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Eosentomon rachelae n. sp., a new species from Kenya (Protura: Eosentomidae)

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ABSTRACT. *Eosentomon rachelae* n. sp. of the "*validum* complex" is described from Kenya. It is most similar to *E. burahacabanicum* YIN & DALLAI, 1985 and to *E. validum* CONDÉ, 1961.

Key words: entomology, taxonomy, *Protura*, new species, *Eosentomon*, Kenya

INTRODUCTION

Little is known about the proturan fauna of Sub-Saharan Africa. Actually, from the whole subcontinent (excluding Madagascar and surrounding islands) only 30 species have been recorded (TUXEN 1977; 1979; YIN & DALLAI 1985). From the Eastern Africa 13 species are known – 5 from Uganda (CONDÉ 1961), 1 from Rwanda (NOSEK 1976), 4 from Somali (YIN &DALLAI 1985), and 3 from Kenya (CONDÉ 1948)

The present collection was carried out in Western Kenya near the north east tip of Lake Victoria. The lake is at an altitude of 1130 m asl. Its eastern shore is covered with dry savannah, interrupted by a range of volcanic hills built up by lava flows associated with the faulting from which the Syrian-African Rift Valley –just east of this region- evolved. The Gembe Hills are among those very steep volcanic mountains. One of the litter samples (ca. one third of a liter in volume), which was collected while climbing up the hill, yielded more than 30 specimens of the genus *Eosentomon*.

Eosentomon rachelae n. sp.

(Figs 1-24)

NAME DERIVATION

The new species is dedicated to Rachel (Rahel) BROZA.

DIAGNOSIS

Eosentomon rachelae n. sp. belongs to the "*validum* complex" of TUXEN (1979). The species of this complex are characterized by the presence of seta *P4a* on urotergites II and III, the presence of labral seta, the lack of anterior setae on urosternite VII, the absence of foretarsal sensilla *b'1* and *c'*, the short empodial appendage of II and III legs, the presence of 4 setae on urosternites IX and X, and more or less reduced setae on urotergite XI.

The complex actually contains 6 African species: *Eosentomon adami* CONDÉ, 1961, *E. angolae* TUXEN, 1977, *E. burahacabanicum* YIN & DALLAI, 1985, *E. gabonense* TUXEN, 1978, *E. subglabrum* CONDÉ, 1961, and *E. validum* CONDÉ, 1961 (TUXEN 1964, 1977, 1979; YIN & DALLAI 1985).

In the shape of female squama genitalis (with distinct "head" and "beak"), not reduced chaetotaxy on urotergite X, and the position of foretarsal sensillum *t1* (distinctly nearer to *α3* than to *α3'*), the new species is most similar to *burahacabanicum* and *validum*. It differs in the abdominal chaetotaxy and in the length of foretarsal sensilla *t2* and *b'2*. The anterior row of setae on urotergites III – VII contains in *burahacabanicum* 10, 10, 8, 8, 2 setae, in *validum* 8, 8, 4(8), 4, 4 setae, in the new species 10, 10, 6(8), 6, 4(6) setae. Sensilla *t2* and *b'2* in *burahacabanicum* and *validum* are relatively long (about 3/4 length of sensillum *a'*) whereas in the new species they are short (about half length of sensillum *a'*).

DESCRIPTION

Head setae relatively short, subposterior seta 1.6-2 x length of posterior seta. Anterior additional seta, posterior additional seta, seta *m4* and anterior sensillum present.

Pseudoculus small, ovate, with distinct inner line, PR 11-16. Clypeal apodeme strong. Rostral seta alate, subequal to the subrostral. Labrum with truncate apices and deep, narrow notch. Labral seta present. Mandibles with three distinct apical teeth. Digits of galea well developed; median and inner equal and shorter but thicker than outer one. Sensilla of maxillary palp short, lateral shorter than dorsal.

Setae on nota slightly diversified. *P1a* situated posteriorly to line of *P1-P2*, *P2* 1.6-2 x length of *P1*. Length ratio of *P1* : *P1a* : *P2* on mesonotum as 0.8-1 : 1 : 1.3-1.4. *P2a* subequal to *P3a*; *P3a* medially to line *P3 – P4*, setiform. Base of *P4a* close to *P5*, but not connected with it. Tracheal camerae short, slightly dilated basally.

Foretarsus with no sensilla *b'1* and *c'*. Sensillum *a* nearly as long as *c*; *c* short, reaching base of *γ3*; *b* shorter than *a'*; *d* short, reaching base of *z*; *e* and *g* long, with spatulate dilation about half of sensillum length; *f1* spatulate, about 3/4 length of sensillum *e; t1* situated nearer to *α3* than to *α3'*; *t3* long, passing base of *δ6*; *a'* long, much longer than *t2*, exceeding base of *α4*, situated slightly distally to level of *α3*; *t2* and *b'2* short, sub equal and filiform; seta *δ4'* slightly proximal to level of *δ4*. BS 1.1-1.2, TR 5.4-5.8, EU 0.8-1.0.

Empodial appendage of II and III leg short; basal seta of III leg (seta *D2*) of normal shape.

Chaetotaxy formula of abdomen:

I	II-III	IV	V-VI	VII	VIII	IX-X	XI	XII
4	10	10	6	4-6	6			
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12	16	16	16	16	9			
4	6	6	6	6	0			
---	---	---	---	---	---	4	8	12
4	4	10	10	10	7			

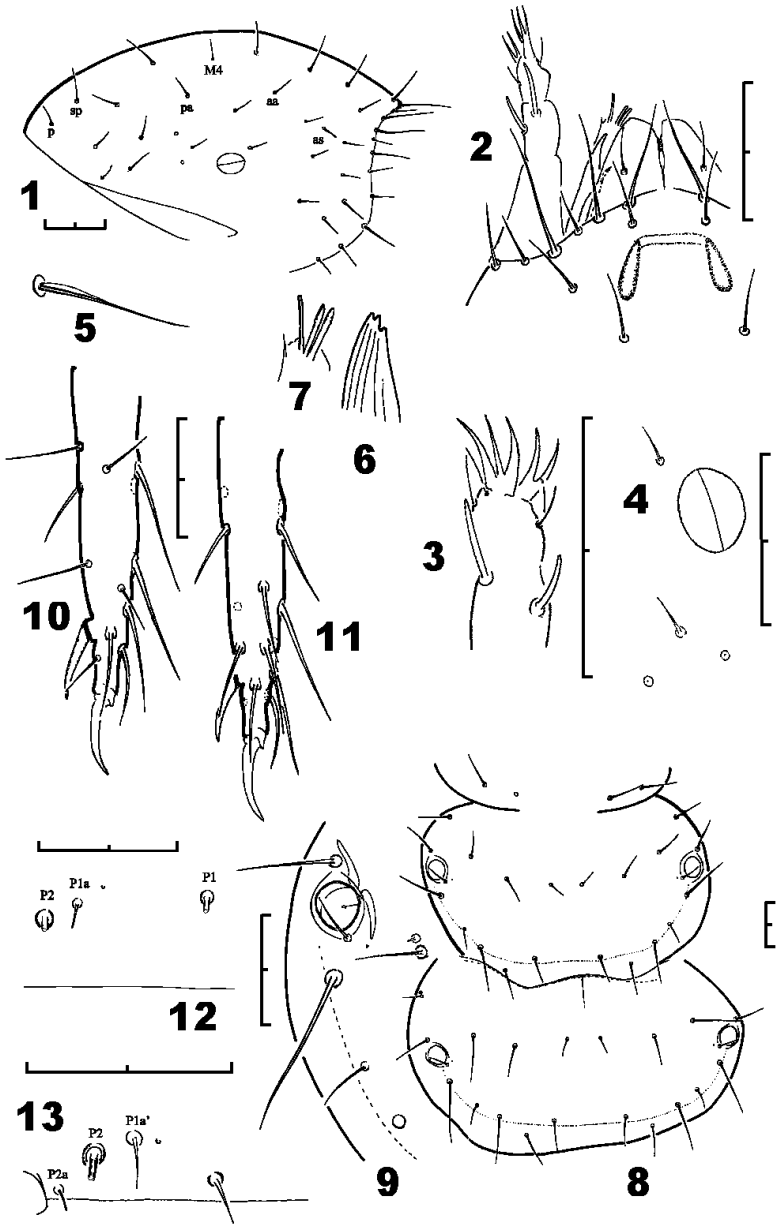
Chaetotaxy formula of urotergite I: 3, 1, 2. Urotergite V and VI with no *A1* and *A3* (on V *A1* sometimes present), VII with no *A1*, *A2* and *A3* (sometimes *A2* present). Seta *P1a* on urotergite I-VI long, on urotergite VII short, situated near *P2*, anterior to it. *P2a* on urotergite II-VI long, situated in half way between *P2-P3*, on urotergite VII as on preceding ones. Seta *P4a* on urotergite II and III present; on urotergite IV-VII setiform. *P1a'* on urotergite VIII with no basal dilation, situated anterior to level of *P2*. Dorsal setae on urotergite X thin, on XI strongly reduced (sometimes hardly visible). Seta *1* on urosternite X subequal to seta *2*.

Antecostae strong with a distinct central lobe. Laterostigma III-IV large with no inner structure. Lateral sclerotisation of urosternite VIII absent. Dorsal lobe of telson has two central pores.

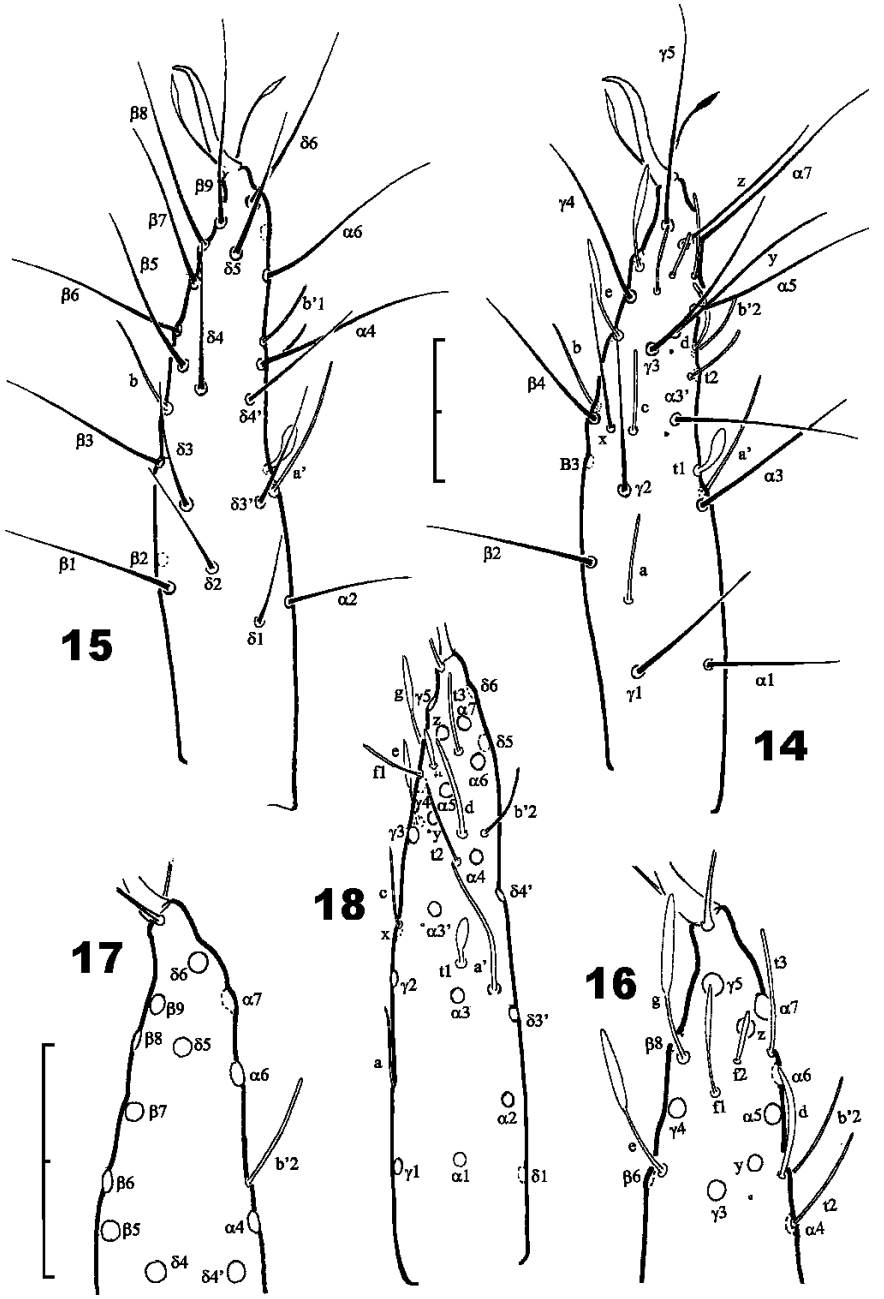
Female squama genitalis short, "head" ovoid with small "beak". Penis with short basiperiphallar setae.

Measurements (in µm) - imago: Head 118-138, pseudoculus 8-11, subposterior head seta 11-12, posterior head seta 6-7, mesonotal seta *P1* 12.5-16.5, *P1a* 15-17, *P2* 20-24, foretarsus 87.5-96, claw 15.5-17, empodial appendage 13-16.5, maximum body length of expanded specimen about 1200.

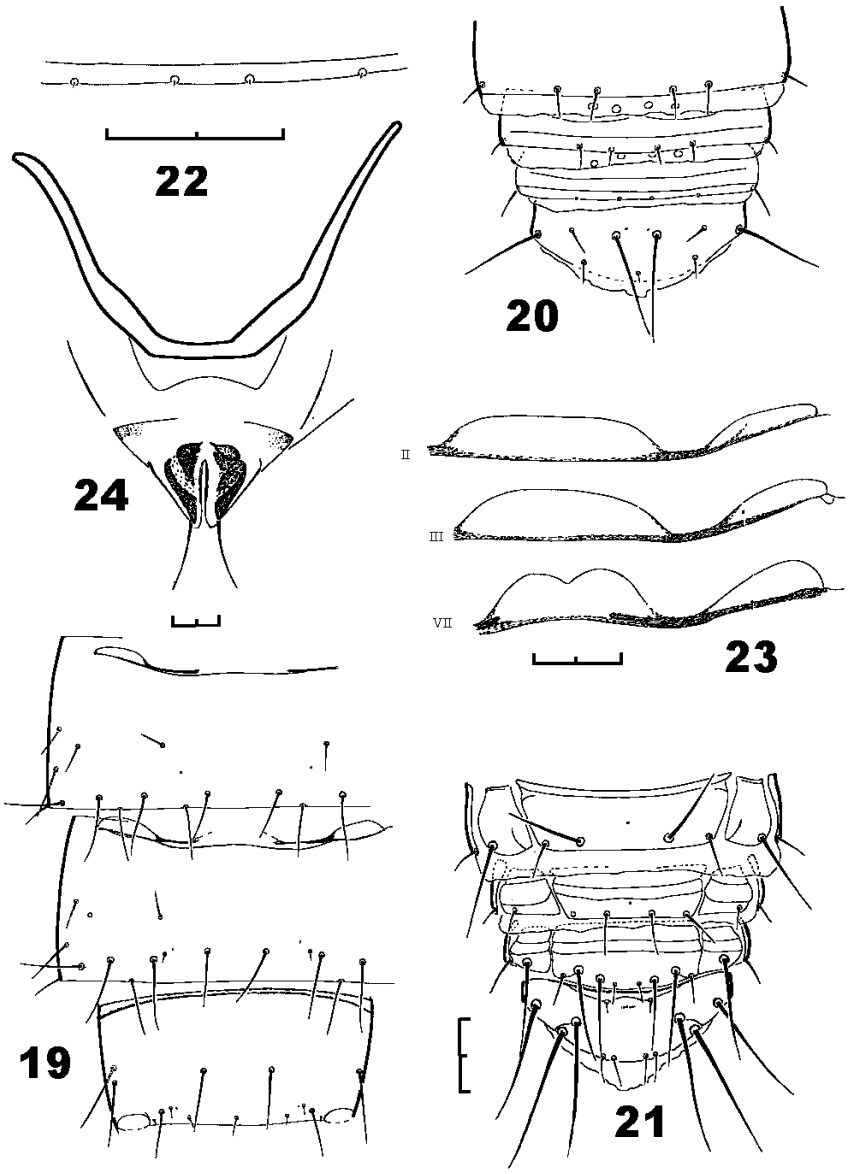
Chaetal variability, imagines (11 specimens). Urotergite V: symmetrical (1 s-n) and asymmetrical (1 s-n) presence of *A1*; urotergite VI: asymmetrical (1 s-n) presence of *A1*; urotergite VII: symmetrical (3 s-ns) and asymmetrical (4 s-ns) presence of *A2*.



1-13. *Eosentomon rachelae* n. sp.: 1 - head (paratype nr 6062); 2 - anterior part of head, dorsal view (holotype); 3 - distal part of palpus maxillaries (paratype nr 6062); 4 - pseudoculus (paratype nr 6062); 5 - rostral seta (lateral view) (paratype nr 6062) (magnification as fig. 4); 6 - mandible (holotype) (magnification as fig. 3); 7 - galea (holotype) (magnification as fig.3); 8 - pro-, meso- and metanotum (paratype nr 6059); 9 - tracheal camerae (paratype nr 6059); 10 - leg III, anterior view (paratype nr 6062); 11 - leg III, posterior view (paratype nr 6062); 12 - seta *P1a* on urotergite VII (holotype); 13 - seta *P1a'* on urotergite VIII (holotype). Scale: 20 µm



14-18. *Eosentomon rachelae* n. sp.: 14 - foretarsus, exterior view (paratype nr 6067); 15 - foretarsus, interior view (paratype nr 6067); 16 - distal part of foretarsus, exterior view (paratype nr 6067); 17 - distal part of foretarsus, interior view (paratype nr 6067); 18 - foretarsus, dorsal view (holotype). Scale: 20 µm



19-24. *Eosentomon rachelae* n. sp.: 19 - urotergite VI - VIII (holotype); 20 - urotergite IX-XII (holotype); 21 - urosternite IX-XII (holotype) (magnification as fig. 20); 22 - hind margin of urotergite XI (holotype); 23 - antecostae II, III and VII (paratype nr 6065); 24 – female squama genitalis ? (holotype) (magnification as fig. 22). Scale: 20 µm

MATERIAL EXAMINED

Holotype: female (collection number 6061): **Kenya**, Gembe Hills (ca 1300 m asl.), 5 km east of the north-east shore of Lake Victoria and in front of Mbita Point, under *Acacia* tree within thick litter layer. Collection was on 11/04/1998 while the habitat was wet and covered with green grass. leg. M. BROZA and M. BROWNBRIDGE.

Paratypes: 5 females, 6 males, together with the holotype.

Holotype and paratypes nr 6056, 6060, and 6062-6064 in the collection of the Institute of Systematics and Evolution of Animals of the Polish Academy of Sciences, Kraków, Poland; paratypes nr 6057-6059 and 6065-6067 in The Israeli National Collection, Tel Aviv University.

ACKNOWLEDGEMENT

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