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Part 6

Deboutevillea marina n. gen., n. sp., (Collembola, Sminthuridae)
from the inter-tidal zone of Singapore

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INTRODUCTION

The marine littoral fauna includes many air-breathing arthropods among which Collembola Arthropleona are abundant. However, the species described here seems to be the first of the Symphypleona recorded as truly inter-tidal, although one species, *Sminthurides avicenniae* Murphy (1960a) was described from brackish mangrove swamps in west Africa. *Deboutevillea* occurs on the open sea coast and is submerged by each tide, when it can be collected with air rising to the surface as rocks and stones are disturbed. Although allied to *Sminthurides* it is so extremely modified as to justify a distinct genus. Such a form could hardly be more appropriately dedicated than to Prof. C. Delamare-Deboutville, leading authority both on the Symphypleona and on the marine interstitial fauna.

Deboutevillea n. gen.

A typical member of the *Sminthuridinae* in having abd.V separated from abd.IV by a distinct suture but fused with abd.VI and bearing 2+2 bothriotrichia. Ventral tube without eversible vesicles or papillae. Although a feature of the subfamily is their relatively small size, short but prominent tubular vesicles or at least papillae are present in other genera. Tenaculum with basal, clavate appendages. Female without *appendices anales*. Male with clasping antennae.

Distinguished from related genera by absence of tibiotarsal organ (cf. *Sminthurides* lat.), mucronal shape and absence of tibiotarsal or anogenital serrate spines (cf. *Denisiella*), absence of post-oral glands and presence in the male of metanotal vesicles (cf. *Sphaeridia*). Unique in having basal, lateral appendages on ventral tube, tibia II of female dilated and spinose and male with spines on frons. Genotype *D. marina* n. sp.

Deboutevillea marina n. sp.

Figures 1 & 2.

Female. Size up to 0.7 mm. Pigmentation intense blue-black with some pale patches visible when cleared in lactic acid (indicated by broken lines in fig. 1a). Frons and clypeus (fig. 1c) without macrochaetae or spines. Occipital region with 2 + 2 ocular and 2 + 2 post-ocular setae. 6 + 6 equal corneae around and between which are several very distinct tubercles not corresponding to ocelli.

Antennae with segment IV (fig. 1*i*) divided into 6 simple subsegments. Body chaetotaxy as in fig. 1*a*, short. Gonopore with 2 + 2 small, simple pregenital setae (fig. 1*b*). Accessory gland with long, slender duct and simple, membranous, spherical vesicle (fig. 1*n*).

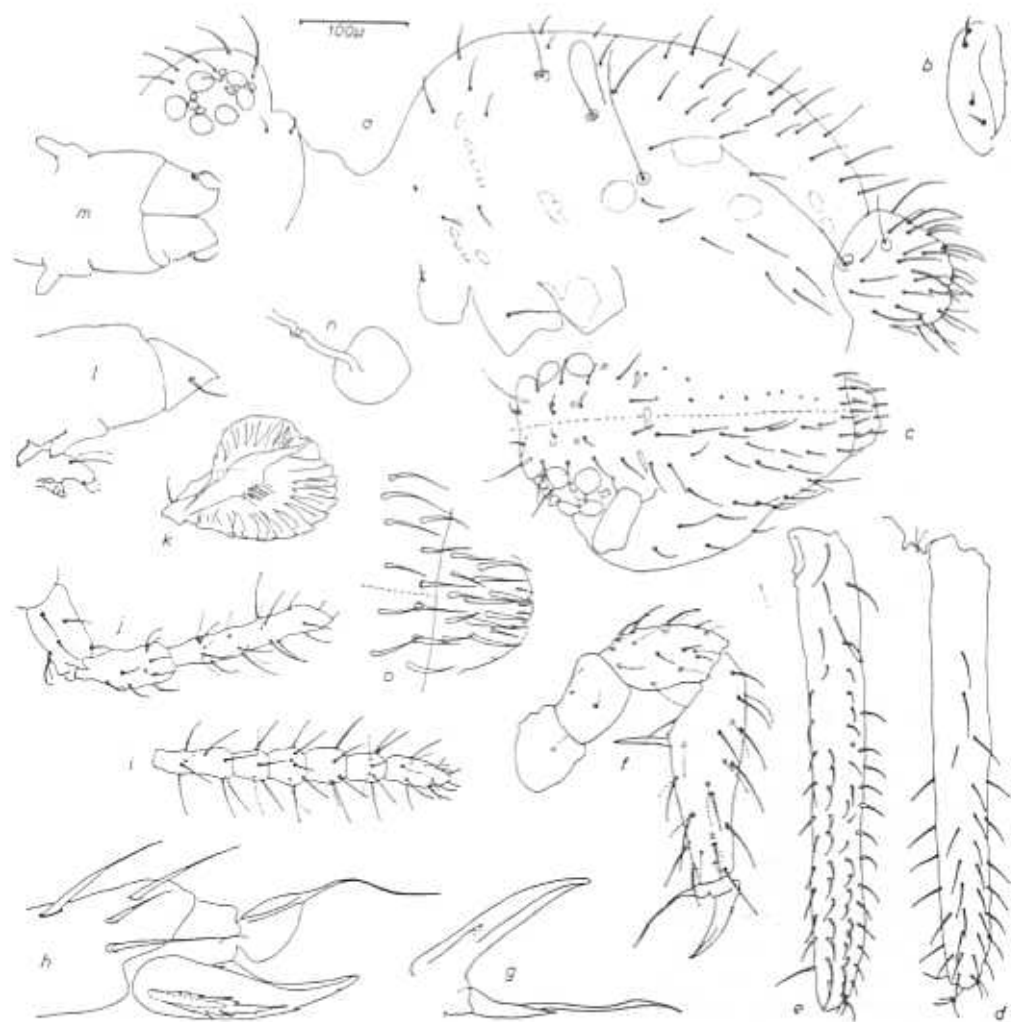


Figure 1. *Deboutevillea marina* female. *a* Occipital and body chaetotaxy, lateral view (x 1). *b* Pregenital setae (x 3.2). *c* Frontal chaetotaxy (x 1). *d* Dens, anterior (x 1.4). *e* Dens, posterior (x 1.4). *f* Leg II (x 1.4). *g* Claw I (x 3.2). *h* Claw III, posterior view (x 3.2). *i* Antenna IV (x 1.4). *j* Antenna I to III (x 1.4). *k* Mucro (x 1.4). *l* Ventral tube and tenaculum, lateral (x 1.4). *m* Ventral tube, anterior (x 1.4). *n* Accessory reproductive gland (x 3.2). *o* Clypeus (x 3.2). (All magnifications are relative to the scale in the figure.)

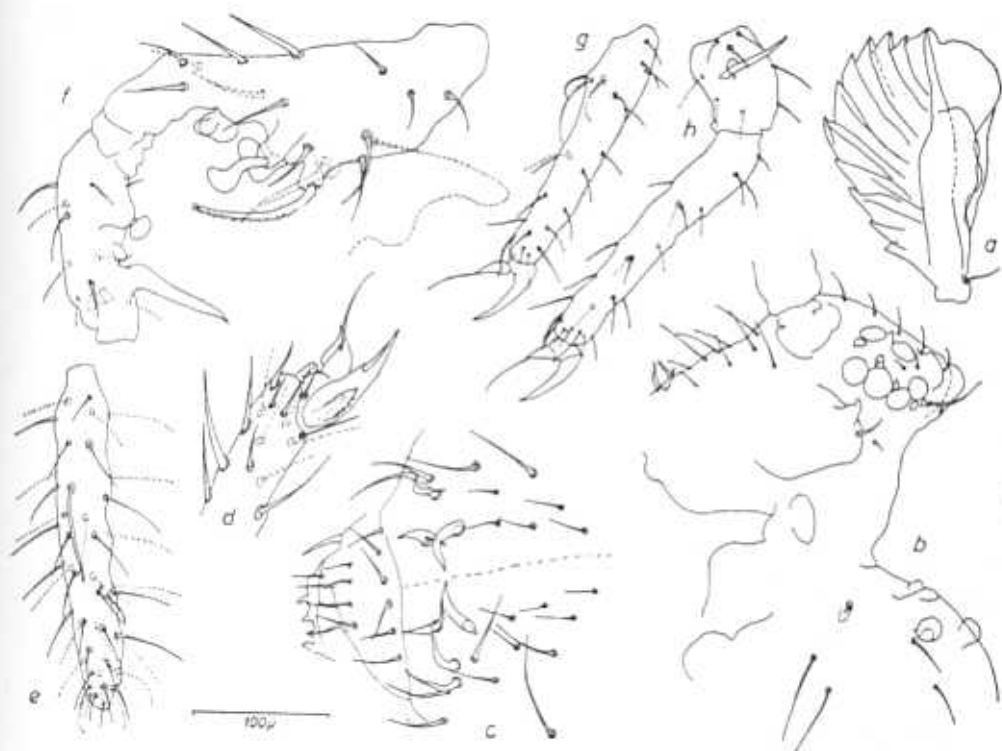


Figure 2. *Deboutevillea marina* male. a Mucro (x 2). b Head and thorax, lateral (x 1). c Clypeal spines (x 2). d Claw III and end of tibia-tarsus, posterior view (x 2). e Antenna IV (x 2). f Antenna II + III (x 2). g Tibiotarsus and Claws of Leg I (x 1). h Femur, tibia-tarsus and claws of leg II (x 1). (All magnifications are relative to the scale in the figure.)

Leg I with setae distributed as in male but not incurved. Claw I with 1 + 1 lateral and no inner teeth (fig. 1g). Leg II with tibia-tarsus triangularly broadened and with strong internal spine (fig. 1f), but femur without spine. Claw II with 2+2 lateral and no inner teeth. Claw III (fig. 1h) with 2 teeth on anterior lamella, one on posterior lamella above which is a hollow, conical tooth-like process fringed with sharp teeth. (I was shown a similar process in *Disparrhopalites* by Dr. Delamare). No inner tooth. Empodial appendage simple. Tibiotarsus III with internal setae very strong but not serrate and no tibiotarsal organ. Trochanteral organ absent. Ventral tube as in figs. 1l & 1m. Dens (figs. 1d & 1e) long, straight and cylindrical with setae in 9 rows. Mucro (fig. 1k) much enlarged, almost one third length of dens, 0.8 as wide as long, obovate and strongly flexed inwards. Three lamellae, the inner with 15 to 20 imbricate teeth, outer broad and convolute but not folded into teeth, anterior reaching only half-way to apex. Mucronal seta present.

Male. Size up to 0.5 mm. Differs from female in presence of 3 + 3 spines above the clypeus, two of these hooked and one T-shaped on each side (fig. 2c). Head with strong tubercles behind the eyes and postocular setae unequal. Lateral thoracic setae long (fig. 2b). Antennal clasping organ (fig. 2f) essentially as in *Sminthurides* but with sensillae m^1 , m^2 and p^1 of Ant. II and p^1 of Ant. III dilated and bladder-like. Ant. II with only one, posterior bothriotrichium and II and III without thin-walled sense hairs. Ant. III with spine d^1 procumbent, spirally striate, and sensillum d^2 simple and lobe-like. (Nomenclature follows Murphy 1960b). Ant. IV (fig. 2e) simple, with a single very elongate anterior sensillum and two fine subapical sensehairs posteriorly. Tibiotarsus I (fig. 2g) with strongly curved proximal setae. Tibiotarsus II not compressed or spinose as in female, but femur II bears a strong curved inner spine (fig. 2h). Metanotal vesicles present.

Type locality. Singapore, Tanjong Gul (a rocky cape near extreme western end of the island), 1st February, 1964, *et. seq.* Under loose rocks and stones between high water neaps and mean tide level—numerous specimens. Also collected from *Oscillatoria* tufts in mangrove swamps at Ulu Pandan, Singapore, 8th December, 1963, *et seq.*

Types. Holotype female and allotype male in British Museum (Nat. Hist.), London. Paratypes in National Museum, Singapore and Bishop Museum, Honolulu, Hawaii.

Affinities. Clearly closer to *Sminthurides* s. str. rather than to any other named entity in the subfamily. It shows distinct resemblances to the *S. macgregori* complex (which is well represented in the oriental region) in the pregenital setae, single bothriotrichium of male ant. II and the "Disparrhopalites" tooth of claw III.

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