

A new species of the genus *Arhodeoporus* (Acari: Halacaridae) from Zanzibar, Tanzania

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Abstract: *Arhodeoporus tanzanicus* sp. nov. is described on the basis of the specimens collected from Pingwe, the east coast of Zanzibar, Tanzania. This is the first record of the genus from Tanzania. This species is a member of the *longirostris* group and characterized by dorsal seta-5 posterior to the anterior gland pore on posterior dorsal plate (PD), anterior margin of PD truncate, ocular plate with long tail surpassing the level of anterior gland pore on PD, rostrum longer than gnathosomal base, tip of rostrum extending to basal part of fourth palpal segment, bipectinate setae on tibiae I-IV: 0-2-1-1.

Résumé : Une nouvelle espèce du genre *Arhodeoporus* (Acari : Halacaridae) des côtes de Zanzibar, Tanzanie. La nouvelle espèce *Arhodeoporus tanzanicus* sp. nov. est décrite à partir de spécimens récoltés à Pingwe, situé sur la côte est de Zanzibar (Tanzanie). C'est la première fois qu'une espèce de ce genre est signalée en Tanzanie. La nouvelle espèce fait partie du groupe *longirostris* et est caractérisée par une soie dorsale-5 postérieure au pore de la glande antérieure sur la plaque postérodorsale (PD), le bord antérieur de la PD tronqué, la plaque oculaire avec une extrémité longue dépassant le niveau du pore de la glande antérieure sur la PD, le rostre plus long que la base gnathosomale, la pointe du rostre s'étendant jusqu'à la partie basale du quatrième segment du palpe, des soies bipectinées aux tibias I-IV: 0-2-1-1.

Keywords: Marine Halacaridae • New species • *Arhodeoporus* • Zanzibar • Tanzania

Introduction

The marine halacarid fauna in Tanzania is poorly known. Eight named and one undetermined species were earlier described from the island and the mainland of Tanzania belonging to genera *Agaue*, *Agauopsis* and *Copidognathus* (Lohmann, 1893; Gimbel, 1919; Konnerth-Ionescu, 1977;

Chatterjee et al., 2006). The taxonomic study on *Arhodeoporus* from Tanzania is entirely lacking. In the present paper, a new species from Zanzibar, Tanzania, *Arhodeoporus tanzanicus*, is described.

Materials and methods

Meiofauna was collected from Pingwe (6°9'S, 39°31'E) along the east coast of Zanzibar, Tanzania among coral rubble of *Fungia* and *Tubipora* at 0.5 m water depth.

Samples were washed with filtered sea water over a 32 µm sieve and stored in 80% ethanol.

Halacarids were sorted under a binocular microscope, cleared in lactic acid and mounted in glycerine jelly. Drawings were prepared using a camera lucida. The positions of setae and gland pores on dorsal plates are given in a decimal system, with reference to the length of a plate, from the anterior to the posterior margin, based on the holotype.

Specimens for scanning electron microscopy were prefixed overnight at 4°C in 2.5% glutaraldehyde, and followed by post fixation in 2% cold osmium tetroxide. After dehydration through a graded series of ethanol (50-100% at 10% interval) for 30 minutes each, the material was dried at the critical point dryer, and coated with gold-palladium in a high evaporator, and then examined with a scanning electron microscope.

Type specimens will be deposited in the museum of Biological Oceanography Division, National Institute of Oceanography, Goa, India.

The following abbreviations are used in the text and figure legends: AD, anterior dorsal plate; AE, anterior epimeral plate; ds₁₋₆, dorsal setae 1-6 on idiosoma; GA, genitoanal plate; GO, genital opening; OC, ocular plate(s); PAS, parambulacral seta(e); PD, posterior dorsal plate; PE, posterior epimeral plate(s); PGS, perigenital setae; P₁₋₄, first to fourth palpal segment; SGS, subgenital setae.

Systematics

Family HALACARIDAE Murray, 1877

Subfamily Halacarinae Viets, 1927

Arhodeoporus tanzanicus sp. nov.

(Figs 1-3)

Material examined

Holotype: ♀, among coral rubble, Pingwe (6°9'S, 39°31'E), the east coast of Unguja, Zanzibar, Tanzania 29 Aug. 2004 leg. M. Raes and H. Gheerardyn. Paratypes: 2 ♀♀ and 1 ♂ collection data same as for holotype. Additional material: 1 ♂, 2 ♀♀, collection data same as holotype. Two females from additional material were used for SEM.

Description

Female: All dorsal plates separate. Idiosoma 400 to 444 µm long. Dorsal plates evenly punctate in areas indicated on figure 1A. AD 149 µm long and 107 µm wide, posteriorly truncated, paired ds₁ at 0.36 level of AD; pair of gland pores situated at 0.18 level of AD anterior to ds₁ (Fig. 1A). Each gland pore with a small tube. OC 217 µm long (including tail), 34 µm wide with a long tail-like posterior portion surpassing the level of insertion of leg IV and

anterior gland pore of PD, tail longer than anterior rectangular portion; anterior rectangular portion with 1 cornea, a gland pore posterior to cornea, slit-like pore canaliculus present near the lateral margin of OC posterior to gland pore; ds₂ located at membranous cuticle between AD and OC; ds₃ on a small platelets in membranous cuticle between AD and PD. PD 279 µm long, 123 µm wide; anteriorly narrow and truncated; ds₄ and ds₅ situated on PD close to lateral margin at about 0.22 and 0.61 level of PD, respectively; 2 pairs of gland pores on PD, anterior pair anterior to ds₅ near the lateral margin at 0.53 level of PD, other one close to posterior margin of PD; ds₆ near anterior margin of anal plate dorsally.

All ventral plates separate (Fig. 3A), evenly punctate. AE with 3 pairs of setae and a pair of epimeral pores (Fig. 1E showing one side of AE). Each PE with 3 ventral setae and 1 dorsal seta. PE posteriorly extending beyond the level of GO (Fig. 1B). GA 182-206 µm long; GO 55-62 µm long (Figs 1B & 3A, B). Ovipositor extending beyond the level of anterior pair of PGS; ovipositor 0.78 of GO length in holotype, almost equal (Fig. 1B) or little longer than GO in the paratypes. Distance between anterior end of GO and that of GA about 1.50-1.62 times of GO length (Figs 1B & 3A). Three PGS present; anterior pair at about 0.31 level of GA, middle pair near the level of anterior margin of GO; third pair near posterior side of GO. Genital sclerites with 2 pairs of SGS (Figs 1B & 3B).

Gnathosoma (Fig. 1C) 182-198 µm long, 61-79 µm wide, about 2.50-3.00 times longer than wide and 0.44-0.45 of idiosomal length. Palp consisting of 4 segments. Rostrum about 1.25-1.30 times longer than gnathosomal base; tip of rostrum extends to basal part of P₄. P₁ and P₃ devoid of any seta; P₂ with 1 dorsal seta distally; P₄ with 3 long proximal setae and 1 minute distal seta. P₂ longer than P₄. Proto- and deuterostral setae situated at tip of rostrum, tritrostral setae (long maxillary setae of rostrum) located just below middle of rostrum, gnathosomal base with a pair of setae (basistrostral setae). Ventrolateral side of gnathosomal base porose.

Leg I longer than following legs. Chaetotaxy of legs I-IV (Fig. 2A-D): trochanters I-IV, 1-1-1-0; basifemora I-IV, 2-2-2-2; telofemora I-IV, 3-3-2-2; patella I-IV, 4-4-3-3; tibiae I-IV, 8-7-5-5; tarsi (PAS excluded) I-IV, 7-4-4-3. Length to width ratio of telofemora I-IV: about 2.80, 2.28, 2.60, 2.76 respectively. Tibia I longer than telofemur I. Arrangement of bipectinate setae on tibiae I-IV (Figs 2A-D & 3C, D, F): 0-2-1-1. Tarsus I equipped with 3 dorsal setae, 1 solenidion, 3 ventral setae, 2 doublets eupathid PAS. Tarsus II with 3 dorsal setae, 1 solenidion, 2 singlet eupathid PAS. Tarsus III with 4 dorsal setae (distance between 2 basal setae slightly less than with height of tarsus) and 2 PAS (1 spur-like and 1 seta-like). Tarsus IV with 3 dorsal setae and 2 spur-like PAS. All legs with 2

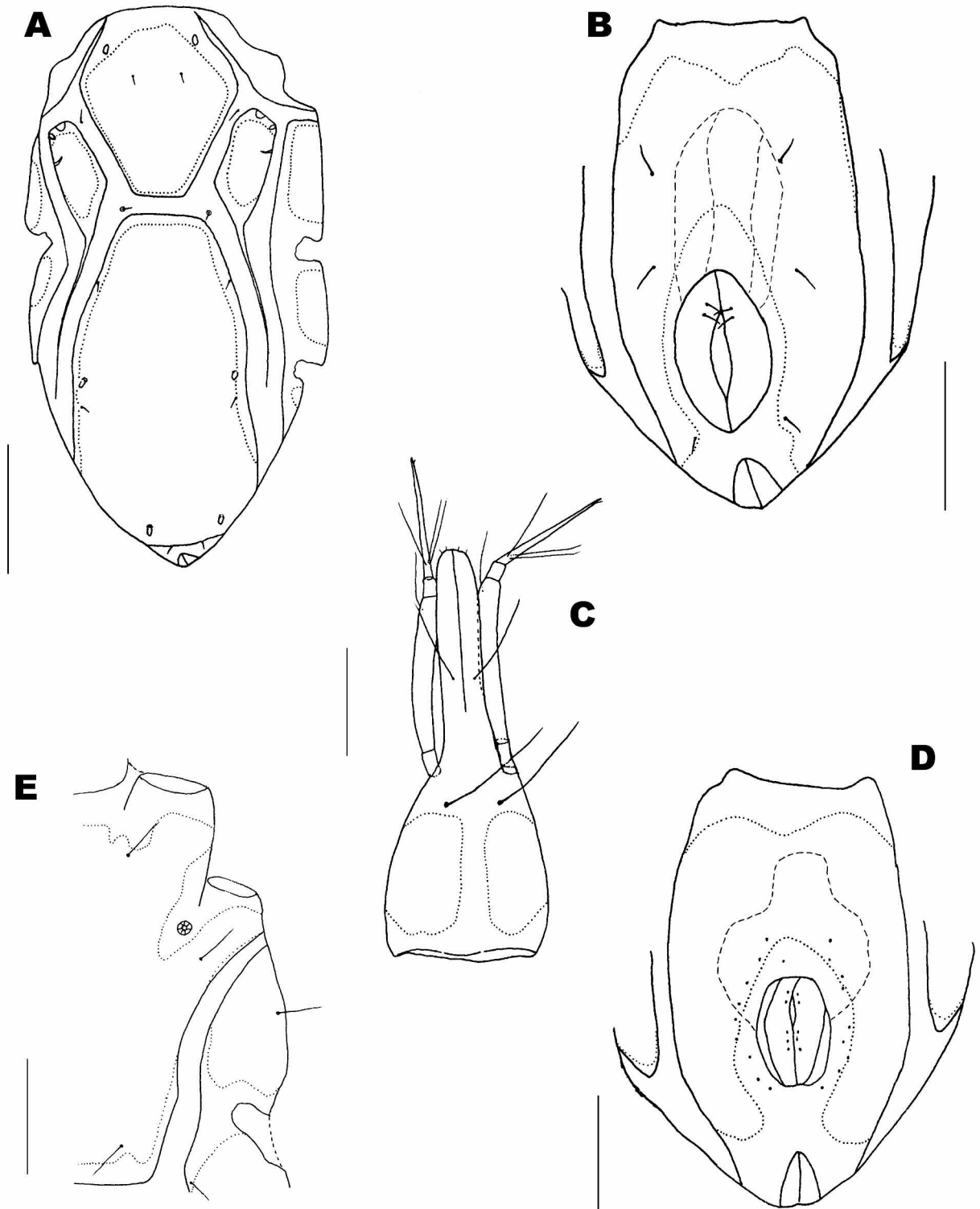


Figure 1. *Arhodeoporus tanzanicus* sp. nov. A-C, E: female; D: male. **A.** Idiosoma, dorsal. **B.** GA of female (drawn from paratype female). **C.** Gnathosoma. **D.** GA of male. **E.** Part of AE and PE. Scale bars: A = 100 μ m, B-E = 50 μ m.

Figure 1. *Arhodeoporus tanzanicus* sp. nov. A-C, E : femelle ; D : mâle. **A.** Idiosome, vue dorsale. **B.** GA de la femelle (paratype femelle). **C.** Gnathosome. **D.** GA du mâle. **E.** Partie du AE et PE. Echelles : A = 100 μ m, B-E = 50 μ m.

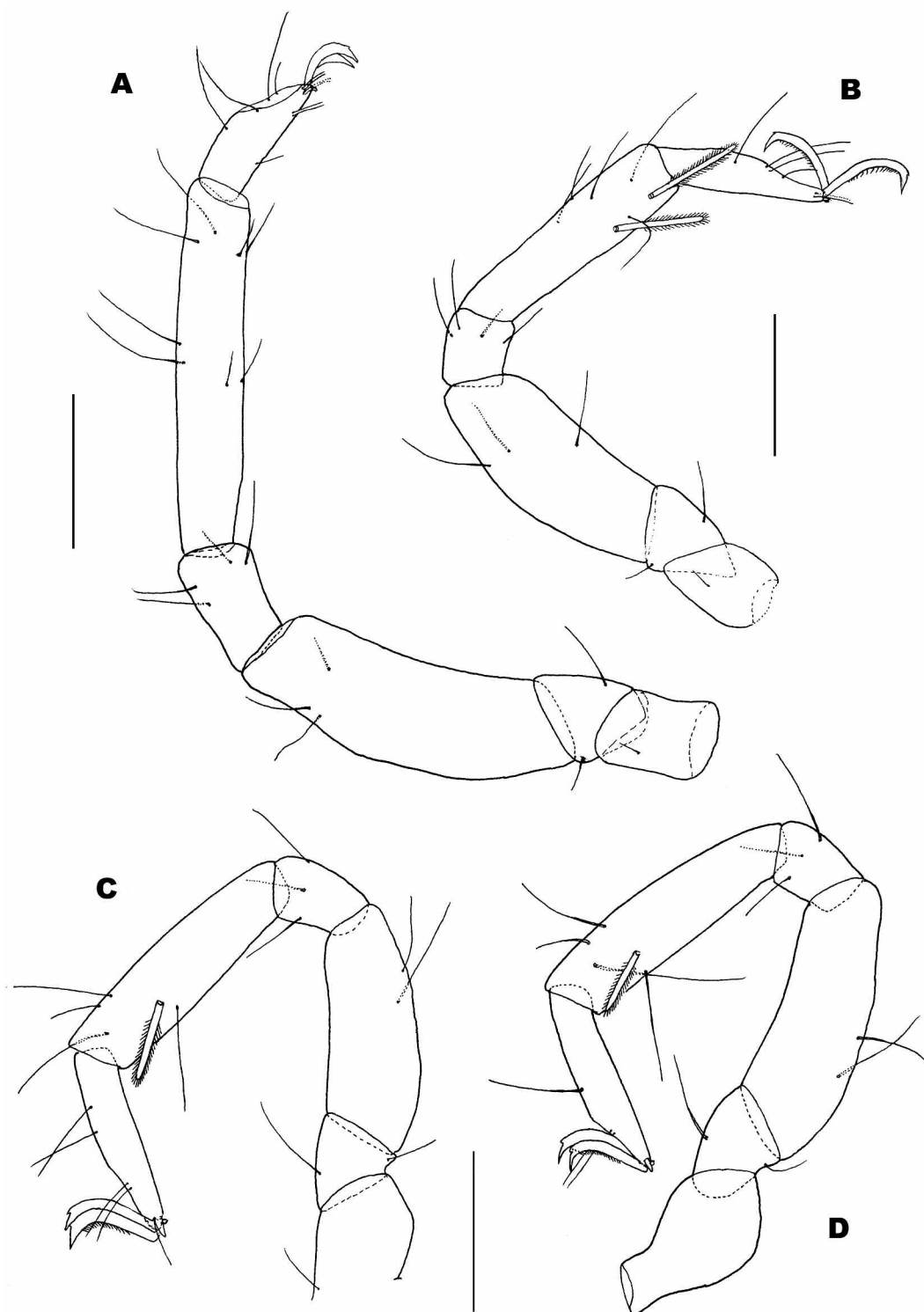


Figure 2. *Arhodeoporus tanzanicus* sp. nov., female. **A-D.** Legs I-IV. Scale bars: 50 μ m.

Figure 2. *Arhodeoporus tanzanicus* sp. nov., femelle. **A-D.** Pattes I-IV. Echelle : 50 μ m.

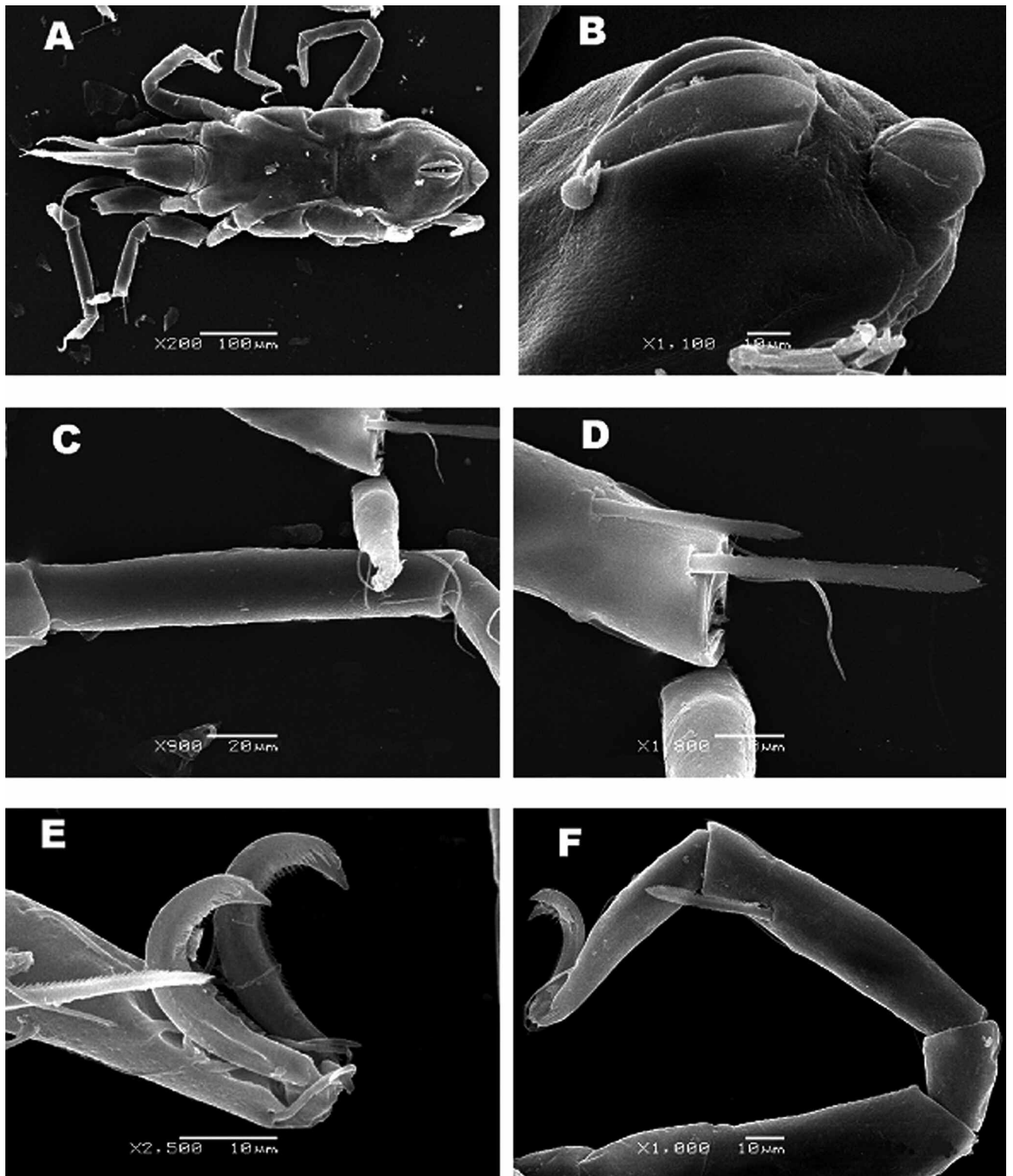


Figure 3. *Arhodeoporus tanzanicus* sp. nov., female. SEM. **A.** Idiosoma, ventral. **B.** GO and anus. **C.** Tibia I. **D.** Part of tibia II showing pectinate setae. **E.** Tarsus tip and claws of leg II. **F.** Leg III. Scale bars: A = 100 µm, B, D-F = 10 µm, C = 20 µm.

Figure 3. *Arhodeoporus tanzanicus* sp. nov., femelle. MEB. **A.** Idiosome ventral. **B.** GO et anus. **C.** Tibia I. **D.** Partie du tibia II montrant les soies pectinées. **E.** Pointe du tarse et griffes de la patte II. **F.** Patte III. Echelles : A = 100 µm, B & D-F = 10 µm, C = 20 µm.

lateral claws and a small bidentate median claw. Lateral claws with minute accessory dorsal process and very fine ventral pecten (Fig. 3E & F).

Male: Idiosoma 416-430 μm long. Structure and armature of body parts resembles the female except GA region (Fig. 1D). GA 194-223 μm long, GO 52-57 μm long; interval between anterior end of GO and that of GA about 1.71-1.82 times of GO length, distance from posterior margin of GO to that of GA sub equal to the length of GO, spermatopositor large, extending 55-61 μm anteriorly from anterior margin of GO, 8-10 pairs PGS; 5 pairs SGS on genital sclerites.

Etymology

The new species is named after its sampling country, Tanzania.

Remarks

Arhodeoporus tanzanicus sp. nov. belongs to the *A. longirostris* group (Bartsch, 1993; Otto, 2000). The *longirostris* group is characterized by the combination of the following features: dorsal plates evenly punctate, OC with tail-like extension, PD narrows anteriorly and devoid of costae, rostrum long, telofemora I-IV with 3-3-2-2 setae. So far, 7 species of this group were reported: *A. caudatus* Otto, 2000, *A. clypeatus* Otto, 2000, *A. lizerdensis* Otto, 2000 from northeastern Australia (Otto, 2000), *A. corallicolus* Otto, 2000 from northeastern and northwestern Australia (Otto, 2000; Bartsch, 2003), *A. longirostris* Bartsch, 1981 from the Mozambique channel (Bartsch, 1981 & 1982), *A. mactanus* Bartsch, 1991 from the Philippines (Bartsch, 1991) and *A. psammophilus* Bartsch, 1993 from western Australia (Bartsch, 1993 & 2007).

Arhodeoporus tanzanicus sp. nov. can be distinguished from *A. caudatus* and *A. longirostris* by the presence of 2 pectinate setae on tibia II (1 pectinate seta on that segment in two latter species). The new species differs from *A. clypeatus*, *A. corallicolus* and *A. psammophilus* in the shape of the ventral setae on tibia I (all setae smooth in *A. tanzanicus* sp. nov. vs 1 pectinate seta in other 3 species). Furthermore, *A. tanzanicus* sp. nov. can be distinguished from *A. corallicolus*, *A. lizerdensis*, *A. mactanus*, and *A. psammophilus* by the PE extending to the level of GO (Fig. 1B & D). Further differences are found in the presence of an ovate or rounded anterior margin of PD in *A. corallicolus*, *A. clypeatus* and *A. mactanus*, a fused AE and GA in *A. clypeatus*, the ds_5 are located laterally of the gland pore in *A. psammophilus* (posterior to the gland pore in *A. tanzanicus*).

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