

**FIRST RECORDS OF THE WATER MITE SPECIES *UNIONICOLA HANKOI* SZALAY, 1927
(ACARI, HYDRACHNIDIA, UNIONICOLIDAE) IN RUSSIA AND UKRAINE**

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[Тузовский П.В., Янович Л.Н., Шевчук Т.В. Первые находки водяного клеща *Unionicola hankoi* Szalay, 1927 (Acari, Hydrachnidia, Unionicolidae) в России и Украине]

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Ключевые слова: *Unionicolidae, Unionicola hankoi, водяной клещ, морфология, самец, самка, дейтонимфа, тритонимфа, Россия, Украина*

Summary: Morphology of male, female, deutonymph and tritonymph of the water mite *Unionicola hankoi* are (re)described with illustrations.

Резюме: Иллюстрированное (пере)описание самца, самки, дейтонимфы и тритонимфы водяного клеща *Unionicola hankoi*.

INTRODUCTION

The water mite *Unionicola hankoi* is reported from the following European countries: Hungary [Szalay, 1927, 1964]; Italy [Ramazzotti, 1947, Nocentini, 1960], Portugal [Lundblad, 1956] and Poland [Biesiadka, 1972]. The water mite *U. hankoi* was known on adults [Szalay, 1927, 1964; Lundblad, 1956] and deutonymph [Nocentini, 1960]. The description of adults and deutonymph of this species has been very brief and insufficiently illustrated.

The aim of this paper is to (re)describe the male, female, deutonymph and tritonymph of *U. hankoi*. The description of this species from Russia and Ukraine is given below.

MATERIALS AND METHODS

The examined material (19 males, 9 females, 12 deutonymphs and 5 tritonymphs) was collected in Russia and Ukraine. Specimens (17 males, 8 females) were collected in Russia, Samara Province, Stavropol District, small lake near village Koltsovo, July 1992 (leg. P.V. Tuzovskij); 2 males, 1 female, 12 deutonymphs and 5 tritonymphs were collected in Ukraine, Zhitomir Province, Sluch River near Baranovka City, 29 June 2011 (leg. L.N. Yanovich and T.V. Shevchuk).

The nomenclature of idiosomal setae is given after Tuzovskij [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), i.e. III-Leg-4 – genu of the third leg; n – is the number of specimens measured. All measurements are given in μm .

***Unionicola (Pentatax) hankoi* Szalay, 1927 (Figs 1-15)**

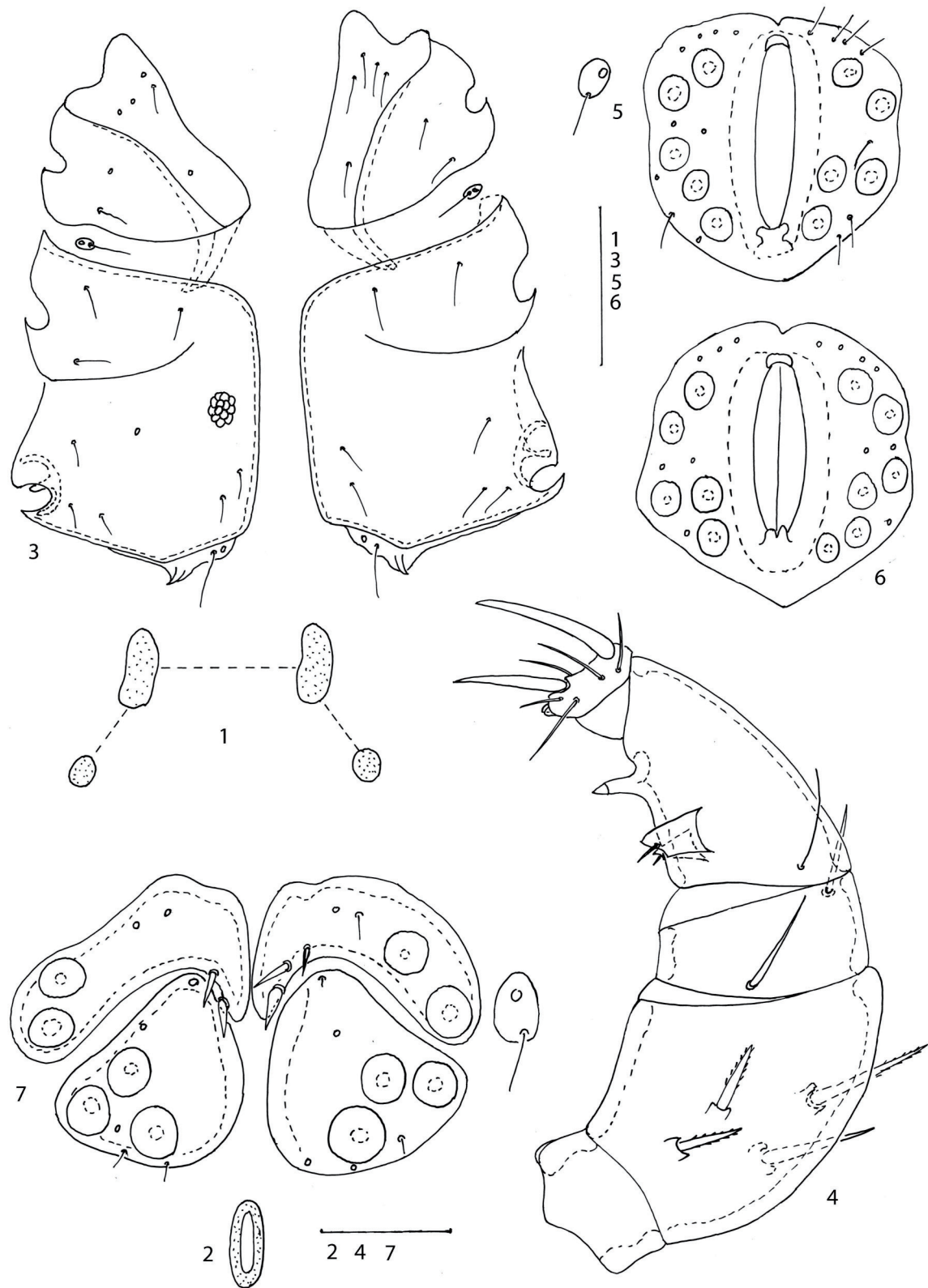
Both sexes. Body somewhat flattened dorsoventrally. Integument soft and smooth. Dorsum usually with two pairs of plates (Fig. 1). Anterior pair of plates relatively large, elongate; posterior plates oval or circular and considerably

smaller than anterior ones. Trichobothria Fp, Oi and setae Pi without glandularia, other dorsal setae associated with glandularia. All idiosomal setae thin and approximately equal in length. Sclerites, bearing setae and glandularia Le, considerably larger than sclerites bearing other idiosomal setae. Excretory pore (Fig. 2) longitudinal, surrounded by narrow sclerotized strip and placed dorsocaudally.

Anterior and posterior coxal groups divided by relatively narrow interspace (Fig. 3). Apodemes of first coxal group rather long and extending posteriorly to anterior edge of third coxae. Suture line between third and fourth coxal plates incomplete and curved, medial end of suture line directed to anterior edge of third coxal plate. Fourth coxal plates with a short projection on medial portion of posterior edge. Sclerites, bearing seta and glandularium Pe, fused with posteromedial margins of fourth coxal plates. Surface of all coxal plates with reticulations.

Pedipalps (Fig. 4) short and stocky, first three segments and proximal portion of tibia expanded dorsoventrally. Trochanter without setae, femur with two short external and two long internal setae, genu with one lateroproximal seta and one dorsodistal seta; tibia strongly tapering distally, with two unequal ventrolateral tubercles proximally to middle of segment bearing thin short seta each and one ventrodistal tubercle bearing short peg-like seta, and with one thin dorsoproximal seta. Tarsus very short, with two long and pointed distal spine-like setae (dorsal and ventral), two short ventral peg-like setae with rounded tips, and five thin unequal setae.

Leg I (Fig. 8) without swimming setae and shorter than legs II-IV. First four segments of leg I thicker than tibia and tarsus. Basifemur of leg I without ventrodistal protrusion or projections and ventral setae, telofemur with slightly convex ventral and dorsal margins and bearing two long subequal ventrodistal setae. Genu I slightly tapering distally, tibia slightly thickened in distal half of segment



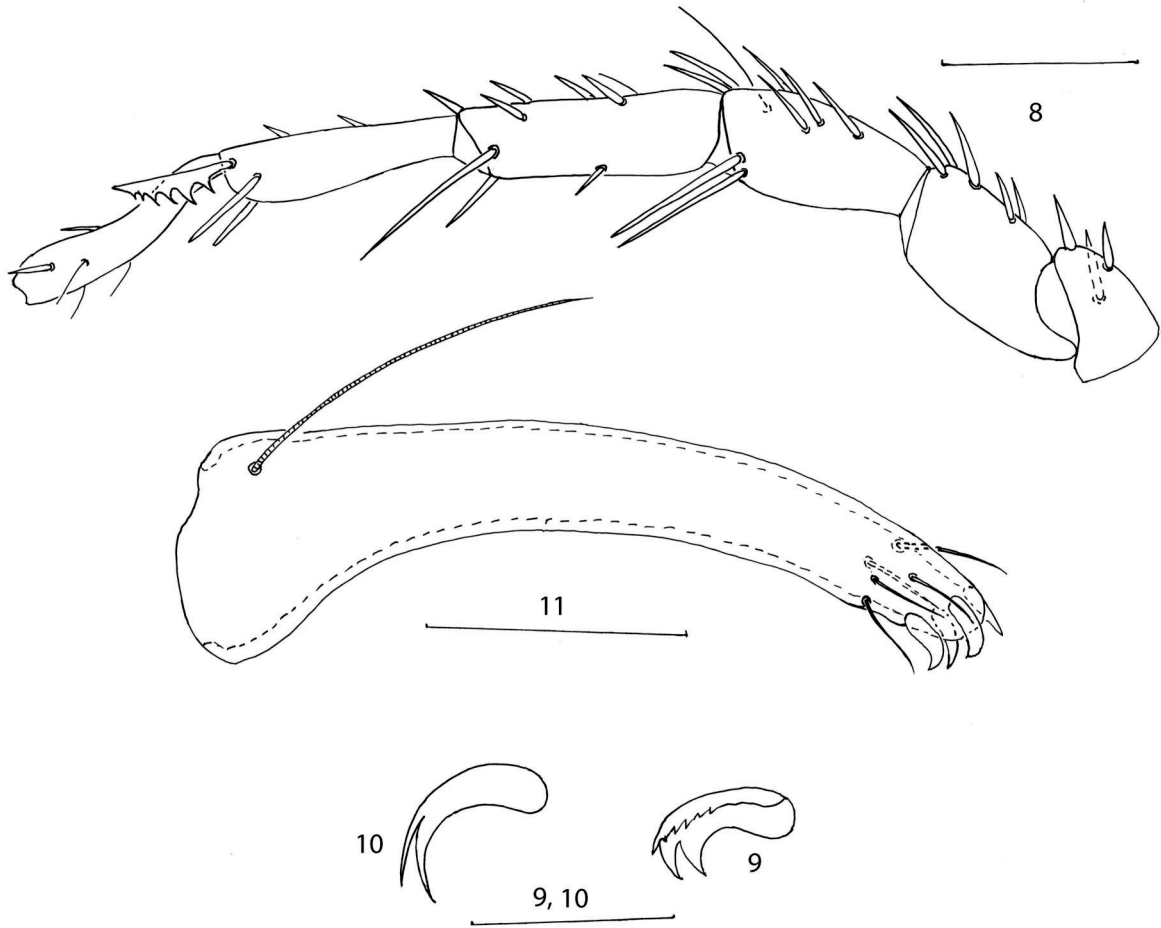
Figs 1-7. *Unionicola hankoi*, adults: 1 – dorsal plates, 2 – excretory pore, 3 – coxal plates, 4 – pedipalp lateral view, 5-7 – genital field; 1-6 male, 7 – female. Scale bars: 1, 3, 5, 6 = 100; 2, 4, 7 = 50.

and bearing distolateral denticulate seta; tarsus I curved and slightly expanded in distal half of segment.

Leg II-IV long, slender; all segments, except trochanter, cylindrical and with swimming setae. The number of swimming setae on legs II-IV is as follows: Leg. II: one on genu, two on tibia; Leg. III: 2-3 on genu and 3 on tibia; Leg. IV: 3-4 on genu and 3 on tibia. Swimming setae of

leg II shorter than swimming setae of legs III-IV. Claws of all legs hook-like with two clawlets. Claws of leg I thick and relatively small with subequal clawlets (Fig. 9), claws of legs II-IV rather thin and large, with unequal clawlets (Fig. 10).

Male. Dorsum usually have two pairs of plates but rarely posterior plates absent.



Figs 8-11. *Unionicola hankoi* and *U. crassipes*, males: 8 – leg I, 9 – claw of leg I, 10 – claw of leg IV, 11 – pedipalpal tarsus; 8-10 – *U. hankoi*, 11 – *U. crassipes*. Scale bars: 8 = 100, 9-10 = 20, 11 = 50.

Genital plates (Fig. 5) fused to each other by anterior and posterior ends, usually with 5 acetabula (rarely 4 or 6, Fig. 6) and 7-9 thin setae on each side. All acetabula approximately equal in size. Gonopore elongate and narrow.

Measurements (n=10). Length of body 570-655; length of coxae III+IV 185-195; length of anterior dorsal platelets 48-55, their width 24-30; length of posterior dorsal platelets 12-24, their width 12-15; length of genital plate 140-155, width 130-140; length of pedipalpal segments (P-1-5): 15-25, 105-140, 30-40, 95-105, 12-17, length of leg segments: I-Leg-1-6 – 55-60, 95-105, 105-115, 120-125, 120-130, 95-105; II-Leg-1-6 – 55-60, 105-110, 95-105, 145-155, 180-190, 150-175; III-Leg-1-6 – 55-65, 105-115, 105-115, 145-155, 180-195, 160-170; IV-Leg-1-6 – 80-90, 110-125, 120-130, 160-180, 195-215, 175-190.

Female. Genital field consisting of four plates (Fig. 7). Anterior genital plates wide and narrow, with two acetabula, two (rarely three) short subequal spine-like posteromedial setae and two short, thin setae each. Posterior plates more or less triangular, bearing usually three (rarely two or four acetabula) and three-five short, thin setae each.

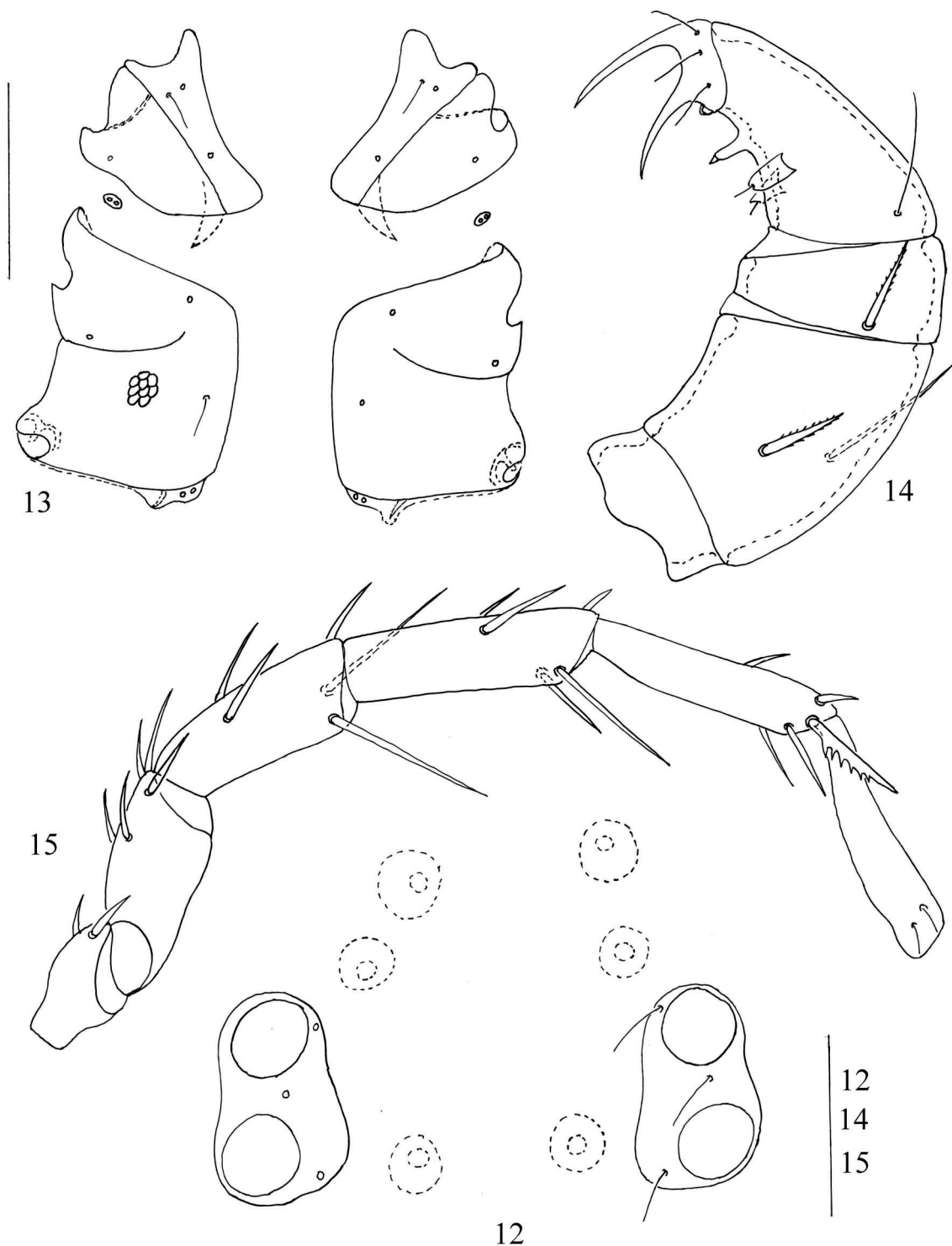
Measurements (n=9). Length of body 570-815; length of coxae III+IV 185-200; length of anterior dorsal platelets 54-60, width 18-21; length of posterior dorsal platelets 18-25, width 12-18; length of anterior genital plates 42-48, width 72-78; length of posterior genital plates 90-100,

width 65-75; length of pedipalpal segments (P-1-5): 17-30, 120-130, 38-43, 105-115, 16-25, length of leg segments: I-Leg-1-6 – 55-65, 105-115, 105-115, 120-140, 120-140, 95-105; II-Leg-1-6 – 55-65, 105-125, 95-105, 145-165, 175-190, 160-180; III-Leg-1-6 – 55-65, 105-125, 105-115, 145-165, 180-205, 160-180; IV-Leg-1-6 – 90-105, 120-140, 130-140, 175-195, 205-220, 180-190.

Deutonymph. Similar to adults, differing mainly by smaller size and external structures of the genital field. Gonopore is absent. Genital field are represented by two separate genital plates, which bearing two acetabula and three (rarely four) thin setae located along anterior edge of each plates (Fig. 12). Dorsal plates, especially posterior pair of plates, rudimentary or absent. Anterior and posterior coxal groups divided by wide interspace, apodemes of first coxal groups not reaching the anterior edge of third coxae (Fig. 13). Surface of all coxal plates with reticulations.

Pedipalps (Fig. 14) short and stocky: trochanter of pedipalp without seta, femur with short external seta and long internal seta, genu with single short proximal seta; tibia with two well developed setal tubercles proximally to middle and single tubercle bearing short peg-like seta at distal end with single thin, long dorsoproximal seta; tarsus with two long thickened setae, two very small ventral peg-like setae and three thin setae.

Legs as in adults, but number of setae on segments



Figs 12-15. *Unionicola hankoi*, deutonymph: 12 – genital field of deutonymph and tritonymph, the last is shown by a dashed line, 13 – coxal plates, 14 – pedipalp, 15 – leg I. Scale bars: 12, 14, 15 = 50, 13 = 100.

of legs less than in adults. Tibia of leg I (Fig. 15) bearing distolateral denticulate seta.

Measurements (n=10). Length of body 450-500; length of coxae III+IV 125-140; length of genital plate 42-55, width 24-27; length of pedipalpal segments (P-1-5): 11-13, 65-75, 24-30, 65-75, 10-12; length of leg segments: I-Leg-1-6 – 20-25, 48-65, 60-65, 75-78, 75-80, 75-78; II-Leg-1-6 – 25-30, 55-65, 60-65, 75-90, 105-115, 105-118; III-Leg-1-6 – 35-40, 48-70, 65-70, 80-90, 105-110, 105-115; IV-Leg-1-6 – 42-48, 50-60, 70-75, 95-105, 115-

120, 120-135

Tritonymph. The ancestrally active instar tritonymph is immobile in water mites. Pupa-like resting stage of *U. hankoi* has only stalked genital acetabula. Genital field (Fig. 12) is characterized by three pairs of minute acetabula arranged in two longitudinal lines in the posterior part of idiosoma.

DISCUSSION

Adults and deutonymphs of *U. hankoi* especially well differ from the European representatives of the genus

Unionicola by the structure of the pedipalpal tarsus. The majority of species of this genus have well developed pedipalpal tarsus (Fig. 11), its length several times more than thickness or height of the segment, and usually bearing four more or less identical distal peg-like setae. In contrast, the pedipalpal tarsus in *U. hankoi* (Figs 4, 14) is very short, its length is much less than height, bears two very large spines which form a pincer-like appendage, and two small rudimentary ventral spines with rounded tips.

The genital field of tritonymph *U. hankoi* has three pairs of genital acetabula, more or less equal in size (Fig. 12); in contrast, tritonymphs of *U. intermedia*, *U. crassipes* and *U. dresscheri* have four pairs of genital acetabula [Tuzovskij, 1987]. The ancestral number of genital acetabula (3 pairs) in tritonymphs is very seldom met among water mites. Three pairs of genital acetabula are noted in *Paniscus michaeli* Koenike, 1896 [Tuzovskij, 1987] and in *Sperchon violaceus* Walter, 1944 [Bader 1982], although tritonymphs of other species of the genus *Sperchon* have only one pair of genital acetabula [Tuzovskij, 1987]. The majority of tritonymphs from various families of water mites (Hydryphantidae, Sperchontidae, Teutoniidae, Lebertiidae, Oxidae, Torrenticolidae, Limnesiidae, Hygrobatidae, part of Pionidae, Krendowskiidae, Mideopsidae) have only one pair of genital acetabula [Tuzovskij, 1987]. The tritonymphs from the families Hydrodromidae, Limnocharidae, Feltriidae, part of Pionidae, Aturidae and Arrenuridae have 4 pairs or more pairs of genital acetabula [Lundblad 1927, Cassagne-Méjean, 1966, Tuzovskij, 1987, Gerecke et al., 2007].

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