Acta zoologica cracoviensia, **52B**(1-2): 101-107, Kraków, 30 June, 2009
doi:10.3409/azc.52b_1-2.101-107

A new *Neomachilellus* WYGODZINSKY, 1953 (Microcoryphia: Meinertellidae) from Puerto Rico

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Received: 10 April 2009
Accepted: 5 May 2009

Carmen BACH DE ROCA, Luis F. MENDES, Rafael MOLERO and Miquel GAJU. 2009. A new *Neomachilellus* WYGODZINSKY, 1953 (Microcoryphia: Meinertellidae) from Puerto Rico. *Acta zoologica cracoviensia*, **52B**(1-2): 101-107.

Abstract. A new species of *Neomachilellus* (*Praeneomachilellus*) bristletail (Meinertellidae: Microcoryphia) from Puerto Rico is described and compared with the closest fossil species *Neomachilellus* (*Praeneomachilellus*) *dominicanus* STURM & POINAR, 1997 and also with the known remaining species of this mostly Neotropical genus. Microcoryphia is reported from Puerto Rico for the first time.

Key words: Microcoryphia, *Neomachilellus*, new species, Neotropical Region.

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I. INTRODUCTION

Up to the present, two subgenera within the genus *Neomachilellus* WYGODZINSKY, 1952 are known: *N.* (*Neomachilellus*) and *N.* (*Praeneomachilellus*) STURM & POINAR, 1997. The former subgenus includes 39 recent species; two of them are from the western afrotropical region and all the remaining species are distributed in the neotropics. Besides these 39 species, STURM (1983, 1984) reported this subgenus in USA (Georgia). The second subgenus includes only one fossil species in Dominican Miocene amber and was described as *N.* (*Praeneomachilellus*) *dominicanus* STURM & POINAR, 1997.

In this paper we describe for the first time a new, recent species of *Neomachilellus* (*Praeneomachilellus*) on the basis of material from Puerto Rico (first data of Microcoryphia for this island). We were informed that the specimens studied were previously loaned to Prof. J. PACLT who identified them as belonging to *Neomachilellus* without further comments and that this information was never published.

II. MATERIAL AND METHODS

The specimens were preserved in alcohol when received. After dissection, they were mounted in Hoyer liquid and dried in a stove during a week. The following abbreviations are used in the text: n/n-1: ratio length of the distal article of maxillary palp / length of the ante-distal article of this palp; P I: first pair of legs; P II: second pair of legs; P III: third pair of legs; st/cx: ratio length of the stylet without the terminal spine / length of the coxite; ts/st: ratio length of the terminal spine / length of the stylet without terminal spine. The specimens studied are deposited in the collection of the Universitat Autònoma de Barcelona (in the text CB).

III. TAXONOMY

Neomachilellus (*Praeneomachilellus*) *szeptyckii* sp. n.

(Figs 1-28)

D i a g n o s i s. Paired ocelli widened, oval-shaped, their distance as half as their width. Antennae annuli with one transverse row of setulae. Maxillary palp with pigment on articles I-III (I-IV in female). Legs with pigment restricted to tibia, without spines or strong spiniform setae. Penis opening long and oval, with one row of thin, simple setae (not sculptured). Ovipositor reaching terminal spine of stylet IX.

D e s c r i p t i o n. Male (holotype). Length of body – 7.5 mm, of antennae (damaged) – 0.84 mm, of paracercus (broken) – 2.58 mm, of cerci (damaged) 1.10 mm. Alive scale pattern unknown. Head (Fig. 1) with some pigment on frons. Clypeus and labrum covered with thin setae. Compound eyes (colour pattern not preserved) round. Paired ocelli below compound eyes, wide, their length about half of their width.

Scapus ca 1.6 times longer than wide.

Maxillary palp (Figs 2, 3) with pigment along the 3 most proximal articles: one spot close to the dorsal apophysis of the basal article; in the second article a large area with pigment occupying almost all the outer surface; in the third article, a longitudinal outer band. Dorsal basal apophysis of the first article somewhat larger than the spiralised inner process. Distal dorsal inner apophysis of the second article blackish, well exposed, apically straightened and curved inwards. Ventral chaetotaxy with usual setae; dorsal surface of article II with some strong setae at the base of apophysis, article III with some black spiniform setae (most of them lost). Hyaline spines not especially abundant on distal articles (V-VII), distributed as follows: V: 2; VI: 4-8; VII: 6. Distal article conical, elongate, ratio n/n-1: 0.64.

Labial palp with apical article about twice wider than long, not angulated, abundant apical conules with multiple, distal thin expansions.

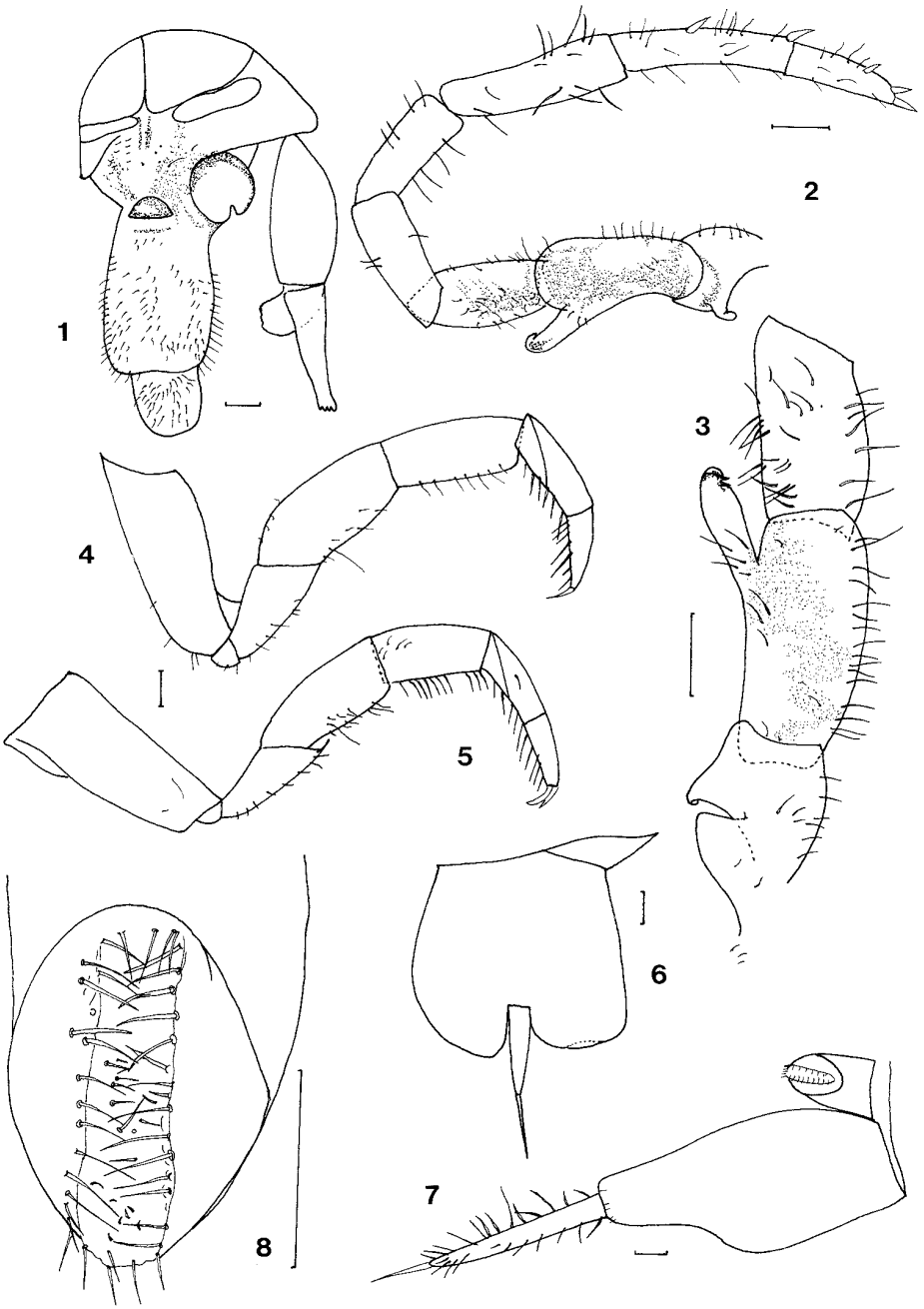
Legs without coxal stylets, PI-PIII (Figs 4, 5) with only small spot of pigment on dorso-proximal area of tibia. PI stronger, with some ventral dark robust and elongate (not spiniform) setae on tarsus. Length of tibiae I, II, III as: 0.39, 0.42-0.44, 0.50-0.51 mm respectively.

Coxosternites without pigment, coxites without spines, sternites small, triangular (Fig. 6). Stylets short, with terminal spine, longer than half their length, ratios st/cx: V: 0.46, VIII: 0.80, IX: 0.67, ts/st: V: 0.68, VIII: 0.96, IX: 0.63.

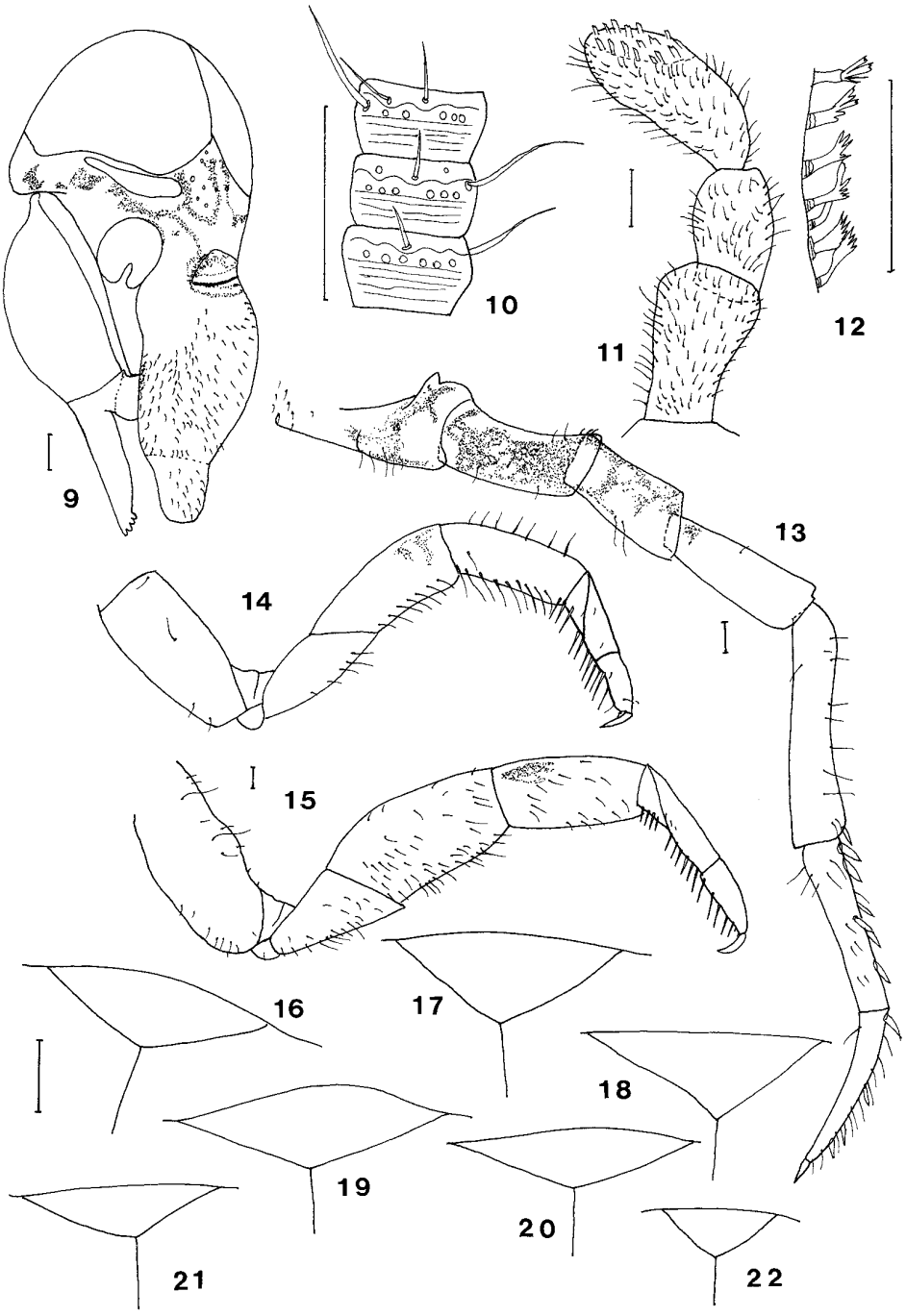
Paramera absent. Penis small (Figs 7, 8), with short basal part and somewhat longer distal part; setae simple (not helicoidally sculptured) inserted on small papillae and arranged in single row around long, ovoid penial opening.

All the posterior filaments damaged.

Female (paratypes). Length of body 8.5-9 mm, of antenna 7.40 mm, paracercus (damaged) length 5.3 mm and cerci length (broken) 2.60 mm.



Figs 1-8. *Neomachilellus* (*Praeneomachilellus*) *szeptyckii* sp. n., male. 1 – head, frontal view; 2 – maxillary palp; 3 – id., three most basal articles; 4 – P I; 5 – P III; 6 – coxosternite IV; 7 – coxite IX and penis; 8 – penis opening. Scales: 0.1 mm.



Figs 9-22. *Neomachilellus* (*Praeneomachilellus*) *szeptyckii* sp. n., female. 9 – head, lateral view; 10 – divisions of the median chain of antenna; 11 – labial palp; 12 – id., detail of the distal conules; 13 – maxillary palp; 14 – P I; 15 – P III; 16 – sternite of urosternite I; 17 – id., of II; 18 – id., of III; 19 – id., of IV; 20 – id., of V; 21 – id., of VI; 22 – id., of VII. Scales: 0.1 mm.

Head as in male, paired ocelli widened in median area (Fig. 9). Scapus of antenna ca 1.6 times longer than wide; distal chain of flagellum with 14-16 annuli, each distal chain with 2 basal annuli hyaline, remaining dark brown; each annulus with crown of setulae and few thin, delicate apical sensilla as in Fig. 10.

Maxillary palp without specialized setae and second article apophysis, three basal articles with pigment (as in male), article IV with dark basal area (Fig. 13). Hyaline spines in the V: 2, VI: 8-10, VII: 12. Distal article delicate, conical, ratio n/n-1: 0.89.

Labial palp (Figs 11, 12) with apical article distal area somewhat enlarged, conules not numerous with some digitations on apex.

Legs (Figs 14, 15), as in male, only tibia pigmented, PI more robust. Length of tibias I, II, III: 0.48-0.50, 0.39-0.44, 0.50-0.59 mm respectively.

Coxosternites (Figs 16-22), as in male, terminal spine always long and thin (Figs 23, 24), ratios st/cx: V: 0.50, VIII: 0.50, IX: 0.58, ts/st: V: 0.83, VIII: 0.88, IX: 0.55.

Ovipositor of quaternary type (STURM & BACH 1993), reaching apex of stylet IX spine (Fig. 24). Gonapophyses VIII (Figs 27, 28) with 52-56 divisions; distal division with terminal spine as long as three most distal divisions, with 3-4 thin setae and some tiny sensorial conules; following 3-4 divisions with one macrochaeta, some thin setae and few conules; remaining divisions till 20-22 with one macrochaeta on each 2-3 divisions, with pair of thin setae per divison and following glabrous. Gonapohyses X with 49-54 divisions (Figs 25, 26); distal division with terminal seta as long as three last divisions; most apical division with 3-4 thin setae and few tiny conules; divisions 9-12 with macrochaetae less regularly arranged.

T y p e m a t e r i a l. Holotype male and paratypes: 2 females, 1 male in CB.

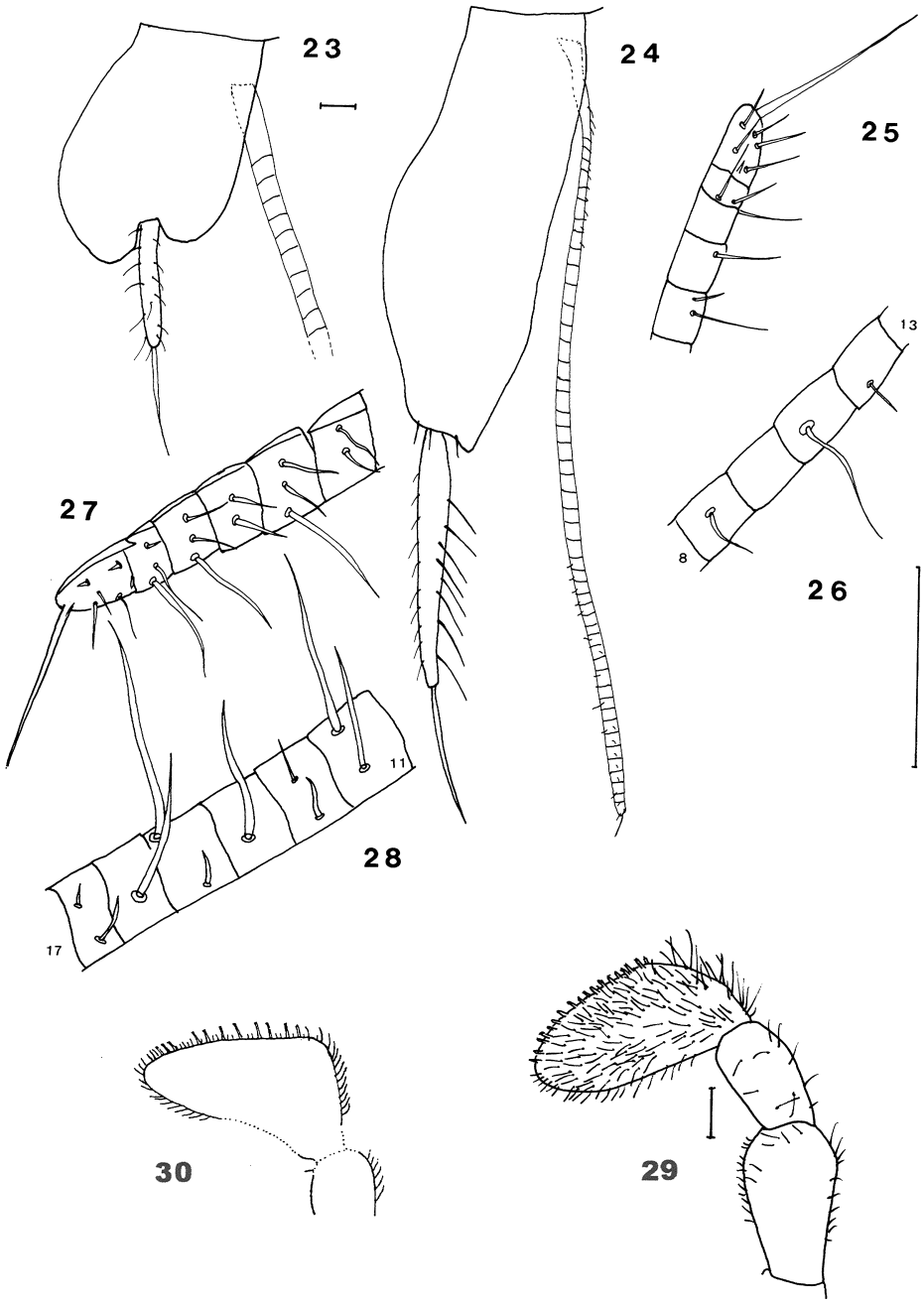
T y p e l o c a l i t y. Puerto Rico, Villela, Parque Estadual de Toro Negro, on lichen covered rocks near a pool of brackisch water, 5/III/1983, J. A. MARI MUTT leg.

E t y m o l o g y. We dedicate the new species to the memory of our dear Polish friend and specialist in "Apterygota" (mainly Protura) Dr. Andrzej SZEPTYCKI.

D i s c u s s i o n. Up to now, there are no recent *Neomachilellus* species known from the Hispaniola Island. The specimens of the species described here come from the Toro Negro area of Villalba, in the central-southern region of Puerto Rico, where *Hymenaea courbaril* (the "algarroba", "locust" or "jutbay") can be found today.

N. (*P.*) *szeptyckii* sp. n. is the only living species of the subgenus *Neomachilellus* (*Praeneomachilellus*) STURM & POINAR, 1977. Previously only *N.* (*P.*) *dominicanus* (the type-species of this subgenus) was described from several specimens included in the 25-20 MY Miocene Dominican amber of *Hymenaea* sp. (Leguminosae) from the La Toca Formation (La Toca, Palo Quemado and Palo Alto), about 10 km north from Santiago, Dominican Republic (STURM & POINAR 1997). The new species differs from the fossil one by the shape of the paired ocelli which are widened and oval-shaped. Moreover *N.* (*P.*) *szeptyckii* sp. n. has one whorl of setae per annulus in the antenna (two in the fossil species), the opening of penis different: much more regularly thinner and elongated in *N.* (*P.*) *szeptyckii* (figs 7, 8). In the fossil species, the penis is smaller relative to the coxite IX. Another conspicuous difference concerns the shape of the distal article of the male labial palp, gradually enlarged and twice as wide as long in *N.* (*P.*) *szeptykii* sp. n. (Fig. 29) while in *N.* (*P.*) *dominicanus* it is clearly angulated and ca 1.5 times wider than long (Fig. 30).

A c k n o w l e d g e m e n t s. We are most grateful to Dr. Jose A. MARI MUTT, from the University of Puerto Rico, for providing us the material for this study. We wish to thank very much the anonymous referee and Dr. Zdzisława STEBNICKA, the Editor-in-Chief of this journal, for numerous helpful suggestions on the manuscript.



Figs 23-30. *Neomachilellus* (*Praeneomachilellus*) *szeptyckii* sp. n., female. 23 – coxite VIII; 24 – coxite IX and posterior gonapophyses; 25 – apex of gonapophyses IX; 26 – median divisions of gonapophyses IX; 27 – apex of gonapophyses VIII; 28 – median divisions of gonapophyses VIII; Fig. 29 – same species, male labial palp. Fig. 30. *Neomachilellus* (*Praeneomachilellus*) *dominicanus*, male labial palp, after STURM & POINAR (1997). Scales: 0.1 mm.

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