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Protura: A New Insect Order Record for Puerto Rico with Description of New Species¹

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ABSTRACT

The insect order Protura is recorded for the first time from Puerto Rico. Two new species, *Eosentomon mutti* and *E. puertoricoense*, are described and *Gracilentulus cf. kenyanus* is recorded from Puerto Rico. The taxonomic status of the latter species is discussed.

INTRODUCTION

The present paper is based on a collection of Protura from Puerto Rico sent to the author for identification by José A. Mari Mutt, Illinois Natural History Survey, Urbana. These specimens represent the first record of the order from the Island.

All specimens treated herein are deposited in the collection of the Illinois Natural History Survey, Urbana. The material from Quebradillas was collected by José A. Mari Mutt, that of Mayagüez was collected by J. A. Mari Mutt and F. Moll, and that of Maricao was taken by J. A. Mari Mutt, R. Rodríguez, and I. Seguinot.

The nomenclature and abbreviations used throughout this paper are as in Tuxen (6); m and f stand for male and female.

RESULTS

FAMILY EOSENTOMIDAE

Genus *Eosentomon* Berlese 1909 (1)

Eosentomon mutti NEW SPECIES

Length of body expanded 1,500 μm , length of foretarsus without claw 85 μm .

Head. Head capsule without rostrum, clypeal apodeme horseshoe shaped (Plate I, fig. c). Mandible striated with a few apical teeth.

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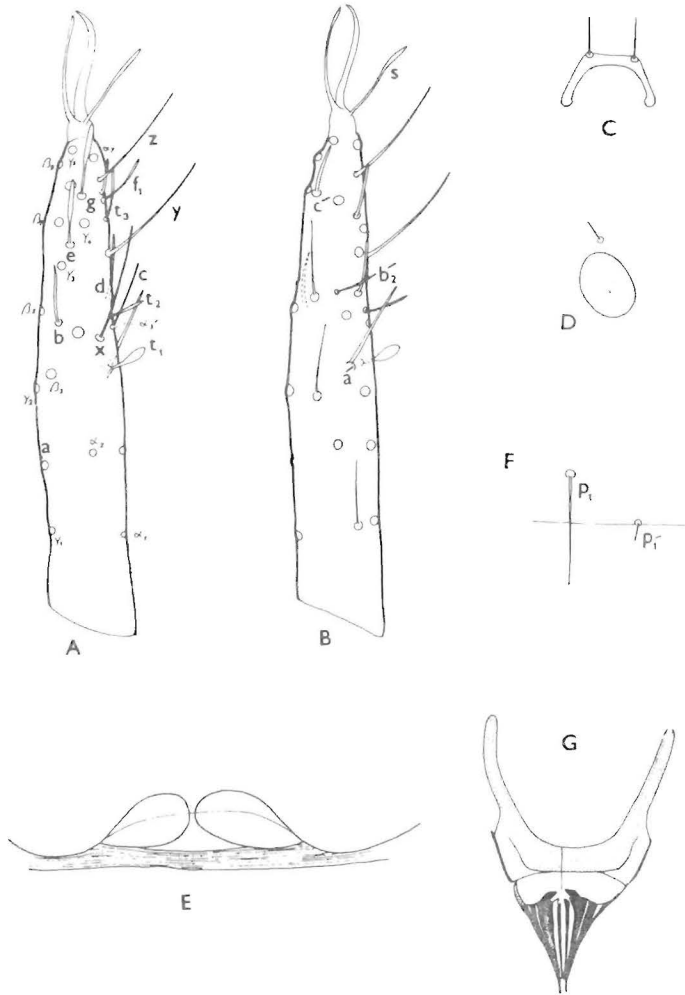


PLATE I, figs. A-G.—*Eosentomon multi* n. sp., m holotype. A, Foretarsus in exterior view; B, Foretarsus in interior view; C, Clypeal apodeme; D, Pseudoculus; E, Central lobe of precosta VI; F, The ratio of sensillae p_1 : p ; G, Female squama genitalis (allotype).

Labral setae present. PR = 8. Pseudoculus with median islet (Plate I, fig. d).

Thorax. Foretarsus characterized by spatulate sensillae \underline{e} and \underline{g} and missing of b_1 (Plate 1, figs. a-b). The ratio of sensillae on exterior side of foretarsus a : b : x : c : d : e : f_1 : f_2 : g as 17: 17: 32: 19: 19: 19.5: 15: 10: 21; on interior side \hat{a} : \hat{b}_2 : \hat{c} as 25: 13: 19.5. Sensilla $\hat{\alpha}$ near t_1 = 4.7, BS = 1.15, U = 1.0. Empodium of middle and hind legs small.

Abdomen. Central lobe of precosta deeply incised (Plate I, fig. e). Sensilla p_1 very small, not reaching the top of p_1 on terg. I-VI (Plate I, fig. f). The female squama genitalis with median sclerotization and short filum (Plate I, fig. g).

Survey of chaetotaxy (in Tuxen's system):

	I	II	III	IV	V-VII	VIII	IX-X	XI	XII
terg.	$\frac{4}{10}$	$\frac{10}{16}$	$\frac{8}{16}$	$\frac{4(8)}{16}$	$\frac{4^x}{16}$	$\frac{6}{9}$	8	8	$\frac{6}{3}$
stern.	$\frac{4}{4}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{6}{10}$	$\frac{6}{10}$	7	4	8	$\frac{8}{4}$

^xa 1-3 missing.

Derivatio Nominis: The species is named in honor of José A. Mari Mut. t.

Diagnosis: This species is closely related to *Eosentomon huetheri* Nosek 1973 b(4) known from Brazil (Amazonas) but differs from it in TR, and in the chaetotaxy of tergs. V-VII, and in the shape of the mandibles.

Comments: The chaetotaxy on tergs. IV-VI seems to be variable (terg. IV a8, terg. V a6, terg. VI a5).

Material studied: Quebradillas, Rd. 2, km 106.8, leaf litter, Jan. 11, 1977. Holotype (m) mounted in Swan's medium. Maricao, Rd. 120, km 13.9, near stone tower, leaf litter, Jan. 5, 1977. One paratype (m). Mayagüez, Rd. 349, km 4.0, leaf litter, Dec. 13, 1976. Allotype (f) and one paratype (m).

Eosentomôn puertoricoense NEW SPECIES

Length of body expanded 1,860 μ m, length of foretarsus without claw 89 μ m.

Head. Mouthparts are like those of *E. mutti*. Labral setae present. The clypeal apodeme is visible. PR = 9. Rostrum missing.

Thorax. Foretarsus is characterized by club of empodium, spatulate sensillae \underline{e} and \underline{g} and missing of \underline{b}_1 (Plate II, figs. a-b). Sensilla a near $\alpha 3$. The ratio of sensillae on the exterior side of foretarsus a: b: x: c: d: e: f_1 : f_2 : g as 16: 23: 39: 15: 17.5: 23: 16.5: 8: 22; on the interior side \acute{a} : \underline{b}_2 : \acute{c} as 23.5: 8. TR = 4.2, BS = 1.38, EU = 1.0. Empodium of middle and hind legs small.

Abdomen: Central lobe of precosta deeply incised (Plate II, fig. e). Sensilla p_1 long, overreaching the top of p_1 on tergs. I-VI (Plate II, fig. d). Female squama genitalis with median sclerotization and short filum (Plate II, fig. c).

Survey of chaetotaxy (in Tuxen's system):

	I	II	IV	V-VII	VIII	IX-X	XI	XII
terg.	$\frac{4}{10}$	$\frac{10}{14}$	$\frac{10}{16}$	$\frac{4^x}{16}$	$\frac{6}{9}$	8	8	$\frac{6}{3}$
stern.	$\frac{4}{4}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{6}{10}$	7	4	8	$\frac{8}{4}$

^xa 1-3 missing.

Derivatio Nominis: The species is named after the Island of Puerto Rico.

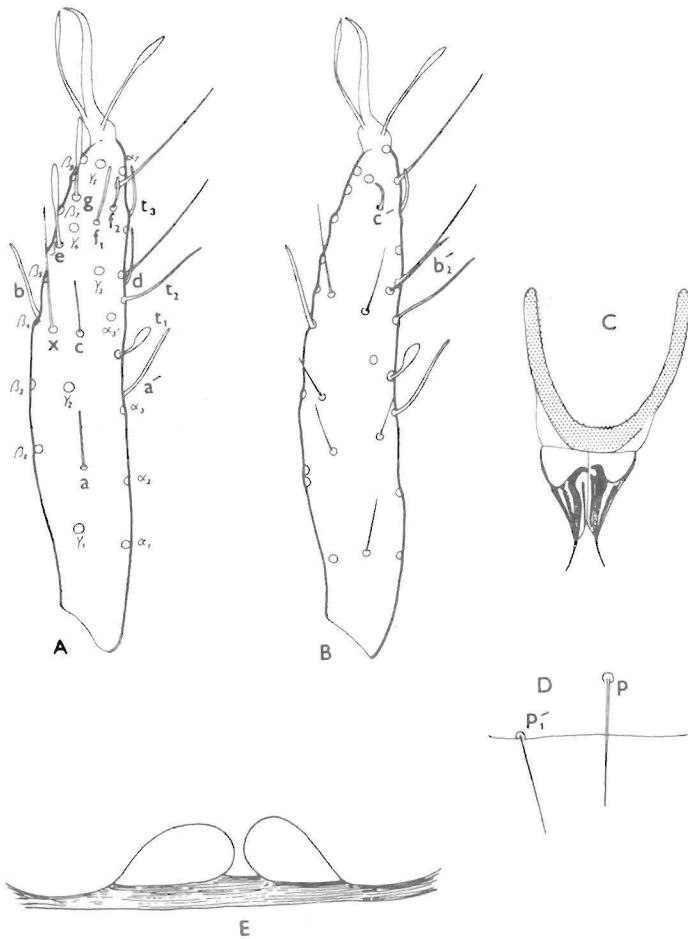


PLATE II, figs. A-E.—*Eosentomon puertoricoense* n. sp., m Holotype. A, Foretarsus in exterior view; B, Foretarsus in interior view; C, Squama genitalis (allotype); D, Ratio of sensillae p_1 : p ; E, Central lobe of precosta VI.

Diagnosis: This species is closely related to *Eosentomon curupira* Tuxen 1976a (7) known from Brazil (Amazonas) and Colombia (Tuxen 1976b (8), but differs from it in the chaetotaxy of abdominal tergites and in the length of p_1 , which is distinctly small in *E. curupira*.

Material studied. Mayagüez, Rd. 349, km 5.9, leaf litter, Dec.13, 1976. Holotype (m) and a paratype (m). Maricao, Rd. 120, km 13.6,

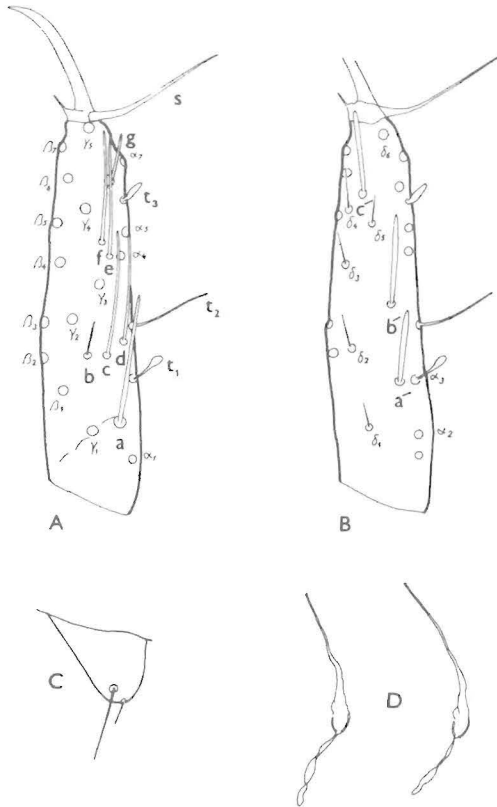


PLATE III, figs. A-D.—*Gracilentulus kenyanus* Condé, f. A, Foretarsus in exterior view; B, Foretarsus in interior view; C, Abdominal leg II; D, Canal of maxillary gland.

Centro Vocacional, leaf litter, Jan. 5, 1977. Allotype (f) and a paratype (f).

FAMILY ACERENTOMIDAE

Genus *Gracilentulus* Tuxen 1963 (5)

Gracilentulus cf. *kenyanus* (Condé) 1948 (2)

The chaetotaxy is exactly as in *Gracilentulus kenyanus* Condé. The differences are in the length and position of sensillae on the interior side of foretarsus (cf. Tuxen 1964(6) fig. 492), see Plate III, fig. b.

The length of the body expanded in the specimen from Puerto Rico amounts to 1,410 $\mu\text{m.}$, that of the foretarsus without the claw is 66 $\mu\text{m.}$ EU = 0.15, BS = 0.51, TR = 3.25. The position of sensillae on the inner side of foretarsus is identical with that of *Gracilentulus neotropicus* Nosek 1973a (3). Tuxen (7) synonymized the latter species with *G. kenyanus* Condé but the length and position of sensillae on the inner side of foretarsus in specimens from Brazil seem to be quite different. This may be due to geographical variation of *G. kenyanus* and *G. neotropicus*, closely related species. Additional material from the Neotropical Region is needed to settle this problem.

RESUMEN

El orden de insectos Protura se informa por vez primera de Puerto Rico. Se describen dos nuevas especies, *Eosentomon mutti* y *E. puertoricoense*, y se cita por primera vez *Gracilentulus* cf. *kenyanus* de Puerto Rico. Se discute además el status taxonómico de esta última especie.

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