

EOSENTOMON PSEUDOROSTRATUM N. SP. (INSECTA, PROTURA, EOSENTOMIDAE) FROM NORTH CAROLINA¹

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During the course of collecting insects from forest litter in the vicinity of Mount Mitchell, North Carolina, an unusual proturan form was found and is described as a new species in this paper.

EOSENTOMON PSEUDOROSTRATUM n. sp.

Figures 1-8

This species is closely related to *Eosentomon rostratum* Ewing (1940), and to a lesser extent to *Eosentomon vermiforme* Ewing (1921), and *Eosentomon montanum* Copeland (1964). All four species belong to the *Eosentomon wheeleri* group of Bonet and Tuxen (1960), and the 2:2:1 subgroup of Copeland (1962). It resembles *rostratum* in general appearance; possessing a long narrow labrum, stylet-shaped mandibles and chaetotaxy. It differs from that species by the presence of sensillum *b' l* on the foretarsus and a larger body.

In comparison with *E. vermiforme* and *E. montanum*, *E. pseudorostratum* has a very long narrow labrum, stylet-shaped mandibles, sensillum *b' l* on the foretarsus, and only four setae each on sterna IX-X. *Eosentomon vermiforme* and *montanum* have a shorter, much broader labrum; mandibles not at all stylet-like; no sensillum *b' l*; and six setae each on sterna IX-X. The terminology and characters used herein conform in most instances to those of Tuxen (1964).

HOLOTYPE FEMALE

When fully extended, body length is 1720 microns; sclerites distinct and pigmented a light yellow.

Head. External features are shown by Figure 1; head capsule slightly longer than broad, length 131 microns excluding labrum, 174 microns including labrum. Pseudoculus 10 microns in length, oval, and divided by a line. Labrum (Fig. 2) very long and extremely narrow. Labral setae absent. Mandibles stylet-form and about three-fourths as long as labrum. Lacinia I and II well sclerotized. Rostral setae I slightly longer than labrum and not flattened at the base. Rostral setae III short and approximately one-third the length of I, (17:45). Tentorium, well developed. Clypeal apodemes distinct and connected anteriorly. Head ratios: LR 131:43 = 3.04; RS III:I 17:45 = 0.38; PR 131:10 = 13.1. The PR was derived by dividing the pseudocular length into head capsule length. It is

17.4 when pseudocular length is divided into total length of the head including the labrum.

Thorax. Chaetotaxy of mesonotum shown by Figure 3; metanotum similar. Setae *p l* and *p l'* of mesonotum 36 and 38 microns respectively; seta *p l* slightly less than two-thirds as long as the distance to its homolog on the opposite side (30:50). Spiracular gland pores small.

Tarsi. Foretarsus (Figs. 4-5), 127 microns long, broadest approximately one-third the distance from proximal end and tapering regularly to base of claw. Pretarsal sensillum *s* not capitate. The *t l* inserted slightly proximal to α 3', with large club, and club longer than shank. Sensilla *b* and *b' 2* lancet-form; *e* and *g* claviform, clubs shorter than their respective shanks; sensillum *d* short and setiform. Sensilla *f 2*, *t 3*, and *c'* equidistant from base of claw. Sensillum *b' l* present, though only the base can be seen. Other sensilla, setae, and tarsal pits as represented in the figures. Ratios: EU = 0.95, TR = 6.12, BS = 1.48. Measurements for BS were made from the proximal end of foretarsus to the base of *t l* and from that point to the insertion of sensillum *s*. Tarsus III with short empodium and a small tooth on the exumbrellar surface of the unguis.

Abdomen. Posterior row of setae on tergum I with two primary, two accessory and one microchaeta on each side. Tergal accessory setae sub-equal in length to their respective primaries. Accessory seta *p l'* on *t VII* (Fig. 6) short, peg-like, and inserted on the posterior margin of the tergum. Sternum VIII (Fig. 7) with two anterior and seven posterior setae. The abdominal chaetotaxy is schematically represented in Table I with

TABLE I
 Schematic Representation of the Chaetotaxy
 of Adult *Eosentomon pseudorostratum*

Abd.	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
t	4	10	10	10	8 ^b	8 ^b	6 ^c	6	8	8	8	9
	10 ^a	16	16	16	16	16	16	9				
s	4	6	6	6	6	6	6	2	4	4	8	12
	4	4	4	10	10	10	10	7				

- a. Two primary, two accessory, and one microchaeta present on each side.
- b. *a 3* missing.
- c. *a 1* and *a 3* missing.

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the anterior rows of setae above the lines and posterior rows below. Precostal lobes distinct; those on terga IV-VIII notched at anterior edge and divided by a line. Eight tergal gland pores are present, two on each lateral margin and four medially in each membranous region between segments IX-X and X-XI.

Genitalia. The female genital parts are shown in Figure 8 in dorsal view. The sternal processes are well sclerotized.

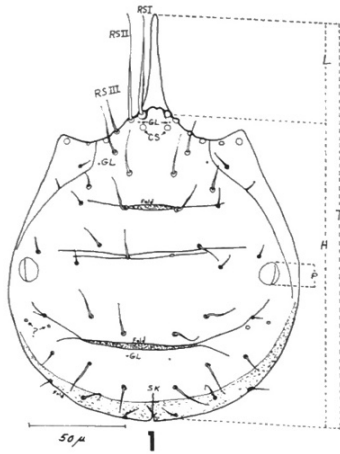


Figure 1. The head in dorsal view: RS I, II, III rostral setae one, two and three; GL, gland pore; CS, clypeal setae; SK, sagittal keel; P, pseudocular length; H, head capsule length; L, labrum length; T, total head length; PR = H divided by P; LR = H divided by L; Fold, atypical folds on head.

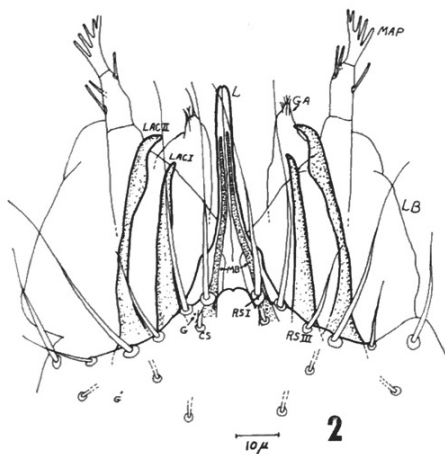


Figure 2. Labrum and mouthparts: L, labrum; LAC I, II, lacinia one and two; G, gland pore; CS, clypeal seta; RS I, III, rostral setae one and three; MB, mandible; MAP, maxillary palpus; LB, hyaline membrane—labium; GA, hyaline membrane—galea.

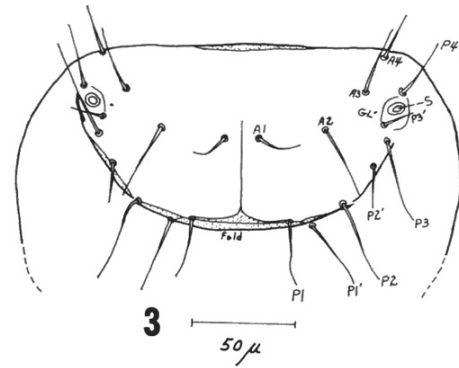


Figure 3. Mesonotal chaetotaxy: Fold, atypical fold on posterior edge of sclerite; S, spiracle; GL, spiracular gland pore.

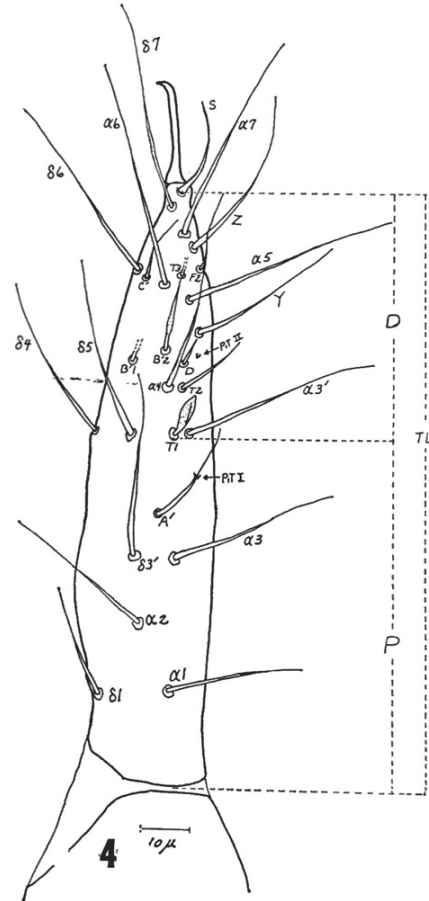


Figure 4. Right foretarsus in dorsal view: chaetotaxy as shown; Pit I, II, tarsal pits one and two; TL, tarsal length less claw; D, length distal to *t l*; P, length proximal to *t l*; TDP = D divided by P; TR = TL divided by U.

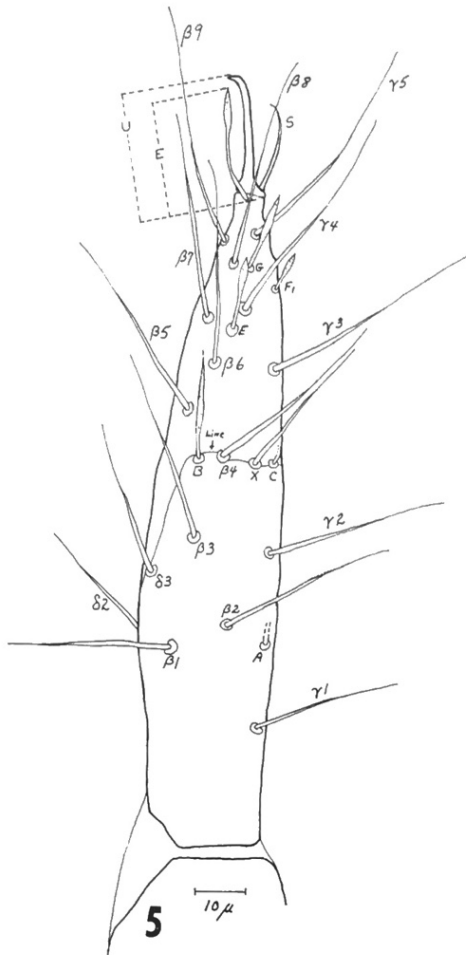


Figure 5. Right foretarsus in ventral view: Line, line always associated with *b*, β 4, *x* and *c*; E, empodium; U, unguitractor; EU = E divided by U.

DISCUSSION

No variation exists among the 114 adult specimens in the presence of: (a) extremely long slender labrum and stylet-like mandibles, (b) tarsal sensillum *b' l*, (c) two primary, two accessory, and one microchaeta on each side in the posterior row of tergum I, (d) seta *p l* on *t* VII short, peg-like, and inserted along the posterior margin of the tergum, (e) two anterior and seven posterior setae on sternum VIII and (f) eight gland pores in each of the membranous regions behind segments IX and X. Twenty-six of the 114 adult specimens have setal discrepancies. In every case this is an obvious abnormality involving the addition or loss of a single seta from only one side of the segment.

Shapes and arrangements of the tarsal sensilla vary only slightly from those on the holotype. Tarsal pits I and II are always visible but pit III may not be seen due to the position of the tarsus and/or the tarsal setae.

The sexes are alike for all characters studied except for small individual variations. The male genitalia show no unusual features.

Post embryonic development and statistical treatment of characters used in describing this species are reviewed by Durey (1963).

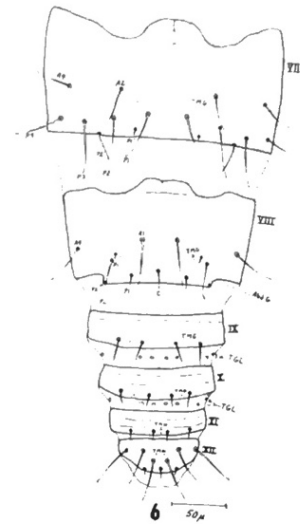


Figure 6. Abdominal terga VII—XII: C, central seta; TMG, tergal microgland pore; Abd G, abdominal gland pore; TGL, tergal gland pores.

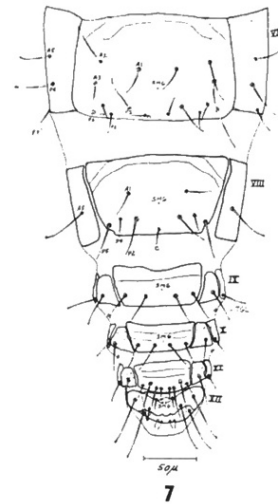


Figure 7. Abdominal sterna VII—XII: SMG, sternal microgland pore; TGL, tergal gland pore.

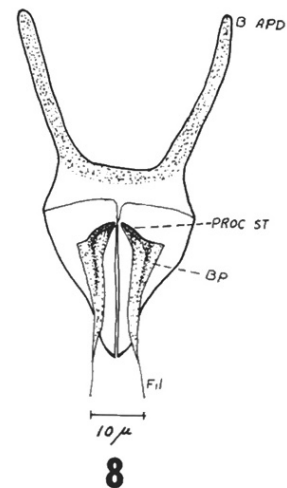


Figure 8. Female squama genitalis in dorsal view: B APD, basal apodeme; PROC ST, processus sternalis; BP, basal plate; Fil, terminal filament.

Types and distribution

The species is known from the holotype female, slide number 45-11/52, (U.S.N.M. Type No. 67040) and 113 paratypes, 74 females and 39 males.

The type locality is the eastern end of Rough Ridge Tunnel, near Mile Post 349, Blue Ridge Parkway, Yancey County, North Carolina. This area is a mixed deciduous forest.

Distribution of specimens: the holotype female, one male and representatives of the larval stages have been deposited in the United States National Museum, Washington 25, D. C.; one male and one female paratype each to Dr. S. L. Tuxen, Universitetets Zoologiske Museum, Copenhagen K, Denmark; Dr. Frederico Bonet, Escuela Nacional de Ciencias Biologicas, Mexico, D. F.; and Mr. D. L. Price, University of California, Davis, California. Three male and three

female paratypes have been retained by Mr. Richard A. Durey and the remaining specimens are in the custody of Dr. T. P. Copeland, Department of Biology, East Tennessee State University.

LITERATURE CITED

- Bonet, F. and S. L. Tuxen. 1960. Re-examination of species of Protura described by H. E. Ewing. Proc. U. S. Nat. Mus. 112:265-305.
- Copeland, T. P. 1962. A Taxonomic Treatment of *Eosentomon* Berlese (Protura) of East Tennessee. Ph.D. Dissertation. Univ. of Tenn. 162 pp.
- 1964. New Species of Protura from Tennessee. Jour. Tenn. Acad. Sci. 39(1):17-29.
- Durey, R. A. 1963. A Statistical Treatment of *Eosentomon pseudorostratum* sp. n. Unpublished thesis. East Tenn. State. Univ. 58 pp.
- Ewing, H. E. 1921. New Genera and Species of Protura. Proc. Ent. Soc. Washington. 23:193-202.
- 1940. The Protura of North America. Ann. Ent. Soc. Amer. 33:495-551.
- Tuxen, S. L. 1964. The Protura. Herman Publishing Co. Paris, France. 360 pp.