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*Eosentomon palustre* sp. n. from Northern Poland  
(Protura: Eosentomidae)

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ABSTRACT. *Eosentomon palustre* sp. n. of „*delicatum*” group is described from the “Potoczek” reserve near Kępice, Northern Poland (UTM XA 20). It differs from similar species in a short female squama genitalis with relatively small “head” and in the seta *P1a* situated nearly at the level of seta *P2*. The new species is associated with swampy habitats. A list of Protura collected together with it in such habitats is given.

Key words: entomology, taxonomy, Protura, *Eosentomon*, new species, Poland, peatbogs

***Eosentomon palustre* sp. n.**  
(figs 1-23)

DIAGNOSIS

*Eosentomon palustre* sp. n. belongs to the “*delicatum*” species group sensu SZEPTYCKI (1985) with relatively thin foretarsal sensillum *c*’ situated distally to the base of seta  $\alpha 6$ . This group includes *E. delicatum* GISIN, 1945, *carpaticum* SZEPTYCKI, 1985, *wanda* SZEPTYCKI, 1985, *ulinense* SZEPTYCKI, 1999 and *zodion* SZEPTYCKI, 1985 (SZEPTYCKI 1985, 1999). Besides the evident differences in the shape of female squama genitalis, the species differ in the position of foretarsal sensilla *t1* and *a*’, position of seta *P1a* on urotergite VII and some details of abdominal chaetotaxy (though the latter details are to some degree variable). The foretarsus is most similar to *ulinense* and *zodion*. In all three species sensillum *t1* is situated more or less at half distance  $\alpha 3$  -  $\alpha 3'$  and sensillum *a*’ is situated

evidently nearer to the level of  $\alpha 3$  than to  $t1$ . The new species differs from *ulinense* and *zodion* in the position of seta  $P1a$  on urotergite VII - in the new species it is situated nearly at the level of seta  $P2$  while in the other two - posteriorly to the level of  $P2$ . The new species differs from *ulinense* also in the absence of seta  $A2$  on urotergite VII. It is also the smallest of all the three species mentioned - the length of foretarsus is 72-81  $\mu\text{m}$ , while in *ulinense* it is 80-85  $\mu\text{m}$ , and in *zodion* 86-88  $\mu\text{m}$ .

#### DESCRIPTION

Head setae short, slightly diversified, seta  $sp$  1.1-1.6 x length of seta  $p$ . Setae  $aa$ ,  $pa$ ,  $m4$  and anterior sensillum present. Pseudoculus ovate, nearly round, with small, circular inner structure, PR 11-14. Clypeal apodeme distinct. Rostral seta simple, slightly shorter than subrostral. Labrum with round apices and deep, narrow notch. Labral seta present. Mandibles with two small apical teeth. Digits of galea well-developed, median and inner ones of equal length. Outer and inner lobe of lacinia strongly curved, smooth. Sensilla of maxillary palp short, lateral sensillum shorter than dorsal.

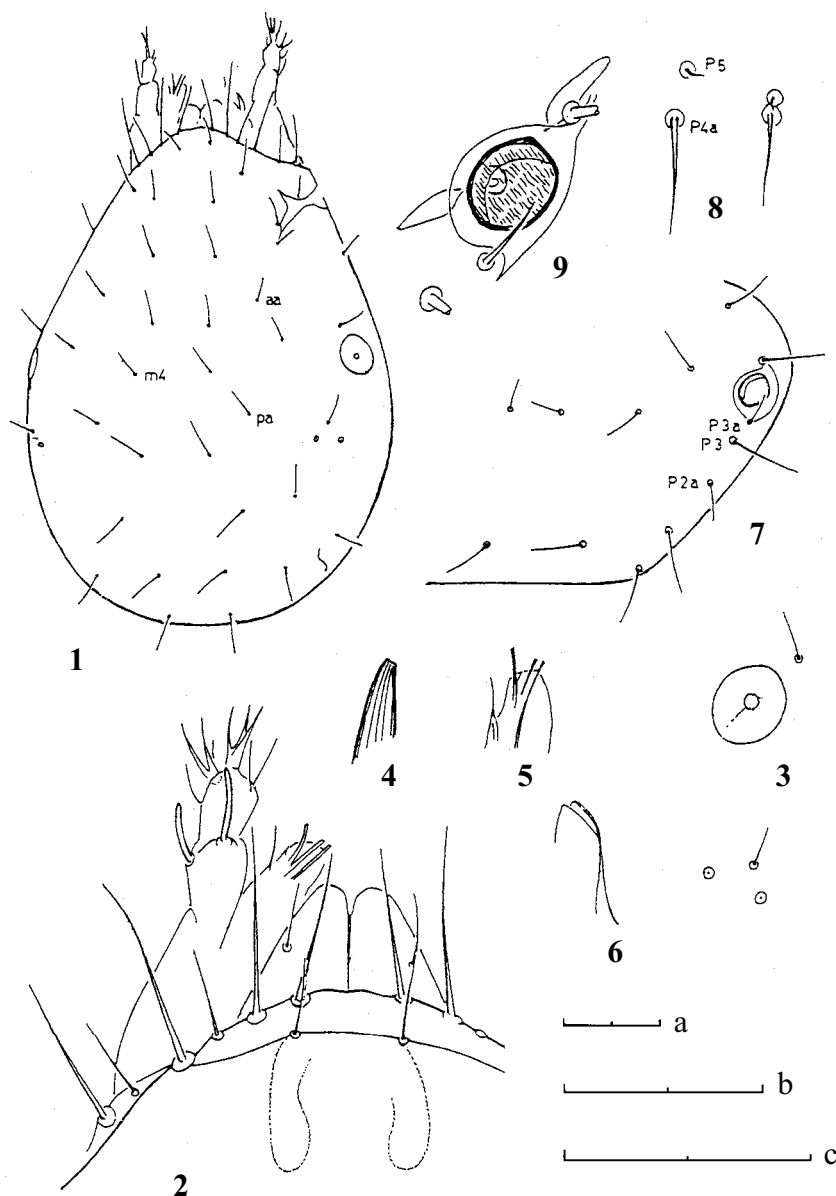
Setae on nota slightly diversified,  $P1a$  situated posteriorly to line  $P1$ - $P2$ ,  $P2$  1.2-1.5 X the length of  $P1$ . Length ratio of  $P1 : P1a : P2$  on mesonotum as 0.7-1.0 : 1 : 1.1-1.3.  $P2a$  slightly longer than  $P3a$ ;  $P3a$  setiform. Base of  $P4a$  on metanotum in most of the specimens (15) contiguous with  $P5$ , in 5 specimens remote from it. Tracheal camerae short, dilated basally.

Foretarsal sensillum  $a$  long, longer than  $3/4$  length of  $c$ ;  $b$  subequal to  $a'$ ;  $d$  long, nearly reaching base of  $t3$ ;  $e$  and  $g$  equal, with spatulate dilation about half sensillum length;  $f1$  filiform, shorter than  $e$ ;  $t1$  situated at half distance  $\alpha 3 - \alpha 3'$ ;  $a'$  nearly at level of  $\alpha 3$ ;  $t2$  and  $b'2$  filiform, equal, longer than  $a'$ ;  $b'1$  absent;  $c'$  distally to level of  $\alpha 6$ , short and thin; seta  $\beta 4'$  distally to level of  $\beta 4$ . BS 0.9-1.0, TR 4.8-7.4; EU 0.7-0.9.

Empodial appendage of II and III leg short, basal seta ( $D2$ ) of III leg spine-like.

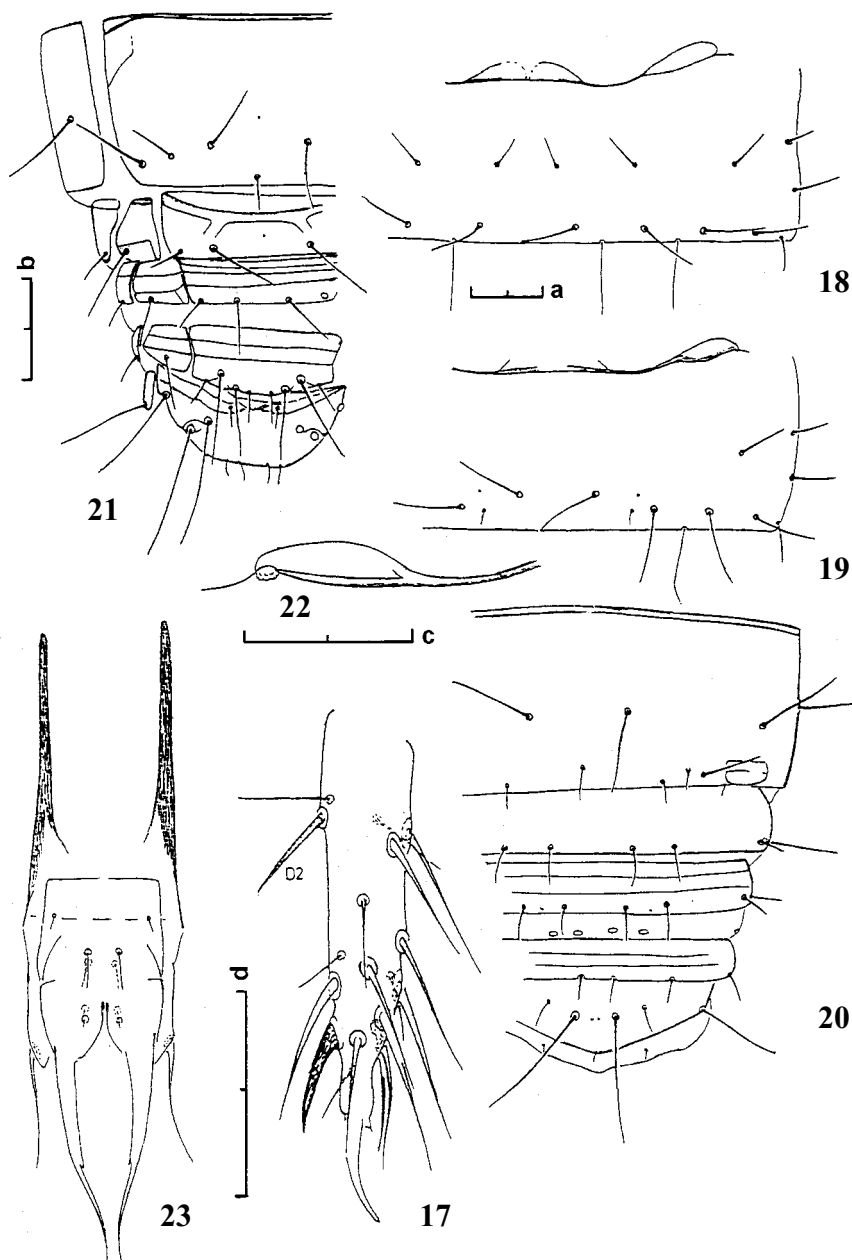
Chaetotaxy formula of abdomen:

I	II-III	IV-V	VI	VII	VIII	IX-X	XI	XII
$\frac{4}{12}$	$\frac{10}{14}$	$\frac{8-10}{16}$	$\frac{8}{16}$	$\frac{4}{16}$	$\frac{6}{9}$	8	8	9
$\frac{4}{4}$	$\frac{6}{4}$	$\frac{6}{10}$	$\frac{6}{10}$	$\frac{6}{10}$	$\frac{0}{7}$	4	8	12



1-9. *Eosentomon palustre* sp. n.: 1 - head (holotype); 2 - anterior part of head, dorsal view (paratype 5635); 3 - pseudoculus (paratype 5634); 4 - mandible (paratype 5635); 5 - galea (holotype); 6 - lacinia (holotype); 7 - mesonotum (holotype); 8 - position of *P4a* and *P5* in holotype (left) and paratype 5624 (right); 9 - tracheal camerae (holotype) (scale bar 20  $\mu$ m, 1, 7 - magnification a, 3 - magnif. b, others - magnif. c)





17-23. *Eosentomon palustre* sp. n.: 17 - leg III (holotype); 18 - urotergite VI (holotype); 19 - urotergite VII (holotype); 20 - urotergite VIII-XII (holotype); 21 - urosternite VIII-X (holotype); 22 - laterostigma II (paratype 5634); 23 - penis (paratype 5635) (scale bar 20  $\mu$ m, 18, 19 - magnif. a, 20, 21 - magnif. b, 22, 23 - magnif. c, 17 - magnif. d)

Chaetotaxy formula of urotergite I: 3, 1, 2. On urotergites IV and V seta *A3* mostly absent, but in some specimens it is present (see below); on VI absent; on VII setae *A1-A3* absent. Seta *Pl1a* on urotergite I-VI longer than *Pl1*, on urotergite VII short, situated slightly posteriorly to level of *P2*, but not reaching hind margin of tergite. Seta *P2a* on urotergite II-VI longer than *P2*, situated at half distance *P2* - *P3*, on urotergite VII as on preceding tergites. Seta *P4a* on urotergite II-III absent, on IV-VII setiform. Seta *Pl1a'* on urotergite VIII with long, distinct basal dilation, in normal (posterior) position. Dorsal setae on urotergite XI about 2/3 length of setae on urotergite X. Seta *1* on urosternite X about 2 times longer than seta *2*. Pores on urotergite I- VI invisible. Antecostae thin with indistinct central lobe. Laterostigma II-IV large, with distinct inner structure. Lateral sclerotisation of urosternite VIII distinct, not connected with antecosta. Urotergite XII with two central pores.

Female squama genitalis short, with long "beak" perpendicular to median line and with rounded, distinctly sclerotised apex of stylus. Penis with short basiperiphallar setae.

Measurements (in  $\mu\text{m}$ ) - imago (in brackets: two specimens of matus junior; single specimen of larva I): Head 107-124 (104-111; 100), pseudoculus 8.5-11 (8; 6), subposterior head seta 7.5-11 (8-9; 8.5), posterior head seta 6-8 (6; 7), mesonotal seta *Pl1* 10-13 (9.5; 8), *Pl1a* 11-16 (12; 7.5), *P2* 14-17 (13; 10), foretarsus 72-81 (68-73; 55.5), claw 10-16 (12; 11), empodial appendage 8-13 (9; 8), maximum body length of expanded specimen about 900 (600; 480).

Chaetal variability. Imago (24 specimens). In most specimens (16) seta *A3* is symmetrically absent on urotergites IV-VII (in one of them seta *A3* is asymmetrically present on urotergite VII); in one specimen seta *A3* is symmetrically absent on urotergite V-VII; in 5 specimens this seta is absent on urotergites VI-VII. In single specimen seta *A3* is symmetrically present on urotergite IV, asymmetrically absent on V, and symmetrically absent on VI-VII.

#### TYPE MATERIAL

Holotype female: (collection number 5633). Northern Poland, "Potoczek" reserve SE of Kępice (UTM XA 20). Dried peatbog with *Sphagnum palustre*, *Oxycoccus palustre*, *Eriophorum vaginatum*, *Carex nigra*, *Hydrocotyle vulgaris*, *Molinia caerulea* and mosses (*Polytrichum commune*, *Aulacomium palustre*). In tussocks of plants and mosses. 22.05.1997. leg. M. SŁAWSKA.

Paratypes: Together with holotype: 4 females, 4 males, and as holotype, leg M. SŁAWSKA, 3.10.1997: 2 females, 1 male, and 3.11.1997: 1 male (5614 - 17, 5619, 5622, 5624, 5626, 5632, 5634 - 35, 5644); "Potoczek" reserve, about 90 years old humid pine forest (near the border of peatbog) with *Vaccinium* spp. and mosses (*Dicranum*, *Pleurozium*, *Leucobryum*). In soil, litter and mosses. 3 10 1997. leg. M. SŁAWSKA: 1 female, 2 males (5636, 5639, 5643); Forest division Osusznica, south of Bytów (UTM XV 85). About 80 years old pine forest (near the village Kiedrowice) of subatlantic character (*Leucobryo-Pinetum*) with no

shrubs but with very abundant *Cladonia* spp. In soil and litter. 10.06.1996. leg. M. SŁAWSKA: 2 females, 5 males (5605 - 09, 5612 - 13)

#### ADDITIONAL MATERIAL

Together with holotype: 2 mj, 1 ll.

All material (mounted in the medium of Marc André) is preserved at the Institute of Systematics and Evolution of Animals of the Polish Academy of Sciences, Kraków.

#### NAME DERIVATION

“*palustre*” (lat., n.) - swampy, because the new species is associated with such habitats.

#### REMARKS

Data on the *Protura* of peatbogs and other swampy areas are very scarce (IMADATÉ & KINJO 1982, SZEPTYCKI 1985). Both authors concluded that there were no *Protura* species associated with such habitats, and that the species collected in bogs belonged to the commonest and the most eurytopic species. Contrary to this belief, *Eosentomon palustre* sp. n. was found on a peatbog, in a humid pine forest on its border, and (in one case) in a fresh pine forest. It seems thus that the new species belongs to the group of hydrophilous species, living mostly in bogs.

Six other members of *Protura* were found together with the new species; in the peatbog: *Eosentomon germanicum* PRELL, 1912, *E. mariae* SZEPTYCKI, 1986, *E. pratense* RUSEK, 1973, *E. silesiacum* SZEPTYCKI, 1985, and *Berberentulus polonicus* SZEPTYCKI, 1968; in the humid pine forest *E. germanicum*, *E. silesiacum* and *E. mariae*, and in the pine forest of subatlantic character *E. mariae*, *E. pinetorum* SZEPTYCKI, 1984 and *E. silesiacum*. All the mentioned species are common in Northern Poland and were found in various types of habitats.

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