

A new species of silverfish of the genus *Persiatelurina* Molero et al. (Zygentoma: Nicoletiidae) from Daghestan

Новый вид щетинохвосток рода *Persiatelurina* Molero et al. (Zygentoma: Nicoletiidae) из Дагестана

V.G. Kaplin & V.G. Vasin

В.Г. Каплин, В.Г. Васин

Vladimir G. Kaplin, All-Russian Institute of Plant Protection, Podbelsky Highway 3, St Petersburg-Pushkin 196608, Russia.
E-mail: ctenolepisma@mail.ru

Vasily G. Vasin, Samara State Agrarian University, Uchebnaya 2, settlement Ust'-Kinel'sky, Samara region 446442, Russia.
E-mail: rast.ssaa@yandex.ru

Abstract. A new species of silverfish, *Persiatelurina daghestaniana* Kaplin, **sp. nov.**, is described from Daghestan. It differs from other species of this genus, *P. caucasica* (Kaplin, 2016) from Abkhazia and *P. farsiana* Molero et al., 2018 from Southwestern Iran, by the structure of the legs, maxillae, maxillary and labial palps, pronotum, urotergite X, urosternites II and VII, urocoxites VIII and IX, subgenital plate, and ovipositor.

Резюме. Описан новый вид щетинохвосток *Persiatelurina daghestaniana* Каплин, **sp. nov.** из Дагестана. Он отличается от других видов этого рода – *P. caucasica* (Каплин, 2016) из Абхазии и *P. farsiana* Molero et al., 2018 из Юго-Западного Ирана – строением ног, нижних челюстей, нижнечелюстных и нижнегубных щупиков, переднеспинки, тергита X, стернитов II и VII, кокситов VIII и IX сегментов брюшка, субгенитальной пластинки и яйцеклада.

Key words: silverfish, taxonomy, Caucasus, Daghestan, Zygentoma, Nicoletiidae, *Persiatelurina*, new species

Ключевые слова: щетинохвостки, систематика, Кавказ, Дагестан, Zygentoma, Nicoletiidae, *Persiatelurina*, новый вид

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Introduction

Silverfish of the family Nicoletiidae are eyeless and lack pigment (Smith & McRae, 2016). Nicoletiid fauna is very diverse, including six subfamilies and about 90 genera (Mendes, 1994); among them about 70 genera and more than 140 species belong to the subfamily Atelurinae (Mendes, 2012). They are found in soil-related and subterranean habitats in regions with warm temperate, subtropical and tropical climatic conditions.

However, they are poorly studied in the Caucasus. Thus, only *Atelura formicaria* Heyden, 1855 was found in Crimea (Kaplin, 1983), and *Atelura abkhazica* Kaplin, 2016 and *Persiatelurina caucasica* (Kaplin, 2016) were described from Abkhazia (Kaplin, 2016).

Recently we collected three atelurid specimens in environs of Derbent (Daghestan), which bear three pairs of styli on urosternites VII–IX, 1+1 exsertile vesicles on urosternite II, and 1+1 pseudovesicles on urosternite VII. The genera of the

subfamily Atelurinae that have these features are the following: *Proatelura* Silvestri, 1916; *Proatelurina* Paclt, 1963; *Nipponatelurina* Mendes et Machida, 1994; *Persiatelurina* Molero, Tahami, Gaju et Sadeghi, 2018 (Mendes, 2012; Tahami et al., 2018). The specimens we collected have been revealed to be a new species of the genus *Persiatelurina* possessing the galea with two apical conules and pretarsi with small pulvilli. In the present study, *Persiatelurina daghestaniana* Kaplin, **sp. nov.** is described based on these specimens.

These specimens (females) were stored in 75% alcohol; holotype and two paratypes were dissected and mounted on glass microscope slides in the Berlese Fluid. Figures were made using microscope and drawing tool. The types of the new species are deposited in the collection of the All-Russian Institute of Plant Protection (VIZR), St Petersburg-Pushkin.

Taxonomy

Order **Zygentoma**

Family **Nicoletiidae**

Subfamily **Atelurinae**

Genus ***Persiatelurina*** Molero, Tahami, Gaju et Sadeghi, 2018

Type species *Persiatelurina farsiana* Molero, Tahami, Gaju et Sadeghi, 2018

Persiatelurina daghestaniana Kaplin, **sp. nov.** (Figs 1–17)

Holotype. Female (in slides), **Russia, Daghestan**, environs of Derbent fortress, 42°03'10"N, 48°16'26"E, 22.IV.2018, V. Kaplin, V. Vasin (VIZR).

Paratypes. Two females (in slides), same data as for holotype (VIZR).

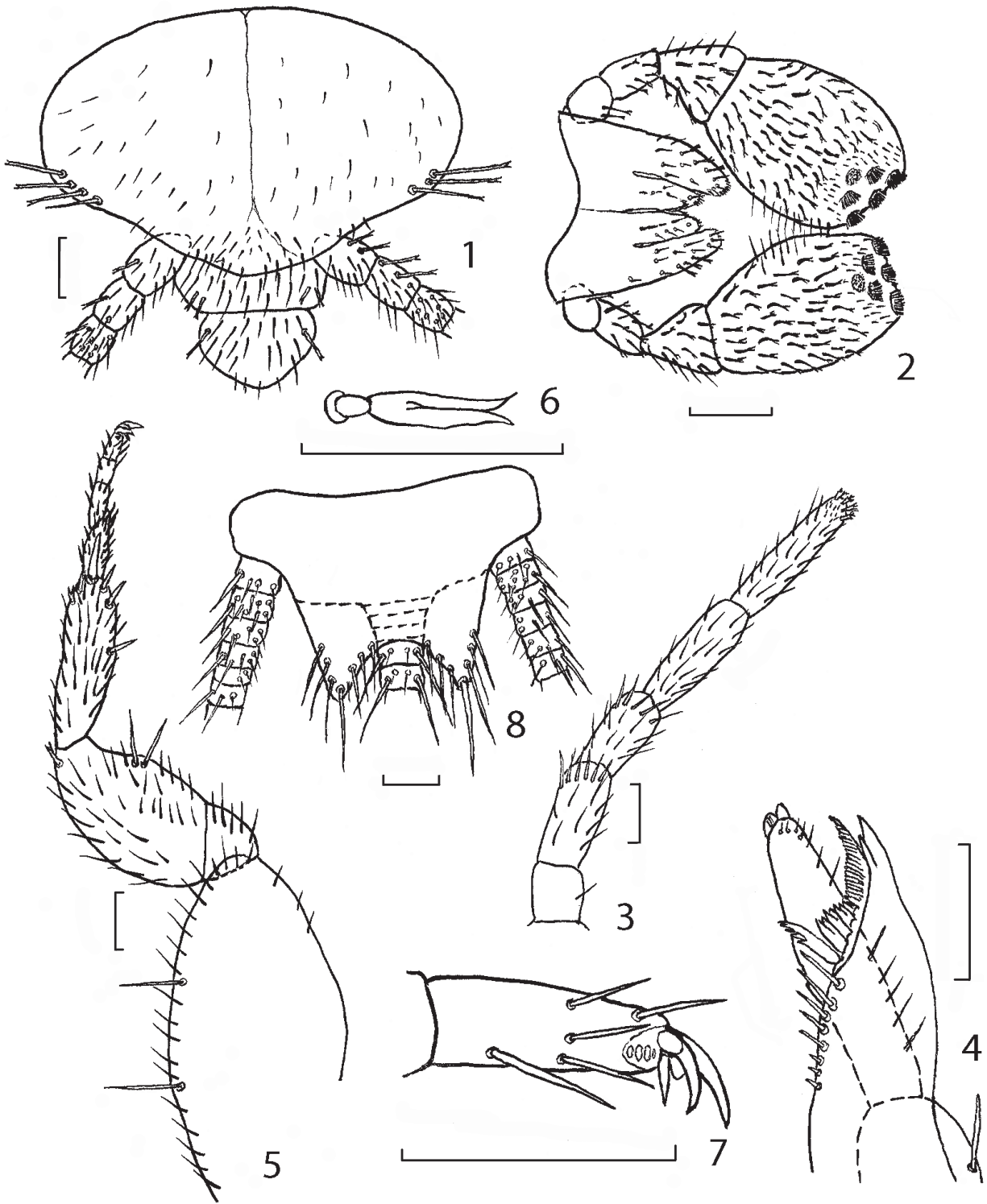
Description. Body length 3.2–3.8 mm; head length 0.26–0.28 mm; thorax length 1.1–1.2 mm. Head width 0.8–0.9 mm; thorax width 1.3–1.4 mm; width of abdominal segment IX about 0.5 mm.

General colouration yellowish white with golden chaetae and scales. Body small, elongate (2.2–2.6 times as long as wide), ateluriform in shape, covered (including head and coxae) by relatively large scales which 1–2.1 times as long as wide and

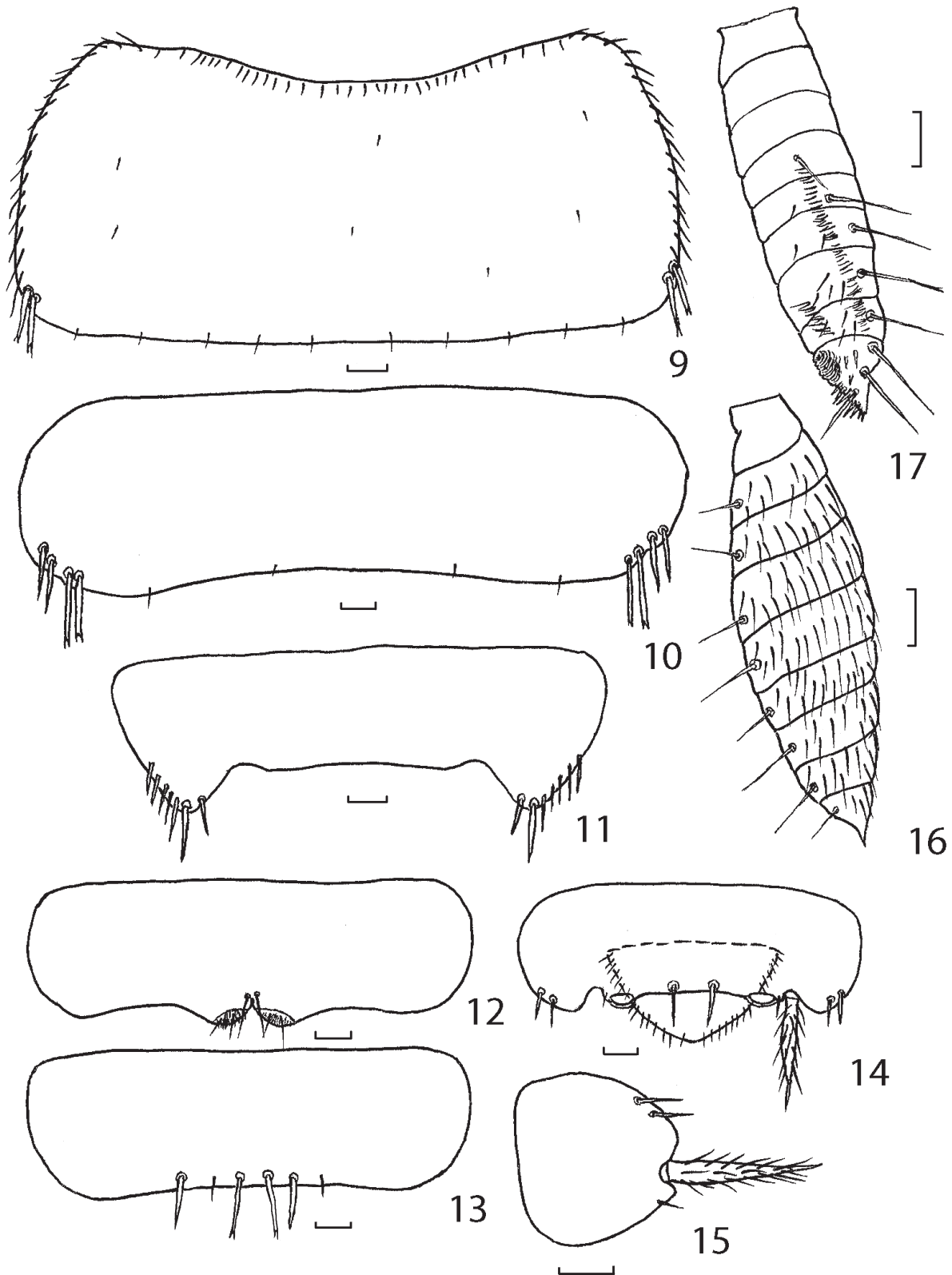
with 14–20 rays (antennae and cerci partially broken). Macrochaetae simple or with apical bifurcations.

Head small, 1.5 times as wide as long (Fig. 1). Basal annuli of flagellum with trichobothria. Mandibles with row of macrochaetae along outer surface (last of these macrochaetae with apical bifurcation) as well as with well-developed incisor and molar regions. Incisor region with seven incisives. Maxillary palps with five palpomeres. Ultimate palpomere of maxillary palps 1.2 times as long as penultimate one; ultimate palpomere with four apical sensorial papillae of usual form (Fig. 3). Galea of maxilla with two apical conules: one more rounded than other. Apical tooth of lacinia bifid; pectinate prostheca long with about 20–22 narrow hyaline projections, five bifurcated hyaline lamellae (first of these lamellae large and perpendicular, rest lamellae inclined), about five simple macrochaetae and three small chaetae along inner margin. Perpendicular lamella in apical part with five lateral projections (Fig. 4). Apical palpomere of labial palp ovoid, about 1.3–1.5 times as long as wide, with six typical sensorial papillae (Fig. 2). Undersurface of last three palpomeres of labial palps with numerous relatively shortened and thickened, slightly curved and apically bifurcated chaetae. Glossae divided into two pairs of lobes, shorter than paraglossae. Paraglossae with simple and bifid chaetae.

Lateral margins of thoracic tergites with a row of setae, two of which (located in posterolateral angles of tergites) apically bifid and longest (Fig. 9). Anterior border of pronotum with numerous small chaetae. Posterior margin of pro-, meso- and metanotum with eight to ten small chaetae (Fig. 9). Legs quite elongate. Coxae and femora widened (Fig. 5). Ratio of lengths: for I, II and III coxae about 2.0, 1.6 and 1.4, respectively; for femora, 1.7, 1.6 and 1.5; for tibiae, 3.7, 4.2 and 4.5. All tibiae with two lyriform spines located at apex of dorsal part, but all femora with only one such spine (Fig. 6). Tibia also with one relatively large apical spur and four ventral simple macrochaetae. Middle part of all femora with two long macrochaetae on poorly marked ledge: distal one bifid, proximal one simple. Praetarsus with two strong claws, two small pulvilli, medial empodial claw and slightly convex small support oval platform with 3–4 transverse ribs (Fig. 7).



Figs 1–8. *Persiatelurina daghestaniana* sp. nov., holotype (female): 1, head; 2, labial palps with ligula; 3, maxillary palp; 4, galea and lacinia of maxilla; 5, fore leg; 6, lyriform spine; 7, fore pretarsus and third tarsomere; 8, urotergite X. Scale bar: 0.1 mm.



Figs 9–17. *Persiatelurina daghestaniana* sp. nov., holotype (female): 9, pronotum; 10, urotergite II; 11, urotergite IX; 12, urosternite II; 13, urosternite III; 14, urosternite VII and subgenital plate; 15, urocoxite VIII; 16, gonapophysis VIII (outer side); 17, gonapophysis IX (inner side). Scale bar: 0.1 mm.

Table. Main morphological differences between *Persiatelurina daghestaniana* Kaplin, **sp. nov.** and its congeners.

Morphological characters		<i>P. daghestaniana</i>	<i>P. caucasica</i>	<i>P. farsiana</i>
Body length, mm		3.2–3.8	4.1–4.6	4.5
Number of macrochaetae on inner margin of lacinia		5	7–8	4?
Ratio of lengths of ultimate palpomere and penultimate one in maxillary palps		1.2	1.3	?
Number of apical sensorial papillae on ultimate palpomere of maxillary palps		4	3	?
Setae on undersurface of ultimate palpomere of labial palps		relatively shortened and thickened, slightly curved, apical bifurcated	relatively long and thin, straight, simple, bifid only in basal part of palpomere	straight, simple, bifid only in basal part of palpomere
Ratio of length to width of tibia	I	3.7	2.9	
	II	4.2	2.6–2.7	3.0
	III	4.5	3.2	
Number of setulae on posterior margin of pronotum		10	10–11	8
Ratio of depth to width of concavity on hind margin of urotergite X		0.45	0.27	0.87
Number of macrochaetae on urosternite II		2	4	4
Ratios of length of styli (without apical spines) on urosternite VII and on urocoxites VIII and IX to length of corresponding urosternite and urocoxites	VII	0.74	0.63	
	VIII	0.78	0.63–0.66	?
	IX	0.84	0.88–0.89	
Ratio of width to length of subgenital plate		1.8	1.6–1.7	1.5
Number divisions of ovipositor		9	9	7

Urotergites I–VIII infralaterally with 2+2 bifid and 2+2 additional simple macrochaetae: inner chaetae more robust and longer than other ones. Posterior margin of urotergites I–VIII with four small chaetae (Fig. 10). Urotergite IX with posterolateral corners protruding, with 1+1 apical, 5+5 outer and 1+1 inner macrochaetae; outer

and inner macrochaetae shorter than apical ones (Fig. 11). Urotergite X with semicircular concave hind margin; ratio of width to depth of this notch (concavity) about 2.2; apex of posterolateral angles of urotergite X with 1+1 long and strong macrochaetae; inner and outer margins of this notch with three macrochaetae each (Fig. 8).

Urosternite I with 1+1 submedian small chaetae. Urosternite II with one pair of submedian vesicles and with six setae (Fig. 12). Urosternite III with four macrochaetae and two small chaetae (Fig. 13). Urosternites IV–VI with five or six chaetae on hind margin. Two submedian macrochaetae of urosternites III–VI long, apically bifurcated (Fig. 13). Urosternite VII with one pair of pseudovesicles, 1+1 submedian long simple macrochaetae between pseudovesicles and 2+2 sublateral smaller setae (Fig. 14). Subgenital plate well developed, 1.8 times as wide as long, with rounded hind margin and single row of simple setae, apically slightly acute (Fig. 14). Urosternites VII–IX with styli; ratios of length of styli (without apical spines) on urosternite VII, urocoxite VIII and urocoxite IX to length of corresponding urosternite and urocoxites about 0.74, 0.78 and 0.84, respectively; ratios of lengths of apical spines and styli (without apical spines) for urosternite VII as well as for urocoxites VIII and IX about 0.30, 0.25 and 0.18, respectively (Figs 14, 15). Ovipositor spindle-shaped, slightly shorter than styli IX. Gonapophyses VIII and IX with nine divisions and acute apices; gonapophyses VIII with numerous straight chaetae, but its outer margin also with one longer chaeta on each of 2–9th or 2–8th divisions; inner margin of gonapophysis IX with one such chaeta on each of 5–9th divisions (Figs 16, 17); gonapophyses IX with an inner apical spiny area; apical part of gonapophyses IX also with well-developed oval sensorial field. Basal part of cerci with trichobothria.

Male unknown.

Remarks. The new species belongs to the genus *Persiatelurina*, which includes two previously described species: *P. caucasica* (Kaplin, 2016) from Abkhazia and *P. farsiana* Molero et al., 2018 from Southwestern Iran. The new species differs from these species by structure of the legs, maxillae, maxillary and labial palps, pronotum, urotergite

X, urosternites II, VII, urocoxites VIII and IX, subgenital plate, ovipositor. The main differences between species are shown in Table.

Etymology. The name of the new species derives from the Daghestan Republic combined with the suffix “-iana”.

Habitats. All specimens of *Persiatelurina daghestaniana* sp. nov. were collected in mountain forest (*Quercus*, *Fraxinus*, *Rosa*, other shrubs), in soil under stones, with small ants.

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