

## *Eosentomon stompi* sp. n., a new *Protura* from Luxembourg (*Eosentomidae*)

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Abstract. *Eosentomon stompi* sp. n., a new species from Luxembourg with very short accessory setae on nota, is described.

Key words: *Protura*, *Eosentomon*, taxonomy, Luxembourg

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### INTRODUCTION

A new species of *Eosentomon* was found in the rich and very interesting material of *Protura* collected in Luxembourg by M. TOMMASI, M. TOMMASI-URSONE, N. STOMP and the junior author. Its description is given below.

We should like to express our very cordial thanks to Dr. Norbert STOMP of the National Museum of Natural History in Luxemburg, who made it possible for us to study the soil fauna of his country, and to Mr Mario TOMMASI and Mrs Maria TOMMASI-URSONE, for collecting most of the material.

The chaetotaxy of urotergite I in *Eosentomon* species was described in most of the earlier papers by the formula 4/10 and the shape of setae by COPELAND's (1964) formula. It is mostly 3,1,1, which means: 3 normal setae, 1 hair-like seta, 1 small sensilla. Since the time when BERNARD (1975) discovered the presence of the lateral sensilla on urotergite I the two formulas should be 4/12 and 3,1,2, respectively. The composition of setae of the posterior row on urotergite I is *P1*, *P1a*, *P2*, *P2a*, *P3*, *P4* (SZEPTYCKI 1986).

Most of the material of the new species (including the holotype) is stored in the Institute of Systematics and Evolution of Animals of the Polish Academy of Sciences, Cracow. Two paratypes are deposited in the National Museum of Natural History in Luxembourg.

*Eosentomon stompi* sp. n.

(figs 1 - 22)

**D i a g n o s i s .** Head chaetotaxy of "*bohemicum*" type, pseudoculus large. Setae *P1a* and *P2a* on nota very short and thin, hair-like. Sensilla *c'* on foretarsus distally to line  $\alpha 6$ - $\delta 5$ , short and thin. Basal seta of 3rd leg of normal shape. Seta *P1a* on urotergite VII situated on level of *P2*, not reaching the hind margin of tergite, *P1a'* on VIII in normal position, with no basal dilation. Dorsal setae on urotergite XI very short. Lateral sclerotisation of urosternite VIII and squama genitalis ♀ of "*stachi*" type.

**D e s c r i p t i o n .** Head setae short, slightly differentiated. Posterior seta very short, hair-like, subposterior seta 2.5-4.0 (in larvae 2.2-3.3)x as long as posterior. Anterior and posterior additional setae absent. Pseudoculus large, with distinct, circular inner structure, PR 6.0-9.8. Labral seta present, rostral seta simple, distinctly thicker than subrostral. Sensillae of maxillary palp short, subequal.

Setae on nota short, slightly diversified, *P1a* situated posteriorly to line *P1*-*P2*, hair-like, much shorter than *P1*, *P2a* subequal to *P1a*, thinner and shorter than *P3a*. Length ratio of *P1* : *P1a* : *P2* on mesonotum as 2.3-3.9 : 1 : 2.8-4.3. Tracheal camerae short, dilated proximally.

Foretarsal sensilla *a* longer than half of *c*; *b* subequal to *a'*; *d* short, slightly exceeding level of  $\alpha 5$ ; *e* and *g* long, with spatulate dilation about half sensilla length; *fl* filiform, longer than half of *g*; *t1* situated nearer  $\alpha 3'$  than to  $\alpha 3$ ; *a'* longer than *t2*; *t2* and *b'2* short, filiform; *b'1* absent; *c'* distally to line  $\alpha 6$  -  $\delta 5$ , short and thin; seta  $\delta 4'$  nearly on level of  $\delta 4$ . BS 0.85-0.96 (in young instars 0.76-0.90), TR 4.5-5.0, EU 0.8-0.9.

Empodial appendage of legs II and III short, basal seta of leg III of normal shape.

Chaetotaxy formula of abdomen:

I	II-III	IV-VI	VII	VIII	IX-X	XI	XII
$\frac{4}{12}$	$\frac{10}{14^*}$	$\frac{8^{**}}{16}$	$\frac{4^{***}}{16}$	$\frac{6}{9}$	8	8	$\frac{6}{3}$
$\frac{4}{4}$	$\frac{6}{4}$	$\frac{6}{10}$	$\frac{6}{10}$	$\frac{0}{7}$	4	8	$\frac{8}{4}$

\**P4a* absent; \*\**A3* absent; \*\*\**A1-A3* absent

Chaetotaxy of urotergite I according to formula 3,1,2. Seta *P1a* on urotergites I-VI distinctly longer than seta *P1*; on urotergite VII short, not reaching hind margin of tergite, situated nearly on level of *P2*, with brush-like apex. Seta *P2a* on urotergites II-VI long, situated at half distance *P2*-*P3*, on urotergite VII long. Seta *P1a'* on urotergite VIII with no basal dilation, in normal position. Dorsal setae on urotergite XI short, about 1/4 length of setae on urotergite X. Seta *1* on urosternite IX long, about twice as long as seta 2, on X short, nearly

subequal to seta 2. Antecostae distinct, with hardly visible central lobe. Laterostigma II-IV relatively large, with distinct inner structure. Lateral sclerotisation of urosternite VIII distinct, with hind margin connected with antecosta. Urotergite XII with pair of central pores.

Squama genitalis ♀ short, with distinct "head" and "beak" perpendicular to median line. Penis with short basiphallar setae.

#### Dimensions (in µm)

	imago	mat. jun	larva II	larva I
head	108-138	109-127	97-111	90-99
pseudoculus	14-18	ca 14	11-13	10-12
subposterior head seta	11-15	10-11	8-10	8-9
posterior head seta	3-5	ca 4	3-4	3-4
mesonotal <i>P1</i>	2-14	ca 11	9-11	8-10
mesonotal <i>P1a</i>	3-5	3-4	3-4	2-4
mesonotal <i>P2</i>	13-16	12-13	10-11	9-11
foretarsus	86-100	ca 83	70-75	62-69
claw	18-21	ca 18	14-16	14-15
empodial appendage	15-18	ca 14	10-13	11-12
maximum body length ca	1100	975	850	750
No of specimens studied	24	2	9	9

The young instars are easy to recognise by the shape of setae *P1a* and *P2a* on the nota. The development of the chaetotaxy seems to be the same as in the other species of *Eosentomon* (ARBEA-POLITE 1990; BERNARD 1975; IMADATÉ 1974). Many abnormalities in a single specimen of matus junior make the distinction between tertiary and complementary setae impossible.

**Chaetal variability.** Imagines (21 specimens). Urotergite II: asymmetrical lack of *P4* (1 sp-n); IV: asymmetrical (2 sp-ns) and symmetrical (2 sp-ns) presence of *A3*, asymmetrical lack of *P4a* (1 sp-n); asymmetrical lack of seta *A1* on urotergites I-IV.

**Maturus junior.** The single specimen studied has many abnormalities: on urotergite I – symmetrical lack of *A2*; on II – symmetrical lack of *A1* and *A2*, asymmetrical lack of *A3* and *P4*; on III – asymmetrical lack of *A2* and symmetrical of *A3*; on IV – asymmetrical lack of *A2*, *P1a* and *P2*, on V – asymmetrical lack of *A1* and *A2*; on VI – symmetrical lack of *A1*.

**Larvae II** (9 sp-ns) and **larvae I** (9 sp-ns) – not observed.

**Holotype** ♀ (collection number 4357): **Luxembourg**, The bank of Our River between Kaasselbiertg and Zogel, 21 VII 1991, soil with mosses under beeches, leg. M. TOMMASI-URSONE & M. TOMMASI.

**Other material:** **Luxembourg**, 1 lvl together with holotype. Stolzembourg, 11 IV 1991, path in the direction of Klangbaach and Akeschterbaach. Small forest with beeches, oaks, cherry-trees, blackberries, ferns etc. surrounded by arable fields. Soil and litter, 2 ♀ (paratypes nr 4396, 4404), leg. W. M. WEINER & M. TOMMASI-URSONE.

Lieler near "Trois Frontieres", 29 IV 1991, slope of Our Valley, exp. N-W, small forest with aspen, birch, hazel *Sambucus* etc. Litter, 1 ♂ (paratype nr 4394), leg. W. M. WEINER & M. TOMMASI-URSONE.

Our Valley, S of "Trois Frontieres", 29 IV 1991, ca 10 m above the bottom, soil, different herbs and moss among trees *Prunus spinosa*, 1 ♀ (paratype nr 4405), leg. W. M. WEINER & M. TOMMASI-URSONE.

Our Valley, near Tintesmillen, 29 IV 1991, ca 50 m above the bottom, litter with mosses and soil between the roots of *Erica*, on a rock, 1 ♀ (paratype nr 4417), leg. W. M. WEINER & M. TOMMASI-URSONE.

Holzbihsbaach near Obereisenbach, 5 VII 1991, very dump locality near a rivulet, oaks, beeches, *Vaccinium*, *Geranium*, mosses, litter, 1 ♀ (paratype 4399), 1 lv1; ca 30 m above the bottom of the valley, exp. N, shadowed, dump locality, oaks, *Oxalis*, ferns, moss, 1 lv1; ca 200 m above the bottom of the valley, exp. N, open locality, 1 lv2, 1 lv1; ca. 200 m above the bottom of the valley, pastureland, 2 ♀, 5 ♂ (paratypes 4364, 4411, 4363, 4406, 4407, 4409, 4413), 1 mj, 2 lv2, leg. M. TOMMASI-URSONE & M. TOMMASI.

Etschenterbaach, 5 VII 1991, ca. 100 m above the bottom of the valley, mosses, ferns, litter, 2 lv1, leg. M. TOMMASI-URSONE & M. TOMMASI.

Roderhausen, Traesbech. 5 VII 1991, 1 ♂ (paratype nr 4361), 1 lv1, leg. M. TOMMASI & M. TOMMASI-URSONE.

Between Roder and Our Valley, 21 VII 1991, exp. N, near a road, moss under oak, 1 ♀, 4 ♂ (paratypes nr 4371, 4370, 4381, 4387, 4388), 5 lv2, 1 lv1; litter with needles under fir-trees, 2 ♀ (paratypes nr 5375, 4378), 1 mj, 1 lv1, leg. M. TOMMASI-URSONE & M. TOMMASI.

**Name derivation:** the species is named in honour of the Director of National Museum of Natural History in Luxembourg, Dr. Norbert STOMP.

**Remarks.** The most peculiar feature of the new species are very short and thin setae *P1a* and *P2a* on the nota. Only few species with such a character have been described till now – from Middle and South America (TUXEN 1964; 1976 a,b), Australia (TUXEN 1967) and Thailand (IMADATÉ 1965). All of them differ in so many characters from the new species that they are evidently unrelated to it.

*E. stompi* has a very peculiar combination of characters. Its head chaetotaxy is typical of the species of "*bohemicum*" group (SZEPTYCKI 1985b). The shortening of setae on urotergite XI exists in some of the species of this group, too (for example in *occidentale* SZEPTYCKI, 1985). On the other hand, the shape of seta *P1a'* on urotergite VIII, lateral sclerotisation on urosternite VIII, and squama genitalis ♀ resemble these characters in some species of "*delicatum*" group (SZEPTYCKI 1985a), especially *stachi* RUSEK, 1966. This allows us to state that the group systematics of the genus *Eosentomon* is not so simple as the senior author supposed some years ago.

## REFERENCES

- ARBEA-POLITE J. I. 1990. *Eosentomon pinkyae* n. sp. (*Protura: Eosentomidae*) de Zaragoza (Espana). *Eos*, Madrid, **66** (1): 15-24.
- BERNARD E. C. 1975 A new genus, six new species, and records of *Protura* from Michigan. *Gt. Lakes Ent.* **8**: 157-181.
- COPELAND T. P. 1964. New species of *Protura* from Tennessee. *J. Tennessee Ac. Sci.*, **39**(1): 17-29.
- IMADATÉ G. 1965. Proturans – fauna of Southeast Asia. *Nature Life SE Asia*, **4**: 195-302.
- IMADATÉ G. 1974. *Protura (Insecta)*. Fauna japon. Tokyo, 351 pp.
- SZEPTYCKI A. 1985a. Polish *Protura*. II. *Eosentomon delicatum* GISIN, 1945, and related species. *Polskie Pismo ent.*, **55**: 139-186.



- SZEPTYCKI A. 1985b. Polish *Protura*. III. *Eosentomon bohemicum* RUSEK, 1966 and related species. Ibidem, 55: 531-574.
- SZEPTYCKI A. 1986. Remarks on the prelarva and postembryonic development of *Protura*. in: DALLAI R. (ed.): 2nd International Seminar on *Apterygota*, Siena, 1986, 243-248.
- TUXEN S. L. 1964. The *Protura*. A revision of the species of the world with keys for determination. Hermann, Paris, 360 pp.
- TUXEN S. L. 1967. Australian *Protura*, their phylogeny and zoogeography. Z. Zool. Syst. EvolForsch., 5: 1-53.
- TUXEN S. L. 1976a. *Protura* of Columbia (*Insecta*). Stud. neotropic. Fauna, 11: 25-36.
- TUXEN S. L. 1976b. The *Protura* (*Insecta*) of Brazil, especially Amazonas. Amazoniana, 5: 417-463.

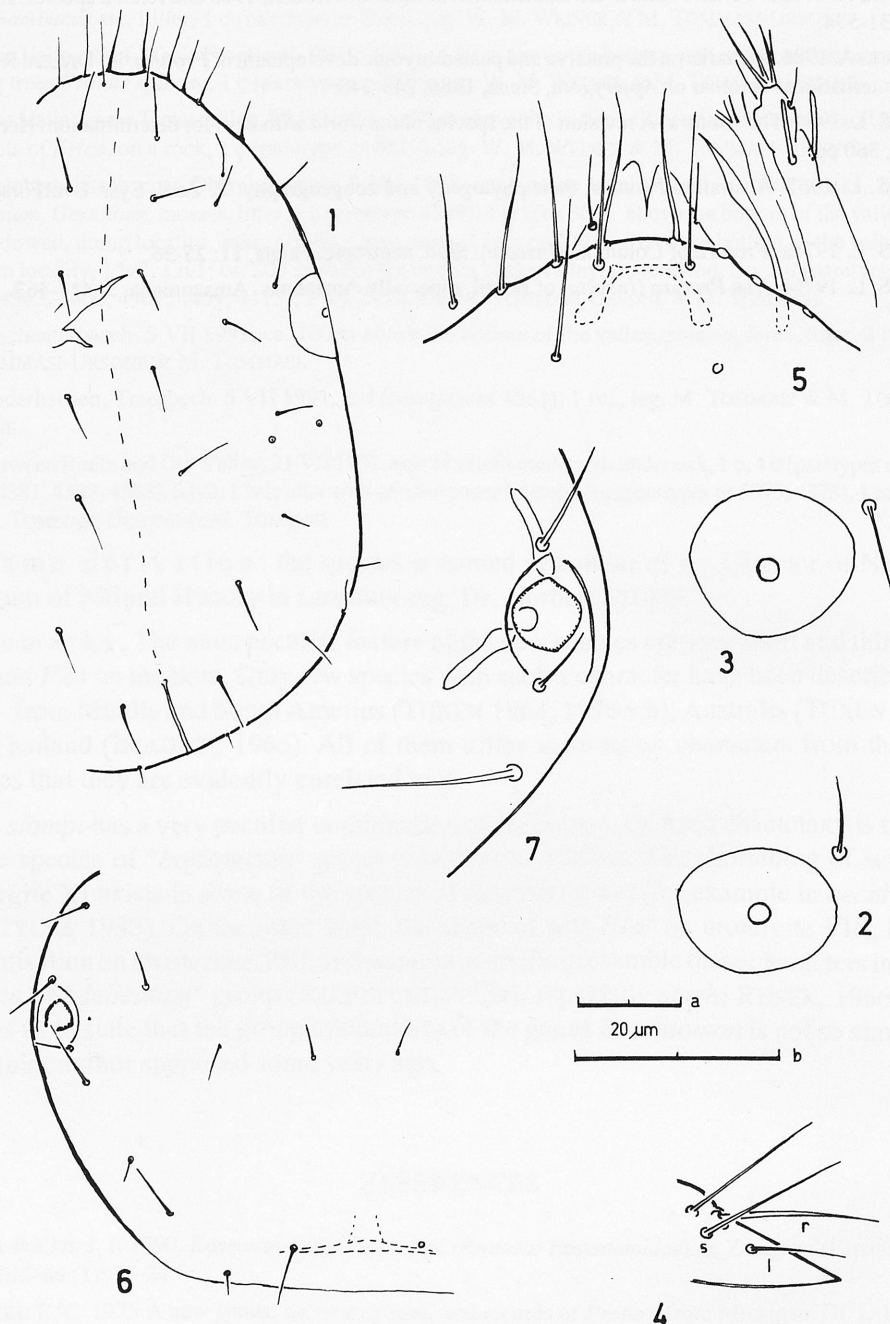


Fig. 1-7. *Eosentomon stompi* sp. n. 1 – head, holotype; 2,3 – pseudoculus, paratypes 4396 (2) and 4413 (3); 4 – rostrum (lateral view), paratype 4413 (r – rostral seta, s – subrostral seta, l – labral seta); 5 – anterior part of head, dorsal side, holotype; 6 – mesonotum, holotype; 7 – tracheal camerae, paratype 4413; (1,6 – magnification a, others – b).

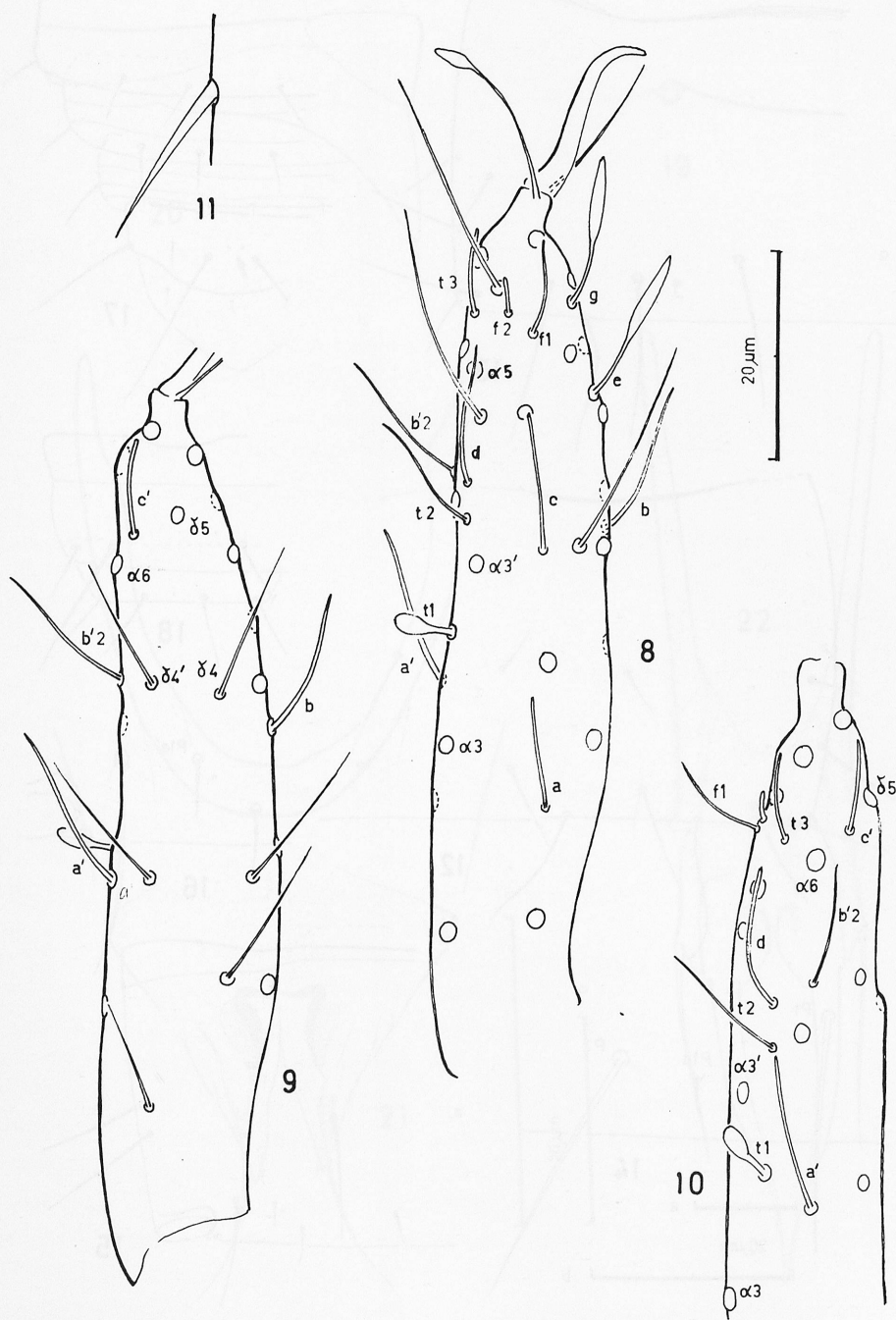


Fig. 8-11. *Eosentomon stompi* sp. n. 8 – foretarsus, exterior view; 9 – ditto, interior view (holotype); 10 – distal part of foretarsus, dorsal view, paratype 4411; 11 – basal seta, paratype 4413.

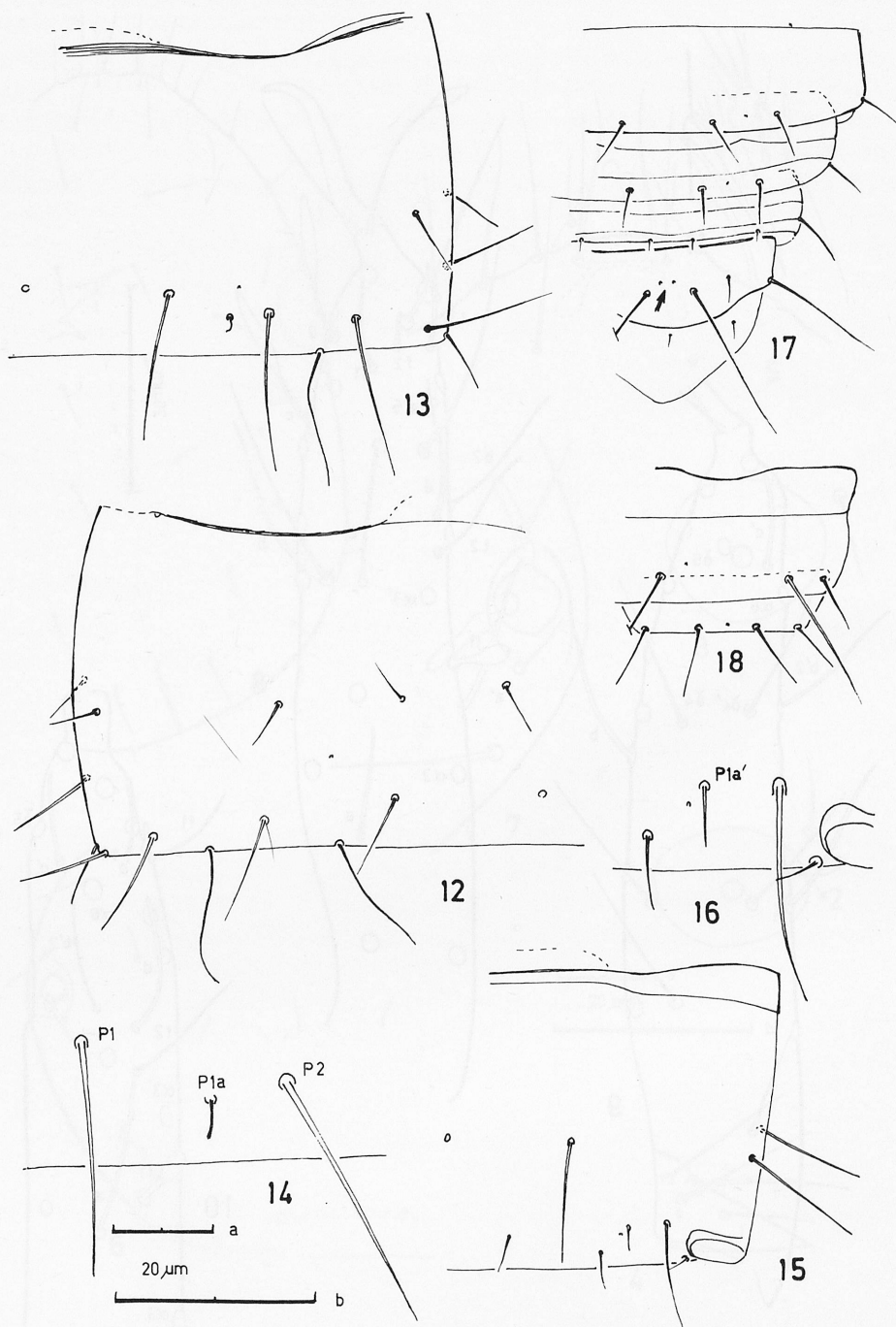


Fig. 12-18. *Eosentomon stompi* sp. n. 12 – urotergite VI, holotype; 13 – urotergite VII, holotype; 14 – seta P1a on urotergite VII, paratype 4405; 15 – urotergite VIII, holotype; 16 – seta P1a' on urotergite VIII, holotype; 17 – urotergite X-XII, holotype (arrow – pores on urotergite XII); 18 – urosternite IX-X, holotype (14, 16 – magnification b, others – a).



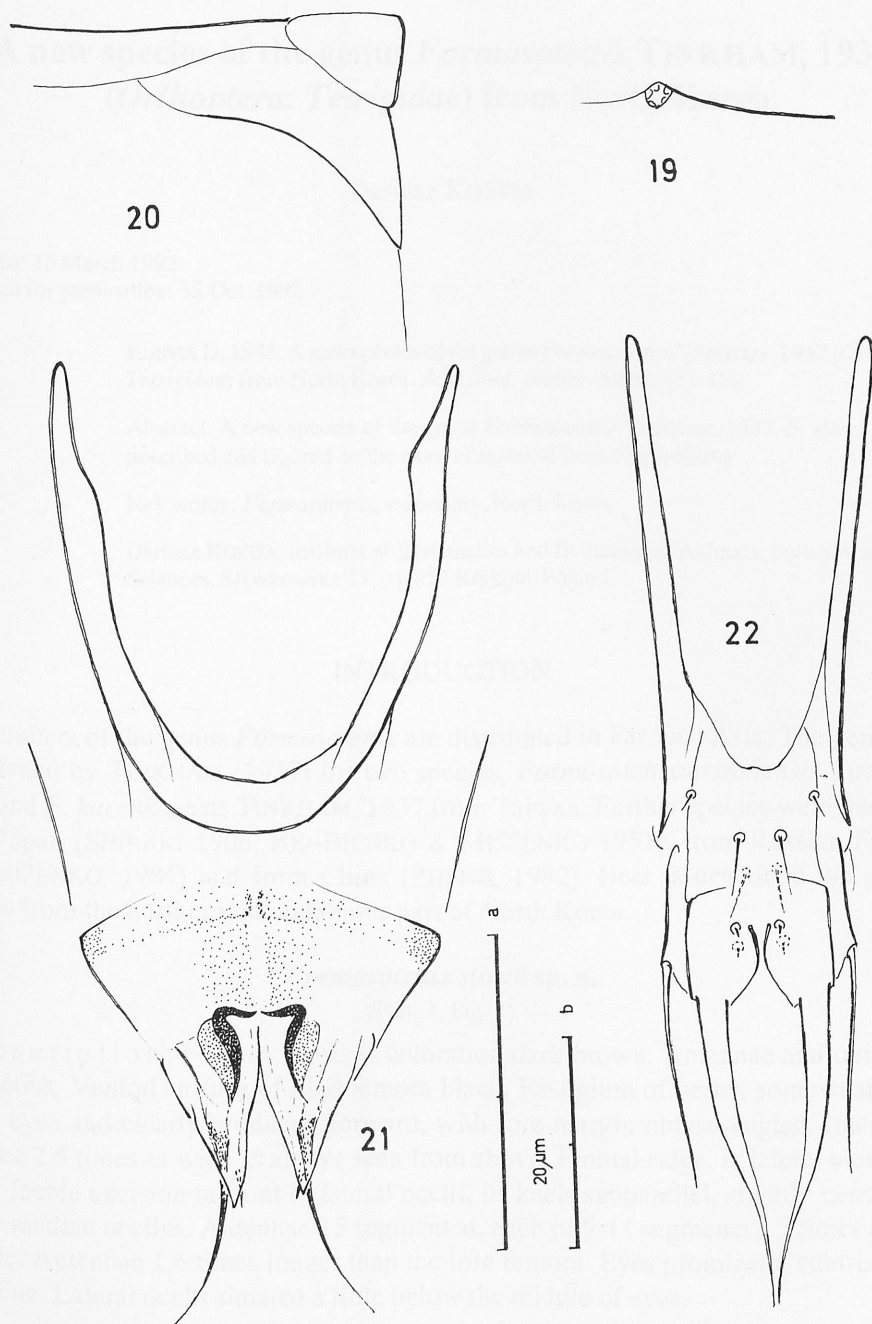


Fig. 19-22. *Eosentomon stompi* sp. n. 19 – laterostigma II, holotype; 20 – anterolateral part of urosternite VIII, holotype; 21 – squama genitalis ♀, holotype; 22 – penis, paratype 4413 (14,16 magnification b, others – a).

