

## THREE NEANURID COLLEMBOLA FROM THE MARQUESAS ISLANDS

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*Abstract:* Three neanurid species described by Carpenter from the Marquesas are here examined and redescribed, proving that they represent special forms within the family having an allied form in Middle Africa.

Only three species of neanurids which were described by Carpenter (1935) from the Marquesas Islands are known. Two of the species are peculiar because of the absence of almost all their segmental tubercles, causing some authors (Stach 1951, etc.) to doubt their position in the family Neanuridae. This peculiarity was discussed with Miss Amy Suehiro of B. P. Bishop Museum, Hawaii, during her visit to Kyoto in 1966. Upon her return she was kind enough to send me the type specimens of these neanurids for detailed examination. As a result, these species have proved to represent special forms within the Neanuridae, having allied forms in Middle Africa. The new diagnoses are given herewith.

*Echinanura elegans* Carpenter, 1935      Fig. 1.

Type (BISHOP 929), Hivaooa, Matuuna, 4.III.1930, Mumford & Adamson.

The slide-mounted type is almost transparent and so completely depressed that it is barely possible to distinguish the dorsal and ventral setae of the body. With the aid of Carpenter's figure, the following detailed studies were made.

Length 2.0 mm. Ratio of antenna to head as 5:6. Antenna rather short; segments I and II with a transverse row of blunt setae; segments III and IV dorsally confluent with 3 apical bulbs and 3 sensory setae; sense organ of segment III consists of 2 rods in a groove, p-, d- and v-seta present. Buccal cone conical, pointed apically. No mouth parts were observed, apparently they are thin and weakly chitinized and maxilla is styli-form. Eyes and postantennal organ absent. Unguis carinate, quite untoothed, its inner side densely granulated. Ventral tube large, with 4+4 setae. Furcal rest absent. Anal opening transverse, so that lateral flap is not paired, *i.e.* supra-anal lobe not bilobed. Integument finely granular, without any segmental tubercles. Only antennal segment VI slightly concave posteriorly at median part forming a pair of insignificant tubercles. Body setae well represented: upon head 3+3 anterior and some 6 posterior setae are differentiated from the other minute setae. Chaetal arrangement of each tergite as in fig. A, where 1 dorsal seta is blunt and short on thoracic segment I to abdominal segment II, longer on III, IV and again short on V. Setae sensuales slender, located 2+2 on thora-

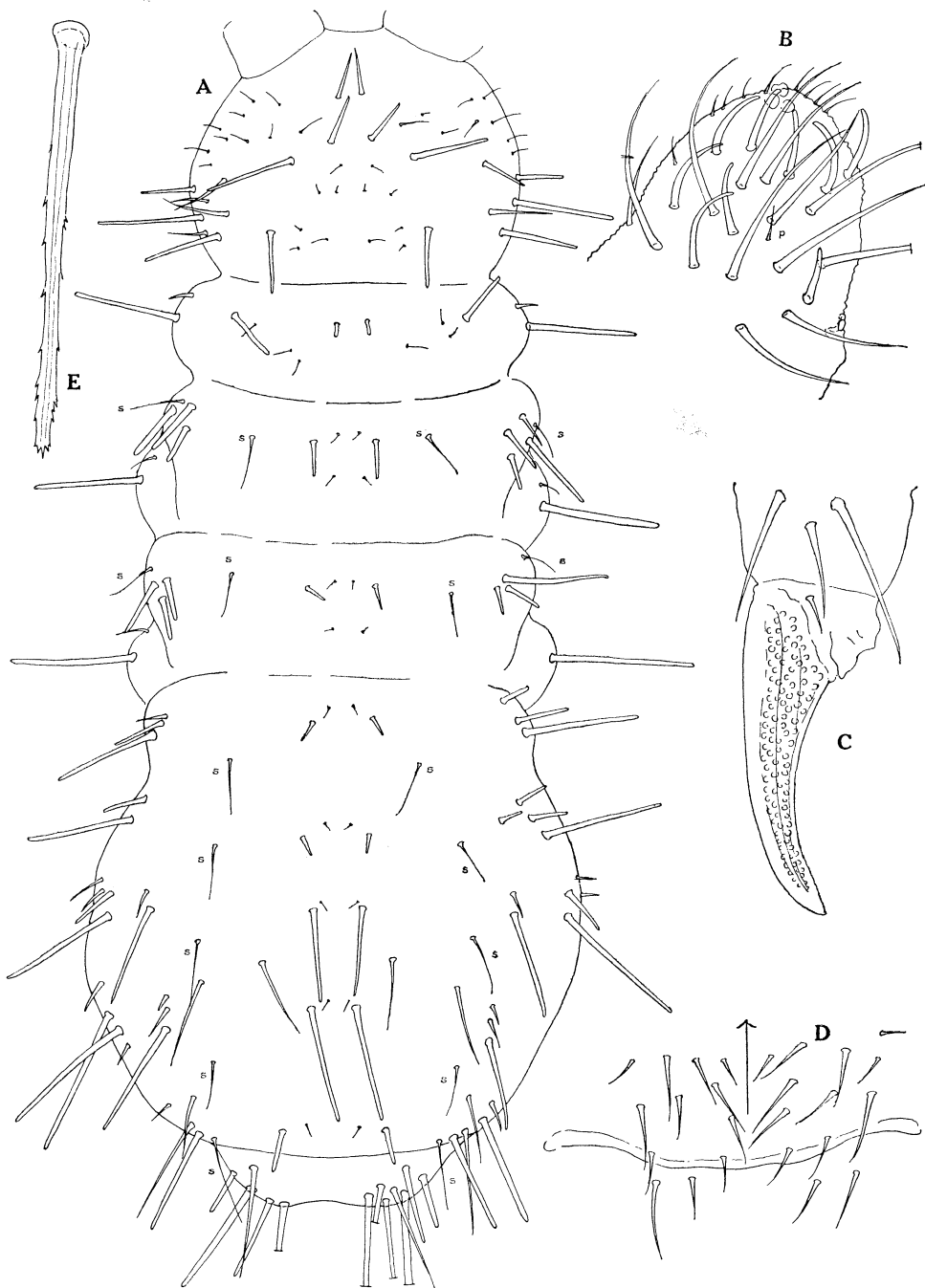


Fig. 1. *Echinanura elegans* Carpenter. A, dorsal chaetotaxy; B, antennal segment IV; C, mid-leg; D, anal cleft; E, large body setae of abdominal segment IV.

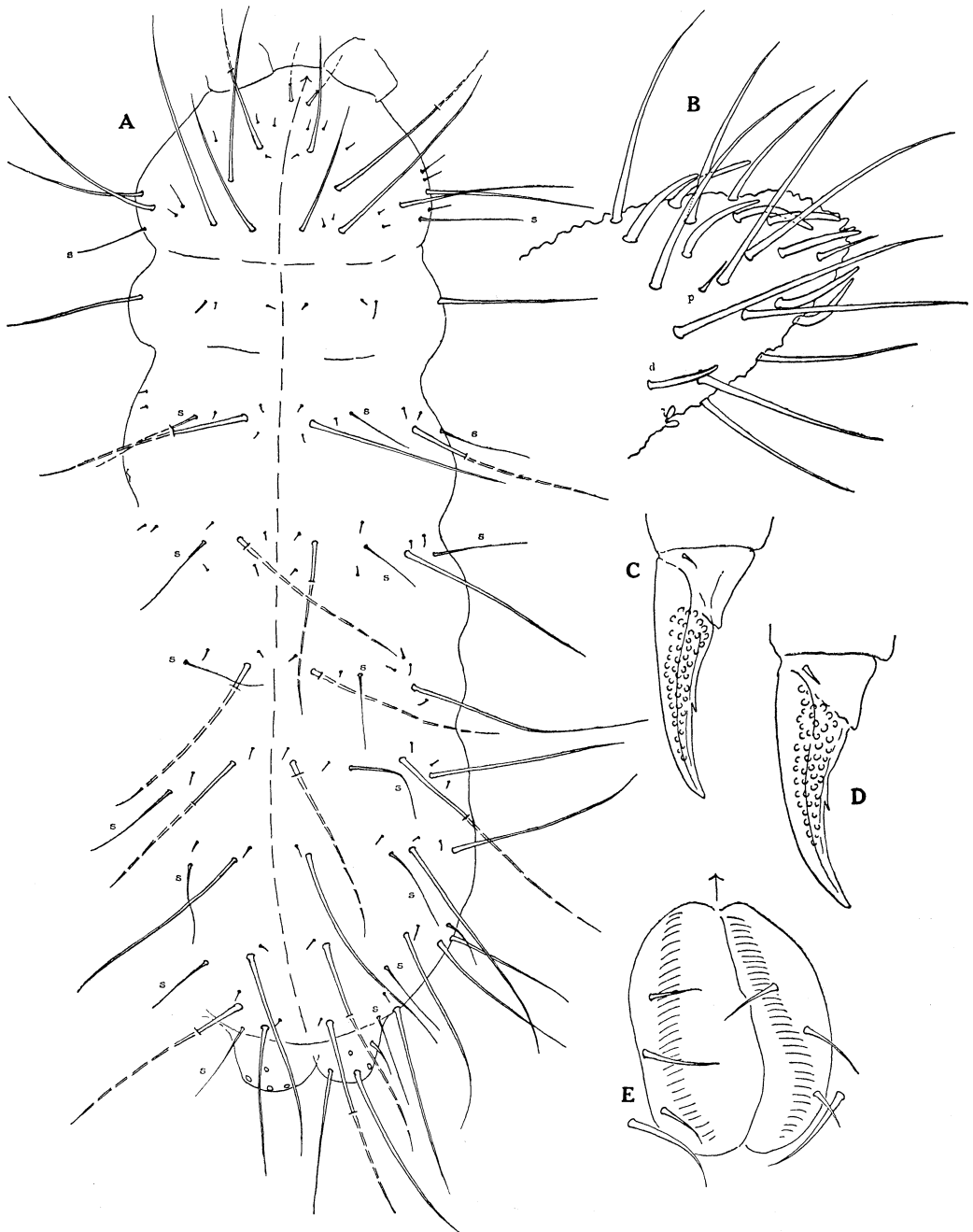


Fig. 2. *Echinanura pacifica* (Carpenter). A, dorsal chaetotaxy; B, antennal segment IV; C, fore-leg; D, hind-leg; E, ventral tube.

cic segments, II, III and 1+1 on abdominal segments I-V. Large setae minutely serrated along their entire length and abruptly terminating apically.

This species is remarkable in many respects. The absence of almost all segmental tubercles on the body and the subsequent disarrangements of body setae, especially in the subdorsal group, indicates the near relationship with *Pronura* Delamare, 1954 of Africa. Another interesting feature is the transverse opening of the anus, as mentioned by Carpenter (l. c., fig. 2f). In this respect, the species is probably comparable to *Pronura*, *Phylliomeria* and *Gnatholonche*, to form a special group within the Neanuridae. However, our knowledge of these genera is yet too scanty to deduce a final conclusion.

***Echinanura pacifica* (Carpenter), new combination**

*Sericanura pacifica* Carpenter, 1935, B. P. Bishop Mus. Bull. **113**: 365-378.

Type (BISHOP 930), Hivaoa, Matuuna, 3.III.1930, Mumford & Adamson.

Body length 3.0 mm in extended condition. Ratio of antenna to head as 4 : 5. Antennal segment I, II with long setae; III and IV dorsally confluent; IV with apical bulbs (?) and 8 sensory setae as in typical Neanuridae. Sense organ of antennal segment III with 2 short rods in a groove, both d- and v-seta sensilla-like, p-seta present. Buccal cone weakly chitinized and transparent. Maxilla probably styliform. Eyes and postantennal organ absent. Unguis carinate dorsally, with 1 inner tooth (?), its inner side densely granular. Ventral tube with 3/1 setae on each side. Furcal rest vestigial. Anal opening uncertain, the example being contorted, but probably with a transverse split. Integument granular, segmental tubercles reduced except on abdominal segment VI where they are represented by a pair of round tubercles. Body setae well developed, slender and very long. Their arrangement considerably different from typical Neanuridae, but with some minute setae representing their original pattern. Long setae are 3+3 on anterior 1/2 of head, 5+5 on posterior 1/2. Thoracic segment I with 1-2-1 setae, the lateral one is long, others small; segments II and III with 2+2 large setae and 2+2 minute setae representing a- and p- seta in the normal case. Abdominal segments I-V obscurely divided, dorsal seta ( $p_1$ ) accompanied by 1 minute seta ( $a_1$ ), each segment with 1 slender s. in position of  $p_2$ .

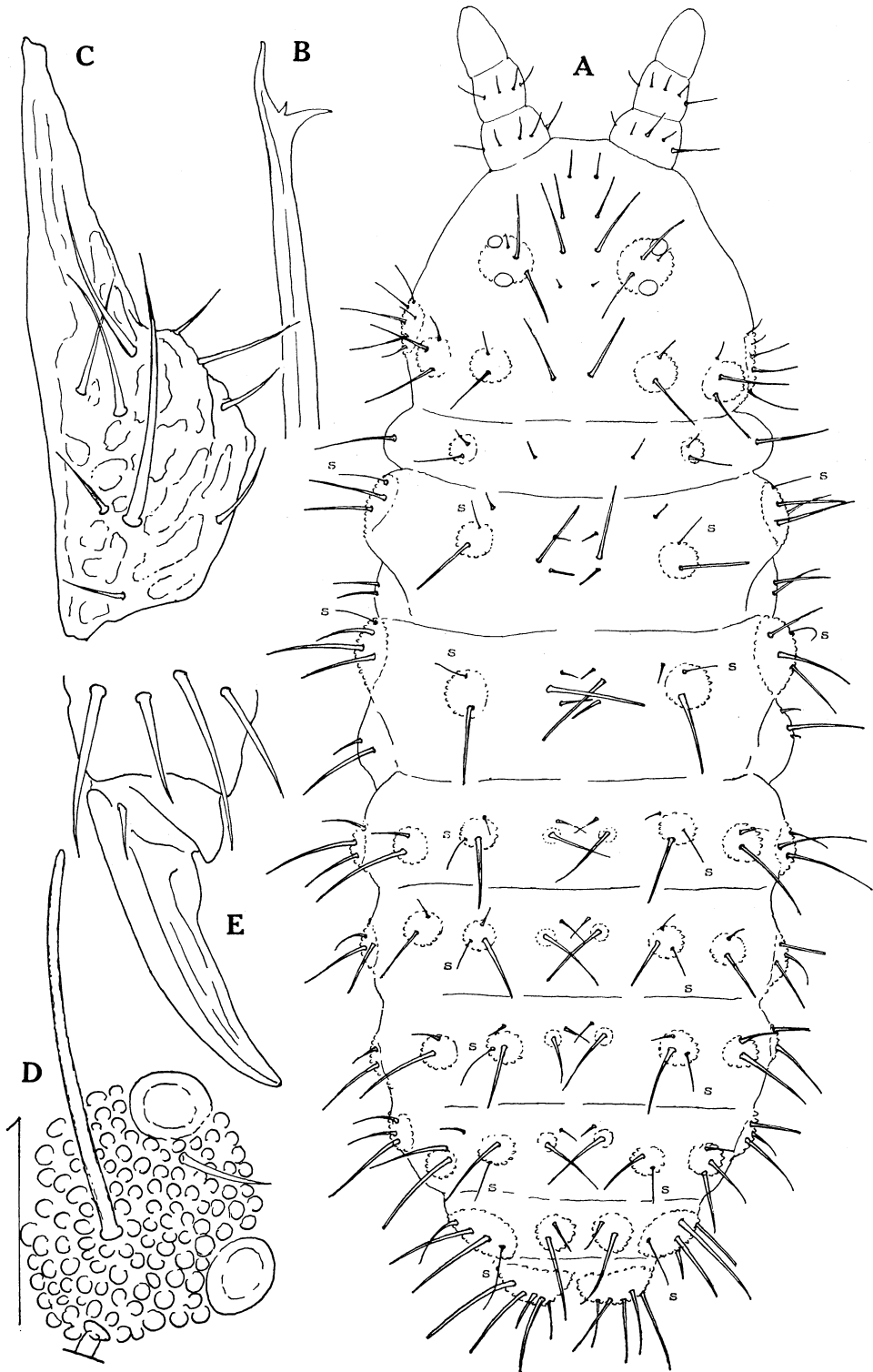
As the type is partly crushed and obscured by the preparation, its minor details are unknown. However, its slender body setae easily discriminate it from others. Doubtlessly *Sericanura* is a member of Neanuridae and the genus is surely synonymous with *Echinanura*. The species is to be regarded as *Echinanura pacifica* (Carpenter).

***Lobella (Propeanura) insularum* (Carpenter), new combination** Fig. 3.

*Neanura insularum* Carpenter, 1935, B. P. Bishop Mus. Bull. **113**: 365-378.

Four examples from Eiao, 16.IV.1931. The slides were soaked in lactic acid for 5 days to soften the sealing medium. One specimen was unmounted for examination of mouth parts. No lectotype is designated, as the diagnosis below has been acquired from the examination of all 4 examples.

Fig. 3. *Lobella (Propeanura) insularum* (Carpenter). A, dorsal view; B, mandible; C, labium; D, eyes; E, mid-leg.



Body length up to 1.8 mm. Antenna relatively short, ratio of antenna to head being 3 : 7 in length. Antennal segments I and II with a row of setae; III and IV dorsally confluent, with 3 apical bulbs and 8 sensory setae; sense organ of III with 2 short rods in a groove, both d- and v-seta well represented. Eyes 2+2, large, uncolored. Postantennal field not observed. Buccal cone ventral, pointed apically and feebly chitinized. Labrum not observed. Mandible elongate, apically tridentate and similar in form to that of *Propeanura*. Maxilla styliform, labium acute apically. Unguis carinate, untoothed, inner side without structures. Ventral tube with 4+4 setae, furcal rest vestigial, but a pair of stronger setae present at its position. Genital and anal opening typical for *Neanura*. Integument granulate, no reticulate area present. Segmental tubercles round, well represented. Head with a pair of ocular tubercles on anterior 1/2. Dorsal tubercles of trunk absent on thoracic segments I-III, represented by a small swelling around base of principal dorsal seta upon abdominal segment IV. Outer tubercles well represented. Head bearing 3+3 large setae on anterior 1/2. Posterior region with 1-2-3 setae. Thoracic segment I with 1-2-1 small setae; II and III with dorsal 3+3 setae, where a- and p-seta are half of the m-seta. Subdorsal tubercles with 2+s, sublateral 3+s. Abdominal segments I-IV with 2+2 tubercles, dorsal one with a large and a small seta each. Setae sensuales located on dorsal side of lateral tubercles. Abdominal segment VI distinct with 2 round tubercles touching each other at base.

There are some allied species of Neanuridae with 2+2 large eyes and 2+2 tubercles upon abdominal segment V, such as *Achorutes semilunaris* Schött, 1925 (Borneo) or *Achorutes rosaceus* Schött, 1917 (North Queensland). Among them this species seems to be characterized by the chaetal arrangement of the head and by rugose body setae. Following my present concept of the family, the species must be mentioned as *Lobella (Propeanura) insularum* (Carpenter)

#### REFERENCES

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