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TWO NEW WATER MITE SPECIES OF THE GENUS *HYDRYPHANTES* KOCH (ACARI, HYDRACHNIDIA, HYDRYPHANTIDAE) FROM RUSSIA

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ABSTRACT: This paper provides an illustrated description of two water mite species—*Hydryphantes samarellus* sp.n. and *Hydryphantes tjumeniensis* sp.n.—from sedge bogs and temporary ponds of Russia.

KEY WORDS: Acari, Hydryphantidae, *Hydryphantes,* water mite, new species, male, female, standing waters.

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INTRODUCTION

At present, about 20 water mite species of the genus *Hydryphantes* are known from Russia (Sokolow 1940, Tuzovsky 2016). In this paper, two new water mite species of this genus are described based on materials collected by Vitaly Stolbov in the standing waters of the Asian parts of Russia. The material was sampled using a common hand net with 250 μm mesh size and fixed in 75% ethanol. All specimens were dissected and the slides were mounted in Hoyer's medium.

MATERIALS AND METHODS

Idiosomal setae are named according to Tuzovsky (1987). 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); ac-1–3—genital acetabula (first, second, third); D—diameter, H—height, L—length, ml—medial length, W—width; n—number of specimens measured. Lengths of the appendage segments were measured along their dorsal sides. All measurements are given in micrometers (μm). The type material is deposited in the collection of the Papanin Institute for Biology of Inland Waters (Borok, Russia).

SYSTEMATICS

Family **Hydryphantidae Piersig, 1896**

Genus ***Hydryphantes* Koch, 1841**

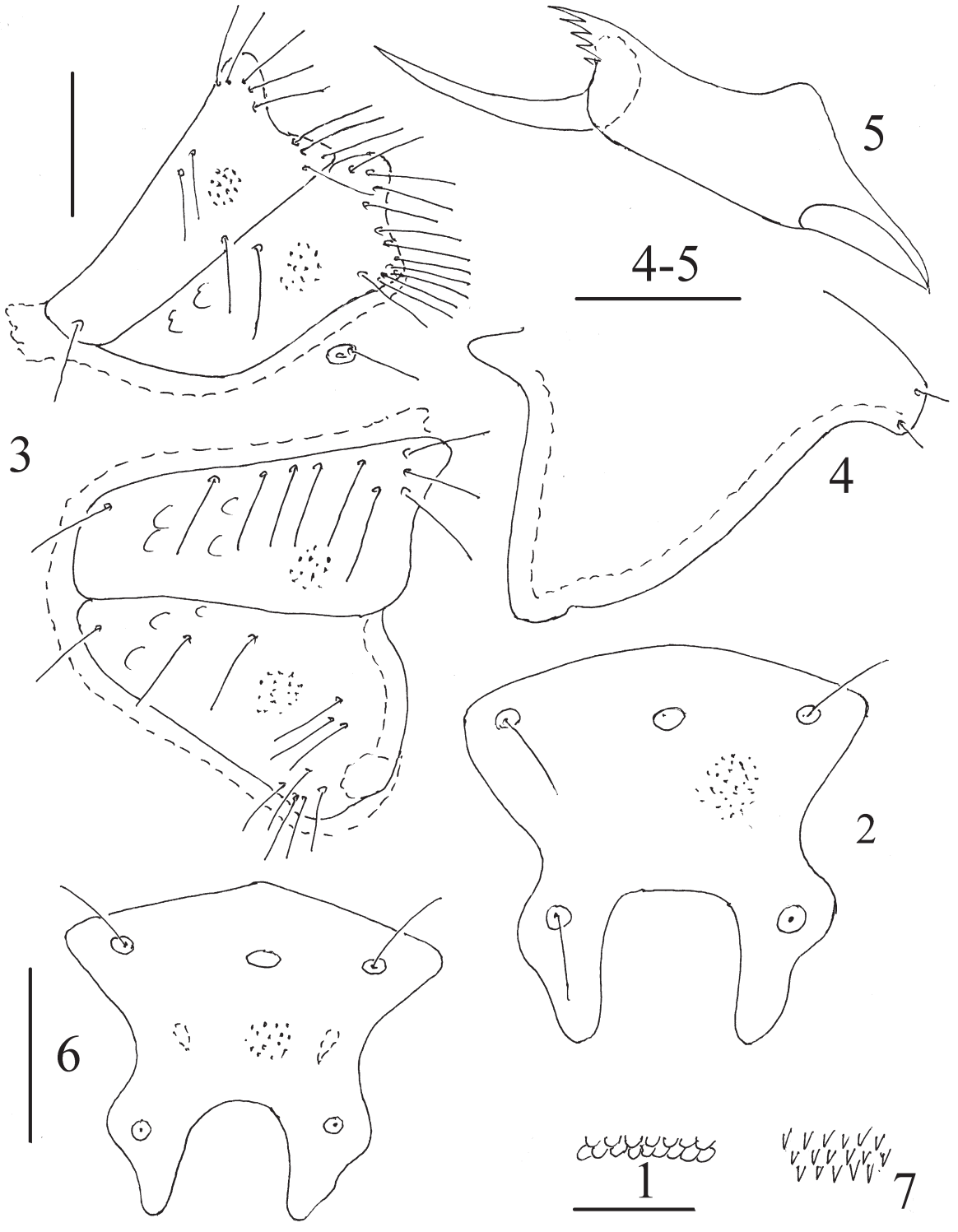
***Hydryphantes (Hydryphantes) samarellus* sp.n.**

Figs. 1–6, 8–12

Type material. Holotype: Male, slide 9958, Asia, Russia, Tyumenskaya Oblast, Tyumen District, temporary pond near Lake Andreevskoe, 57°05′03″ N 65°42′09″ E, 19 May 2019. Additional material: female, Sverdlovskaya Oblast, Tugulymsky District, sedge bog near the village of Kolobovo, 57°06′05.7″ N 64°42′15.4″ E, 9 May 2016, leg. V. Stolbov.

Diagnosis. Integument with short rounded papillae; frontal plate compact with obtuse-angled or equally convex anterior margin and relatively long posterior projections, anterior width > medial length, median eye situated at level of anterior setae of plate; coxal plates I–IV with a few long, fine setae each; P-3 with one medial and three dorsal setae; capitulum with short rostrum, ventral margin slightly convex; genital field with three pairs of unequal acetabula.

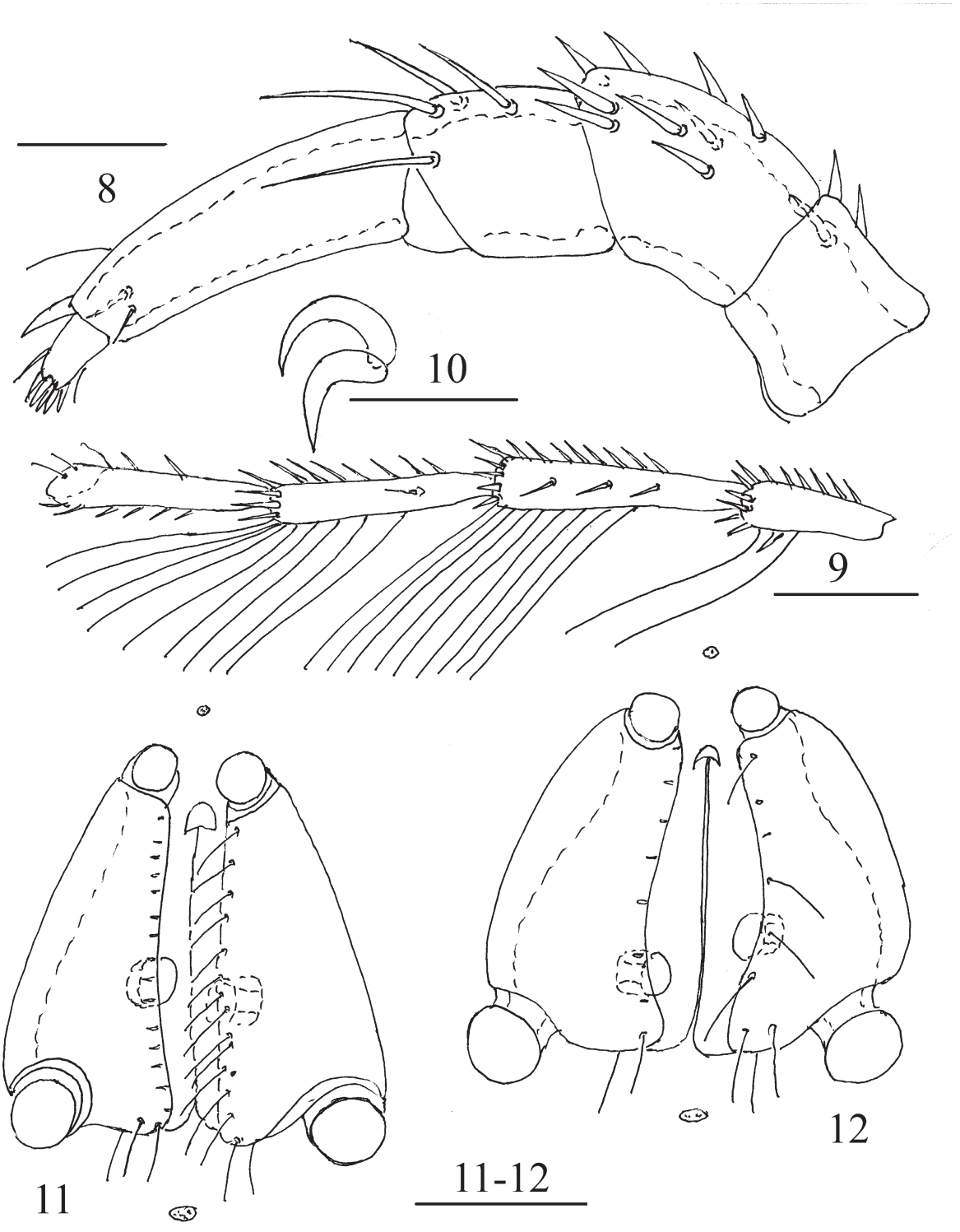
Description. Both sexes. Color red. Idiosoma soft, oval; integument with short rounded papillae (Fig. 1). Number and position of idiosomal setae typical for genus *Hydryphantes*. Frontal plate (Fig. 2) a little wider than long (L/W 0.90–0.96) with straight or concave posterior margin, anterior margin equally convex or obtuse-angled (Fig. 6); posterior projections relatively long (frontal plate mL/posterior projections ratio 1.5), their medial margins straight; median eye situated at level of anterior setae (*Fp*). Coxal plates I–IV with a few long, fine setae each (Fig. 3). Coxal plates I+II forming subcutaneous posteromedial extensions embracing gnathosomal bay, but medially separated by a membranous strip. Medial margins of coxal plates IV shorter than medial margin of coxal plate III. Genital field with three pairs of unequal acetabula: ac-3 largest, ac-2 distinctly smaller than ac-1. Pregenital and postgenital scler-



Figs. 1–6. *Hydryphantes samarellus* sp.n.: 1—fragment of integument; 2, 6—frontal plate; 3—coxal plates; 4—capitulum, lateral view; 5—chelicera; 1–5—male, 6—female. Scale bars: 1—50 μm, 2–6—100 μm.
Fig. 7. *Hydryphantes samaricus*, fragment of integument.

ites very small, but postgenital sclerite larger than pregenital one. Excretory pore surrounded by sclerotized ring.

Capitulum (Fig. 4) with short rostrum, ventral margin equally S-shaped, mouth opening of medium size. Chelicera (Fig. 5) with large basal seg-



Figs. 8–12. *Hydryphantes samarellus* sp.n.: 8—pedipalp, lateral view; 9—IV-Leg-3–6; 10—leg claws; 11–12—genital field; 8–11—male, 12—female. Scale bars: 8, 11, 12—100 μm, 9—200 μm, 10—50 μm.

ment and rather long slightly curved chela, basal segment with dorsal hump near middle of segment.

Pedipalp stout (Fig. 8): P-1 with three to four short dorsodistal setae; P-2 with 10–14 short, thick setae; P-3 with one medial seta and three dorsal setae; P-4 slender (L/H ratio > 3.0), slightly tapering distally, with short dorsodistal spine and 3 thin distal setae.

Legs II–IV with swimming setae (Fig. 9). Leg swimming setae number: II-Leg-5, 6-7; III/IV-Leg-3, 2–3; III-Leg-4, 6–10; III-Leg-5, 7–10; IV-Leg-4, 9–11; IV-Leg-5, 10–12. Leg claws hook-like, without claw lamella (Fig. 10).

Male. Acetabular plate (Fig. 11) elongate (L/W ratio 1.9), with 17–18 medial setae on each side, L basal segment/chela 2.35.

Measurements (n=1). Idiosoma L 1,200; frontal plate, total L 312, W 325, mL 187, posterior projections L 125, distance between medial margins of posterior projections L 125, frontal plate mL/posterior projections ratio 1.5; coxal plates I+II L 235, W 160; coxal plate III+IV L 350, W 285; genital flap L 185, W 100; genital acetabula (ac-1–3) D 30, 25, 37; capitulum L 235; chelicera L: basal segment 250, chela L 105; pedipalpal segments (P-1–5) L/H, L/H ratio: 60/60, 1.0; 90/66, 1.36; 66/60, 1.1; 132/42, 3.14; 24/15, 1.6; leg segments L: I-Leg-1–6: 75, 100, 100, 150, 185, 200; II-Leg-1–6: 85, 110, 135, 225, 260, 270; III-Leg-1–6: 85, 125, 145, 230, 265, 270; IV-Leg-1–6: 150, 150, 200, 335, 325, 300.

Female. Acetabular plate (Fig. 12) elongate (L/W ratio 1.75), with 8–10 genital setae on each side (L basal segment/chela 1.9).

Measurements (n=1). Idiosoma L 1,200; frontal plate L 350, W 365, mL 240, posterior projection L 110, distance between posterior projection L 108, frontal plate mL/posterior projections ratio 2.1; coxal plates I+II L 260, W 185; coxal plate III+IV L 335, W 300; genital flap L 175, W 100; genital acetabula (ac-1–3) D 27, 23, 39; capitulum L 210; chelicera L: basal segment 225, chela 120; pedipalpal segments (P-1–5) L/H, L/H ratio: 63/51, 1.23; 78/66, 1.18; 60/60, 1.0; 120/39, 3.07; 24/14, 1.75; leg segments L: I-Leg-1–6: 75, 100, 125, 175, 200, 215; II-Leg-1–6: 85, 115, 150, 235, 265, 275; III-Leg-1–6: 100, 115, 150, 250, 270, 275; IV-Leg-1–6: 150, 135, 210, 310, 310, 250.

Remarks. The present species is closely related to *Hydryphantes samaricus* Tuzovskij, 2014 in the structure of the idiosoma and appendages. Both species are well distinguished by the structure of the integument. In particular, the integument in *H. samaricus* (Fig. 7) with short conical papillae (Tuzovsky 2014), while in *H. samarellus* sp.n. the integument with short rounded papillae (Fig. 1).

Etymology. The species is named *samarellus* as it has many features in common with the species *Hydrypantes samaricus.*

Habitat. Sedge bogs, temporary ponds.

Distribution. Russia: Sverdlovskaya Oblast; Asia, Russia: Tyumenskaya Oblast.

Hydryphantes (*Hydryphantes*) *tjumeniensis* sp.n.

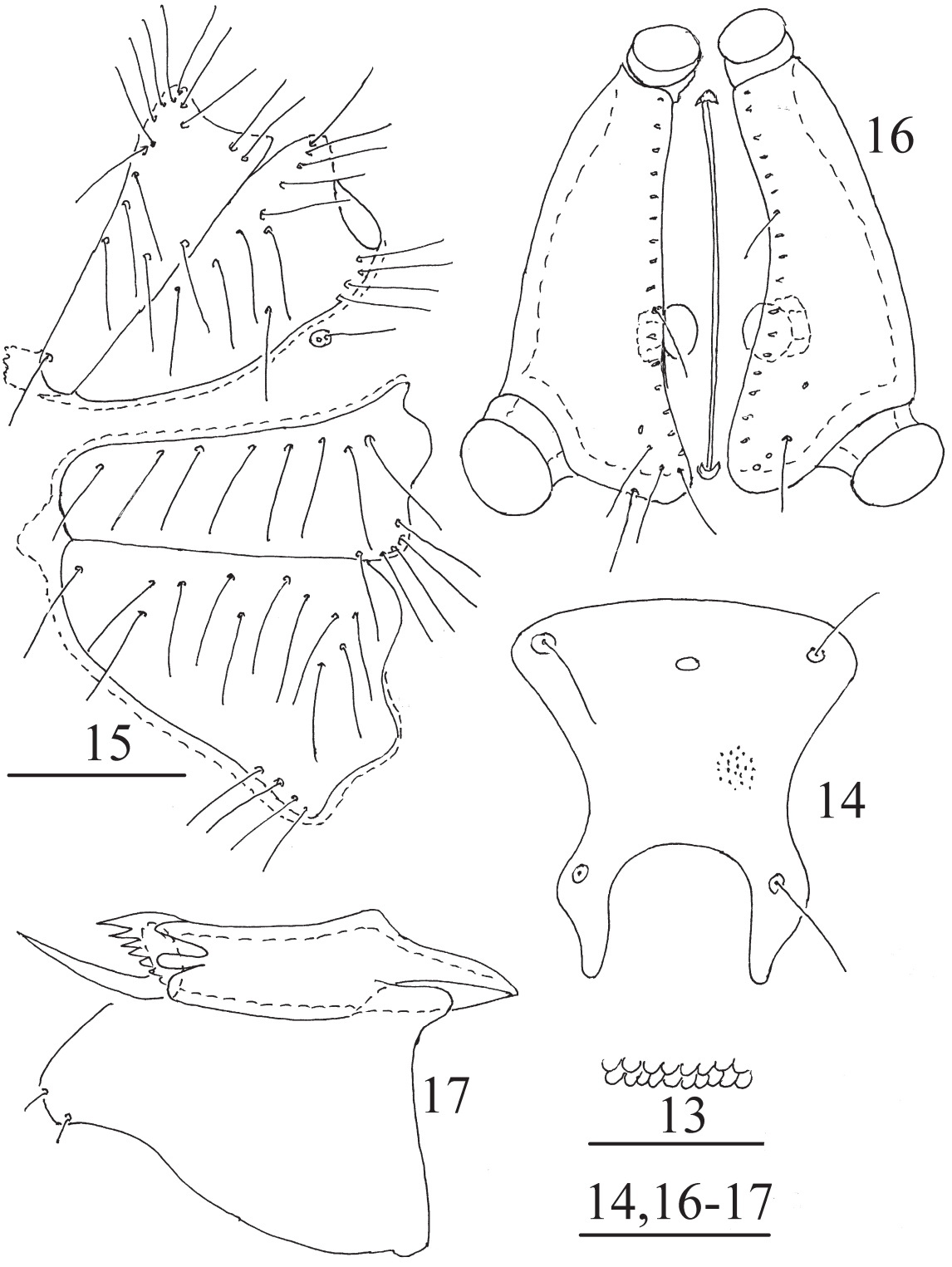
(Figs. 13–21)

Type material. Holotype: Male, slide 9959, Asia, Russia, Tyumenskaya Oblast, Tyumen District, small temporary pond in the vicinity of the village of Patrushevo, near the Topolya Natural Monument, 57°06′08.0″ N 65°32′52.0″ E, 5 June 2019, leg. V. Stolbov.

Diagnosis. *Male.* Integument with short rounded papillae; frontal plate large, with weakly equally convex anterior margin and rather long posterior projections, median eye situated at level of anterior setae of plate, anterior width > medial length; all coxal plates with a few long, fine setae each; medial margins of coxal plates III–IV nearly equal in length; capitulum with equally S-shaped ventral margin, rostrum and mouth opening of medium size; P-3 with eight setae; genital field with 20–22 medial setae on each side; legs II–IV with long swimming setae.

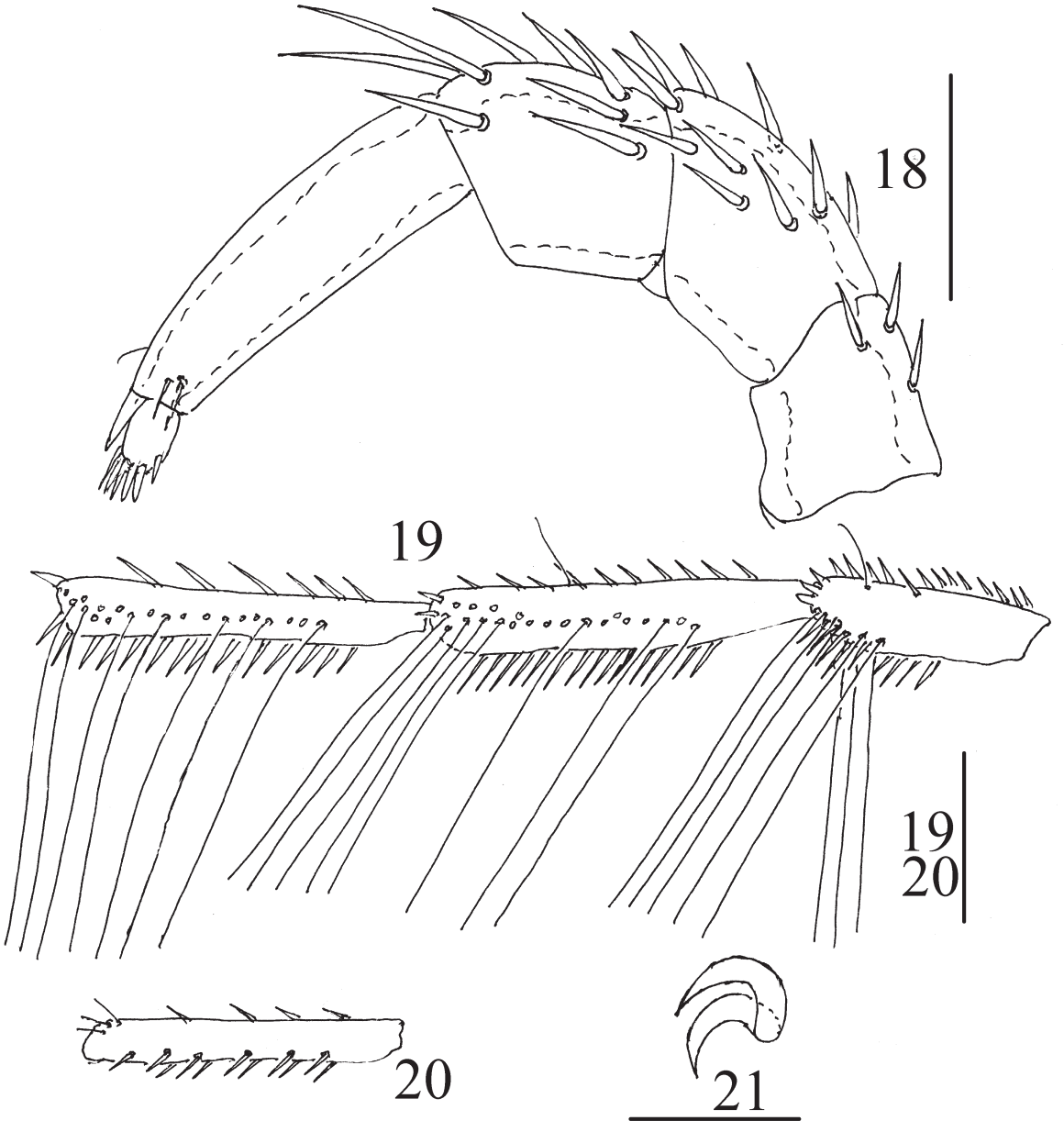
Description. *Male*. Color red. Integument with short rounded papillae (Fig. 13). Frontal plate (Fig. 14) large, a little longer than wide (L/W ratio 1.06), anterior width a little larger than medial length, with weakly equally convex anterior margin, posterior projections long (mL frontal plate/posterior projections L 2.05), their medial margins straight and broadly separated, median eye situated at level of anterior setae (*Fp*). All coxal plates with a few long, fine setae each (Fig. 15). Coxal plates I+II forming subcutaneous posteromedial extensions embracing gnathosomal bay, but medially separated by a membranous strip. Medial margins of coxal plates III–IV nearly equal in length. Genital field (Fig. 16) with three pairs of acetabula, ac-3 largest, ac-1 a little larger than ac-2. Acetabular plate elongate (L/W ratio 2.2), with 20–22 medial setae. Excretory pore surrounded by sclerotized ring.

Capitulum (Fig. 17) with equally S-shaped ventral margin, rostrum and mouth opening of medium size. Chelicera basal segment large with dorsal hump, chela relatively short (L basal segment/chela 2.6). Pedipalp stout (Fig. 18): P-1 with three short dorsodistal setae; P-2 with 10 short, thick setae; P-3 with eight unequal thick setae; P-4 slender (L/H ratio 4), slightly tapering distally, with short dorsodistal spine and 3 thin distal setae.



Figs. 13–17. *Hydryphantes tjumeniensis* sp. n., male: 13—fragment of integument; 14—frontal plate; 15—coxal plates; 16—genital field; 17—capitulum and chelicera. Scale bars: 13—50 μm, 15—200 μm, 14, 16–17—100 μm.

Legs II–IV with long swimming setae. Number of swimming setae as follows: II-Leg-5, 11–13; III-Leg-3, 3–5; III-Leg-4, 13–15; III-Leg-5, 17–21; IV-Leg-3, 5–9; IV-Leg-4, 21–24; IV-Leg-5, 18–23



Figs. 18–21. *Hydryphantes tjumeniensis* sp.n., male: 18—pedipalp, lateral view; 19—IV-Leg-3–5; 20—IV-Leg-6; 21—leg claws. Scale bars: 18—100 μm, 19–20—200 μm, 21—50 μm.

(Fig. 19); IV-Leg-6 with a few short, thick setae (Fig. 20). Leg claws hook-like (Fig. 21).

Measurements (n=1). Idiosoma L 1450; frontal plate total L 412, W 360, mL 277, posterior projection L 135, distance between medial margins of posterior projections 165; coxal plates I+II L: 475, W 300; coxal plate III+IV L: 450, W 435; genital flap L 250, W 110; genital acetabula D 40, 33, 62; capitulum L 300; chelicera L total 400, basal segment 285, chela L 110; pedipalpal segments (P-1–5) L/H: 80/75, 125/100, 100/87, 200/50, 30/19; leg segments L: I-Leg-1–6: 100, 125, 150, 250, 285, 285; II-Leg-1–6: 100, 150, 210, 360, 400, 375; III-Leg-1–6: 110, 160, 225, 375, 435, 410; IV-Leg-1–6: 210, 210, 335, 485, 460, 425.

Differential diagnosis. The present species is similar to *Hydryphantes* (*Hydryphantes*) *affinis* Sokolow, 1931, *H.* (*Hydryphantes*) *crassipes* Koenike 1914, *H.* (*Hydryphantes*) *fontinalis* Sokolow, 1934 and *H.* (*Hydryphantes*) *hellichi* Thon, 1899

in the structure of the frontal plates. The frontal plate in *H. affinis* differs from that of *H. tjumeniensis* sp.n. in its minor dimension (320–350), anterior margin variable in shape but medial eye always located distinctly posterior to the level of anterior trichobothria (*Fp*); P-3 with four thin setae (Sokolow 1931, 1940). *Hydryphantes crassipes* is well distinguished from *H. tjumeniensis* sp.n. in the shape of the pedipalps (extremely robust), P-3's length distinctly shorter than height, P-4 only about twice as long as it is high (Di Sabatino *et al.* 2010). *Hydryphantes fontinalis* differs from *H. tjumeniensis* sp.n. in having a modified cheliceral claw that is stylet-like, very fine and long (almost as long as the basal segment), with an acute-angled basal kink; also, swimming setae in *H. fontinalis* are reduced in number: 6 on III-Leg-4/5; 7–8 on IV-Leg 4/5 (Sokolow 1940, Gerecke 1996; Di Sabatino *et al.* 2010). *Hydryphantes hellichi is* characterized by the following features: frontal plate large (L 535–570, W 410–460), capitulum with long rostrum (Tuzovskij 2016).

Etymology. The species epithet "*tjumeniensis*" is derived from the name of the region (Tyumenskaya Oblast) where it was collected.

Habitat. Temporary ponds.

Distribution. Russia: Tyumenskaya Oblast.

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