, 08.07.1984. Specimens were fixed by 3% formaldehyde solution and mounted on slides using Hoyer's medium.

Idiosomal setae and lyriform organs are named 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



Figs.1–2. *Sperchon crassipalpis* Marshall, deutonymph: 1 – dorsal view, 2 – ventral view. Scale bar = 200 μ m.

Рис. 1–2. *Sperchon crassipalpis* Marshall, deutonymph: 1 – дорсальная сторона, 2 – вентральная сторона. Шкала: 200 μ m.

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; $i_1 - i_3$ – lyriform or slit organs.

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; ac. 1-2, genital acetabula (anterior, posterior); n = number of specimens measured. The length of appendage segments was measured along their dorsal side; all measurements are given in μm .

SYSTEMATIC PART

Family Sperchontidae Thor, 1900

Genus *Sperchon* Kramer, 1877

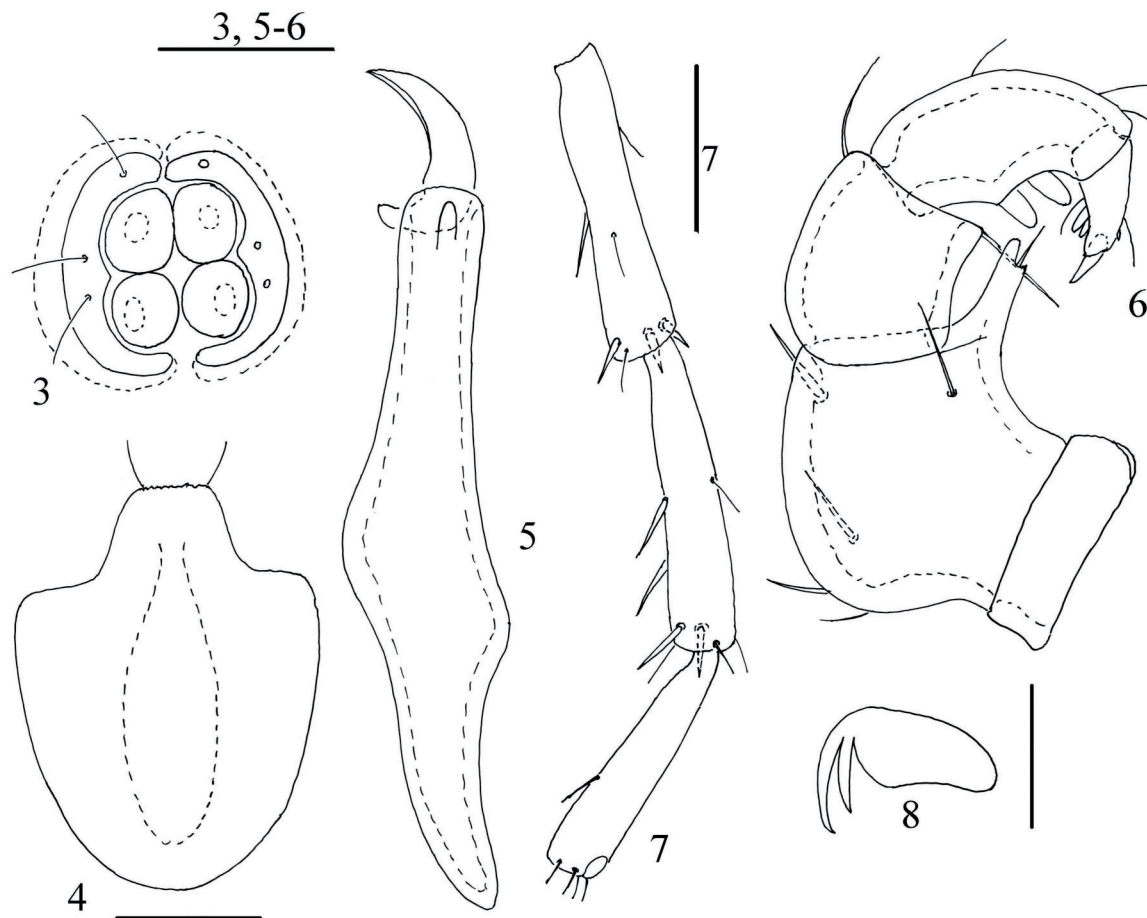
Sperchon (Palpisperchon) crassipalpis Marshall, 1933

(Figs. 1-8)

Diagnosis. Deutonymph. Integument with small papillae, both pairs of genital acetabula large oval and situated closely together.

Deutonymph, description. Body flat and oval. Integument with small papillae. The number and position of idiosomal setae and lyriform organs typical for the genus *Sperchon*, but glandularia *Pe* absent (Figs 1-2). Trichobotria *Fp*, *Oi*, setae and *Pi* without glandularia, other dorsal setae associated with glandularia and located on relatively large tubercles or warts. Sclerites bearing trichobotria *Oi* much larger than sclerites bearing trichobotria *Fp*. Setae *Fch*, *Fp*, *Vi*, *Oi*, *Ve*, median eye, eye capsules and first pair of lyriform organs (i_1) situated closely together at anterior end of idiosoma; setae *He*, *Li* and *Si*, four pairs of lyriform organs ($i_2 - i_4$) situated along lateral edges of idiosoma. Eye capsules relatively large, median eye small.

Coxae of legs combined into four groups, occupying about half of ventral surface of idiosoma. Posteromedial portions of coxae of legs I-II close together, but not fused to each other, with slightly developed posteromedial apodemes. Anterior and posterior coxal groups well separated. Posterior coxal groups widely separated, their combined length greater than width on each side. Setae *Hv* located in lateral posi-



Figs. 3-8. *Sperchon crassipalpis* Marshall, deutonymph: 3 – external genital organ; 4 – capitulum, ventral view; 5 – chelicera, lateral view; 6 – pedipalp, lateral view; 7 – genu, tibia and tarsus of leg IV; 8 – claw of leg IV. Scale bars: 3-6, 8 = 50 μm , 7 = 100 μm .

Рис. 3-8. *Sperchon crassipalpis* Marshall, deutonymph: 3 – наружный генитальный орган; 4 – капитулум, вентральная сторона; 5 – хелицера, боковая сторона; 6 – педипальпа, боковая сторона; 7 – колено, голень

tion between coxae II and III; setae *Sc* situated behind posterior margin of coxae IV; setae *Oe*, *Le* and *Se* located along lateral margins of ventral surface. Excretory pore surrounded by sclerotized ring and located between setae *Ci*. Setae *Pi* and *Ci* arranged in longitudinal rows. External genital organ placed between coxae IV.

Genital acetabula (4) oval, relatively large and almost subequal, anterior and posterior pairs of acetabula situated close together (Fig. 3). Genital flaps separated narrow with well developed secondary sclerotization, each flap bearing three thin setae.

Capitulum (Fig. 4) with relatively large base and short rostrum. Chelicera (Fig. 5) with long basal segment and small stylet.

Pedipalp (Fig. 6) compact: P-1 very short, without setae; P-2 stocky, high with five unequal setae and large ventrodorsal projection bearing one short seta; P-3 shorter than femur, with one dorsodistal and one ventrodorsal seta; P-4 longer than genu, curved dorsoventrally, with two subequal peg-like ventral setae and three thin dorsal setae; proximal peg-like seta situated near middle of the segment, distal peg-like seta in its distal portion.

Legs without swimming setae, with a few thick and thin short setae (Fig. 7). Tarsi of all legs slightly thickened distally. Claws with well developed blade (its ventral margin slightly concave) and two clawlets of unequal length, external clawlet longer than internal clawlet (Fig. 8).

Measurements (n=3). Length of body 675–785, width 560–645; length of coxae I–II 140–150, width 120–130; length of coxae III–IV 160–170, width 130–140; length of genital flaps 72–78, width 15–18, length/width of genital acetabula (ac.1–2): 24–30/20–24; 25–31/20–24; length of pedipalpal segments (P-1–5): 17–19, 78–85, 50–54, 65–70, 25–30; length of leg segments: I–Leg-1–6: 60–65, 60–70, 90–100, 105–110, 105–115; II–Leg-1–6: 45–48, 60–65, 60–72, 105–115, 115–135, 115–135; III–Leg-1–6: 50–55, 60–65, 110–125, 125–145, 125–145; IV–Leg-1–6: 65–90, 75–95, 80–90, 150–170, 135–165.

Remarks. The water mite *S. crassipalpis* has been reported from Northern America [Marshall, 1933; Cook, 1974] and Kamchatka [Wainstein, 1976]. Adults of this species has been found by me in materials from the Chayandra River (Irkutsk Province, Asian part of Russia) and from the Pechora River basin (European part of Russia), leg. O.S. Tsember.

The world fauna of water mites of the subgenus *Palpisperchon* Lundblad, 1941 currently includes five species: *S. crassipalpis*, *S. mirabilis* Lundblad, 1941, *S. distans* Scheffler, 1972; *S. nikkoensis* Imamura, 1976 and *S. skopetsi* Tuzovskij, 1982, 1990. All species of this subgenus are described on adults and only

in *S. distans* and *S. skopetsi* deutonymphs are known [Scheffler, 1972 and Tuzovskij, 1990 respectively]. In the fauna of Russia the following species of this subgenus are recorded: *S. crassipalpis*, *S. distans* and *S. skopetsi*. Distinctions between deutonymphs of these species are given in a key.

Key to deutonymphs of the Russian species of the subgenus *Palpisperchon*

- 1 (2) Integument with small papillae
S. (Palpisperchon) crassipalpis Marshall, 1933
- 2 (1) Integument fine lined or with strips and ribs
- 3 (4) Integument fine lined, genital acetabula square (Scheffler, 1972)
..... *S. (Palpisperchon) distans* Scheffler, 1972
- 4 (3) Integument with strips and ribs, genital acetabula circular (Tuzovskij, 1990)
..... *S. (Palpisperchon) skopetsi* Tuzovskij, 1982

ACKNOWLEDGEMENTS

I express sincere gratitude to anonymous referees for reviewing the manuscript. I also grateful T.S. Vshivkova and O.S. Tsember for collecting the material.

REFERENCES

- Cook D.R., 1974. Water mite genera and subgenera // Memoirs of the American entomological Institute, 21. P. 1- 860.
- Imamura T., 1976. Two new species of watermites from Nikko National Park // Annotationes Zoologicae Japonensis, 49. P. 279-284.
- Lundblad O., 1941. Neue Wassermilben // Entomologisk Tidskrift, 62 (1-2). S. 97-121.
- Marshall R., 1933. Water mites from Waoming as fish food // Transactions of the American Microscopical Society, 52. P. 34-41.
- Scheffler W., 1972. *Papisperchon distans* nov. spec. (Acari, Hydrachnellae) aus dem Baikalsee-Gebiet // Acarologia, 14 (1). S. 66-70.
- Tuzovskij P.V., 1982. Description of two new species of the water mites of the superfam. Lebertioidea (Acarina, Trombidiformes) from Magadan Province // Revue d'Entomologie de l'URSS, 61 (3). P. 644-656 (in Russian).
- Tuzovskij P.V., 1987. Morfologiya i postembrional'noye razvitiye vodyanykh kleshchej [Morphology and Postembryonic Development in Water Mites]. Nauka, Moscow. 172 p. (in Russian).
- Tuzovskij P.V., 1990. Opredelitel' deutonymphs vodyanykh kleshchej [Key to water mites deutonymphs]. Nauka Publ., Moscow. 238 p. (In Russian).
- Wainstein B.A., 1976. O nakhozhdenii vodyanogo kleshcha *Sperchon (Palpisperchon) crassipalpis* (Sperchontidae, Acariformes) v faune SSSR // Biology of Inland Waters. Informazionnyi Bulletin, 32. P. 25-29 (in Russian).