Acarina 22 (1): 29–35

DESCRIPTION OF TWO NEW WATER MITE SPECIES OF THE GENUS *ATRACTIDES* KOCH (ACARI, HYDRACHNIDIA, HYGROBATIDAE) FROM KRASNODARSKY KRAY, RUSSIA

P. V. Tuzovsky

Institute for Biology of Inland Waters of the Russian Academy of Sciences, Borok, Yaroslavl Prov., 152742 Russia; e-mail: tuz@ibiw.yaroslavl.ru

ABSTRACT: An illustrated description of two new water mite species, *Atractides shapovalovi* (male, female) and *A. saprykini* (male) from the running waters of the Krasnodarsky Kray is presented.

KEY WORDS: water mites, Hygrobatidae, *Atractides*, new species, morphology, running waters, Krasnodarsky Kray, Russia

INTRODUCTION

In materials of water mites sent to me for identification from the North Caucasus I found two new species of the genus *Atractides* Koch, 1837, which are described below.

MATERIALS AND METHODS

The material was sampled with a regular hand net 250 μm mesh size. Specimens were fixed in 4 % formalin. All mites were mounted in Hoyer's medium. Idiosomal setae are named according to Tuzovsky (1987), legs setae are named according to Gerecke (2003).

The following abbreviations are used in species description: 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; S-1, proximal sword seta on tibia of leg I; S-2, distal sword seta on tibia of leg I; ac. 1–3, genital acetabula (anterior, median, posterior); 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 micrometers (μm).

Family Hygrobatidae Koch, 1842

Genus *Atractides* Koch, 1837

Atractides (Atractides) shapovalovi Tuzovskij, sp. n.

Figs 1–17

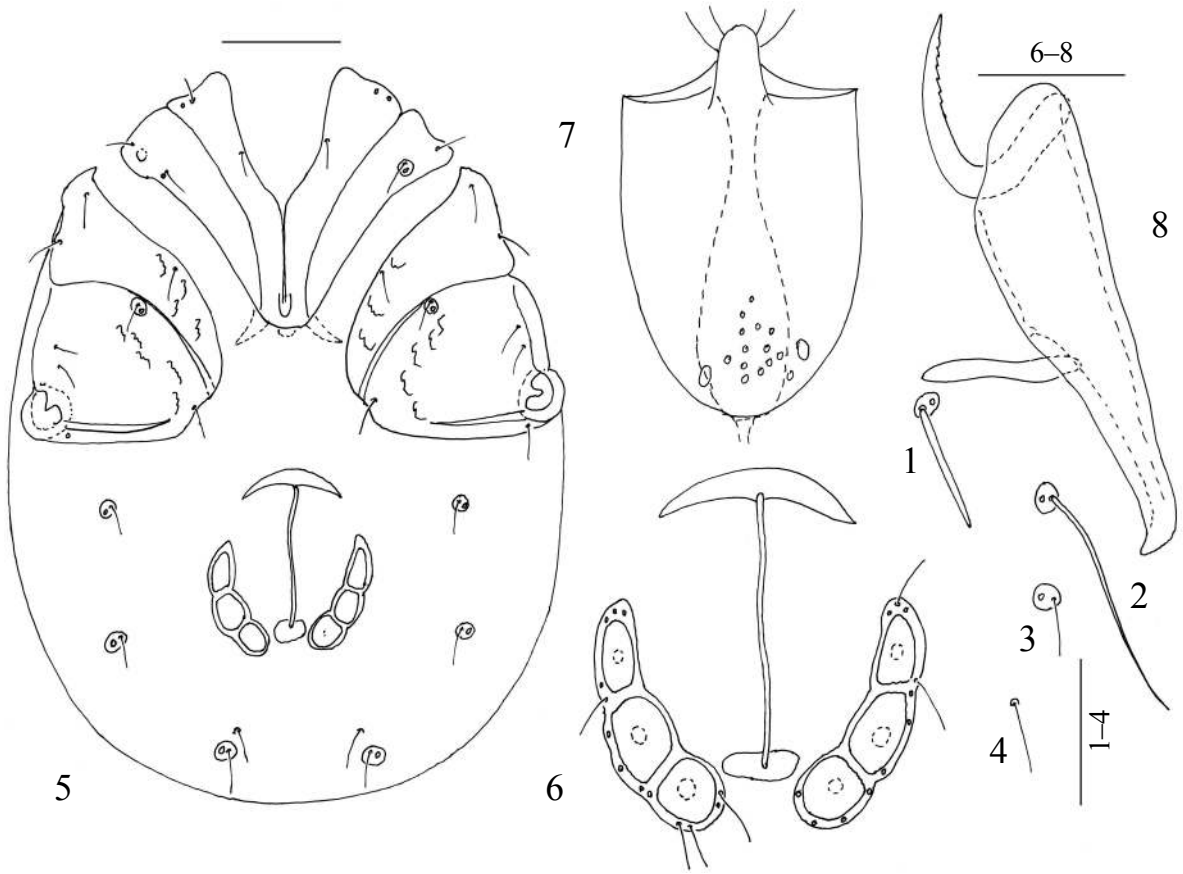
Type material. Holotype: female (IBIW 9783), Russia, North Caucasus, Krasnodarsky Kray, Apsheronsky District, Kurdghips River near settlement Krasny Dagestan, 3 June 2013, leg. M.B. Shapovalov and M.A. Saprykin. Paratypes: 1 male and 7 females same data. The holotype is deposited in the collection of Institute for Biology of Inland Waters (Borok, Russia).

Diagnosis. Adults: integument soft and finely striated; median projection elongate and not reaching posterior margin of coxal plates I; I–Leg: I–Leg-5 S-1 and S-2 separated from each other, S-1 slender and longer than S-2, S-2 thickened near middle; I–Leg-6 moderately slender, curved; P-4 ventral margin divided by setae insertions in sectors 1:2:2 or 2:2:3, sword seta short and located near distoventral seta; setae *Pi* and *Ci* separated; **female:** genital plates elongate (L/W ratio 3.0–3.2), P-2 with straight ventral margin; **male: g**enital field apple-shaped and as long as wide, plates fused to each other only by anterior ends; P-2 with ventrodistal protrusion.

Description. Female. The idiosoma flat, oval, integument soft with very finely striated. Number and position of idiosomal setae typical for genus *Atractides*. Setae *Fch* relatively long and thick (Fig. 1), setae *Oe, Hi* and *He* (Fig.2) longest and heaviest of all dorsal setae. Trichobothtia *Fp, Oi* and setae *Pi* without glandularia (Fig. 4), other idiosomal setae associated with glandularia (Fig. 3). In mature specimen coxal plates (Fig. 5) cover less than half of ventral surface of idiosoma. Posteromedial margin of coxal plates I+II straight or slightly convex, with two moderately large apodemes and short subcutaneous median projection; median suture line between coxal plates I distinct. Setae *Hv* located in lateral portion of coxae II. Coxae III+IV with straight or slightly concave oblique medial margins; base and glandularia of seta *Pe* situated near anterior margins of coxae IV. Setae *Pi* and *Ci* separated, excretory pore unsclerotized.

Gonopore slightly longer than genital plates (Fig. 6). Genital plates elongate (L/W ratio 3.0–3.2) with 3 acetabula and 11–13 fine setae. Anterior genital sclerite much wider than posterior one.

Capitulum (Fig. 7) elongate, rostrum moderately long narrow, well extending to anterior edge



Figs 1–8. *Atractides shapovalovi* sp. n., female: 1 — seta Fch, 2 — seta He, 3 — seta Sce, 4 — trichobothria Oi; 5 — idiosoma, ventral view, 6 — genital field, 7 — capitulum, ventral view, 8 — chelicera. Scale bars: 1–4, 5 = 100 µm, 6–8 = 50 µm.

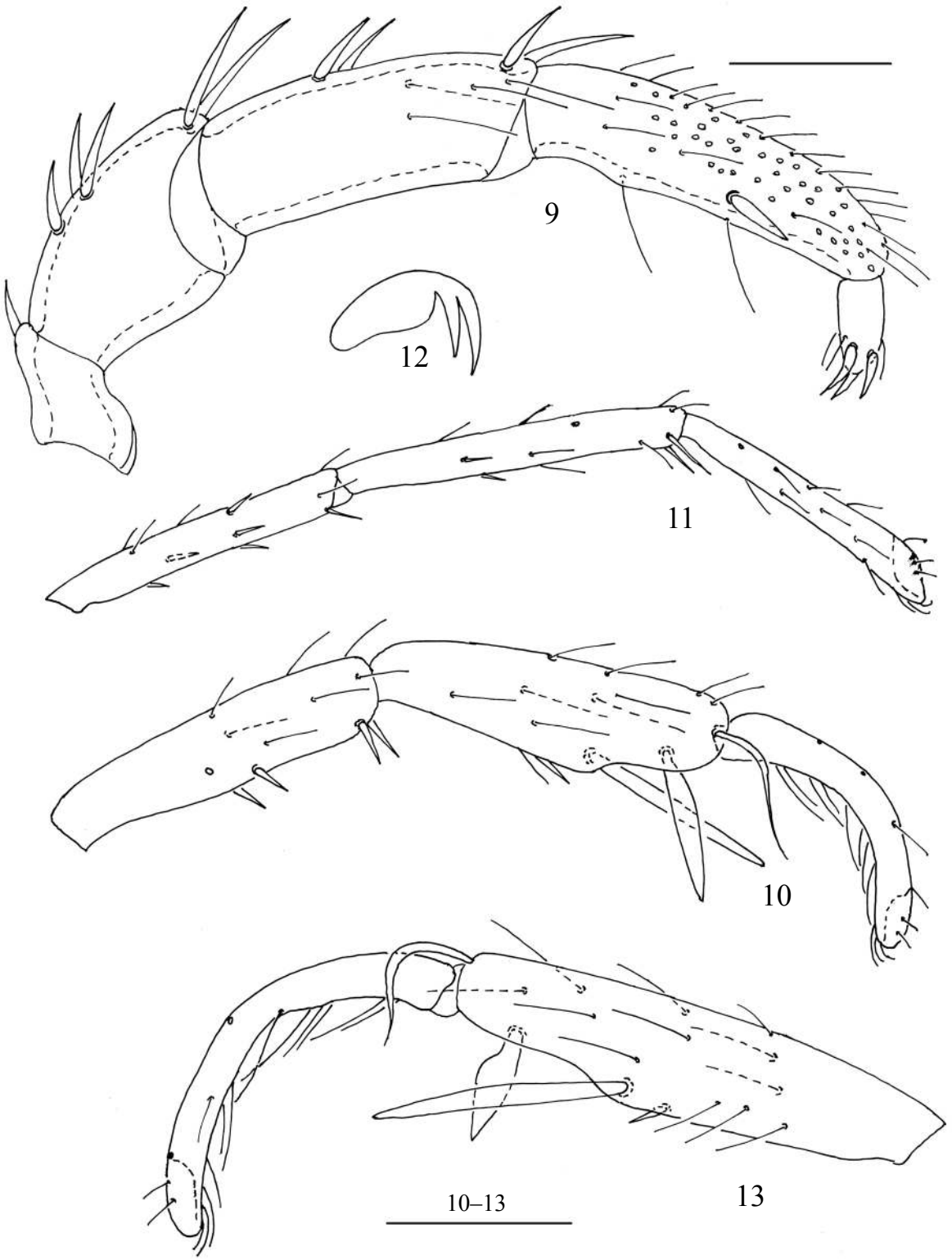
of capitulum, dorsal hypostomal setae longer than ventral setae. The basal segment of chelicera (Fig. 8) large, with straight dorsal margin; cheliceral stylet rather large, crescent.

Pedipalp (Fig. 9) moderately in size; P-1 short, with a single short dorsodistal seta; P-2 with straight ventral margin, with five dorsal (two short proximal and three more long distal unequal setae); P-3 longer than P-2 with straight ventral margin, with two proximal and two distal thick setae and 4–5 fine ones; P-4 narrowed proximally with slightly convex dorsal edge and very numerous dorsolateral setae, bases of two ventral setae divide tibia into three sectors (1:1:2 or 2:2:3); sword seta short and located near distoventral seta.

I–Leg-4 not thickened distally (Fig. 10), I–Leg-5 very slightly thickened near middle with maximum H near insertion S-1, seta S-1 slightly longer and thinner than S-2, both these setae more or less pointed, narrowed proximally, S-2 thickened with maximum height near middle; I–Leg-6 slender curved and slightly thickened proximally. Posterior legs slender, without swimming setae, with a few thin and thick short setae (Fig. 11). Leg claws (Fig.12) with long external clawlet and relatively short internal one; lamella moderately developed with concave ventral margin.

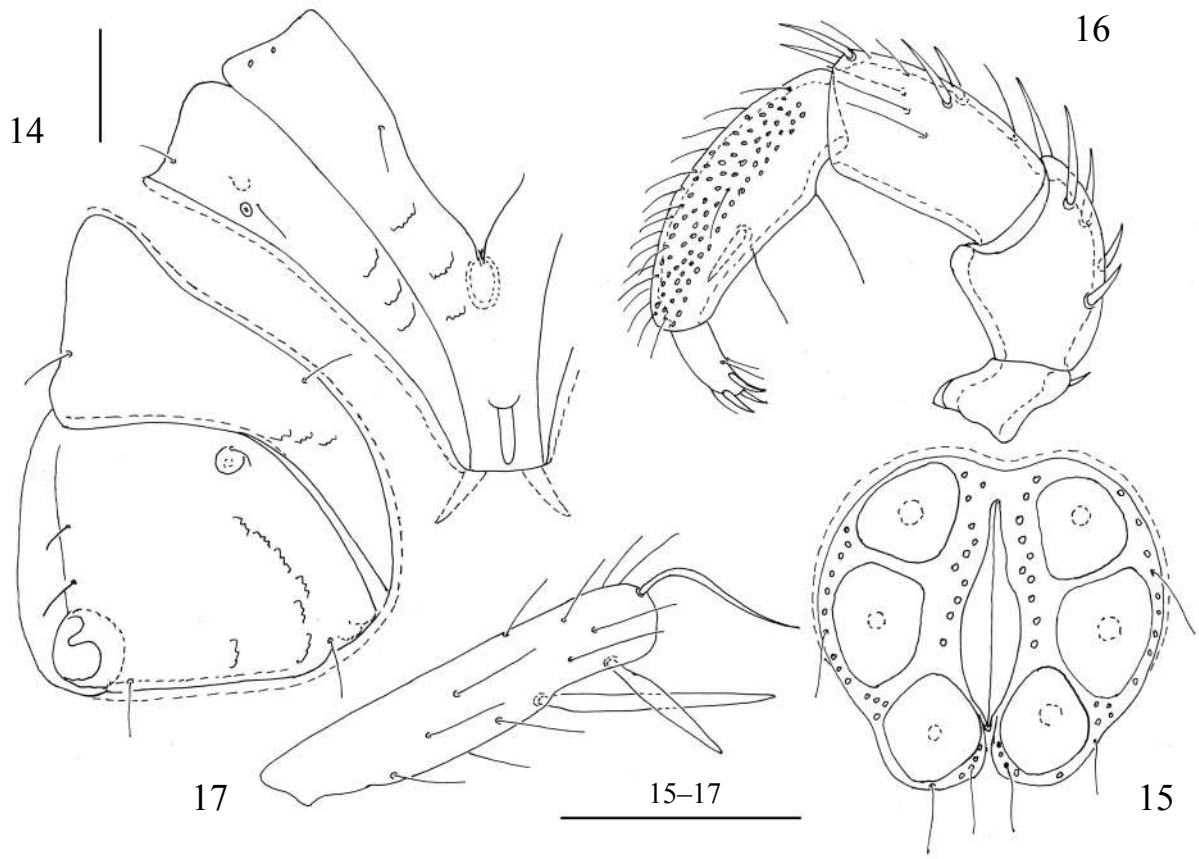
Measurements (n=8). Idiosoma L 510–570; coxae I+II L 275, W 250, medial portion of coxae I L 140; coxae III+IV L 240, W 215; genital plate L 90–96, W 30–35; genital acetabula (ac. 1–3) L/W: 30–33/18–21, 30–33/21–24, 24–30/24–30; basal segment of chelicera L 145–150, cheliceral stylet L 54–60; pedipalpal segments (P-1–5) L: 30–32, 60–65, 72–85, 90–96, 24–30; leg segments L: I–Leg-1–6: 50–55, 65–80, 100–115, 175–185, 170–180, 130–140; II–Leg-1–6: 50–55, 60–65, 90–100, 120–125, 120–1130, 110–120; III–Leg-1–6: 50–55, 55–65, 90–100, 140–150, 145–155, 135–145; IV–Leg-1–6: 90–105, 90–100, 155–170, 200–210, 220–230, 155–185; tibia of leg I: seta S-1 L 90–105, W 8–11, ratio L/W 9.6–11.5; seta S-2 L 65–75, W 13–15, ratio L/W 4.5–5.2; distance between setae S-1 and S-2 27–30.

Male. Dorsal surface, gnathosoma and legs similar to female. Differs from female by smaller size and shape of genital field. Coxae of legs (Fig. 14) cover larger than one half of ventral surface.



Figs 9–13. *Atractides shapovalovi* sp. n., female: 9 — pedipalp, lateral view. 10 — genu, tibia and tarsus of leg I, 11 — genu, tibia and tarsus of leg IV, 12 — claw.
Atractides nikooae Pesic, 2004, female (collected in North Caucasus): 13 — tibia and tarsus of leg IV.
Scale bars: 9 = 50 μm, 10–13 = 100 μm.

Posteromedial margin of coxal plates I+II straight, with two moderately large apodemes forming acute angle and short posteromedian projection but without subcutaneous median projection. Median suture line between coxal plates I not developed.



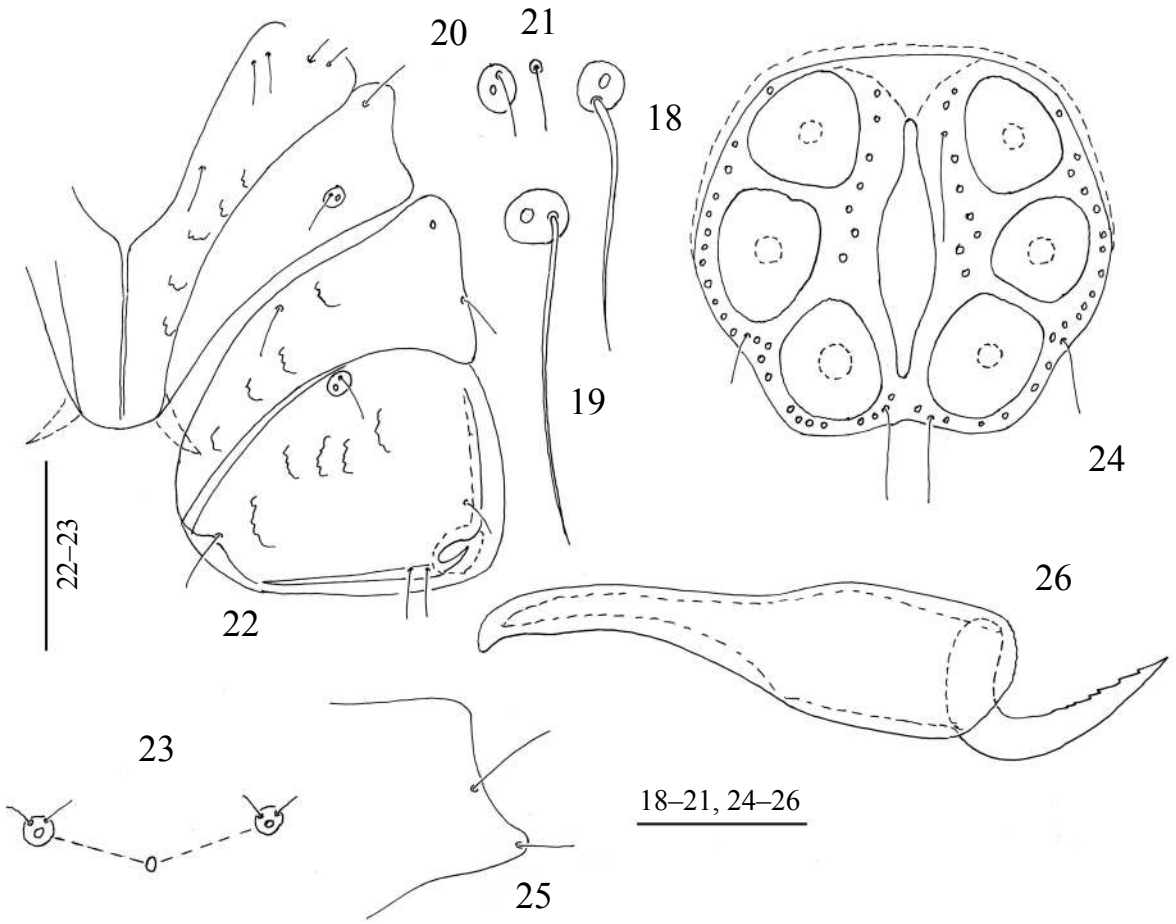
Figs 14–17. *Atractides shapovalovi* sp. n., male: 14 — coxal plates, ventral view; 15 — genital plate; 16 — pedipalp; 17 — I–Leg-5. Scale bars: 14 = 100 μm, 15–17 = 50 μm.

Genital field (Fig. 15) apple-shaped, plates fused to each other by anterior ends only. All genital acetabula approximately equal in size. Genital field as long as wide, with 29–30 fine setae on each side.

Pedipalp (Fig. 16) relatively short; P-2 with small widely rounded ventrodistal protrusion, protuberance on protrusion not developed, with five dorsal (two proximal and three distal) unequal setae; P-3 thick with straight ventral margin, with two proximal and two distal thick unequal setae and 5–6 fine ones; P-4 narrowed proximally with convex dorsal edge and very numerous dorsolateral setae, bases of two ventral setae divide tibia into three sectors (2:3:3); sword seta located near ventrodistal setae. Anterior legs as in female (Fig. 17).

Measurements (n=1). Idiosoma L 550; coxae I+II L 370, W 200, median portion of coxae I L 110; coxae III+IV L 190, W 175; genital field L 100, W 102; L/W of genital acetabula (ac. 1–3): 30/24, 36/30, 30/27; basal segment of chelicera L 145, cheliceral stylet L 55; pedipalpal segments (P-1–5) L: 30, 60, 65, 90, 24; leg segments L: I–Leg-1–6: 48, 70, 125, 185, 170, 135; II–Leg-1–6: 48, 60, 95,140, 145, 140, III–Leg-1–6: 55, 60, 110, 170, 175, 155; IV–Leg-1–6: 110, 95, 160, 220, 245, 180; tibia of leg I: seta S-1 L 90, W 9, ratio L/W 10; seta S-2 L 63, W 11, ratio L/W 5.7; distance between setae S-1 and S-2 25.

Differential diagnosis. The new species is closely related to *Atractides nikooae* Pesic, 2004. It differs from *A. nikooae* in the following characters (character states of adults of *A. nikooae* are given after Pesic 2004 and Esen et al. 2013 in parenthesis): the pedipalp with sexual dimorphism, P-2 with small the ventrodistal protrusion in the male, Fig. 16 and straight the ventral margin in female, Fig. 9 (without sexual dimorphism, P-2 ventral margin straight in the both sexes), the genital plates in the male are fused by the anterior ends only, Fig.15 (fused by both anterior and posterior ends); sword setae S-2 relatively long and thickened near middle, Fig.10 (short and strongly thickened in the basal third, Fig.13); the interspace between setae S-1 and S-2 relatively short, 25 μm in the male and 27–30 μm in the female (40–42 μm in male, and 70–72 μm in female).



Figs 18–26. *Atractides saprykini* sp. n., male: 18 — seta Fch, 19 — seta Hi, 20 — seta Sce, 21 — trichobothria Oi; 22 — coxal plates, 23 — setae Ci and Pi and excretory pore, 24 — genital field, 25 — anterior part of capitulum, 26 — chelicera. Scale bars: 18–21, 24–26 = 50 μm, 22–23 = 100 μm.

Etymology. The species is named after the collector Dr. Maxim Shapovalov.

Habitat. Running waters.

Distribution. Russia, Krasnodarsky Kray.

Atractides (Atractides) saprykini Tuzovskij, sp. n.

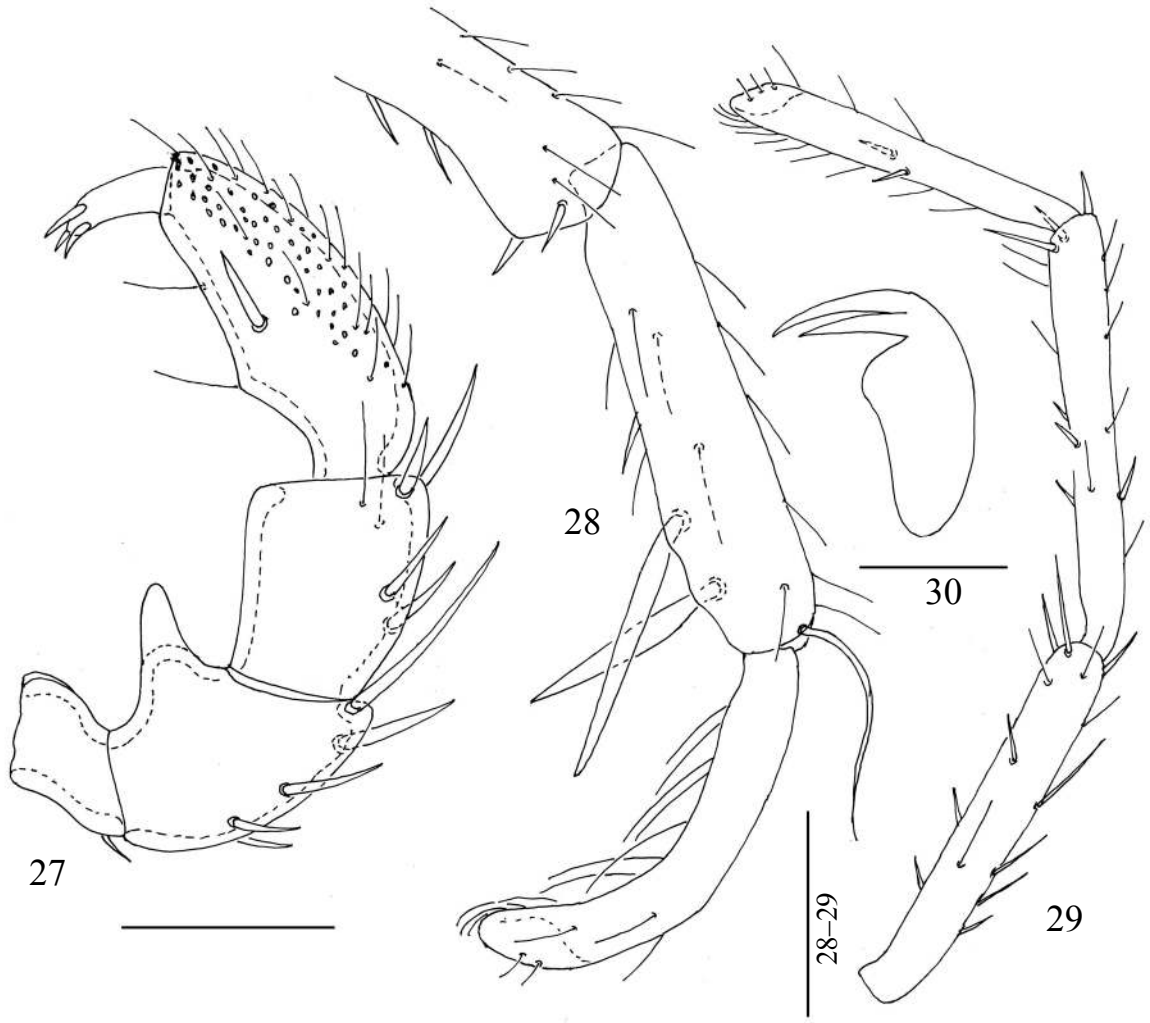
Figs 18–29

Type material. Holotype: male (IBIW 9786), Russia, North Caucasus, Krasnodarsky Kray, Apsheronsky District, settlement Krasnyj Dagestan, Kurdghips River, 3 June 2013, leg. M.B. Shapovalov and M.A. Saprykin. The holotype is deposited in the collection of Institute for Biology of Inland Waters (Borok, Russia).

Diagnosis. Male: integument soft and finely striated; median projection on coxal plates I not developed; I–Leg: I–Leg-5 S-1 and S-2 moderately separated, S-1 and S-2 heteromorphic, S-1 slightly longer than S-2; I–Leg-6 moderately slender, curved, P-2 with ventrodistal hump and long protuberance; P-4 ventral margin divided by setae insertions in sectors 3:3:2, sword setae located between ventral setae; genital field as long as wide, with straight anterior margin and slightly concave posterior margin, setae *Pi* and *Ci* fused to each other.

Description. Male. Idiosoma flat, oval, integument soft very finely striated. Number and position of idiosomal setae typical for genus *Atractides*. Setae *Fch* (Fig.18), *Oe, Hi* and *He* (Fig. 19) longest and thickest of all dorsal setae. Trichobothtia *Fp, Oi* and setae *Pi* without glandularia (Fig. 21), other idiosomal setae associated with glandularia (Fig. 20).

Coxae of legs covering larger than one half of ventral surface. Suture line between coxae I developed, posteromedian projection not developed, apodemes of coxal plates I+II long, slightly extending to anteromedial margin of coxal plates III and forming obtuse angle (Fig. 22). Posteromedial margin of coxae I convex. Setae *Hv* situated in lateral portion of coxae II. Coxae III+IV trapezoidal, their medial margins wide and rounded; glandu-



Figs 27–30. *Atractides saprykini* sp. n., male: 27 — pedipalp, 28 — genu, tibia and tarsus of leg I, 29 — genu, tibia and tarsus of leg IV, 30 — claw. Scale bars: 27 = 50 μm, 28–29 = 100 μm, 30 = 20 μm.

laria *Pe* situated near anterior margins of coxae IV. Setae *Pi* and *Ci* situated on common sclerite on each side, excretory pore unsclerotized (Fig. 23).

Genital plates (Fig. 24) fused to each other by anterior and posterior ends, their anterior margin straight and posterior margin slightly concave. All genital acetabula subequal. Genital field nearly as long as width, with 30–33 fine setae on each side.

Capitulum (Fig. 25) elongate, rostrum moderately long narrow, slightly extending to anterior edge of capitulum; dorsal hypostomal setae longer than ventral setae; basal segment of chelicera large, thickened distally with straight dorsal margin; cheliceral stylet rather large, crescent (26).

Pedipalp (Fig. 27) stout; P-1 short, with a single short dorsodistal seta; P-2 and P-3 equal in length; P-2 with widely rounded ventrodistal protrusion (hump) and long protuberance, and five dorsal (two proximal and three distal) unequal setae; P-3 with straight ventral margin, with two proximal and two distal thick unequal setae and 2–3 fine ones; P-4 relatively long, narrowed proximally with convex dorsal edge and very numerous dorsolateral setae, bases of two ventral setae divide tibia into three sectors (2:2:1), sword seta shorter than distance between ventral setae.

I–Leg-4 (Fig. 28) thickened distally; seta S-1 and S-2 long but S-1 slightly longer and thinner than S-2. I–Leg-6 relatively moderately long, strongly curved, equal in thickness at whole length. Posterior legs without swimming setae, with a few short, thick and fine setae (Fig. 29). Leg claws (Fig. 30) with long external clawlet and relatively short internal one; lamella well developed with concave ventral margin.

Measurements (n=1). Idiosoma L 540; genital field L 95, W 100; L/W of genital acetabula (ac. 1–3): 30/24, 30/24, 33/27; basal segment of che-

licera L 130, cheliceral stylet L 60; pedipalpal segments (P-1–5) L: 30, 60, 60, 90, 27; leg segments L: I–Leg-1–6: 48, 78, 110, 160, 160, 130; II–Leg-1–6: 48, 85, 90, 120, 125, 120; III–Leg-1–6: 60, 65, 100, 150, 155, 175; IV–Leg-1–6: 95, 90, 150, 190, 210, 170; tibia of leg I: seta S-1 L 84, W 8; seta S-2 L 72, W 12; distance between setae S-1 and S-2 21.

Differential diagnosis. The new species is closely related to *Atractides cf. lunipes* Lundblad 1956 and *A. caucasicus* Tuzovskij, 2010. The new species differs from *A. caucasicus* in the following characters (character states of male *A. caucasicus* are indicated after Tuzovsky 2010): the rostrum is long and extending to the anterior margin of the capitulum, Fig. 25 (short not reaching to the anterior margin of the capitulum); P-2 with a long, not transparent protuberance, Fig. 27 (P-2 with a short transparent process); P-4 slender, with the maximum height in the proximal part near the proximoventral seta (P-4 thick with the maximum height near the median part of the segment); P-4 ventral margin divided by setae insertions 2:2:1 (P-4 ventral margin divided by setae insertions 1:1:1). The apodemes of coxal plates I+II in the male *Atractides* cf. *lunipes* form an acute angle; the terminal segments of I–Legs, sword setae S-1 and S-2 are long: I-Leg-5/6 L 202/142.3 µm., ratio I–Leg-5/6 L 1.42; S-1 L 102.5 µm, S-2 L 77.6 µm. (Pesic et al. 2004). While in the male *A. saprykini* the apodemes of coxal plates I+II form an obtuse angle; the terminal sements of I–Legs, sword setae S-1 and S-2 are relatively short: I–Leg-5/6 L 160/130 µm, ratio I–Leg-5/6 L 1.23; S-1 L 84 µm, S-2 L 72 µm.

Etymology. The species is named after the collector, Dr. Maxim Saprykin.

Habitat. Running waters.

Distribution. Europe, Russia, Krasnodarsky Kray.

ACKNOWLEDGEMENTS

The author expresses sincerely gratitude to Maxim Shapovalov and Maxim Saprykin for specimens and anonymous referees for their work.

REFERENCES

Esen, Yu., Pesic, V., Erman, O., and Kaya, Yü. 2013. New water mites of the Family Hygrobatidae (Acari, Hydrachnidia) from Turkey. *ZooKeys*, 364: 15–25.

Gerecke, R. 2003. Water mites of the genus *Atractides* Koch, 1837 (Acari: Parasitengona: Hygrobatidae) in the western Palaearctic region: a revision. *Zoological Journal of the Linnean Society,* 138, 141–378.

Pesic, V., Saboori, A., Asadi, M., and Vafaei, R. 2004. Studies on water mites of the family Hygrobatidae (Acari, Hydrachnidia) from Iran, I. The water mite genus *Atractides* Koch, with the description of five new species. *Zootaxa*, 495: 1–40.

Tuzovsky, P.V. 1987. *Morfologiya i postembryonal'noe razvitie vodyanykh kleshchey* [Morphology and Postembryonic Development in Water Mites]. Moscow, Nauka. 172 pp. [In Russian]

Tuzovsky, P.V. 2010. Two new water mite species of the genus *Atractides* (Acariformes, Hygrobatidae) from the Northern Caucasus. *Zoologicheskiy Zhurnal*, 89 (3): 178–187. [In Russian]