

A description of two new species of water mites of the genus *Torrenticola* Piersig, 1896 (Acariformes: Hydrachnidia: Torrenticolidae) from the Krasnodar Kray, Russia

Описание двух новых видов водяных клещей рода *Torrenticola* Piersig, 1896 (Acariformes: Hydrachnidia: Torrenticolidae) из Краснодарского края России

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Two new water mite species, *Torrenticola amplexella* and *T. krasnodarensis*, from running waters of the North Caucasus (Krasnodar Kray) are described with illustrations.

Приведено иллюстрированное описание двух новых видов водяных клещей (*Torrenticola amplexella* and *T. krasnodarensis*) из проточных водоемов Северного Кавказа (Краснодарский Край).

Key words: North Caucasus, Krasnodar Kray, water mites, Torrenticolidae, *Torrenticola*, *T. amplexella*, *T. krasnodarensis*, new species

Ключевые слова: Северный Кавказ, Краснодарский край, водяные клещи, Torrenticolidae, *Torrenticola*, *T. amplexella*, *T. krasnodarensis*, новые виды

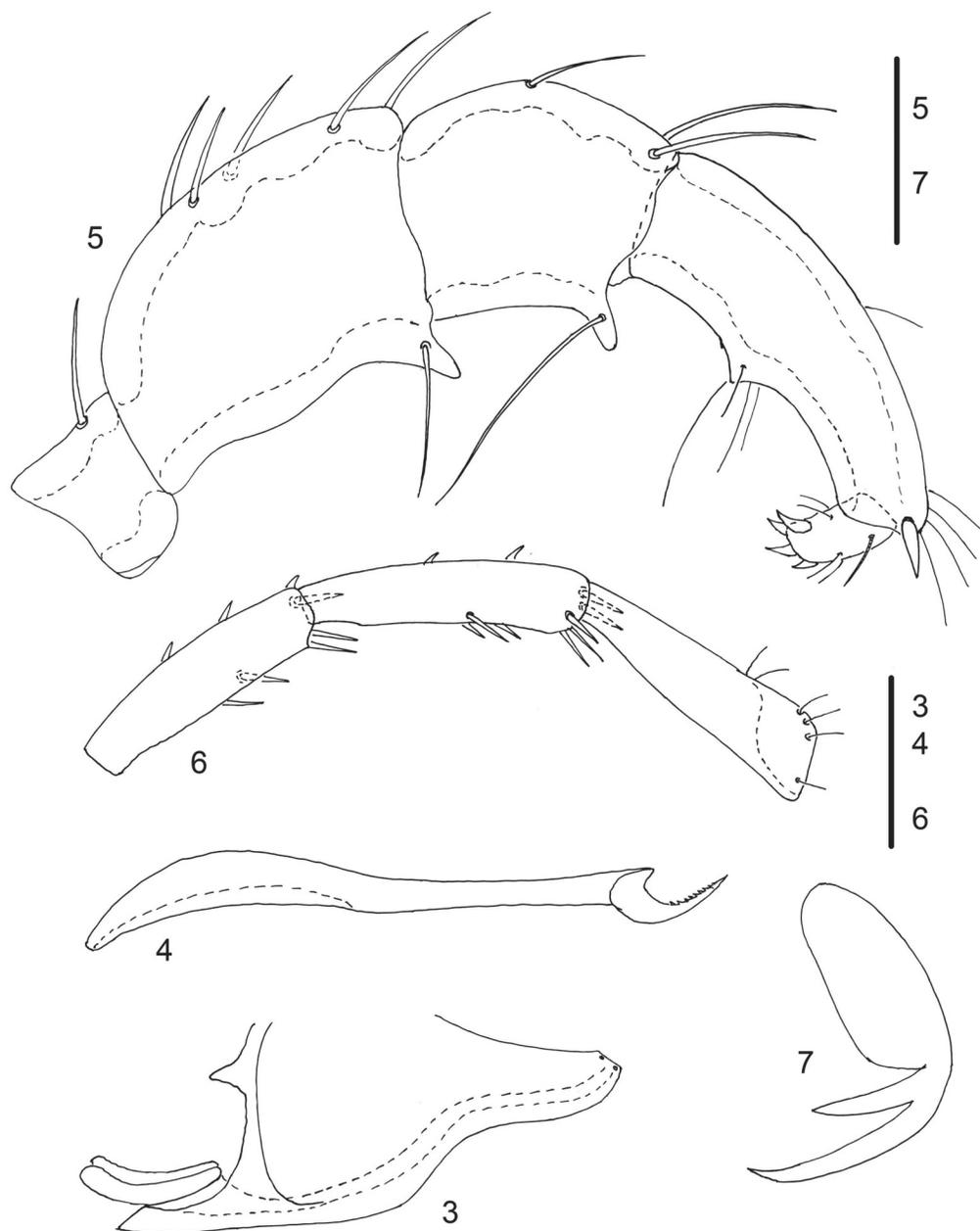
INTRODUCTION

The genus *Torrenticola* Piersig, 1896 is subdivided into two subgenera, *Torrenticola* and *Megapalpis* Halbert, 1944 (Gerecke & Sabatino, 1996; Wiles, 1997). The subgenus *Torrenticola* represents the most diversified and species-rich taxon among the Torrenticolidae with more than 200 species described from all continents except for Antarctica and Australia (Di Sabatino et al., 2010). All 16 species of water mites in the fauna of Russia belong to the subgenus *Torrenticola*: *T. abbreviatella* Tuzovskij, 2004, *T. abbreviatus* Sokolow, 1934, *T. amplexa* (Koenike, 1908), *T. amplexoides* Tuzovskij, 2004, *T. anomala* (Koch, 1837), *T. caucasica* Tuzovskij, 2012, *T. connexa* (Koenike, 1908), *T. elliptica* Maglio, 1909, *T. rara* Tuzovskij, 2012, *T. recentnis* Tuzovskij, 2003,

T. rossica Tuzovskij, 2003, *T. sandalensis* (Sokolow, 1926), *T. simulans* Tuzovskij, 2012, *T. ubinensis* Tuzovskij, 2005, *T. ussuriensis* (Sokolow, 1949), and *T. wolgaensis* (Sokolow, 1934) (Sokolow, 1940; Tuzovskij, 2003a, 2003b, 2004, 2005, 2012). In samples collected from running waters of the North Caucasus (Krasnodar Kray) two new species of the genus *Torrenticola* was discovered. Their descriptions are given in the present paper.

MATERIALS AND METHODS

The material was collected by the author with a common hand net with a 250 µm mesh. None of the specimens were dissected thus preserving the natural shape of the body. The specimens were mounted in Hoyer's medium. The type material is deposited



Figs 3–7. *Torrenticola krasnodarensis* sp. nov., female: **3**, capitulum, lateral view; **4**, chelicera, lateral view; **5**, pedipalp, lateral view; **6**, leg IV; **7**, claw of leg IV. Scale bars: 50 μ m (5, 7), 100 μ m (3–4, 6).

pairs of long narrow platelets surrounding median and caudal portions of main shield. All platelets separated from dorsal shield. Anteromedial platelets narrow and shorter than anterolateral platelets, anterolateral

platelets tapering posterolaterally. Dorsal shield wide, covering about 4/5 of dorsal surface (length/width ratio 1.06–1.07), secondary sclerotization well developed. Glandularia *Sci* located distant from lat-

eral margins of dorsal shield. Two muscle attachment sites with rough sculpture between setae *Sci*. Setae *Fch* thicker than others idiosomal setae. Setae *Vi* located on anteromedial platelets, setae *Oi* and *Hi* on anterolateral platelets; *Li* located on secondary sclerotization of dorsal shield; *Fch*, *Fp*, *Ve*, *Oe*, *He*, *Le*, *Si* and four pairs of slit organs (i_1-i_2 , i_4-i_5) occupying peripheral position on soft integument, i_3 on first pair of narrow lateral platelets.

Coxal shield large, covering about 9/10 of ventral area, capitular bay U-shaped (Fig. 2). Suture line between coxae II+III four times shorter than medial portion of coxae I. Genital field pentagonal in shape with six pairs of subequal acetabula, located in posterior portion of anterior half of ventral surface. Glandularia *Sce* located at level of posterior margin of genital field, glandularia *Pe* located at tips of anterolateral processes of coxae II. Genital field and fragments of suture lines of coxae IV well separated. Setae *Ci* and *Pi* in caudal portion of zone of primary sclerotization of coxal shield. Excretory pore not embedded in area of primary sclerotization of coxal shield.

Capitulum (Fig. 3) with moderately long rostrum, ventral margin curved; rostrum almost twice as short as basic part of capitulum; anterior end of rostrum curved dorsally.

Chelicera (Fig. 4) elongated and slightly thickened proximally; stylet short, crescent, with two rows of fine teeth on concave side.

Pedipalp (Fig. 5) robust; P-1 short, with single dorsodistal setae; P-2 thick, with convex ventral margin, with five dorsal approximately subequal setae, and one further seta laterally at base of the ventrodistal conic projection; P-3 shorter than femur, with straight ventral margin, with three dorsal setae (one proximal and two distal unequal setae), ventral side of P-3 with projection and single long seta similar to that of P-2; P-4 longer than P-2, with about equally convex dorsal side, one heavy seta and five thin setae on dorsodistal portion; ventral side concave, with single tubercle near middle of segment, bearing four

setae of different length; P-5 short, with single solenidion, with four thin setae and four short terminal spines.

Morphology and chaetotaxy of leg IV as illustrated in figure 6. All legs without swimming setae. Tarsi of legs II-IV gradually thickened to distal end, their ventral margin straight. Ambulacrae with long external and short internal clawlets, ventral margin of blade slightly straight (Fig. 7).

Measurements (n=2). Length of idiosoma dorsum 660-800, width 565-675; length of anteromedial platelets 150-155, width 75-82; length of anterolateral platelets 185-225, width 85-100; length of dorsal shield 560-675, width 525-625; distance from glandularia *Sci* to lateral margin of dorsal shield 70-75, length of median portion of coxae I 135-160, length of suture line of coxae II+III 35-40; length of genital field 200-205, width 175-180; distance from posterior margin of genital field to excretory pore 275, distance from posterior margin of genital field to caudal edge idiosoma 350; length of capitulum 245-290; length of basal segment of chelicera 245-290, length of stylet of chelicera 55-60; lengths of pedipalpal segments (P-1-5): 30-35, 84-90, 60-65, 90-102, 24-27; lengths of leg segments: I-Leg-1-6: 35-45, 85-100, 75-100, 110-125, 110-125, 100-110; II-Leg-1-6: 45-50, 75-100, 80-100, 110-125, 125-135, 135-150; III-Leg-1-6: 60-70, 80-100, 85-100, 135-150, 160-175, 175-185; IV-Leg-1-6: 125-130, 110-150, 135-155, 180-200, 200-210, 185-210.

Male. Unknown.

Comparison. The present species is most similar to *T. rossica*. In contrast to all other species of the subgenus *Torrenticola*, the dorsum in the two species has three pairs of long, narrow platelets surrounding the lateral and caudal portions of the main shield. Female *T. krasnodarensis* **sp. nov.** can be distinguished from female *T. rossica* by the following character states: the zone of primary sclerotization of the

dorsal shield bears only a single pair of setae (*Sci*) (Fig. 1) (vs. bearing two pairs of setae (*Sci*, *Li*); the excretory pore is not embedded in the area of primary sclerotization of the coxal shield (Fig. 2) (vs. embedded in the area of primary sclerotization of coxal shield); setae *Ci* is embedded in the area of primary sclerotization of the coxal shield (vs. not embedded); the fragments of suture lines of coxae IV and the genital field are separated (the fragments of suture lines of coxae IV starting out right angle with the idiosoma axis from caudolateral edges of genital field). For description of *T. rossicus* see Tuzovskij (2003b). Female *Torrenticola krasnodarensis* sp. nov. differs from adults of *T. diaspora* (see Gerecke & Di Sabatino, 1996) in having the capidulum with a well curved ventral margin (Fig. 3) (vs. slightly curved, gently S-shaped), P-3 with a ventrodiscal projection (Fig. 5) (vs. without any projection), and the fragments of suture lines of coxae IV and the genital field separated (Fig. 2) (vs. in female, forming an angle with the idiosoma axis from the caudolateral edges of the genital field).

Etymology. The species name (adjective) is derived from its region locality, Krasnodar Kray.

Habitat. Running waters.

Distribution. The species is only known from its type locality – Europe: Russia, North Caucasus, Krasnodar Kray.

Torrenticola (Torrenticola) amplexella
sp. nov.

(Figs 8–14)

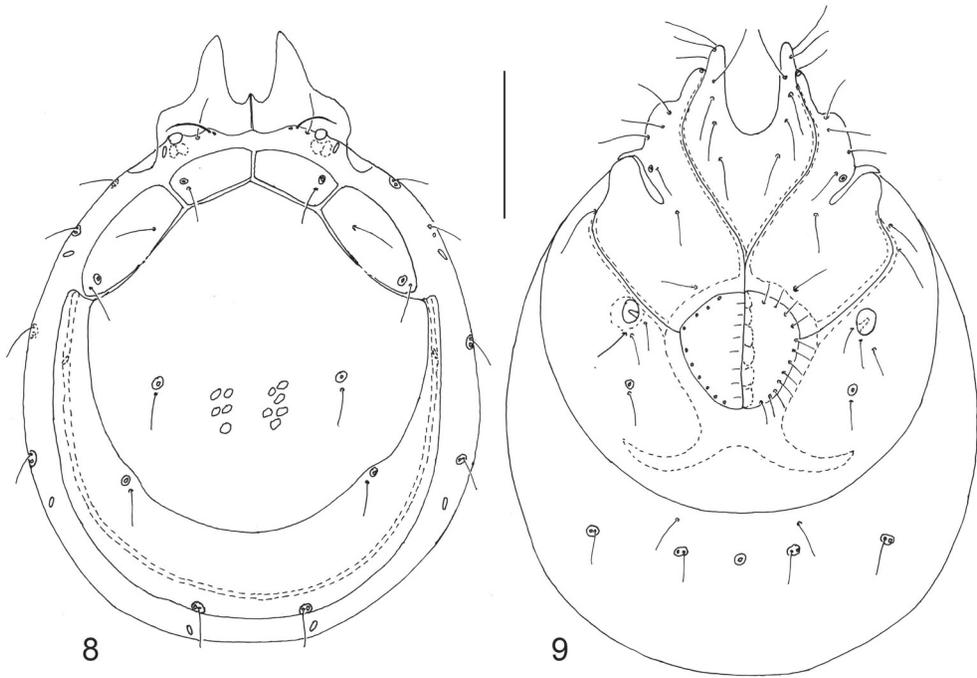
Holotype: female, slide 9662, Russia, North Caucasus, Krasnodar Kray, Seversk District, Ubin stream near settlement Ubinskaya, 7 May 1976. River bottom: pebble and sand, depth 0.3–0.5 m. **Paratype:** 1 female, Ubin River, same locality and habitat as holotype.

Description. Female. Body wide and almost circular shaped, frontal edge between setae *Fch* wide and almost straight (Fig. 8). Dorsum with main dorsal shield, in two pairs anterior platelets (medial and lateral) and long narrow sclerotized U-shaped strip

surrounded by lateral and caudal portions of main shield; this strip (shown by dotted lines on Fig. 8) usually concealed by shield. Anteromedial platelets separated from main dorsal shield, and anterolateral platelets separated or partially fused to dorsal shield. Anteromedial platelets narrow and shorter than anterolateral platelets, anterolateral platelets tapering posterolaterally. Dorsal shield wide, covering about $\frac{3}{4}$ of dorsal surface (length/width ratio 1.06–1.07), secondary sclerotization well developed. Glandularia *Sci* located distant from lateral margins of dorsal shield. Two muscle attachment sites with rough sculpture between setae *Sci*. Setae *Fch* thicker than others idiosomal setae. Setae *Vi* located on anteromedial platelets, setae *Oi* and *Hi* on anterolateral platelets; *Li* and *Si* on secondary sclerotization of dorsal shield; *Fch*, *Fp*, *Ve*, *Oe*, *He*, *Le* and four pairs of slit organs (i_1-i_2 , i_4-i_5) occupy peripheral position on idiosoma, and i_3 on the U-shaped strip anteriorly.

Coxal shield large (Fig. 9), covering about $\frac{2}{3}$ ventral area, capitular bay U-shaped. Suture line between coxae II+III is 2.3–2.4 times shorter than medial portion of coxae I. Genital field pentagonal in shape with six pairs of subequal acetabula, located in the posterior portion of the anterior half of ventral surface. Glandularia *Sce* located at level of posterior margin of genital field, glandularia *Pe* located at tips of anterolateral processes of coxae II. Fragments of suture lines of coxae IV well developed and arcuate, starting out acute angle with idiosoma axis from caudolateral edges of genital field. Excretory pore, setae *Ci*, *Se* and *Pi* away from line of primary sclerotization of ventral shield.

Capitulum (Fig. 10) with long rostrum, ventral margin curved; rostrum 1.8 time shorter than basic part of capitulum; anterior end of rostrum curved dorsally. Chelicera (Fig. 11) elongated and slightly thickened proximally; stylet short, crescent, with two rows of fine teeth on concave side. Pedipalp (Fig. 12) robust; P-1 short, with single dor-



Figs 8–9. *Torrenticola amplexella* sp. nov., female: 8, dorsal view; 9, ventral view. Scale bar: 200 μ m.

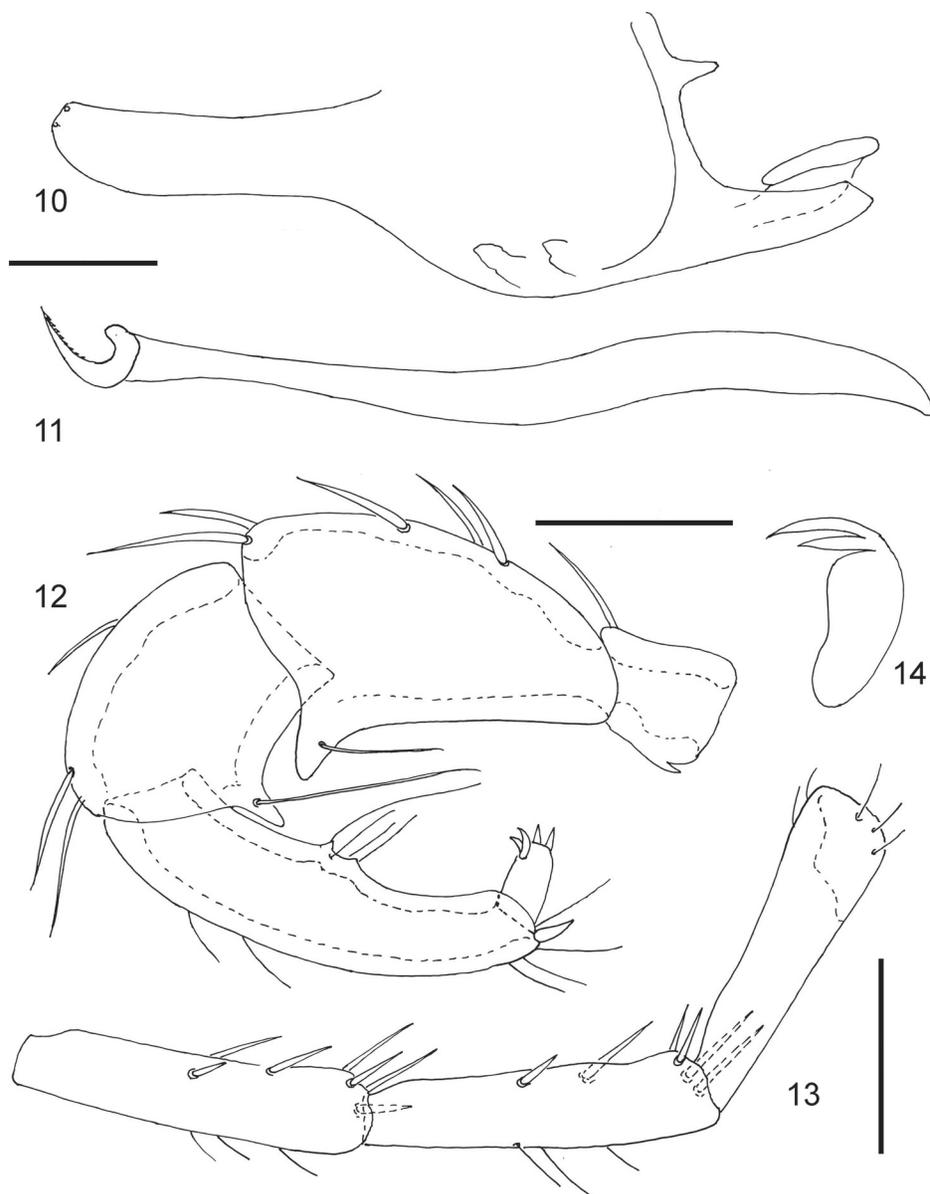
sodistal setae; P-2 thick, with straight ventral margin, with five dorsal approximately subequal setae, and one further seta laterally at base of ventrodistal conic projection; P-3 shorter than femur, with almost straight ventral margin, with three dorsal setae (one proximal and two distal unequal setae), ventral side of P-3 with projection and single seta similar to that of the P-2; P-4 with almost equally convex dorsal side, one heavy seta and five thin setae on dorsodistal portion; ventral side concave, with two small tubercles near middle of segment, bearing four setae of different length.

Morphology and chaetotaxy of leg IV as illustrated in Fig. 13. All legs without swimming setae. Tarsi of legs II–IV gradually thickened to distal end, their ventral margin straight. Ambulacrae (Fig. 14) with long external and short internal clawlets, ventral margin of blade slightly concave.

Measurements ($n=2$). Length of dorsum idiosoma 685–700, width 610–630; length of anteromedial platelets 115–125, width 55–65; length of anterolateral plate-

lets 175–195, width 70–80; length of dorsal shield 540–600, width 500–525, length of zone secondary sclerotization of dorsal shield 120–140; distance from glandularia *Sci* to lateral margin of dorsal shield 90–95, length of median portion of coxae I 125–132, length of suture line of coxae II+III 50–55; length of genital field 150–160, width 145–155; distance from posterior margin of genital field to excretory pore 180–200, distance from posterior margin of genital field to caudal edge idiosoma 295–310; length of capitulum 270–290; length of basal segment of chelicera 270–305, length of stylet of chelicera 42–48; lengths of pedipalpal segments (P-1–5): 30–33, 90–96, 65–69, 102–110, 24–30; lengths of leg segments: I–Leg-1–6 – 35–40, 70–90, 75–80, 85–90, 100–108, 95–120; II–Leg-1–6 – 42–48, 70–100, 75–80, 100–110, 115–125, 120–125; III–Leg-1–6 – 448–55, 72–110, 78–85, 108–120, 140–145, 140–145; IV–Leg-1–6 – 100–110, 115–120, 125–135, 160–170, 175–180, 160–170.

Male. Unknown.



Figs 10–14. *Torrenticola amplexella* sp. nov., female: 10, capitulum, lateral view; 11, chelicera, lateral view; 12, pedipalp, lateral view; 13, leg IV; 14, claw of leg IV. Scale bars: 50 μ m (10–12, 14), 100 μ m (13).

Comparison. The new species is most similar to *Torrenticola amplexa* (Koenike, 1927) for they share a similar shape of the dorsum, capitulum and chelicerae. *Torrenticola amplexella* sp. nov. can be easily distinguished from *T. amplexa* by the proportions

of the pedipalps and the idiosoma. Female *T. amplexella* sp. nov. differs from female *T. amplexa* by the following character states: P–2 is shorter than P–4 (vs. P–2 and P–4 being equal in length or P–2 slightly longer than P–4); the idiosoma length is 685–

700 μm (vs. 700–875 μm); the glandularia *Sci* located at some distance from the lateral margin of the main dorsal shield (Fig 8) (vs. near the lateral margin of the main dorsal shield); the medial suture of the coxal plates II+III equals 50–55 μm (vs. 30 μm); length of the genital field is 150–160 μm (vs. 170–180 μm); and the fragments of the suture lines of the coxae IV are connected by a wide transverse strip (Fig. 9) (vs. disconnected). Descriptions of *T. amplexa* can be found in Tuzovskij (1981), Cicolani & Di Sabatino (1990), and Di Sabatino et al. (2010).

Etymology. The species name, a noun in apposition, *amplexella*, refers to considerable similarity between the new species and *T. amplexa*.

Habitat. Running waters.

Distribution. Europe (Russia, North Caucasus).

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