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A NEW WATER MITE SPECIES OF THE GENUS *PIONA* KOCH (ACARI: HYDRACHNIDIA, PIONIDAE) FROM RUSSIA

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ABSTRACT: A description of a new water mite species, *Piona nodatella* (male, female), from standing waters of the Yaroslavl Province of Russia is presented.

KEY WORDS: water mite, Pionidae, *Piona nodatella*, new species, morphology, male, female

INTRODUCTION

Over 20 water mite species of the genus *Piona* Koch, 1842 are presently known for the fauna of Russia (Sokolow 1940; Tuzovsky 2005, 2013), but it is still not sufficiently investigated. The world fauna of water mites of the genus *Piona* currently includes about 200 species and subspecies (K.O. Viets 1987). This paper describes the male and female of a new water mite species *Piona nodatella* from the European Russia.

MATERIALS AND METHODS

Mites were sampled with a common hand net (250 μm mesh size). Specimens were not fixed in Koenike liquid, but slides were made from the fresh material. All mites were mounted in Hoyer's medium. The type material is deposited in the collection of Institute for Biology of Inland waters (Borok, Russia).

Idiosomal setae are given after Tuzovsky (1987): *Fch* — frontales chelicerarum, *Hv* — humerales ventralia, *Ci* — caudales internae, *Pi* — praeanales internae, *Pe* — praeanales externae. Furthermore, 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 third leg; L — length; 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).

SYSTEMATICS

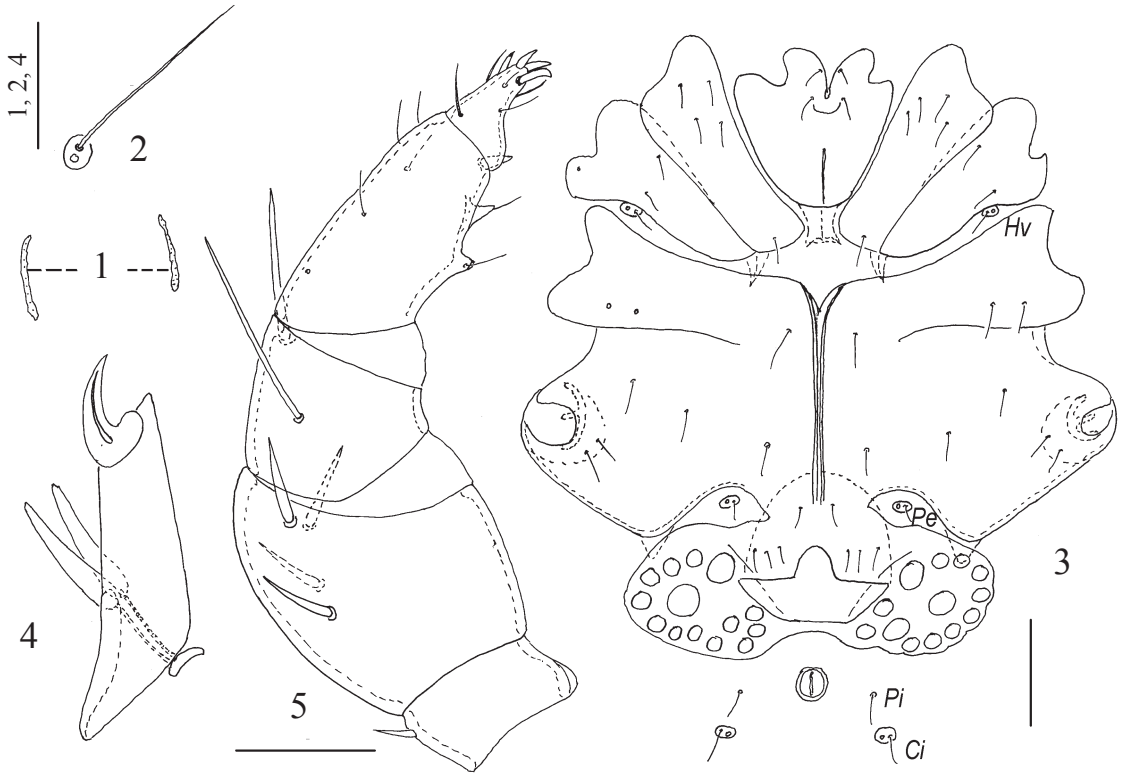
Family Pionidae Thor, 1900
Genus *Piona* Koch, 1842
Piona nodatella Tuzovskij, sp. n.

Figs 1–14

Material examined. Holotype: male, slide 3174, Russia, Yaroslavl Province, Nekouz District, sedge-sphagnum bog near settlement Borok, 1 July 1974, leg. P.V. Tuzovsky. Paratypes: 1 female same data as holotype, 1 female 3 July 1974 and 2 females 7 July 1974 same locality as holotype, leg. P.V. Tuzovsky.

Diagnosis. Both sexes. Dorsum with two elongate narrow plates; *Fch* long, thin; P-2 ventral margin convex, P-3 with two long unequal setae, lateral seta situated near middle of segment, P-4 setal tubercles moderately developed and separated, P-5 short and strong expanded proximally; two to three acetabula larger than others acetabula on each side; I–Leg-5 with 4–5 swimming setae. **Male**: posterior coxal group touching, but not fused medially; gonopore trapezoidal in shape, with small median incision anteriorly, genital pit deep, 13–14 genital acetabula, EC with three coins; I/II–Leg-6 not thickened distally. **Female:** genital plates bowed, with 9–13 pairs of acetabula, in anterior part narrow (one acetabulum in width), posteriorly broader (with two to three acetabula in width), medial margin concave.

Description. Male. Idiosoma oval, integument soft and striated. Dorsum with two small elongate narrow platelets, ratio L/W 6.0 (Fig. 1). The number and position of idiosomal setae typical for the genus *Piona.* All dorsal setae thin and approximately equal in length, but setae *Fch* (Fig. 2) many longer than other idiosomal setae associated with glandularia and trichobothria. Anterior coxal groups separated with short apodemes (Fig. 3). Sclerites bearing setae setae *Hv,* fused with posterior margins of coxal plates II, but suture line present on each side. Posterior coxal groups touching, but not fused medially, interspace between them sclerotized. Suture line between third and fourth coxal plates incomplete obliterated medially. Acetabular plates fused to coxal plates IV posterior margin and extending laterally beyond posterior projections of these plates. Gonopore



Figs 1–5. *Piona nodatella* sp. n., male: 1 — dorsal platelets; 2 — seta *Fch*; 3 — ventral view; 4, chelicera; 5 — pedipalp, lateral view. Scale bars: 1–2, 4, 3 = 100 μm, 5 = 50 μm.

trapezoidal in shape with small median incision anteriorly, genital pit deep, 13–14 genital acetabula, on each side, two to three pairs larger than others. Setae *Pe* free. Excretory pore surrounded by narrow sclerotized ring and situated anteriorly to setae *Pi* and *Ci*. Capitulum with short anchoral process and two pairs subequal ventral setae. Ejaculatory complex (Fig. 6) with long proximal arms and short distal arms, proximal chamber large, with a curving narrow proximal projection, forming three coils.

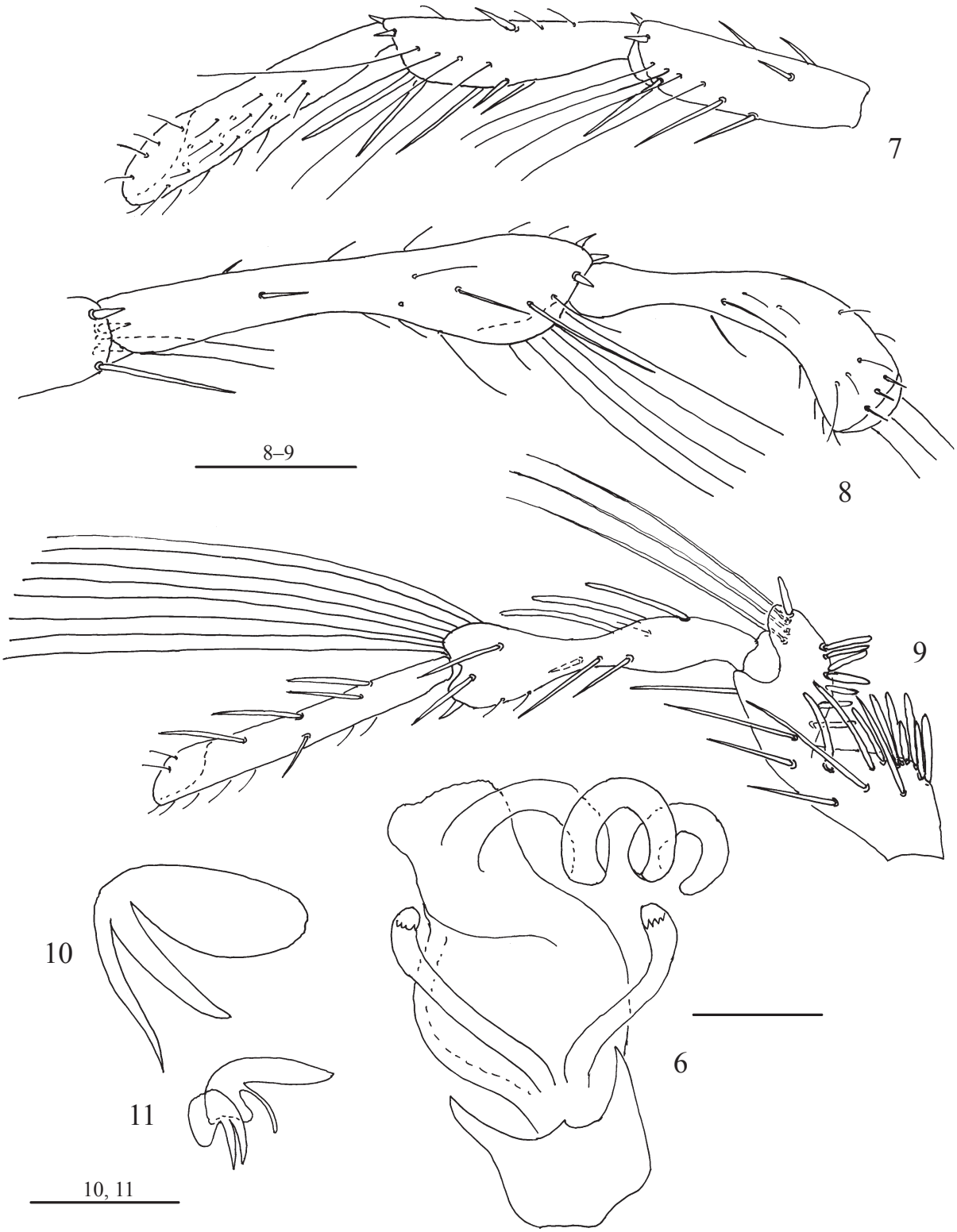
Chelicera (Fig. 4) with large basal segment and short crescent chela.

Pedipalp (Fig. 5) compact: P-1 with single short dorsodistal seta, P-2 with four subequal setae; P-3 with two long unequal setae, lateral seta located near middle of segment; P-4 slightly shorter than P-2, both setal tubercles moderately in size and a little separated; ventrodistal peg-like seta relatively large; P-5 short (L/H ratio 1.33), strong expanded proximally, with proximal solenidion, four thin setae and four very short, thick distal spines.

I–Leg-6 (Fig. 7) and II–Leg-6 along entire length an identical thickness; III–Leg-5 long expanded distally, III–Leg-6 comparatively short and club–shaped (Fig. 8); IV–Leg-4 thick, with a deep concavity bearing numerous unequal spine–like setae (Fig. 9); IV–Leg-5 narrowed posterior to middle of segment and expanded distally, IV–Leg-6 thin straight, with four to five thick setae. Number of swimming setae as follows: four on I–Leg-4–5, five on II–Leg-4–5, two on III–Leg-4, five to six on III–Leg-5, two to three on IV–Leg-4, six to seven on IV–Leg-5. Claws of tarsi I–II relatively large, with two long clawlets (Fig. 10). Claws of legs III asymmetrical (Fig. 11); large claw with thick, long straight dorsal clawlet and a relatively thin slightly curved ventral clawlet; small claw with a thick, short pointed subequal clawlets.

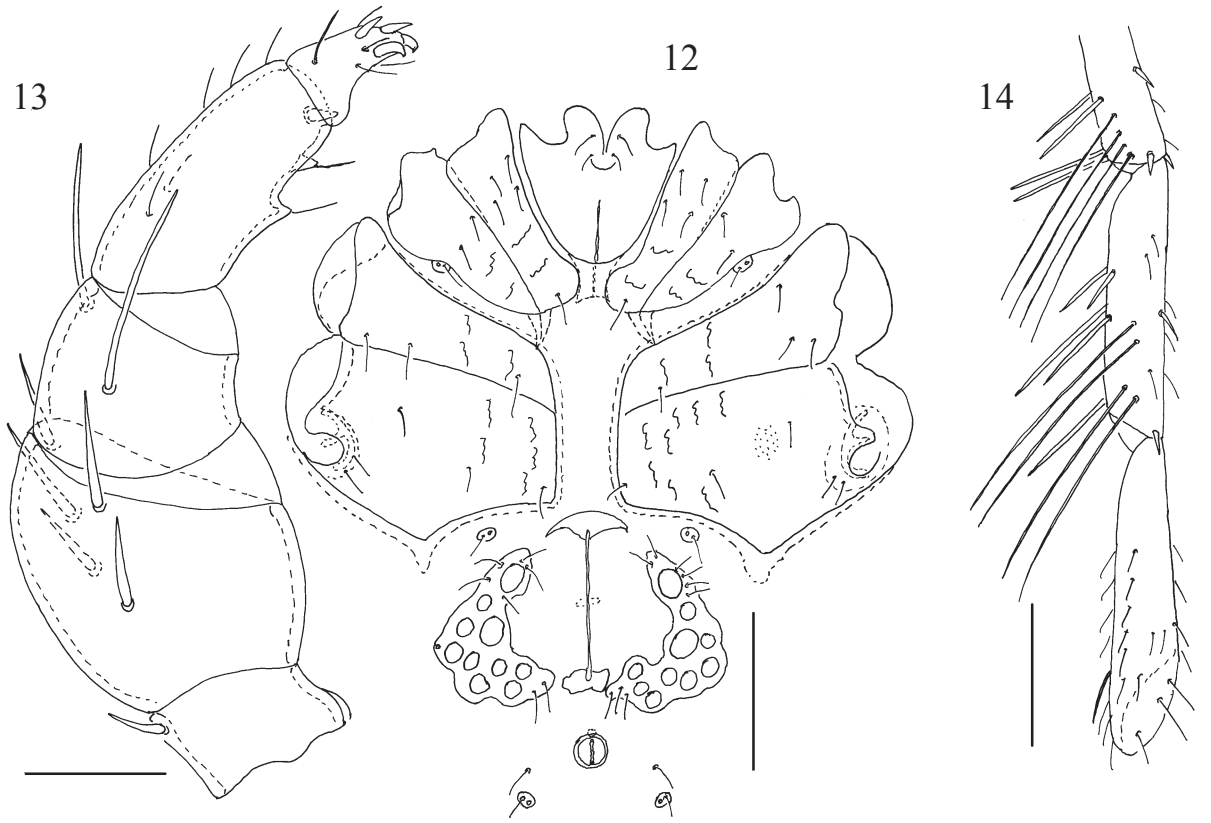
Measurements (n=1). L of idiosoma 660; dorsal platelets L 55, W 9; L of seta *Fch* 110; genital field W 310; ventral shield L 520; cheliceral segments L: base 155, chela 50; pedipalp segments (P–1–5) L: 30, 108, 54, 90, 36; leg segments L: I–Leg-1–6: 55, 90, 130, 170, 175, 210; II–Leg-1–6: 60, 108, 130, 185, 190, 220; III–Leg-1–6: 65, 108, 115, 200, 240, 170; IV–Leg-1–6: 115, 96, 95, 180, 205, 200.

Female. Idiosoma oval, integument soft and striated. Dorsum similar as in of the male. All coxal groups separated and covering about half of the ventral surface in mature specimens (Fig. 12). An-



Figs 6–11. *Piona nodatella* sp. n., male: 6 — ejaculatory complex; 7 — I–Leg-4–6; 8 — III–Leg-4–6; 9 — IV–Leg-4–6; 10 — claw of leg I; 11 — claws of leg III. Scale bars: 6, 10–11= 50 μm, 7–9 = 100 μm.

terior coxal plates with short apodemes. Sclerites bearing setae setae *Hv,* fused with posterior margins of coxal plates II, but suture line present on each side. Medial margin of coxal plate IV 1.5–2.0 times longer than medial margin of coxal plate III. Posterior margins of coxal plates IV forming obtuse angles, apodemes slightly developed. Genital opening and acetabular plates approximately equal in length. All acetabula and genital setae located on acetabular plates. Acetabular plates bowed, with 9–13 pairs of unequal acetabula (two to three pairs of acetabula larger than others), in



Figs 12–14. *Piona nodatella* sp. n., female: 12 — ventral view; 13 — pedipalp, lateral view; 14 — I–Leg-4–6. Scale bars: 12 = 200 μm, 13 = 50 μm, 14 = 100 μm.

anterior part narrow (one acetabulum in width), posteriorly broader (with two acetabula), medial margin concave; each plates with four to six anterior and two to four posterior genital setae.

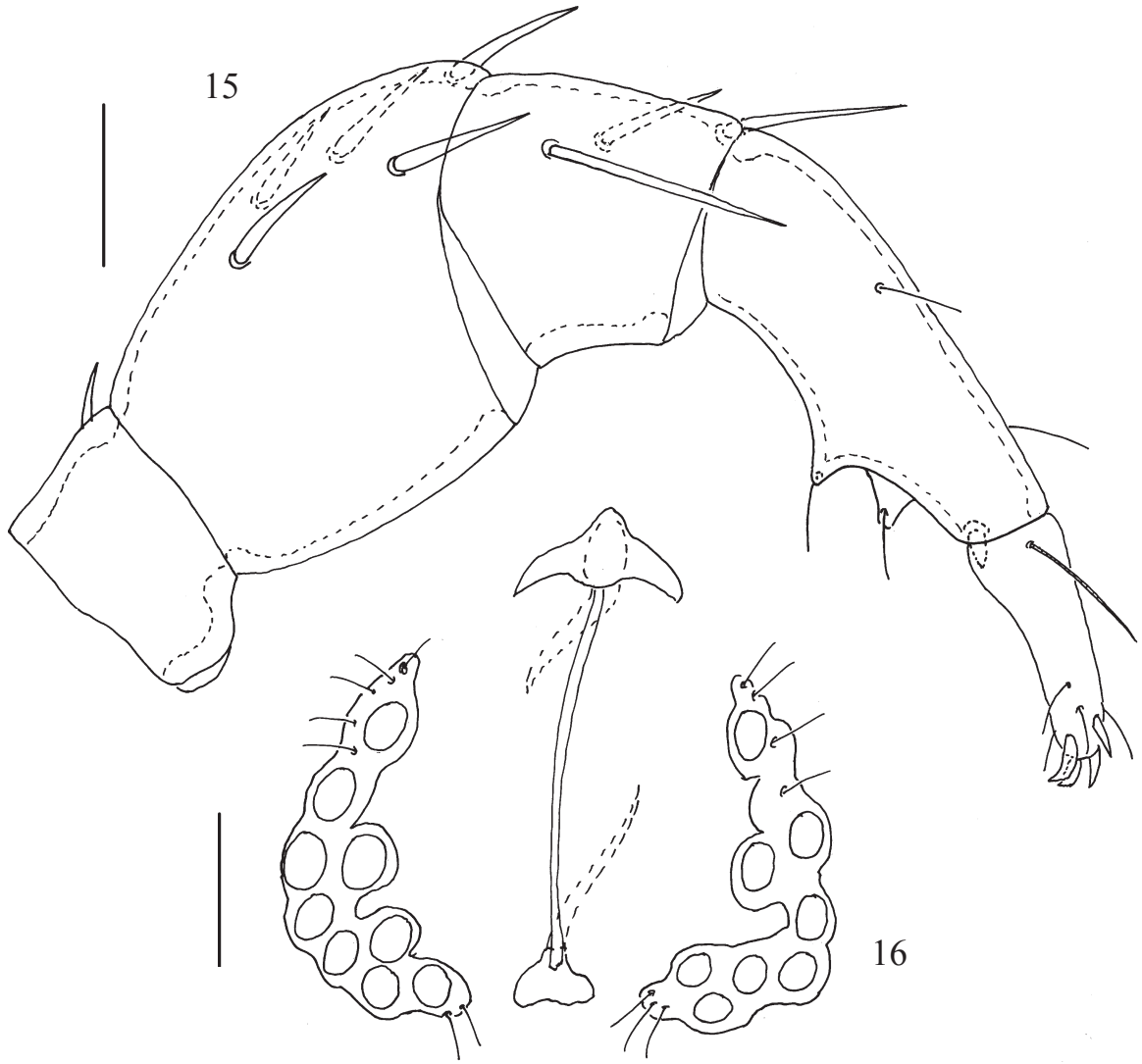
Pedipalp compact (Fig. 13): P–1 with a single, short dorsodistal seta; P–2 relatively large, with convex ventral margin and bearing five dorsal setae; P–3 with concave ventral margin, with two long unequal setae, base of lateral seta located near middle of segment; P–4 a little slender than in male, setal tubercles distinctly separated; P–5 short, strong expanded proximally (L/H ratio 1.30–1.35).

Legs thin and slender. I–Leg-4–5 with four to five short swimming setae (Fig. 14). Legs II–IV with long swimming setae, with the following numbers: four to seven on II–Leg-4, seven to eight on II–Leg-5, five to six on III–Leg-4, seven to nein on III–Leg-5, three to four on IV–Leg-4 and five to seven on IV–Leg-5.

Measurements (n=4). Idiosoma L 735–1050; dorsal platelets L 60–70, W 7–9; seta *Fch* L 100–110; acetabular plates L 135–170, W 55–78; heliceral segments L: base 168–180, claw 48–60; pedipalp segments (P–1–5) L: 36–42, 108–115, 54–65, 95–108, 36–39; leg segments L: Leg-1–6: 70–85, 100–115, 150–165, 190–215, 205–230, 225–245; II–Leg-1–6: 78–90, 105–125, 150–170, 210–240, 225–260, 240–270; III–Leg-1–6: 78–105, 120–140, 145–170, 220–240, 225–270, 240–270; IV–Leg-1–6: 120–135, 120–140, 150–175, 225–245, 240–255, 220–255.

Differential diagnosis. The new species is similar to *Piona nodata* (Müller, 1776). Adults of *P. nodatella* sp.n. differ from those of *P. nodata* by the following characters (characters states of *P. nodata* are indicated in parentheses). **Adults** — P-3 with two setae, Figs 5, 13 (with three setae, Fig. 15), P-4 setal tubercles are moderately developed and separated (P-4 setal tubercles comparatively are large, lying close to each other), P-5 short, strong, expanded proximally (comparatively long, slightly expanded proximally), the genital field with two to three large acetabula, Figs 3, 12 (with subequal acetabula). **Female** — each genital plate is broader posteriorly, with two to three rows of acetabula in width (each genital plate not broad posteriorly, usually with one row of acetabula in width, Fig. 16).

Etymology. The species epithet, *nodatella*, is derived from the name of *Piona nodata*.



Figs 15–16. *Piona nodata* (Müller, 1776), female (collected in Yaroslavl Province): 15 — pedipalp; lateral view; 16 — genital field. Scale bars: 15 = 50 μm, 16 = 100 μm.

Habitat. Sedge-sphagnum bogs.

Distribution. Europe (Russia, Yaroslavl Province).

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