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DESCRIPTION OF A NEW WATER MITE SPECIES OF THE GENUS *HALACARELLUS* K. VIETS (ACARI: HALACARIDAE) FROM KAMCHATKA

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ABSTRACT**:** A new water mite species, *Halacarellus kamchatkaensis* sp.n. (Acari: Halacaridae), collected in the freshwater lake Kuril'skoe in Kamchatka is described. This species is characterized by the following features: in both sexes, the anterodorsal plate with straight anterior margin and anterolateral notches, the ocular plates are wide and without eye lenses, the posterodorsal plate is pear-shaped; the genital valves with three acetabula each; in males, the genital acetabula are external, the genital plate with 23–27 perigenital setae on each side; in females, the genital acetabula are internal, the genital plate with one seta on each side.

KEY WORDS: Halacaridae, *Halacarellus kamchatkaensis,* new species, male, female, freshwater lake, Kamchatka, Russia.

INTRODUCTION

The majority of species of the genus *Halacarellus* K. Viets, 1927 live in marine habitats, and only one species, *Halacarellus phreaticus* Petrova, 1972, has been reported so far exclusively from fresh or strongly freshened brackish water (Bartsch 2007). In the Kuril'skoe Lake (a freshwater lake in south of the Kamchatka peninsula), several mites belonging to the genus *Halacarellus* have been found. The present paper describes the male and female of the water mite *Halacarellus kamchatkaensis* n. sp. (Halacaridae).

MATERIALS AND METHODS

The material was collected by T.L. Vvedenskaya in the Kuril'skoe Lake (southern Kamchatka). The material was sampled with the regular hand net with 200 μm mesh size. Specimens were preserved in Koenike's solution and mounted on slides using Hoyer's medium. External morphology terms mainly follow Bartsch (2007). The following abbreviations are used in the description: P-1–P-4 – first to fourth palpal segments; I Leg 1–6 – first leg, segments 1–6 (trochanter, basifemur, telofemur, genu, tibia, and tarsus), e.g. III Leg 4 is genu of third leg; s — solenidion; *n* — the number of specimens measured. All measurements are in μm.

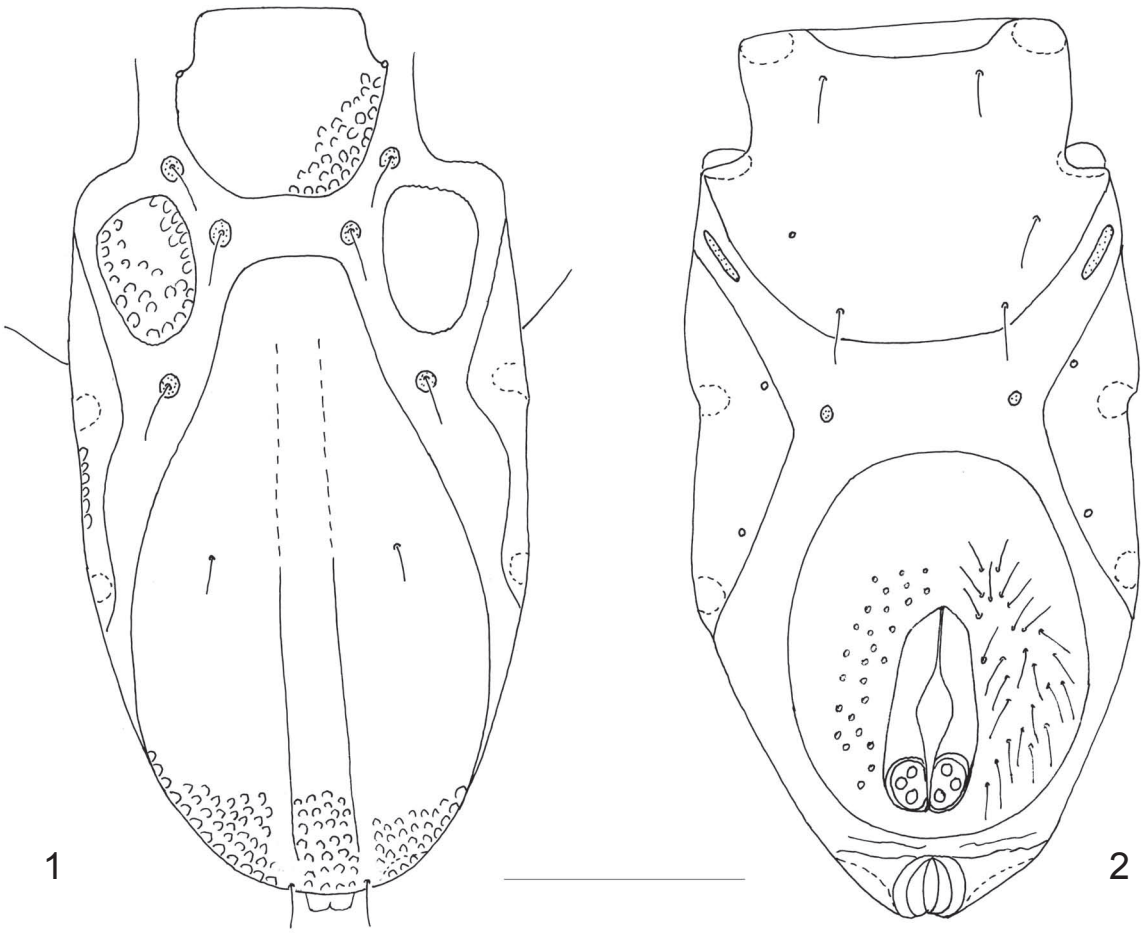
Halacarellus kamchatkaensis, sp. n.

Figs. 1–12

Type material. Holotype: male, slide No 9530, Russia, southern part of the Kamchatka peninsula, Kuril'skoe Lake, depth 0.4 m, substrates: pebbles, sand and detritus, 29.07.1998, coll. T.L. Vvedenskaya. Paratypes: one male and one female from the same locality and collection date as holotype. The type material is deposited in the collections of the Institute for Biology of Inland Waters (Borok, Russia).

Description. Both sexes. Body almost colorless in the preservative liquid. Anterior dorsal plate (Fig. 1) slightly elongate (ratio of length/width 1.07–1.1), with anterolateral notches, straight anterior margin, convex lateral margins and slightly concave posterior margin, bearing one pair of setae near lateral corners (on the slide only their alveoli are visible). Ocular plates well developed (ratio of length/width 1.7), with wide anterior portion and more or less rounded posterior end, without eye lenses. Posterodorsal plate large, pear-shaped (ratio of length/width 1.7), with narrow anterior portion and expanded posterior one, with straight or slightly convex anterior margin, with rounded posterior end, with one pair of setae near middle and one pair of setae caudally. Posterodorsal plate with rather wide median longitudinal strip, which is especially distinctly developed in its posterior portion. Interscutal membrane between dorsal plates soft and finely striated with three pairs of small more or less circular sclerites bearing setae in anterior half of idiosoma.

Epimeral plates (coxae of legs I–IV) in three groups (Fig. 2). Anterior epimeral group (coxae I+II) wide, ratio of length/width 0.8, capitular bay wide, with more or less straight posterior margin. Coxae I with one seta near anterior margin, coxae II with medial and lateral setae on each side. Posterior epimeral groups (coxae III+IV) elongated. Coxae III with two setae (lateral and ventromedial), coxae IV with one medial seta on each side. One pair of narrow elongated platelets situated laterally on soft integument between anterior and posterior epimeral groups, and one pair small more

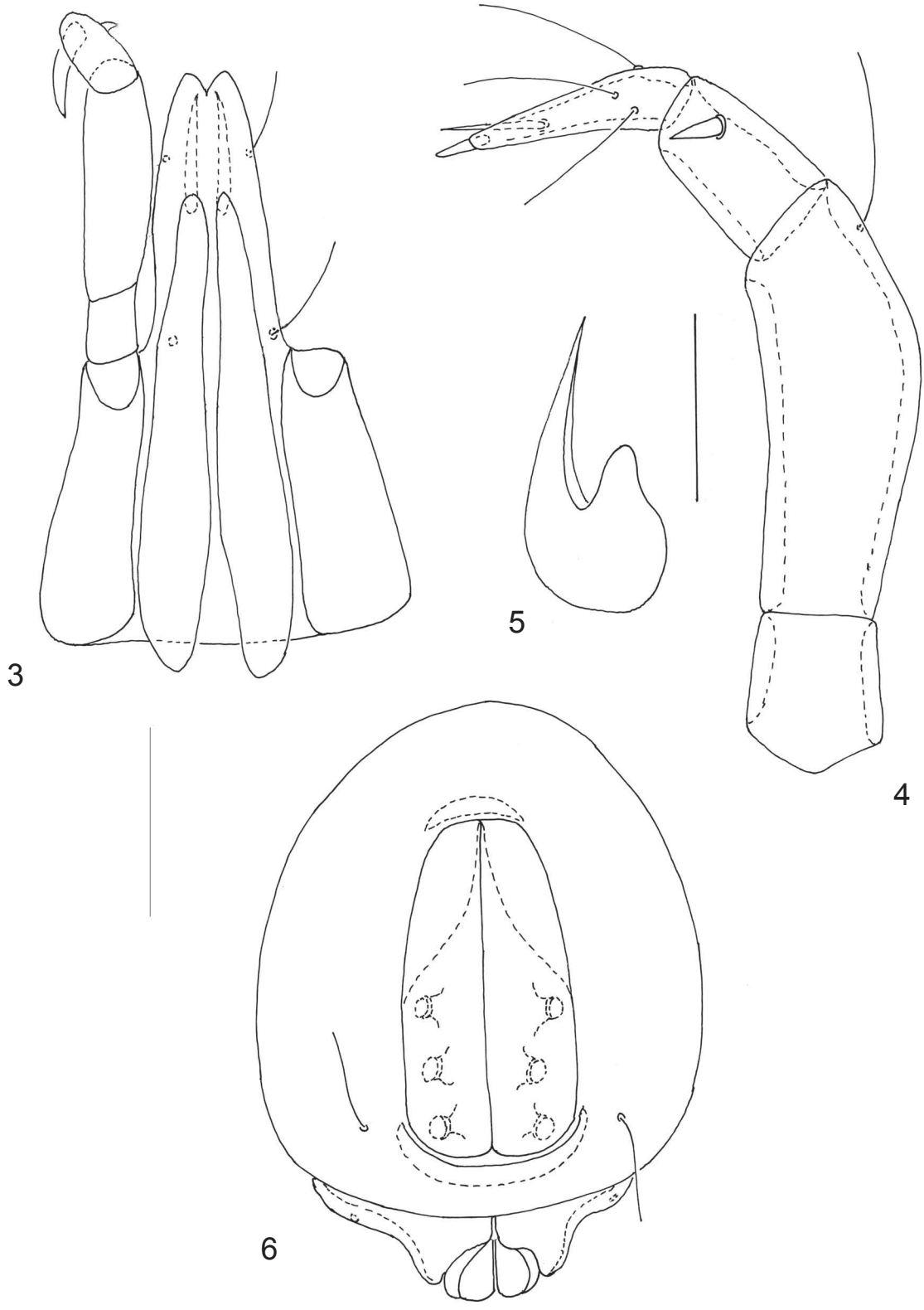


Figs. 1–2. *Halacarellus kamchatkaensis*, male: 1— dorsal view, 2 — ventral view. Scale bar: 1–2 = 100 μm.

or less circular platelets situated medially to posterior epimeral groups.

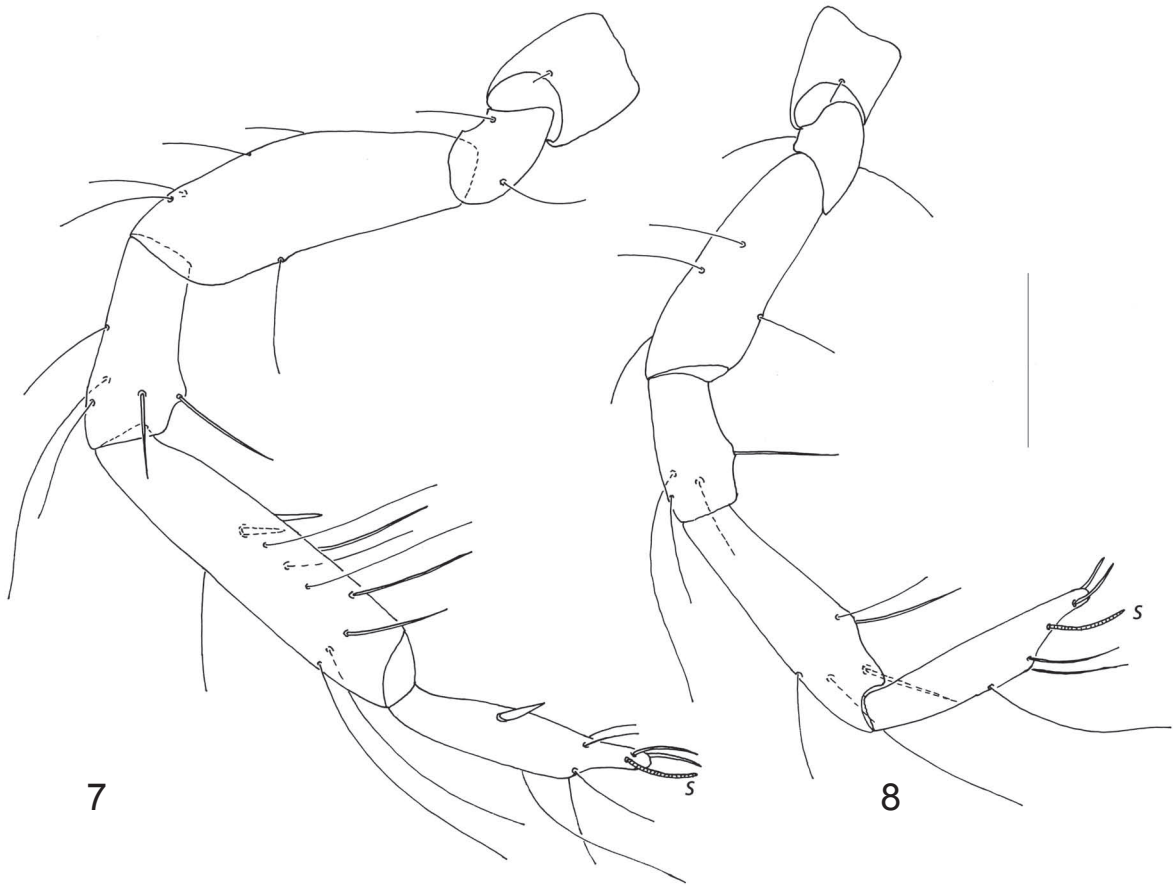
Capitulum (Fig. 3) elongate with rather wide base. Rostrum slender, approximately twice as long as wide, in ventral view almost with parallel lateral margins and provided with two pairs of thin setae, posterior setae slightly longer than anterior ones. Palps attached laterally to capitulum, distance between P-1 considerably larger than width of P-1. First (basal) segment of palp (Fig. 4) relatively short, without setae. Second segment of palp large, with convex dorsal margin and slightly concave or almost straight ventral one, with single dorsodistal thin seta. Third segment of palp with short peg-like distomedial seta. Fourth segment of palp tapering distally, with three thin basal setae, one bristle seta near middle and short distal spine. P-4 longer than P-3. Chelicera with large basal segment and relatively short stylet. Cheliceral stylet (Fig. 5) pointed.

Legs I (Fig. 7) longer than other pairs of legs: trochanter with single short seta; basifemur with one dorsal and one ventral setae; telofemur with convex dorsal margin, bearing four dorsal setae and one ventrodistal seta; genu shorter than telofemur and tibia, bearing three thin unequal dorsal setae, one distolateral seta and one ventrodistal one; tibia with straight dorsal margin, with two short spines, three bristle and six long thin unequal setae; tarsus with one ventral spine near middle, one solenidion, three long unequal dorsal setae, two short ventral and two parambulacral setae. Solenidion and parambulacral setae setuated closely to each other. Leg II (Fig. 8): trochanter with single short seta; basifemur with two setae (dorsal and ventral); telofemur with three dorsal thin setae and one ventrodistal thin seta; genu with three unequal thin setae and one ventrodistal bristle; tibia with three (two unequal dorsal and one ventral) thin setae and two ventrodistal bristles; tarsus with one solenidion, two parambulacral setae and three unequal dorsal setae. Number and arrangement of setae on segments of legs III (Fig. 9) and legs IV (Fig. 10) almost similar to each other. Trochanter of leg IV without seta. Tibia III and IV each with two ven-



Figs. 3–6. *Halacarellus kamchatkaensis*: 3 — male, dorsal view of gnathosoma, 4 — male, internal view of pedipalp, 5 — male, lateral view of cheliceral stylet; 6 — female, genitor-anal area. Scale bars: 3, 6 = 50 μm, 4–5 = 25 μm.

tral bipectinate setae. Tarsi III and IV with two parambulacral setae and three unequal dorsal ones each. Claws of leg I (Fig. 11) smaller in size than those of claws of leg II–IV (Fig. 12). All lateral claws bidentate, ventral dent larger than dorsal one; lateral claws of leg I without pectines, lateral claws of leg II–IV with fine pectines. Median claw of all tarsi very small, median claw I



Figs. 7–8. *Halacarellus kamchatkaensis*, female: 7 — leg I, 8 — leg II. Scale bar: 7–8 = 50 μm.

with two denticles, median claw on tarsi II–IV with one denticle.

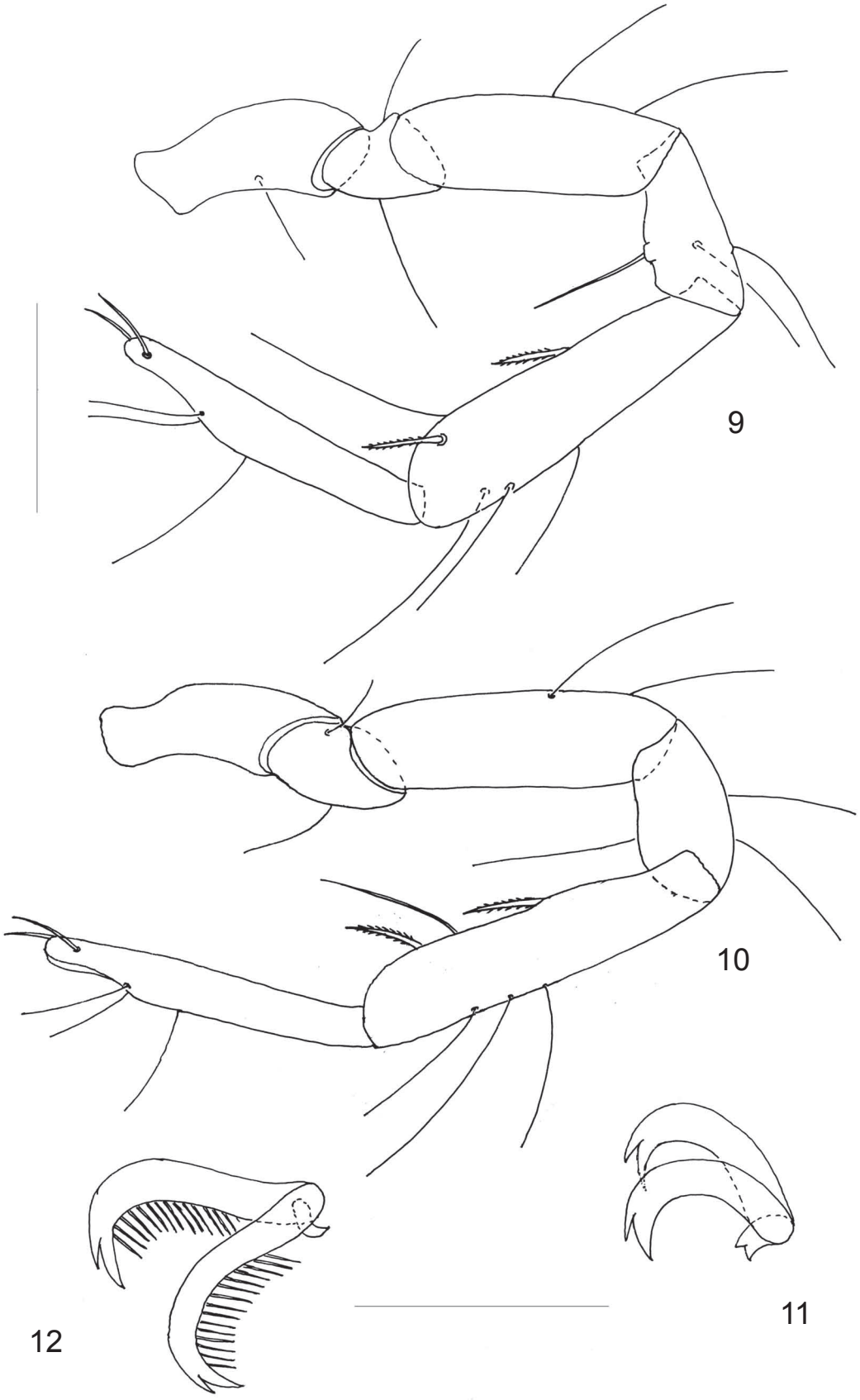
Male. Genital field large and oval. Genital flaps elongated, ratio of length/width 3.7; genital acetabula (three pairs) external and situated on posterior part of genital flaps. Genital plate with 23–27 perigenital setae on each side.

Measurements (*n*=2). Length of idiosoma 420–425, width 200–205; length of anterodorsal plate 102, width 96; length of ocular plates 81, width 48; length of posterodorsal plate 275–295, width 165–170; length of coxae I+II 150, width 180; length of coxae III+IV 132; length of genital plate 170–190, width 143–147; length of genital flap 70, width 19; diameter of genital acetabula 6–8; length of capitulum 130–145, length of rostrum 55–60; length of basal segment of chelicera 120–128, length of cheliceral stylet 35–38; lengths of pedipalpal segments (P-1–P-4): 16, 58, 22, 30; length of peg-like seta on P-3 7–9; lengths of leg segments (trochanter – tarsus): I — 36, 42, 90, 54, 96, 57; II — 36, 36, 72, 42, 75, 63; III — 57, 30, 60, 51, 72, 78; IV — 57, 33, 75, 54, 87, 81.

Female. Similar to male but slightly larger. Genital field large and oval (Fig. 6). Genital flaps elongated, ratio of length/width 2.5; genital acetabula (three pairs) internal and situated on posterior part of genital field. Genital plate with one seta on each side.

Measurements (*n*=1). Length of body 435, width 240; length of anterodorsal plate 108, width 96; length of ocular plates 78, width 48; length of posterodorsal plate 280, width 168; length of coxae I+II 150, width 220; length of coxae III+IV 160; length of genital plate 210, width 150; length of genital flap 90, width 36; diameter of genital acetabula 8–10; length of capitulum 145, length of rostrum 65; length of basal segment of chelicera 120, length of cheliceral stylet 36; lengths of pedipalpal segments (P-1–P-4): 18, 60, 24, 30; length of peg-like seta on P-3 10; lengths of leg segments (trochanter – tarsus): I — 42, 42, 96, 60, 108, 60; II — 42, 42, 80, 42, 72, 60; III — 51, 36, 66, 48, 90, 78; IV — 60, 36, 81, 51, 90, 84.

Differential diagnosis. The new species is similar to *Halacarellus subterraneus* Schulz, 1933, and also to *H. capuzinus* (Lohmann, 1893) and *H. procerus* Viets, 1927, but differs from them by the following characters (character states of *H. subterraneus, H. capuzinus* and *H. procerus* are



Figs. 9–12. *Halacarellus kamchatkaensis*, male: 9 — leg III, 10 — leg IV, 11 — claws of tarsus I, 12 — claws of tarsus II. Scale bars: 9–10 = 50 μm, 11–12 = 25 μm.

indicated in parentheses from Shulz 1933; Lohmann 1893; Viets 1927, 1936; Sokolow 1952): the anterodorsal plate in *H. kamchatksensis* sp.n. with the straight anterior margin (with convex anterior margin or anteromedian protrusion), the bases of setae are situated in lateral corners of the anterodorsal plate (bases of setae situated rather far from to lateral margins of this plate), the genital plate of female with one pair of setae (with two pairs of setae), inhabitants of freshwater (marine inhabitants). In addition, the rostrum in *H. subterraneus* and *H. capuzinus* is triangular in shape, its length and width subequal; the ocular plates in *H. procerus* is elongated (ratio length/width > 2.0), tarsus of leg I with two medial bristle; in contrast, the rostrum in *H. kamchtkaensis* sp. n. is approximately twice as long as it is wide, in ventral view almost with parallel lateral margins; the ocular plates are rather wide (ratio of length/width 1.7), the tarsus of leg I with one medial spine.

Etymology. The species is named after the peninsula where it was collected (Kamchatka).

Habitat. Freshwater lake.

Distribution. Kuril'skoe Lake, Kamchatka peninsula, Russia.

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