

# A new family, genus and species of apseudomorphan Tanaidacea (Crustacea: Peracarida) from the Caribbean Sea

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*A new family, of apseudomorphan Tanaidacea, Sphaeromapseudidae, is discovered and described from the Caribbean Sea. Sphaeromapseudidae is tentatively placed between the Metapseudidae and Tanzanapseudidae. A new genus Sphaeromapseudes and species, S. plumosetosa, associated with intertidal coral rubble, are described.*

**Keywords:** Crustacea, Tanaidacea, Apseudomorpha, Sphaeromapseudidae, *Sphaeromapseudes*, *S. plumosetosa*, Caribbean Sea

Submitted 30 September 2010; accepted 19 January 2011; first published online 14 March 2011

## INTRODUCTION

During a search for Portuguese tanaidaceans in the collection of the Zoological Museum of the University of Copenhagen, the author came across samples of peculiar apseudomorphan Tanaidacea from the Caribbean Sea and Indonesia. Subsequent study revealed a highly unusual combination of family-level characters accompanying a peculiar body shape. The many conflicting higher-level characters that plague tanaidacean systematics (Sieg, 1984; Larsen & Wilson, 2002; Bird & Larsen, 2009), including that of the Apseudomorpha (Guțu, 2006; Araújo-Silva & Larsen, 2010), suggest that the current state of the systematics of Apseudomorpha is unstable and unresolved. The unique morphology of the new taxon nevertheless suggests that a new family, closely related to the Metapseudidae, Whiteleggiidae, Tanzanapseudidae complex, should be erected.

The new genus differs noticeably from the usual tanaidacean body form by being dorso-ventrally flattened in the lateral view while rounded in the dorsal view. This body shape suggests an association with *Cycloapapseudes* Menzies, 1953 but this genus does not have the bifurcate cheliped dactylus, nor does it have dimorphic pleopods or the strange 'double rostrum'. *Cycloapapseudes* is also reported to bear exopods on the cheliped and pereopod 1 (Gardiner, 1973) which the new genus does not. The genus *Isopodidus* (Larsen & Heard, 2002) also displays a flat, rounded, body shape but clearly belongs to Tanaidomorpha rather than to the Apseudomorpha.

## MATERIALS AND METHODS

The material was collected by J. Just on 21 February 1978 at Station 18, Bellairs Research Institute, Barbados, at a depth

of 0.5 m. The type material is deposited in the Zoological Museum, University of Copenhagen (ZMUC). Three specimens (CRU 20401, 20402 and 20404) of a closely related species were also found in the collection of ZMUC. The terminology herein follows Larsen (2003).

## SYSTEMATICS

Order TANAIIDACEA Dana, 1849  
Suborder APSEUDOMORPHA Sieg, 1980  
Family SPHAEROMAPSEUDIDAE fam. nov

## DIAGNOSIS

Body compact, rounded in dorsal view, more or less dorso-ventrally flattened. Carapace, as long as pereonites 1–3 combined, spines absent but many large dorsal tubercles and anterolateral plumose setae present. Eyes well developed but not separated from carapace by a groove. Rostrum consists of two discrete gently curved structures the smaller on top of the large. Somites are wider than long, with multiple semiplumose setae (Araújo-Silva & Larsen, 2010) and large dorsal tubercles. Pereonites are without acute lateral apophyses. Pleon narrower than pereon, longer than 25% total body length; with five free pleonites, epimera rounded. Pleotelson has large dorsal projections, longer than pleon. Antennule is biramous. Antenna has small squama. Mandibles have tri-articulate palp. Maxillule has bi-articulate palp. Cheliped and pereopod 1 are without exopod. With four pairs of oostegites. Pereopod 1 not greatly enlarged coxa without spiniform apophysis, dactylus without aesthetascs. Pleopods attached ventrally, of dissimilar structure, pairs 1–4 of normal biramous appearance while pleopod 5 basal article is fused with endo- and exopod and bears distal spines. Uropod is biramous.

Genus *Sphaeromapseudes* gen. nov.

## DIAGNOSIS

Antennule has a row of spines on both margins of the first article; inner flagellum of four articles; outer flagellum of

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two articles. Antenna peduncle article 3 much shorter than 4 and 5. Cheliped basis is without ventral spiniform seta; dactylus with bifurcate unguis. Pereopod 1 carpus is less than half as long as merus. Pereopod 4 thinner than other pereopods and with reduced dactylus. Uropod is longer than pleon; endopod with multiple articles, exopod with two articles.

*Sphaeromapseudes plumosetosa* sp. nov.  
(Figures 1–3)

#### TYPE MATERIAL

Holotype: ovigerous female (CRU-20455) 1.4 mm. Collected by J. Just on 21 February 1978 at Station 18, Bellairs Research Institute, Barbados, at a depth of 0.5 m.

Paratypes: one ovigerous female (CRU-20456), 1.5 mm, same locality as holotype (dissected). There are one female and three manca (CRU-20457). Same locality.

#### DIAGNOSIS

Currently the same as generic diagnosis.

#### ETYMOLOGY

The species is named after the setose body and appendages.

#### DESCRIPTION

Body is from holotype (ovigerous female) and appendages are from dissected paratype (ovigerous female).

*Body* (Figures 1A & 2A): compact and dorso-ventrally flattened, 2.1 times as long as wide, densely (more densely than illustrated) covered with circumplumose setae.

*Cephalothorax*: as long as pereonites 1–3 combined (including rostrum). Eyes well developed but not separated from carapace by a groove, with few (5–7) ocelli, ocular lobes with minuscule blunt anterior apophysis. Rostrum (Figure 1E) consists of two discrete and gently-curved structures the smaller on top of the larger, slightly bent ventrally. Carapace spines absent but many large dorsal tubercles and anteriolateral plumose setae present (not all illustrated for clarity).

*Pereonites*: all with dorsal tubercles and dorsal and lateral setation consisting of plumose setae, setation more prominent on posterior pereonites. All pereonites wider than long and bearing plumose setae present (more than illustrated). Pereonites 1 and 2 are wider than the rest and with more prominent lateral shoulders than other pereonites.

*Pleon*: about 30% of total body length. Pleonites all wider than long. Pleonites 1 to 3, without pointed epimera but bearing large dorsal tubercles and dorsal and lateral setae. Pleonites 4 and 5 have very pronounced paired dorsal projections bearing plumose setae and spines. All pleonites have

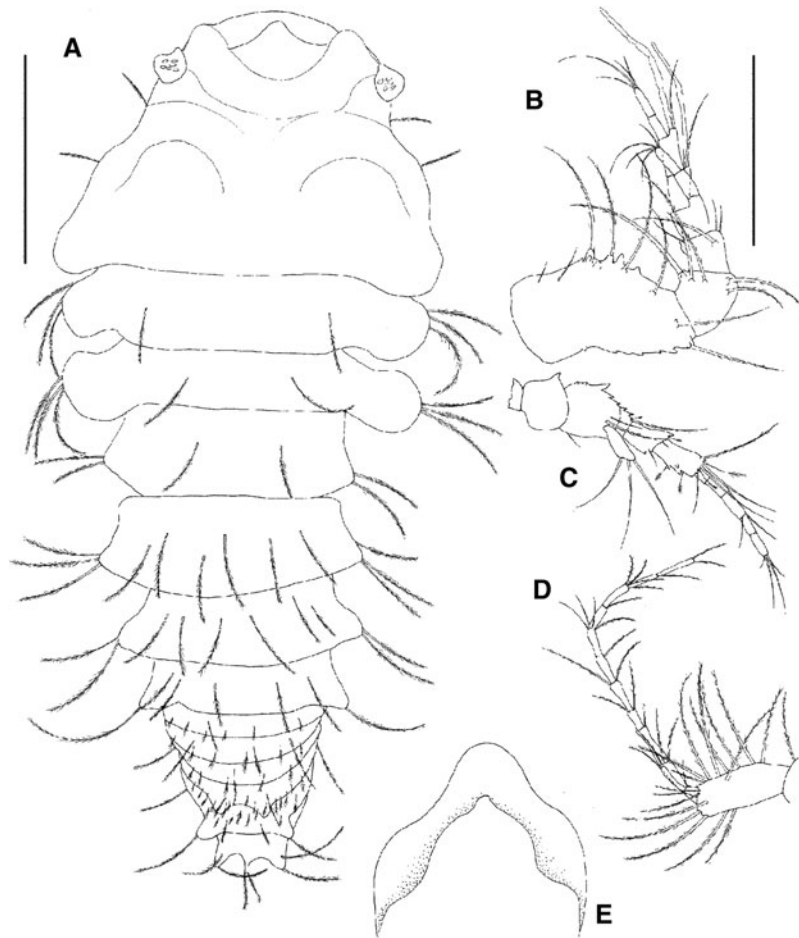


Fig. 1. *Sphaeromapseudes plumosetosa* sp. nov. ovigerous female (CRU-20455 and CRU-20456). (A) Holotype, dorsal view, scale bar = 0.5 mm; (B) antennule; (C) antenna; (D) uropod; (E) rostrum, anterior view. Scale bars: B–E = 0.25 mm.

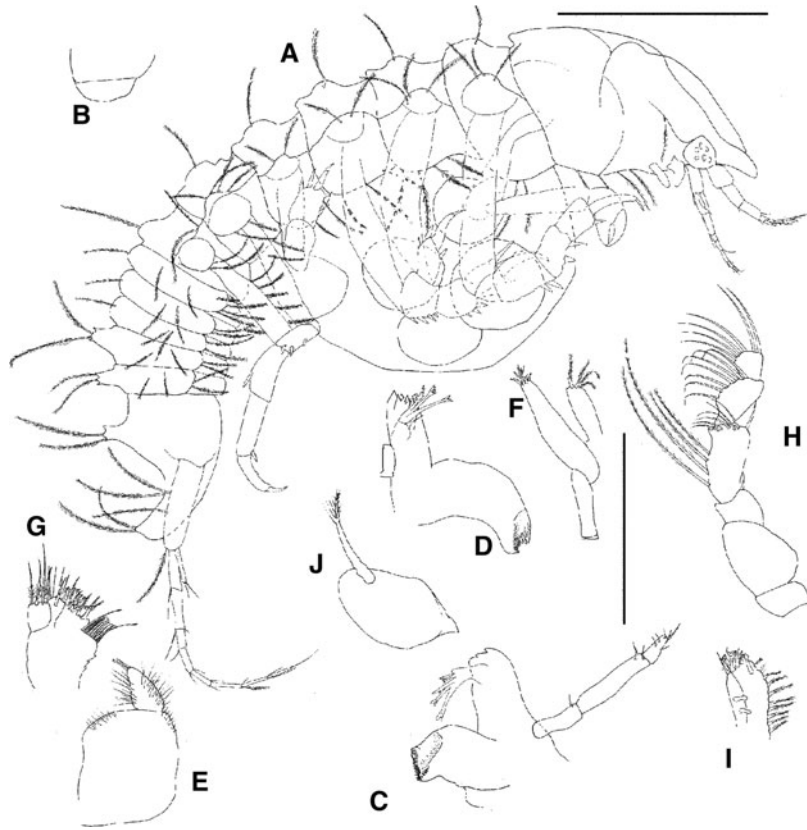


Fig. 2. *Sphaeromapseudes plumosetosa* sp. nov. ovigerous female (CRU-20455 and CRU-20456). (A) Lateral view, scale bar = 0.5 mm; (B) labrum; (C) right mandible; (D) left mandible; (E) labium; (F) maxillule; (G) maxilla; (H) maxilliped; (I) maxilliped endite; (J) epignath. Scale bars: B–J = 0.25 mm.

plumose setae (more than illustrated) and pleopods but without ventral keel.

*Pleotelson* (Figure 3K): divided by a transverse medial ridge. It is as long as all pleonites combined (not visible in dorsal view owing to body curvature). Bearing pronounced paired proximal and subdistal projections with, spines and large plumose setae, as well as distally tapering apex and many plumose setae (more than illustrated).

*Antennule* (Figure 1B): half as long as carapace. Peduncle article 1 less than half as long as rest of antennule, with several blunt tubercles and spines along both margins. It has few smaller simple setae and several large semiplumose setae arising from tubercles. Article 2 is less than twice as long as article 3, with several large semiplumose distal setae arising from tubercles. Article 3 has three simple distal setae and one large semiplumose seta arising from tubercles. Article 4 (common article) is apparently naked. Inner flagellum is shorter than first peduncle article, of four articles; the two proximal articles with outer distal prolongation each bearing one simple seta and one large aesthetasc; flagellum article 3 naked; article 4 with four distal simple setae. Outer flagellum is less than half of inner flagellum and of two articles; proximal article naked; distal article with four distal simple setae.

*Antenna* (Figure 1C): with about ten articles. It is more than half as long as antennule. Article 1 has dorsal spine but without setae. Article 2 has few simple and setulose setae and multiple dorsal spines. Squama attached distally on article 2 reaching almost to the end of article 4, with three distal simple setae. Article 3 is much shorter than articles 4 and 5, with one small setulated, and one large semiplumose

setae and dorsal spines. Article 4 is rectangular with two simple and one setulose setae and distal spines. Article 5 is rectangular with multiple semiplumose and setulose setae and distal- and subdistal spines. Articles 6–10 (flagellum) serially repeating article, articles 8 and 10 with simple setae.

*Mouthparts*: labrum (Figure 2B) articulated from clypeus, slightly curved and apparently naked. Mandibles (Figure 2C, D) molar process broad and with denticulate apex. Palp with three articles; article 1 longer than article 3 with single short seta; article 2 longest, with two short simple setae; article 3 with mediobasal tuft of short simple setae. Right mandible (Figure 2C) has setal row of four multifurcate and one spiniform setae; incisor with three prominent but blunt denticles. Left mandible (Figure 2D) has incisor with six denticles; lacinia mobilis with four denticles; setal row consisting of four complex and one spiniform setae arising from common peduncle. Labium (Figure 2E) palp has numerous setules and two bifurcate terminal setae. Lobes have numerous setules. Maxillule (Figure 2F) palp has two articles, distal article broken. Outer endite has seven spiniform distal setae; inner endite has four setulose distal setae. Maxilla (Figure 2G) outer lobe of movable endite with four pinnate setae, but no spines on outer margin. Inner lobe has movable endite with row of five robust setae. Outer lobe has fixed endite with two simple robust four pinnate- and five multifurcate spiniform setae. Inner lobe has fixed endite with row of numerous distally curved setae and two longer, distally serrated, setae separated by large gaps; inner margin with spines. Maxilliped (Figure 2H) coxa and basis naked. Palp article 1 has no setae on inner margin but outer

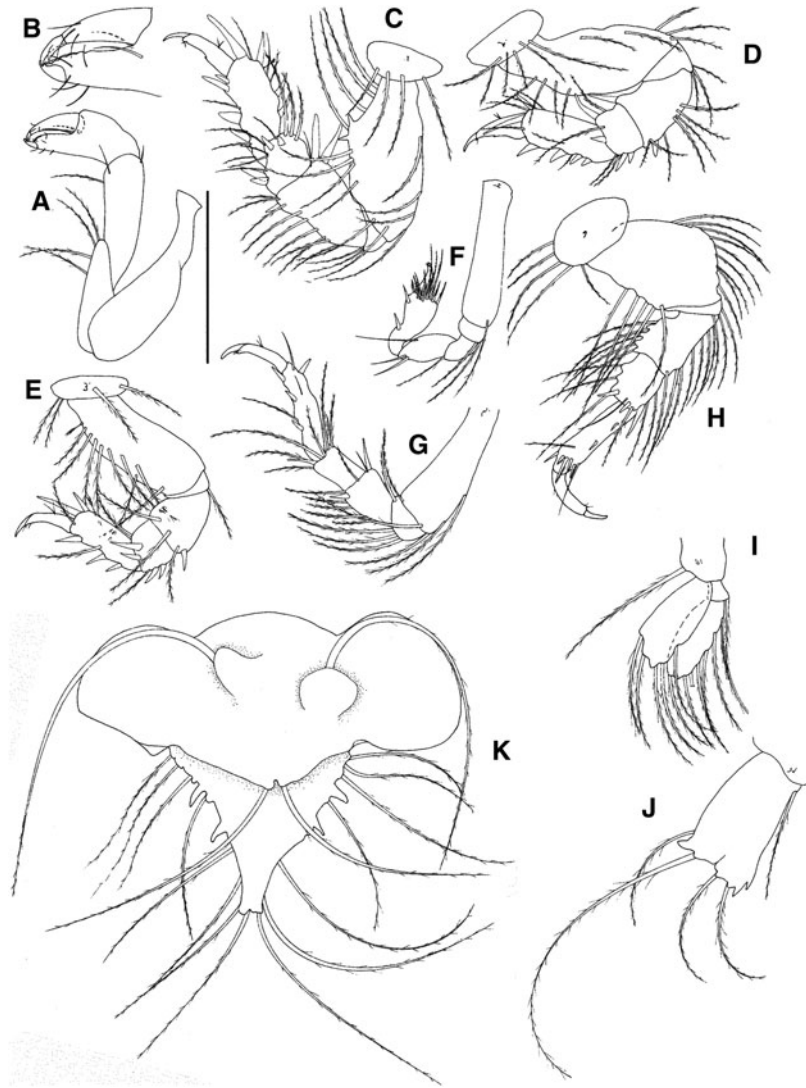


Fig. 3. *Sphaeromapseudes plumosetosa* sp. nov. ovigerous female (CRU-20455 and CRU-20456). (A) Cheliped; (B) same, chela; (C) pereopod 1; (D) pereopod 2; (E) pereopod 3; (F) pereopod 4; (G) pereopod 5; (H) pereopod 6; (I) pleopod 1; (J) pleopod 5; (K) pleotelson. Scale bars: A–K = 0.25 mm.

spiniform seta; article 2 with row of long semiplumose setae on inner margin and strong spiniform setae distally on outer margin and row of six distal simple setae; article 3 with rows of seven simple setae on inner margin; article 4 with six simple distal setae. Endite (Figure 2I) with one robust but apparently non-complex seta and eight complex setae on distal margin; with one subdistal complex—but not leaf-shaped—seta inner margin with two coupling hooks and row of eight circumplumose setae; outer margin with fine setules. Epignath (Figure 2J) body is naked, terminal spine with distal circumplumose setules.

**Cheliped** (Figure 3A): without exopod. Basis is longer than carpus and apparently naked. Merus is longer than half of carpus, with four ventral semiplumose setae. Carpus has one ventral semiplumose, one ventrodiscal simple and one dorso-distal simple setae. Propodus (Figure 3B) with two setae at dactylus insertion. Fixed finger has three setae along ventral margin and two on cutting margin; cutting margin also with row of small denticles getting progressively smaller in a proximal direction. Dactylus is as long as fixed finger, with three subdistal setae and conspicuous bifurcate unguis.

**Pereopod 1** (Figure 3C): without exopod. Coxa is without apophysis, with several semiplumose setae. Basis is about as long as merus and carpus combined, with several ventral and dorsal semiplumose setae and two dorsomedial spines. Ischium has two semiplumose setae. Merus is more than twice as long as carpus, with multiple semiplumose setae on ventral margin and one ventrodiscal spiniform seta; with additional two heavy dorsodiscal spiniform setae. Carpus is less than half as long as propodus, with two subdistal and two distal ventral spiniform setae and scattered semiplumose setae. Propodus is longer than dactylus/unguis, with five ventral and four dorsal spiniform setae and scattered semiplumose setae and dorsal small setulated seta. Dactylus is longer than carpus, with single medial serration, distal setulose projection at unguis insertion and two dorsomedial setae. Unguis is one-third lengths of dactylus.

**Pereopod 2** (Figure 3D): as pereopod 1 except: basis without spines. Merus has one spiniform distal seta on each margin. Propodus has four ventral and two dorsal spiniform setae.

**Pereopod 3** (Figure 3E): as pereopod 1 except: merus with only one ventrodiscal spiniform seta. Propodus has three

ventral and two dorsal spiniform setae. Dactylus is more slender than in pereopod 1 and without ventral serration.

*Pereopod 4* (Figure 3F): smaller than other pereopods. Basis is thinner than in other pereopods and with only one ventrodistal semiplumose seta. Ischium has two semiplumose distal setae. Merus is shorter than carpus, without spiniform setae and with only one ventrodistal semiplumose seta. Carpus is shorter than propodus, without spiniform setae and with scattered simple distal setae. Propodus is uneven, with two ventral spiniform setae, and two parallel rows of distal comb setae. Dactylus is slightly reduced with very small unguis and no serrations.

*Pereopod 5* (Figure 3G): basis has few distal semiplumose setae. Ischium has three ventral and one dorsal semiplumose seta. Merus is longer and wider than carpus, with one spiniform distal seta on each margin and row of semiplumose ventral setae. Carpus has one spiniform ventrodistal seta and distal row of semiplumose setae. Propodus is very long (as long as carpus and merus combined) with three ventral and one dorsal spiniform setae, and scattered semiplumose and simple setae. Dactylus and unguis are as in pereopod 3.

*Pereopod 6* (Figure 3H): coxa, basis, merus and carpus densely covered with semiplumose setae on both margins. Ischium only has plumose setae on ventral margin. Carpus and especially merus with pronounced dorsal projection. Carpus has three ventral spiniform setae. Propodus is without plumose setae, with two ventral small spiniform setae as well as subdistal row of simple and serrated spiniform setae. Dactylus is not serrated, with two dorsal simple setae and distal setose projection at unguis insertion.

*Pleopods 1–4* (Figure 3I): peduncle uniaarticulated, with one plumose seta (less densely plumose than those on endopod–exopod) arising from projections on inner margin. Exopod is biauriculate, with about nine plumose setae. Endopod is as long as exopod, with five distal plumose setae.

*Pleopod 5* (Figure 3J): of radically different structure than pleopods 1–4. Endopod and exopod fused with peduncle, with one proximal and four distal semiplumose setae. Distal margin has conspicuous spines.

*Uropod* (Figure 1D): longer than pleon. Basal article is less than three times as long as wide, several semiplumose setae. Endopod has 11 articles, all with one or more distal semiplumose setae. Exopod has two articles, proximal article is smaller and wider than distal article, both with semiplumose distal setae.

#### REMARKS

The most striking feature of the new genus *Sphaeromapseudes* is the reduced morphology of the posterior pleopod. The sphaerotid-like body shape with the many body projections/tubercles and setulated setae, also makes this genus conspicuous. The morphology of the pleotelson (in lateral view), suggests an affinity with the Metapseudidae which also display the same projections of the pereopod dactylus as the new species. However, the rest of the pereopod morphology does not correspond to the metapseudid form. The distinctively reduced pereopod 4 and the ventral pleopod attachment are paralleled within the Whiteleggidae while most other characters are not.

Three specimens (CRU 20401, 20402 and 20404) of a closely related species were also found in the collection of ZMUC. These specimens almost certainly do not represent the same

species owing to the distance between sampling locality, being from Banda, Kai Islands, Indonesia. Unfortunately all three Indonesian specimens are in a very poor condition which does not allow reliable identification or description.

#### ACKNOWLEDGEMENTS

I would like to thank Curator Dr J. Olesen and Collection Manager Tom Schoette, Zoological Museum of Copenhagen, for making the material available for study. Thanks are extended to the referees for greatly improving this manuscript.

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