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Noldo kaprusii n. sp., a new species from Crimea (Protura: Nipponentomidae)

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ABSTRACT. A new species of Protura, *Noldo kaprusii* n. sp. from Crimea is described. Some corrections and supplements to the description of *Noldo submontanus* SZEPTYCKI, 1988 are given.

Key words: entomology, taxonomy, Protura, new species, *Noldo*, Crimea, Ukraine

The material of Protura collected in Crimea in 1997 by Dr. R. J. POMORSKI, Dr. D. SKARŻYŃSKI, and Dr. I. KAPRUS' contains a new species of the genus *Noldo* SZEPTYCKI, 1988. The genus *Noldo* was created by the junior author (SZEPTYCKI 1988) for a single species, *N. submontanus* SZEPTYCKI, 1988 from the foothills of Altai Mts and from the area of Novosibirsk (Siberia). Unexpectedly, the second species was found in Crimea. Its description is given in the present paper. It is the first record of Protura from Crimea.

***Noldo kaprusii* n. sp.**

(Figs 1-21)

DIAGNOSIS

Noldo kaprusii n. sp. differs from *N. submontanus* SZEPTYCKI, 1988 in the more protruded labrum, shorter lever of pseudoculus, long seta *M* on meso- and metanotum (in *N. submontanus* seta *M* is very short and thin), foretarsal sensilla *b*

and *c* equal (in *N. submontanus* sensillum *b* is longer than *c*), and relatively shorter sensilla *d*, *e* and *a'*. Besides, the new species is larger – the length of foretarsus is 95-103 µm (in *N. submontanus* it is 81-90 µm).

DESCRIPTION

Head setae long, rostrum distinct, short. Additional setae absent, all setae mostly of normal shape, in some specimens on dorsal side 2+2 modified setae present. Pseudoculus round, with distinct, short lever, PR 13.5-21. Maxillary gland with small, densely granulated calyx, and small granulated thickening below it, posterior filament short, with elongated, simple posterior dilation, CF 6.5-9. Maxillary palps short, basal sensilla equal, short and thin. Labial palps well developed, with broad basal sensilla. Labium with smooth inner margin.

Main setae on nota long. Seta *M* on meso- and metanotum long, same shape as other main setae, longer than *A2* (seta *P1* only 1.2-1.4 times longer than *M*). Accessory setae *P1a* and *P2a* modified, short, relatively thick, stump; *P2a* nearer to *P3* than to *P2*; *P5* as small sensillum. Length ratio of *P1* : *P1a* : *P2* on mesonotum as 6-8.3 : 1 : 7.2-9.8. Seta *P2* 1.1-1.4 times longer than *P1*. Mesonotum with pores *al* and *sl*, metanotum with pore *sl*. Setae *A2* and *M2* on prosternum, and *A1* on meso- and metasternum modified, as accessory setae on nota; other setae of normal shape. Sterna with no pores. Chaetotaxy formula as in Table I.

Foretarsus with no sensillum *b'*; sensillum *t1* filiform; *t3* short, leaf-like; *f* nearly seta-like; other sensilla slender, equally broad. Sensillum *e* close to *d*. Sensillum *a* slightly longer than *b* and *c*; *d* short, evidently shorter than *t2*; *a'* short, not reaching base of *t3*. Setae $\beta 1$ and $\delta 4$ equal, short. Length formula of sensilla: $t3 < d < e < t1 < (b = c = g = t2 = a') < (a = f)$. BS 0.8 – 1.1, TR 2.4 – 2.9, EU about 0.1.

Chaetotaxy of abdomen as in Table I. Accessory setae on urotergite I-VI modified, as accessory setae on nota. Accessory setae on urotergite VII longer and thinner than those on preceding tergites, stump. Pore *psm* present on urotergites I-VIII, *psl* only on VII, *al* on II-VII. The last one on urotergites II-VI situated dorsally to level of *A5*, on VII on level of *A5*. Row of pores on membrane between urotergite VII and VIII distinct. Membrane between tergite and sternite on abdominal segments II-VI with single membranal pore in anterior part.

Abdominal legs with 4, 2, 2, setae, of normal *Acerella*-type. Accessory setae on urosternites I-VII as those on tergites. Urosternites I-VII with single, median pore, situated anteriorly (on one of the anterior lines) on I-VI, and posteriorly (slightly anteriorly to setae *P1*) on VII.

Abdominal segment VIII with distinct striate band. Tergite and sternite with irregular row of small, scattered granules. Comb VIII with straight hind margin composed of 10 – 14 long, slender teeth. Pore *psm* with no surrounding teeth, other pores absent. Hind margin of sternite and laterotergites smooth.

Seta *1a* on urotergite IX subequal to seta *1*. Seta *2a* on urotergites IX and X shorter than the other setae, nearly spine-like. In lateral part of urotergite IX and X distinctly ciliated lines present. Hind margin of urotergite X and XI with subtle striation. Urosternites IX - XI smooth, hind margin of IX and X with subtle striation in lateral part (externally to seta 2). Dorsal lobe of telson with single median pore, ventral lobe with 1+1 anterolateral pores. Hind margin of dorsal lobe smooth, of ventral lobe with delicate serration in central part.

Penis with 5+5 setae, additional seta absent. Squama genitalis short, with more or less conical, stump acrostyli.

Body measurements (10 females, 9 males) (in μm): head 135-154, pseudoculus 8-10, maxillary gland 16-22, mesonotal *P1* 39-58, mesonotal *P1a* 6-8, mesonotal *P2* 48-62, mesonotal *M* 32-46, foretarsus 95-103, claw 33-42, empodial appendage 3-5, maximum body length 1720.

Chaetal variability. Imago (56 specimens). Urotergite IV: asymmetrical presence of *A4* (1 specimen); urotergite VI: asymmetrical presence of *A4* (2 s-n); urotergite VII: asymmetrical additional seta present above *P1a* in place of pore *psm*, pore absent (1 s-n). In 2 specimens seta *M* on mesonotum is asymmetrically very short and thin.

TYPE MATERIAL

Holotype male (nr 15.10a): Ukraine, Crimea, loc. 1, Jaltinskij Mountain Reserve, neighborhood of Gurzuf, litter and soil in beech-pine forest, 12.09.1997, leg. I. Kaprus'.

Table 1. Body chaetotaxy of *Noldo kaprusii* n. sp.

	dorsal		ventral	
	setae	formula	setae	formula
Th. I	1,2	4	A1, 2, M1, 2 P1, 2, 3	$\frac{4+4}{6}$
Th. II	A2, 3, 4, M P1, 1a, 2, 2a, 3, 3a, 4, 5	$\frac{8}{16}$	Ac, 1, 2, M P1, 3	$\frac{5+2}{4}$
Th. III	A2, 3, 4, M P1, 1a, 2, 2a, 3, 3a, 4, 5	$\frac{8}{16}$	Ac, 1, 2, 3, M P1, 3	$\frac{7+2}{4}$
Abd. I	A1, 2, 5 P1, 1a, 2, 2a, 3, 4	$\frac{6}{12}$	Ac, 2 P1, 1a	$\frac{3}{4}$
Abd. II-III	A1, 2, 3, 4, 5 P1, 1a, 2, 2a, 3, 4, 4a, 5	$\frac{10}{16}$	Ac, 2 Pc, 1a, 2	$\frac{3}{5?}$
And. IV-VI	A1, 2, 3, 4, 5 P1, 1a, 2, 2a, 3, 4, 4a, 5	$\frac{10}{16}$	Ac, 2 P1, 1a, 2, 3	$\frac{3}{8}$
Abd. VII	A2, 3, 4, 5 P1, 1a, 2, 2a, 3, 4, 4a, 5	$\frac{8}{16}$	Ac, 2 P1, 1a, 2, 3	$\frac{3}{8}$
Abd. VIII	A1, 4, 5 Pc, 1, 1a, 2, 2a, 3, 3a, 5	$\frac{6}{15}$	1, 2 1a	$\frac{4}{2}$
Abd. IX	1, 1a, 2, 2a, 3, 4	12	1, 2	4
Abd. X	1, 2, 2a, 3, 4	10	1, 2	4
Abd. XI	1, 3, 4	6		6
Telson		9		$\frac{0}{6}$

Paratypes: 7 females, 6 males (nr 15.3a-c; 15.4c; 15.8a,b; 15.9; 15.10a,b; 15.12; 15.14c,d; 15.16): together with holotype; 3 females, 1 male (nr 15.1; 15.5; 15.7; 15.17): loc. 2, Jaltinskij Mountain Reserve, neighborhood of Gurzuf, litter and soil in pine forest, 1000 m a.l.s., 12.09.1997, leg. I. Kaprus'; 3 males (nr 5579-5581): loc. 3, Partizanskoje near Gurzuf, litter and soil in beech forest, 10.09.1997, leg. R. J. Pomorski, D. Skarżyński, I. Kaprus.

OTHER MATERIAL

loc.1, 12.09.1997 - 5 females; loc.2, 12.09.1997 - 3 females; loc.3, 10.09.1997 - 17 females, 1 male; and Ukraine, Crimea, Nikitskij Botanical Garden near Jalta, litter and soil under *Juniperus* sp. in oak forest, 27.10.1986, 3 females, leg. N.M. Chernova.

The holotype and paratypes nr 15.1, 15.3a-c, 15.5, 15.4c, 15.9, 15.10b, 15.12, 15.17 are deposited in the collection of the State Museum of Natural History, Ukrainian National Academy of Sciences, L'viv, Ukraine; paratypes nr 15.7, 15.8a-c, 15.14 c,d, 15.16, 5579, 5580, 5581 in the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences Kraków, Poland.

NAME DERIVATION

Named in the honor of Dr. Igor KAPRUS' of the Museum of Natural History of the Ukrainian Academy of Sciences in Lviv.

REMARKS

The original description of *N. submontanus* contains some mistakes and omissions. First, in the description of chaetotaxy (SZEPTYCKI 1988, Table IX) there are many mistakes. The chaetotaxy of *N. submontanus* is exactly the same as that of the new species (Table I of the present paper). Three important characters were omitted, too. They are: the presence of granulated thickening on the posterior filament of maxillary gland, the presence of a pore on the membrane between tergite and sternite II-VI, and the presence of peculiar, ciliated structures in the lateral portion of urotergite IX and X. All the mentioned structures are exactly the same in *N. submontanus* and in the new species.

The junior author supposed that the peculiar, long lever of pseudoculus is a generic character of *Noldo*. Now we think that it is a specific character of *N. submontanus*. It may be that the generic characters of *Noldo* are the structure of maxillary gland (with a granulated thickening below calyx) and the presence of the membranal pores.

The differences between *N. submontanus* and *N. kaprusii* n. sp. can be summarized as follows:

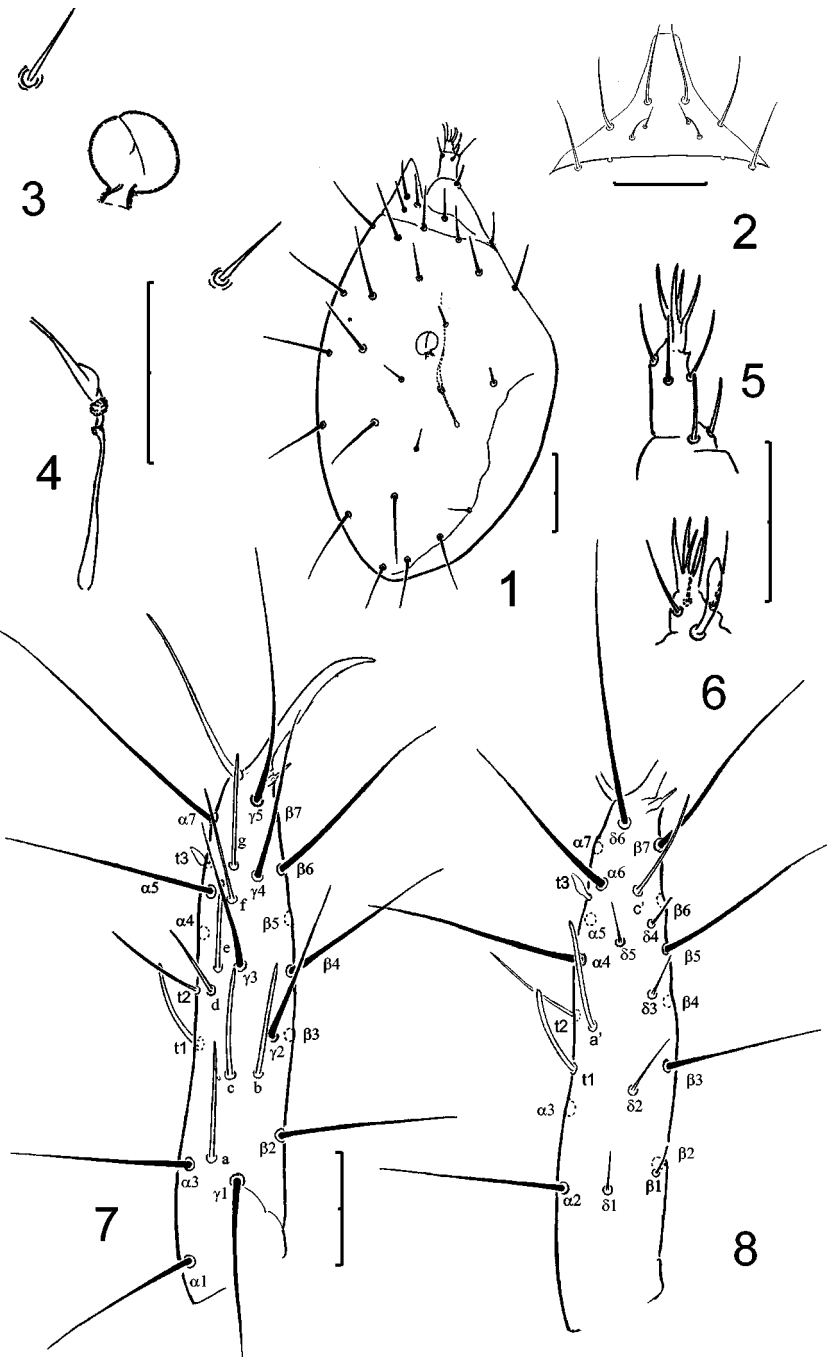
<i>N. submontanus</i>	<i>N. kaprusii</i> n. sp.
labrum short, indistinct	labrum distinctly protruded
lever of pseudoculus long	lever of pseudoculus short
seta <i>M</i> on nota very short	seta <i>M</i> on nota long
foretarsal sensillum <i>b</i> longer than <i>c</i>	foretarsal sensilla <i>b</i> and <i>c</i> equal
sensilla <i>d</i> , <i>e</i> and <i>a'</i> short; <i>a'</i> do not reach base of <i>t3</i>	sensilla <i>d</i> , <i>e</i> and <i>a'</i> long; <i>a'</i> reaching base of <i>t3</i>
length of foretarsus 81-90 μ m	length of foretarsus 95-103

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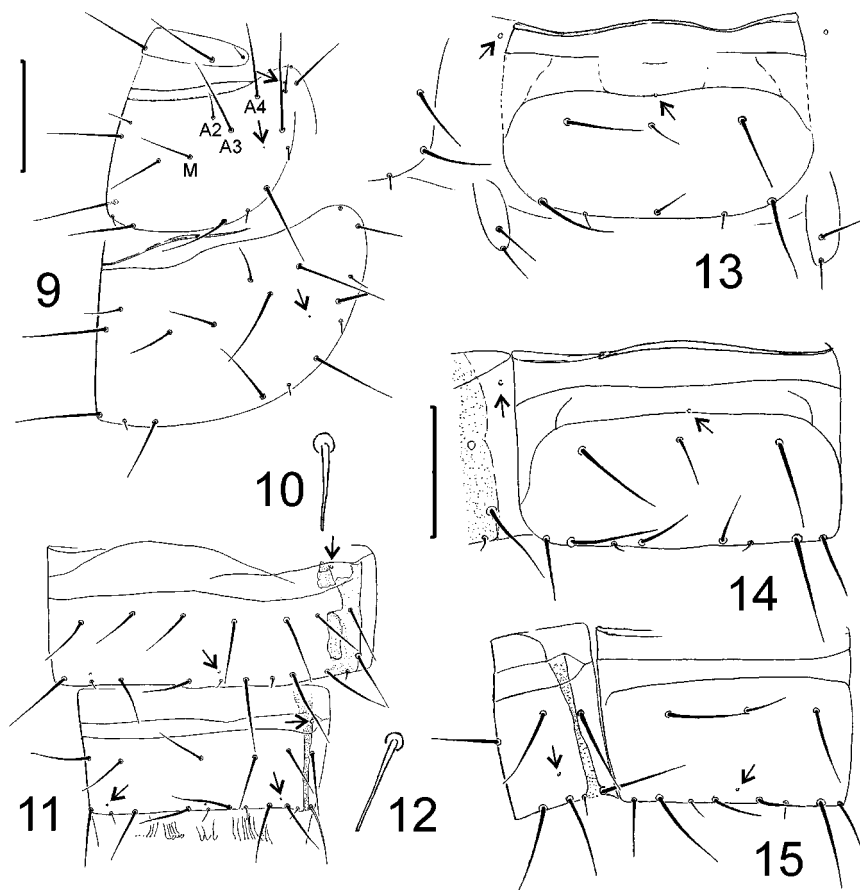
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REFERENCE

- SZEPTYCKI, A., 1988. New genera and species of Protura from the Altai Mts. Acta zool. cracov., **31**: 297-362.

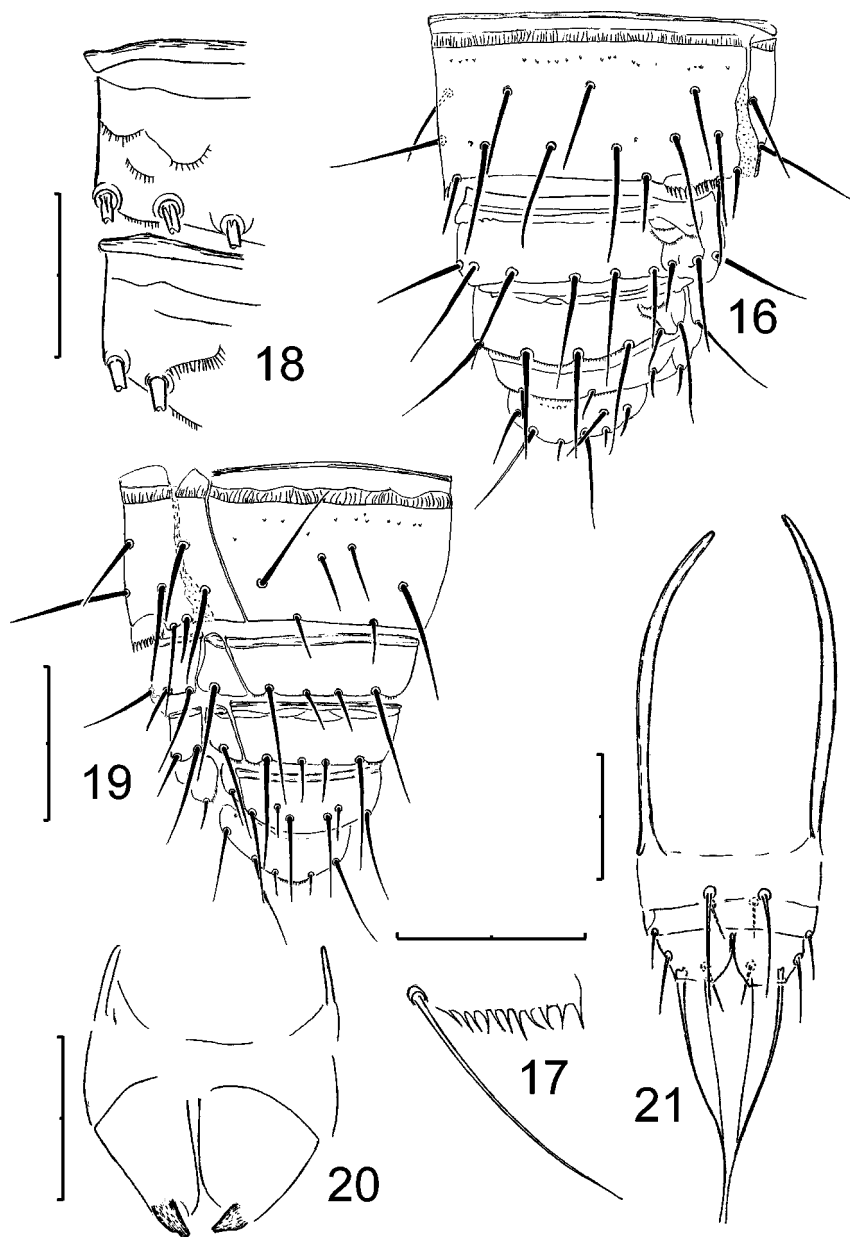


Explanation: see next page



9-15. *Noldo kaprusii* n. sp. (arrows – pores): 9- nota (holotype), 10- seta *P1a* on metanotum (holotype), 11- urotergite VI and VII (holotype), 12- seta *P1a* on urotergite VII (holotype), 13- urosternite III (holotype), 14- urosternite VI (paratype 15.4c), 15- urosternite VII (paratype 15.4c). (Scale bar: 50 µm)

1-8. *Noldo kaprusii* n. sp.: 1- head (paratype 15.4c), 2- labrum (paratype 15.1), 3- pseudoculus (paratype 15.10b), 4- maxillary gland (paratype 15.14d), 5- maxillary palp (paratype 15.14d), 6- labial palp (paratype 15.14c), 7- foretarsus, exterior view (paratype 15.4c), 8- foretarsus, interior view (paratype 15.4c). (Scale bar: 20 µm)



16-21. *Noldo kaprusii* n. sp.: 16- urotergite VIII-telson (holotype), 17- comb VIII (paratype 15.10b), 18- lateral part of urotergite XI and X (paratype 15.10b), 19- urostermite VIII-telson (holotype), 20- female squama genitalis (paratype 15.14d), 21- penis (paratype 15.12). (Scale bar for figs 16 and 19: 50 μ m, for others: 20 μ m)