

# A new genus and species of Apseudomorpha (Crustacea: Tanaidacea) from the Mar del Plata submarine Canyon, South West Atlantic, and replacement of the preoccupied name *Hoplomachus* Guțu 2002

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**Abstract** A new apseudomorph tanaidacean, *Deidamiapseudes poseidon* n. gen., n. sp., is fully described and illustrated based on many specimens collected in the Mar del Plata Submarine Canyon, South West Atlantic, at 1144 m depth. The new genus *Deidamiapseudes* is closely related to the genus *Hoplomachus* Guțu, 2002, from which it can be distinguished by the lack of ommatidia, and by having antennule accessory flagellum of three articles, antenna with small scale, and pleopods with a few setae. In addition, *Deidamiapseudes poseidon* n. gen., n. sp. was found in deep-sea waters, whereas *Hoplomachus* is a shallow water genus. The uncertain family position of these two genera is discussed. The name *Hoplomachus* Guțu, 2002, preoccupied by *Hoplomachus* Fieber, 1858, is replaced with the name *Hoplopolemius*.

**Keywords** Tanaidacea · *Deidamiapseudes poseidon* n. gen., n. sp. · *Hoplomachus* · *Hoplopolemius nomen novum* · South-West Atlantic

## Introduction

Examination of the material collected during the Talud Continental 2012 and the Talud Continental 2013 surveys

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carried out by the RV Puerto Deseado to the Mar del Plata Submarine Canyon yielded many specimens of an undescribed genus and species, which is herein fully described and illustrated.

The Mar del Plata Canyon is located off the coast of Argentina at around 38° S. Its head is situated on the upper continental slope at a water depth of ~1,000 m and extends for ~110 km downslope to a water depth of ~3,900 m (Voigt et al. 2013). Although still largely unexplored, this canyon is currently under study, and many new species and new records are expected to be reported in the next few years (see Cerino and Lauretta 2013; Martinez et al. 2014; Ocampo et al. 2014).

Seven species of the suborder Apseudomorpha have been so far reported from the Argentine continental shelf, viz., *Acutihumerus patagoniensis* (Băcescu and Absalao, 1985), *Apseudes spectabilis* Studer, 1884, *Monokalliapseudes schubarti* (Mañé-Garzón, 1949), *Paradoxapseudes heroae* (Sieg, 1986), *Saltipedis paulensis* (Brum, 1971), *Synapseudes idios* Gardiner, 1973, and *Synapseudes aflagellatus* Sieg, 1986 (see Pfeffer 1888; Shiino 1970; Gardiner 1973; Sieg 1986; Guțu 1996; Schmidt 1999; Elias et al. 2001; Giachetti and Roccatagliata 2014). The present paper deals with the first deep-sea apseudomorph tanaidacean collected off the coast of Argentina.

## Materials and methods

The specimens were collected by the RV Puerto Deseado at a single station on the upper part of the Mar del Plata Submarine Canyon. This station was sampled twice — once in August 2012 and again in May 2013 (see “Material examined”). Both samples were collected at 1,140 m depth with an epibenthic sledge similar to the one designed by Hessler and Sanders (1967) i.e., a frame with a runner at each side to keep

the sledge from sinking too far into the sediment, and a heavy wire screen to protect the net. It has a mouth of 14 cm by 58 cm, a length of 110 cm, and 1 mm mesh size.

Specimens were stained with Chlorazol Black E®, and the dissected appendages were temporarily mounted in glycerine for microscopic examination. Drawings were prepared using a Carl Zeiss Axioskop compound microscope equipped with a camera lucida. Line drawings were captured in digital format and inked with a Wacom tablet after Coleman (2003). Description of the female habitus is based on the holotype (not dissected). Description of dissected appendages are based on four paratypes (two brooding females, one male I, one male II). Cephalothorax length was taken from the base of the rostrum to the posterior margin of cephalothorax (Fig. 1a). Body width was measured at the widest part of the cephalothorax in dorsal view. Body length was estimated from the base of the rostrum to the tip of the pleotelson in lateral view following the curvature of the body in order to minimize error due to the flexed posture of the specimen. Cheliped: length and width of carpus and propodus were taken as shown in Fig. 1b. Pereopods 1–6: article lengths were measured along their longest margins. If there was a difference in the number of setae between right and left appendages (or in the number of articles between right and left antennular flagella), this variation was indicated between parentheses. Morphological terminology follows Larsen (2003) except for the setae classification. The following types of setae were distinguished (see also Alberico and Roccatagliata 2008; Garm and Watling 2013): simple seta completely lacks outgrowths on the shaft; serrulate seta has one or more rows of short and extremely thin setules on distal half; serrate seta has one or two rows of denticles on distal half; setuloserrate seta has setules on the proximal half and denticles on the distal half; circumplumose (= pappose) seta has long setules scattered randomly along the entire length of the shaft; spiniform (= cuspidate) seta is short and robust; and penicillate (= broom) seta is tiny, and has a pedestal and extremely thin setules distally.

The specimens for SEM photographs were cleaned with 0.5 % non-ionic detergent Triton X100, ultrasounded, dehydrated through a graded ethanol series, critical point dried, mounted on stubs and observed in a Philips XL30 TMP microscope.

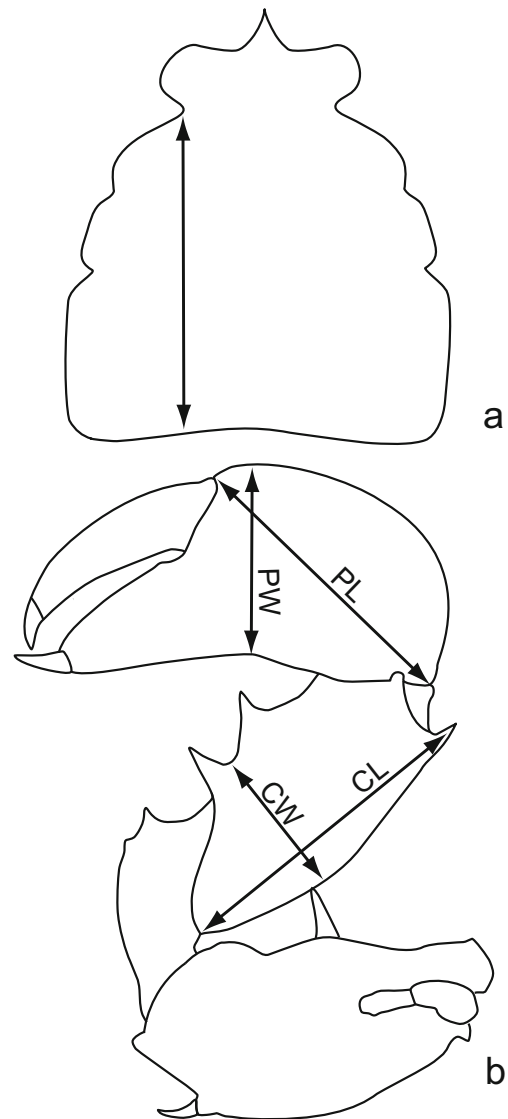
The specimens were sorted out according to the following criteria:

Manca: last pair of pereopods absent or partially developed.

Juvenile: all pereopods fully developed, oostegites and penial cone absent.

Preparatory female: with small non-overlapping oostegites.

Brooding female: with fully developed marsupium.



**Fig. 1** *Deidamiapseudes poseidon* n. gen., n. sp. Measurements of: **a** cephalothorax; **b** cheliped. *CL*, carpus length; *CW*, carpus width; *PL*, propodus length; *PW*, propodus width

Male I: penial cone present. Cheliped as in female, or in between female and male II.

Male II: penial cone present. Cheliped robust.

Types and other studied materials are deposited in the invertebrate collection of the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia” (MACN).

## Systematics

Order Tanaidacea Dana, 1849

Suborder Apsedomorpha Sieg, 1980

Superfamily Apsedoidea Leach, 1814

Genus *Deidamiapseudes* n. gen.

## Diagnosis

Rostrum long, acute, and pointing down, with paired lobes at base. Eyelobes without ommatidia, pointed anteriorly. Pereonites shorter than wide. All pereonites and pleonites with lateral apophyses and hyposphenia (except for pereonites 1–4 of brooding females, which lack hyposphenia). Pleotelson with a subacute projection on each side and a dorsal cusp-like process distally. Antennule peduncle of four articles (including common article), article 1 armed with large spines on inner margin and distally; accessory flagellum of three articles. Antenna with small squama. Mandible palp three-articled. Maxillule palp two-articled. Maxilliped: endite with normal (not leaf-shaped) caudodistal inner seta, palp article 2 with one stout spiniform seta on outer disal angle; palp article 3 as wide as long. Cheliped and pereopod 1 with exopods. Cheliped stout (not elongated), carpus with three large spines (two ventral, one dorsodistal). Pereopod 1 stronger than the following ones, coxa with a large apophysis, basis lacking spines and circumplumose setae on dorsal margin. Pereopods 2–6 elongated, carpi slightly longer than propodi and much longer than meri, lacking circumplumose setae. Pereopods 4–6, propodi bearing rows of serrate setae distally. Both sexes with five pairs of pleopods, which are slender, biramous, and have a few setae. Oostegites lacking on cheliped, present on pereopods 1–4. Male II cheliped stronger than that of female, with a large apophysis on the cutting margin of fixed finger.

Gender: masculine

Etymology: The name of this new genus honors Dr. Deidamia Giambiagi for being the first Argentine researcher to work on tanaidaceans.

Type species: *Deidamiapseudes poseidon* n. sp.

*Deidamiapseudes poseidon* n. gen, n. sp.

(Figs. 2, 3, 4, 5, 6, 7, and 8)

## Material examined

RV Puerto Deseado, Talud Continental 2012 survey, Sta. 12, Submarine Canyon Mar del Plata, 37°57.907'S 54°31.921'W, 1,144 m, 11 August 2012, Ignacio Chiesa col.: brooding female (HOLOTYPE MACN-In 39805), 158 mancae, 54 juveniles, 18 preparatory females, 13 brooding females, 92 male I, 21 male II (PARATYPES MACN-In 39806). RV Puerto Deseado, Talud Continental 2013 survey, Sta. 39, Submarine Canyon Mar del Plata, 37°58.054'S 54°31.715'W, 1,144 m, 25 May 2013, Ignacio Chiesa col.: 19 mancae, 10 juveniles, 8 preparatory females, 7 brooding females, 17 male I, 6 male II (MACN-In 39807).

Etymology: The species is named after the Greek God of the sea Poseidon, as the three strong distal spines on the first article of the antennule peduncle are reminiscent of Poseidon's trident.

## Description of the brooding female (body from holotype MACN-In 39805, appendages from dissected paratypes MACN-In 39806a, MACN-In 39806b)

Body length: 5.8 mm.

Body dorsoventrally flattened, 4.5 times as long as wide, narrower posteriorly, cuticle strongly calcified (Figs. 2a, b and 7b). Cephalothorax subrectangular, anterior margin produced into an acute rostrum lobed at base, point downcurved and not visible dorsally (Figs. 2a and 7a, d). Lateral margins interrupted by two notches, anterior notch shallower than posterior one. Eyelobes pointed anteriorly and not fused with carapace, without eyes. Epistomal spine shorter than rostrum. Pereonites 1 and 6 the shortest, 0.35 as long as cephalothorax. Pereonites 3, 4, and 5 the longest. Pereonites 1 to 6 respectively 3.3, 2.6, 1.6, 1.6, 1.8 and 2.2 times wider than long, with anterolateral spine-like apophyses and rounded posterolaterally at attachment of coxa. Pereonites 5 and 6 with mid-ventral spiniform processes (hyposphenia).

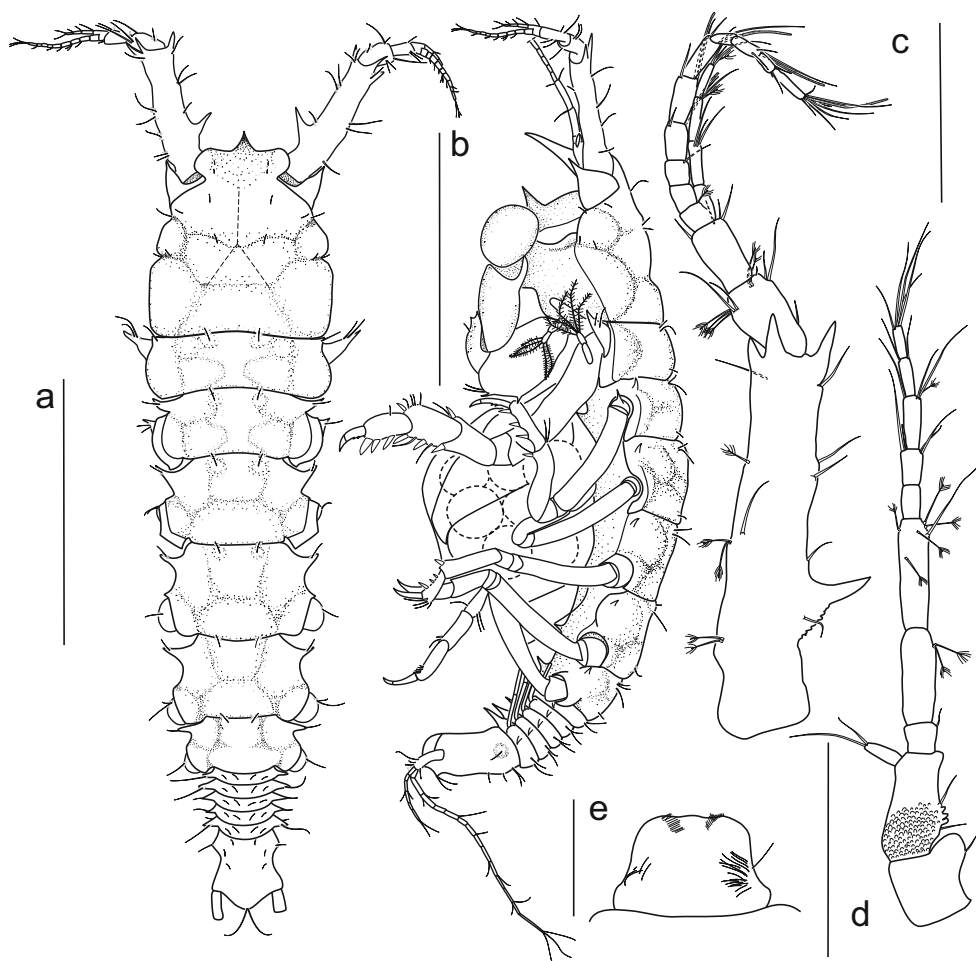
Pleon and pleotelson combined 1.1 times longer than cephalothorax. Pleon of five free pleonites, pleonites 0.2 as long as wide and all of them with pleopods. Each pleonite with: one mid-ventral spiniform process (hyposphenium), one spine-like apophysis bearing a subterminal small seta laterally, and a few small setae dorsally.

Pleotelson 1.1 times longer than five free pleonites combined and 1.3 times longer than wide, lateral margins with one subacute projection bearing one simple seta, distal end rounded and bearing a dorsal cusp-like process.

Antennule (Figs. 2c and 7e) peduncle of four articles. First article 4.1 times as long as wide, with simple and penicillate setae, inner margin with one large spine preceded by denticulations proximally, and three (one inner, two outer) large spines distally. Second article 0.2 as long as first article, with simple and penicillate setae. Third article 0.8 as long as second article, with simple setae distally. Fourth (common) article with one (two) penicillate seta. Outer flagellum of nine (eight) articles; article 1 glabrous (or with one simple seta), articles 2–9 with simple setae, articles 3, 4, 5, 7, and 9 with one aesthetasc each. Inner flagellum of three articles, reaching approximately half-way along article 5 of outer flagellum.

Antenna (Fig. 2d) of ten articles, 0.6 as long as antennule. Article 1 0.7 as long as article 2, with inner rounded apophysis bearing one simple seta. Article 2, ventral surface squamous, inner margin bearing two simple setae and three small teeth in between, outer margin with a small squama bearing two simple setae distally. Article 3 as long as wide with one simple seta. Article 4 three times as long as article 3, with two penicillate setae. Article 5 as long as article 4, with one simple seta and five penicillate setae. Articles 6 slightly shorter than article 7, glabrous. Article 7 with simple setae distally. Articles 8 to 10 gradually decreasing in length, with simple setae distally (article 8 also with one penicillate seta).

**Fig. 2** *Deidamiapseudes poseidon* n. gen., n. sp. Brooding female (holotype MACN-In 39805): **a** habitus in dorsal view (because of the flexed posture of the specimen, the pleon and pleotelson look shorter than it actually is); **b** habitus in lateral view. Brooding female (paratype MACN-In 39806 **a**): **c** antennule; **d** antenna; **e** labrum. Scale bars: **a, b**, 2 mm; **c–e**, 0.5 mm



Labrum (Fig. 2e) concave and distally truncate, with patches of setules.

Right mandible (Fig. 3a) *pars incisiva* with four rounded denticulations. Setiferous lobe with four multifurcate setae and an incisive extension (reduced *lacinia mobilis*). *Pars molaris* robust, straight, with marginal row of setules. Mandibular palp of three articles, proximal article the shortest, with two simple setae; middle article 1.8 times as long as proximal one, with eight long and eight short (not drawn) serrate setae arranged in two rows; distal article 0.75 as long as middle one, with 12 progressively longer serrate setae, most apical seta as long as article. Left mandible (Fig. 3b) as right one except for having a three-dentate *lacinia mobilis*, *pars incisiva* with five rounded denticulations, and setiferous lobe with seven simple setae.

Labium (Fig. 3c) basal lobes with denticles on outer margin and setules on distal inner margin; palp with simple setae and small spines marginally and three stout setae at the apex.

Maxillula (Fig. 3d) inner endite with rounded projection half-way along the outer margin and with five circumplumose setae distally. Outer endite with 11 distal spines and two subdistal serrate setae, outer and inner margins finely setose.

Palp two-articled, distal article with one short and six (five) long setae armed distally with two rows of denticles, one pointing forwards, one pointing backwards (see detail).

Maxilla (Fig. 3e) with small spines on inner margin, setules on outer margin, and microtrichia on rostral surface. Moveable endite: outer lobe with six serrulate setae distally; inner lobe with seven simple setae with rounded tip, two serrulate setae and one circumplumose seta distally, and setules marginally. Fixed endite: outer lobe with four simple setae with rounded tip, six serrate setae (see detail) and three stout trifurcate spiniform setae (see detail) distally, one spiniform seta with a few denticles apically on inner margin, and a row of small spines on outer margin; inner lobe with row of approximately 29 serrulate setae with bifurcate tip (see detail), four setuloserrate setae decreasing gradually in size towards inner margin, and one serrate seta on inner-distal corner.

Maxilliped (Fig. 3f, g). Coxa glabrous. Basis inner margin with small spines and one simple distal seta, outer margin with some setules. Endite outer distal margin with a row of approximately nine setae (changing gradually from long and cylindrical to short and spatulate, see detail), caudodistal margin



**Fig. 3** *Deidamiapseudes poseidon* n. gen., n. sp. Brooding female (paratype MACN-In 39806a): **a** right mandible; **b** left mandible; **c** labium; **d** maxillule; **e** maxilla (the basal part of inner endite drawn from another specimen); **f** maxilliped, inner view; **g** maxilliped basis and endite, outer view. Arrow points caudodistal inner seta. Brooding female (paratype MACN-In 39806b): **h** epignath. Scale bars: **a–d, f–h**, 0.2 mm; **e**, 0.1 mm



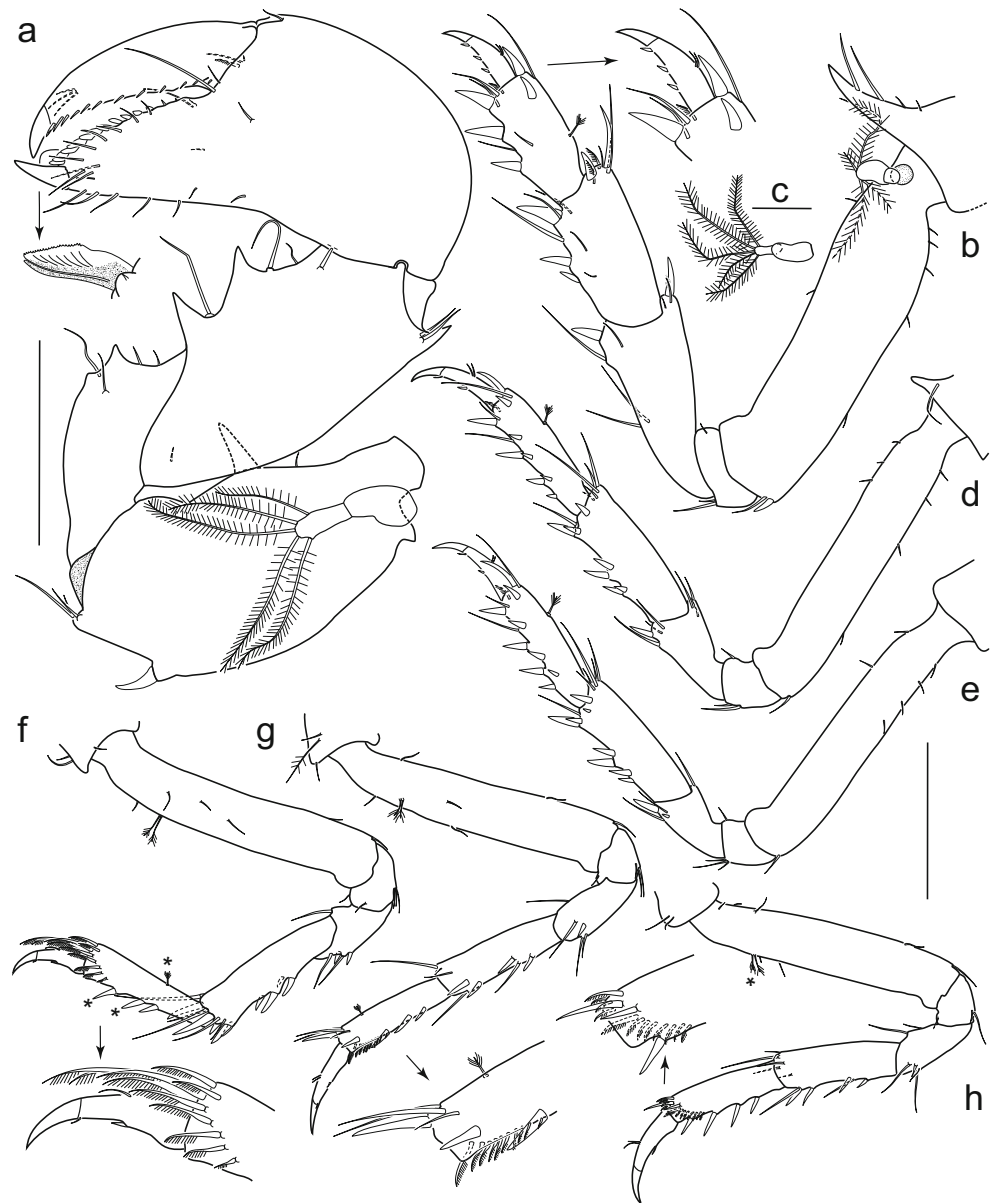
with two simple setae (arrow in Fig. 3g indicates caudodistal inner seta), inner margin with four coupling hooks and a row of nine circumplumose setae. Palp: article 1 with two simple setae, article 2 with 15 simple setae arranged in two rows on inner margin, and one spiniform seta on outer distal margin, article 3 approximately as long as wide and 0.54 as long as article 2, inner margin with two rows of setae (four serrulate, four simple), article 4 with seven serrulate setae arranged in two rows and one short simple seta.

Epignath (Fig. 3h) with one glabrous and one setose lobe proximally, and one strong seta ornamented with tiny setules caudally.

Cheliped (Fig. 4a). Basis stout, 1.6 times as long as wide, dorsal margin with one large spine, ventral margin with one

stout spiniform seta medially and three simple setae distally. Merus with two spines (one large, one small) and a few setae ventrodistally (one to two small spines in other specimens examined). Carpus, width 0.47 its length, with one large spine and two simple setae dorsodistally, and two large spines and a few simple setae ventrally. Propodus, width 0.62 its length, with one small serrate seta and a few simple setae on inner surface near its articulation with dactylus. Fixed finger, ventral margin with simple setae; cutting edge with row of 15 flat setae (see detail) and a submarginal row of simple setae, distal claw slender. Dactylus with a row of small spiniform setae along cutting edge and three simple setae near distal end on inner surface, distal claw curved. Exopodite two-articled, distal article with five circumplumose setae.

**Fig. 4** *Deidamiapseudes poseidon* n. gen., n. sp. Brooding female (paratype MACN-In 39806a): **a** cheliped; **b** pereopod 1, outer view; **c** pereopod 1, detail of exopodite; **d** pereopod 2, outer view; **e** pereopod 3, outer view; **f** pereopod 4, outer view; **g** pereopod 5, inner view; **h** pereopod 6, inner view. *Scale bars: a, c–h, 0.5 mm; b, 0.2 mm.* \*, setae broken (drawn from the opposite pereopod)

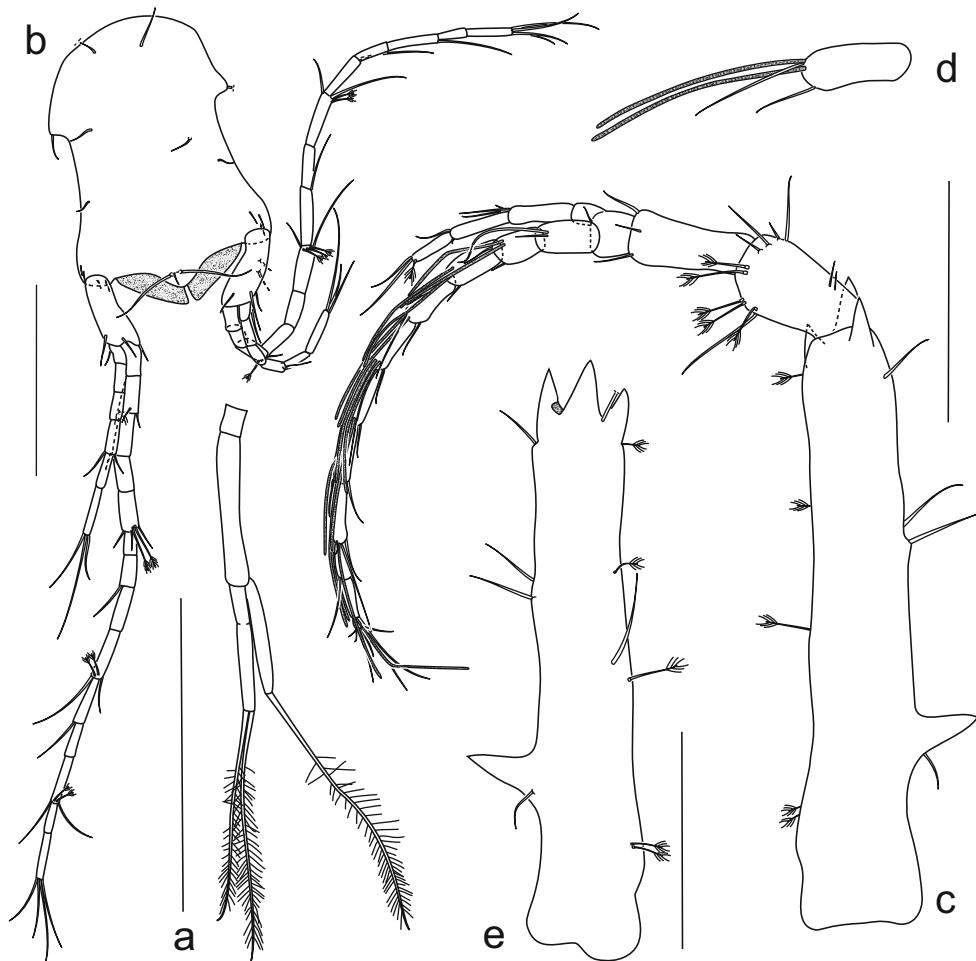


Pereopods 1 to 4 with oostegites.

Pereopod 1 (Fig. 4b, c). Fossorial. Coxa bearing spine-like apophysis and a few setae. Basis 3.7 times as long as wide, with a few small simple setae on both margins, and one spiniform seta and one simple seta ventrodistally. Ischium with two unequal simple setae on ventrodistal corner and one small simple seta dorsally. Merus 0.6 as long as basis with two spiniform setae distally (one ventral, one dorsal), and a few simple setae. Carpus 0.7 as long as merus, ventral margin with three spiniform setae (two half-way along article, one distal) increasing gradually in size; dorsodistal corner with one spiniform seta and two small serrate setae; remaining setae as figured. Propodus 0.9 as long as carpus, with three subequal spiniform setae and two (one marginal, one submarginal) simple setae ventrally, two simple setae and one small

serrate seta ventrodistally, one simple seta and two spiniform setae (one distal and one subapical) dorsodistally, and one penicillate seta dorsally. Dactylus with three small spiniform setae ventrally and two contiguous small simple setae dorsally. Unguis distinct. Exopodite, distal article 0.7 as long as proximal one, with five circumplumose setae (see detail).

Pereopod 2 (Fig. 4d). Coxa bearing spine-like apophysis with one simple seta. Basis 6 times as long as wide, with one simple seta ventrodistally and a few small simple setae on both margins. Ischium with two unequal simple setae ventrodistally and one small simple seta dorsally. Merus 0.3 as long as basis, with one spiniform seta and three unequal simple setae ventrodistally, and three simple setae dorsodistally. Carpus 1.4 times as long as merus, ventral margin with four spiniform setae (arranged in two rows), ventrodistal corner with two



**Fig. 5** *Deidamiapseudes poseidon* n. gen., n. sp. Brooding female (paratype MACN-In 39806a): **a** pleopod 5; **b** pleotelson and uropods. Male II (paratype MACN-In 39806c): **c** antennule (ventral view); **d** detail of outer flagellum article 5; **e** antennule first article, dorsal view. Scale bars: 0.5 mm

spiniform setae and one simple seta, dorsodistal corner with five unequal simple setae, outer surface with one spiniform seta subapically. Propodus 0.9 as long as carpus, ventral margin with six unequal spiniform setae (arranged in two rows) and one simple seta, ventrodistal corner with one spiniform seta, one simple seta and one small serrate seta, dorsodistal corner with one simple seta and two spiniform setae (one distal and one subapical), dorsal margin with one penicillate seta. Dactylus curved with one small spiniform seta and one small simple seta ventrally, and two contiguous small simple setae dorsally. Unguis distinct.

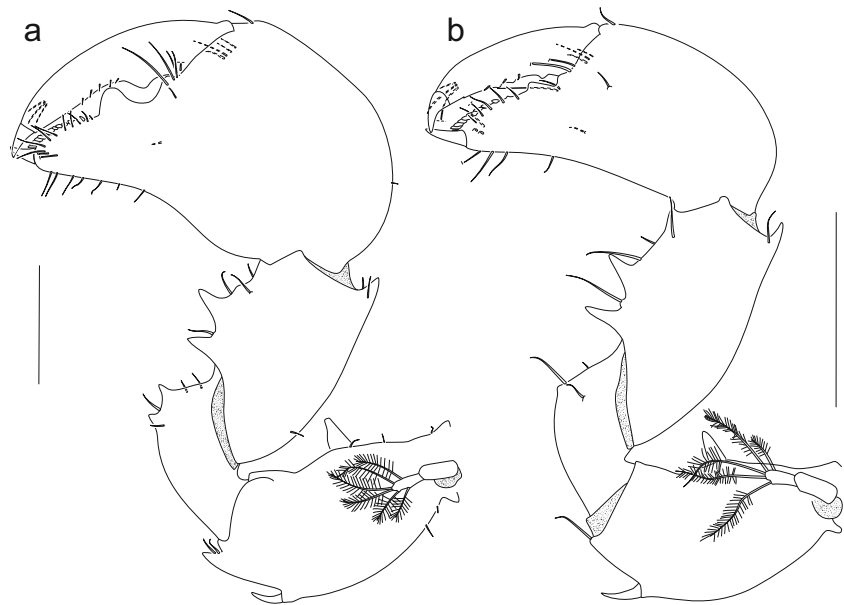
Pereopod 3 (Fig. 4e). It differs from pereopod 2 mainly in: coxa without spine-like apophysis; merus with two unequal spiniform seta ventrodistally; carpus, outer surface with two unequal spiniform setae subapically.

Pereopod 4 (Figs. 4f and 7c). Coxa with a few setae. Basis 6 times as long as wide, with two penicillate setae dorsally and a few simple setae. Ischium with three unequal simple setae ventrodistally and two small simple setae dorsally. Merus 0.3 as long as basis, with two small spiniform setae and two simple setae ventrodistally, and one simple seta dorsally. Carpus 1.6

times as long as merus, ventral margin with four spiniform setae arranged in two rows, ventrodistal corner with three spiniform setae, dorsodistal corner with two simple setae and one slender spiniform seta both on inner and outer surfaces. Propodus 0.9 as long as carpus, with three spiniform setae ventrally, one penicillate seta dorsally and a crown of approximately 16 serrate setae on distal margin (only some of them shown). Dactylus curved with one small spiniform seta and one small simple seta ventrally, and one small simple seta dorsally. Unguis distinct.

Pereopod 5 (Fig. 4g). Coxa with a few setae. Basis 6 times as long as wide, with two penicillate setae dorsally and a few simple setae. Ischium with two simple setae ventrodistally and one small simple seta dorsally. Merus 0.3 as long as basis, with one spiniform seta and two simple setae ventrally, one simple seta dorsally, and one simple seta on inner surface. Carpus 1.5 times as long as merus, ventral margin with four spiniform setae (arranged in two rows) and two simple setae, dorsodistal corner with three unequal simple setae. Propodus 0.9 as long as carpus, ventral margin with three spiniform setae and ten serrate setae becoming longer distally, dorsodistal corner with one spiniform seta and three simple

**Fig. 6** *Deidamiapseudes poseidon* n. gen., n. sp. Male II (paratype MACN-In 39806c): **a** cheliped. Male I (paratype MACN-In 39806d): **b** cheliped. Scale bars: 0.5 mm



setae, inner surface with one spiniform seta near distal end, dorsal margin with one penicillate seta. Dactylus with one small spiniform seta and one small simple seta ventrally and two contiguous small simple setae dorsally. Unguis distinct.

Pereopod 6 (Fig. 4h). Similar to pereopod 5 except for: carpus with five unequal simple setae on dorsodistal corner, propodus with four spiniform setae on ventral margin, a crown of 12 serrate setae on distal margin and two spiniform setae on dorsodistal corner.

Pleopods (Fig. 5a) all alike. Basis long and slender, glabrous. Exopod of two articles, boundary between these two articles only marked by a tiny indentation; proximal article glabrous, distal article with two circumplumose setae distally, endopod slightly shorter than exopod and with one circumplumose seta distally.

Uropod (Fig. 5b) biramous, rami filiform. Basis with six simple setae. Exopod of six articles, 1/3 as long as endopod. Endopod of 14 (15) articles, some articles with two to three penicillate and two simple setae, others with one simple seta or glabrous.

#### Description of the adult male II (based on paratype MACN-In 39806c)

Body length: 5.8 mm.

As brooding female, except for:

Pereonite 6, with penial cone and without hyposphenium.

Antennule (Fig. 5c–e) outer flagellum of 11 articles: article 1 with two simple setae, articles 2–6 with two aesthetascs and two simple setae each (Fig. 5d), article 7 with two aesthetascs and one simple seta, article 8 with one aesthetasc and three simple setae, article 9 with one simple

seta, article 10 with one aesthetasc and two simple setae, article 11 with five simple setae.

Antenna of 11 articles (with an extra glabrous article after article 7), articles 4 and 5 five times longer than article 3.

Left mandible with four-dentate *lacinia mobilis*.

Cheliped (Figs. 6a and 8a–c) more robust than in female. Merus with two large spines ventrodistally (one to two spines in other specimens examined). Carpus width 0.57 its length. Propodus width 0.77 its length. Fixed finger, cutting edge with a proximal small apophysis, followed by a pronounced U-shaped notch and a large medial apophysis. Dactylus with proximal apophysis that fits inside the fixed finger U-shaped notch.

Pereopod 1, carpus with two (one half-way along article, one distal) spiniform setae on ventral margin; propodus with four (three) subequal spiniform setae and two simple setae on ventral margin.

Pereopod 2, propodus with five (three large, two small) spiniform setae arranged in two rows on ventral margin.

Pereopod 3, merus with three (two) spiniform setae ventrally near distal end; carpus with one large spiniform seta on outer surface (the small spiniform seta present in the brooding female is absent).

Pereopod 4, propodus with four spiniform setae ventrally.

Pereopod 5, merus with two simple and two spiniform setae ventrally and lacking setae on inner surface; propodus ventral margin with five spiniform setae.

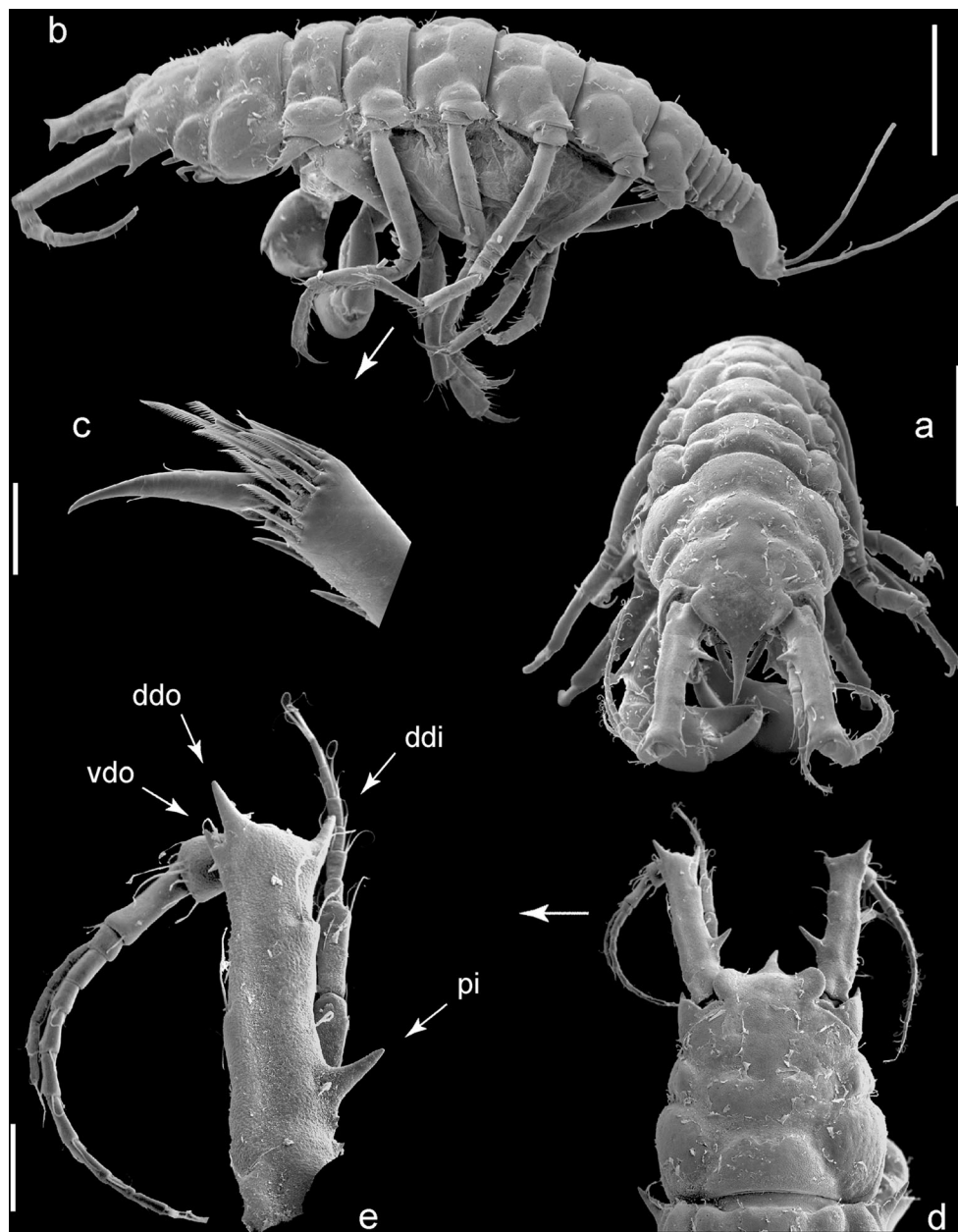
#### Description of the adult male I (based on paratype MACN-In 39806e)

Body length: 4.5 mm.

It differs from brooding female mainly:

Pereonite 6, with penial cone and without hyposphenium.





**Fig. 7** *Deidamiapseudes poseidon* n. gen., n. sp. SEM photos. Brooding female (paratype MACN-In 39806e): **a** habitus, anterior view. Brooding female (paratype MACN-In 39806f): **b** habitus, lateral view; **c** pereopod 4, detail of distal end; **d** cephalothorax; **e** antennule and antenna (*vdo*,

ventrodistal outer spine; *ddo*, dorsodistal outer spine; *ddi*, dorsodistal inner spine; *pi*, proximal inner spine). Scale bars: **a**, **b**, 1000  $\mu\text{m}$ ; **c**, 100  $\mu\text{m}$ ; **d**, 500  $\mu\text{m}$ ; **e**, 200  $\mu\text{m}$

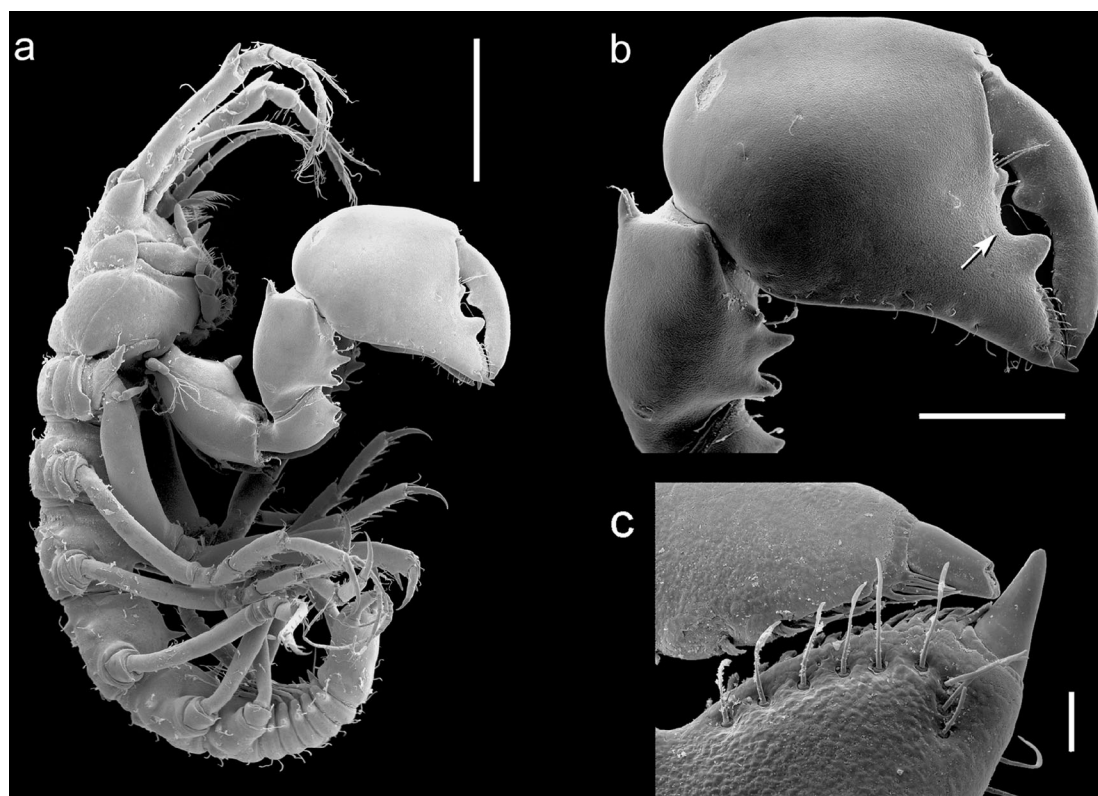
Cheliped (Fig. 6b): Merus with one small spine ventrodistally. Fixed finger, cutting edge with a shallow U-shaped notch, a low medial apophysis, and a row of eight flat setae. Dactylus with an incipient proximal apophysis.

### Remarks

Of the seven species of Apsedomorpha recorded from the Argentine Sea, *Deidamiapseudes poseidon* n. gen., n. sp.

resembles most *Apsedes spectabilis* and *Paradoxapseudes herosae*. These two species are, however, easily separated from *D. poseidon* by having visual elements, pleopods with many setae, and lacking spines on the antennule peduncle article 1.

*Deidamiapseudes poseidon* n. gen., n. sp. can be immediately recognized by its antennule article 1 armed with one large spine on inner margin and three distally. These large spines are present in both sexes and in all the stages (mancae, juveniles, and adults).



**Fig. 8** *Deidamiapseudes poseidon* n. gen., n. sp. SEM photographs. Male II (paratype MACN-In 39806 g): **a** habitus, lateral view; **b** cheliped (arrow points to the U-shaped notch); **c** cheliped, detail of fixed finger and dactylus. Scale bars: **a**, 1,000  $\mu$ m; **b**, 500  $\mu$ m; **c**, 50  $\mu$ m

## Replacement name

Family Metapseudidae Lang, 1970

Subfamily Chondropodinae Guțu, 2008

Genus *Hoploplemius* nomen novum

The genus *Hoplomachus* was erected by Guțu (2002) to include *Aapseudes propinquus* Richardson, 1902 (type-species) and *Aapseudes triangulatus* Richardson, 1902. Recently, we have become aware that this generic name is a junior homonym of the mirid bug genus *Hoplomachus* Fieber, 1858 (Insecta: Heteroptera: Miridae) (Fieber 1858). In accordance with Article 60 of the International Code of Zoological Nomenclature (ICZN 1999), *Hoplomachus* Fieber, 1858 has priority and *Hoplomachus* Guțu, 2002 must be treated as its junior homonym. Hence, we herewith propose the replacement name *Hoploplemius* nomen novum for *Hoplomachus* Guțu, 2002. The new name, from the Greek *hoplites* (armed) and *polemistes* (warrior), refers to the armed antennule, as the previous name does. The gender of the proposed new name is also masculine.

## Discussion

Knowledge of the apseudomorph tanaidaceans has significantly increased in the latest decades; however, the systematics of

this suborder continues to be unsatisfactory (see Guțu 2006; Larsen et al. 2015). In this regard, although *Deidamiapseudes poseidon* n. gen., n. sp. has a unique combination of characters that validate the erection of a new genus, it is currently impossible to assess whether this genus should be assigned to the family Apeseudidae or Metapseudidae.

*Deidamiapseudes poseidon* presents an acute and conspicuous spine-like apophysis on the coxa of pereopod 1. However, this character is present not only in the members of the family Apeseudidae, but also in some Metapseudidae of the subfamily Chondropodinae (genera *Julmarichardia* Guțu, 1989 and *Hoplomachus* Guțu, 2002 -now *Hoploplemius*).

Guțu (2008) proposed the subfamily Chondropodinae (Metapseudidae) to include *Hoplomachus* and other five genera. In order to avoid any confusion between Chondropodinae and Apeseudidae, Guțu (op. cit.) stated that the presence of spines on the inner margin of the antennule peduncle article 1, and the pereopods 2, 3, and 5 with a “climbing type” configuration (propodus much longer than carpus, slightly curved) are features that occur in Chondropodinae but not in Apeseudidae.

*Deidamiapseudes poseidon* n. gen., n. sp. has large spines on the inner margin of the antennule peduncle article 1 but its appendages are adapted for walking (not for climbing). Hence, this new genus has a combination of features, occupying a somewhat intermediate position between Apeseudidae and Metapseudidae.

The taxonomic position of *Hoplopolemius* (formerly *Hoplomachus*) at family level also requires confirmation. This genus or its type species, *H. propinquus* (Richardson, 1902) have alternately been considered a member of the family Apseudidae and Metapseudidae (see Guțu and Iliffe 1985; Guțu 1996, 2002, 2008; Larsen and Shimomura 2006). As mentioned above, the members of this subfamily have pereopods 2, 3, and 5 of climbing type; however, in *H. propinquus* these three pereopods are not clearly adapted for climbing. What is more, Guțu (2002) has reported that the pereopods 2, 3, and 5 of *H. propinquus* are of “walking type”.

In addition, in the molecular phylogeny based on partial DNA sequences from three genes (28S+H3+COI) presented by Drumm (2010), the genera *Aapseudes* and *Hoplomachus* were resolved as a monophyletic clade with strong support. Drumm (op. cit.) stated that this result does not support the transfer of *Hoplomachus* from Apseudidae to Metapseudidae.

In conclusion, the taxonomic position of these taxa at the family level remains so far unresolved. Even so, to avoid further taxonomic confusion in the present contribution we refer to the genus *Hoplopolemius* as a member of Metapseudidae (subfamily Chondropodinae).

Currently the genus *Hoplopolemius* encompasses the following three species: *H. propinquus* (type species), *H. triangulatus*, and *H. toyoshious* (see Richardson 1902; Larsen and Shimomura 2006). The members of *Hoplopolemius* are distributed in shallow waters, have visual elements and multisetose pleopods (unknown in *H. triangulatus*), features that readily distinguish them from *Deidamiapseudes poseidon* n. gen., n. sp.

*Deidamiapseudes poseidon* n. gen., n. sp. has eyelobes without visual elements and pleopods with reduced setation, characteristics that are also exhibited by the deep-sea Apseudinae genera *Langapseudes* and *Taraxapseudes* (see Băcescu 1987, Santos and Hansknecht 2007). Nevertheless, *D. poseidon* can be easily separated from these two deep sea genera by the peduncle article 1 of the antennule armed with large spines, and by its short and stout body (not long and cylindrical).

Finally, *Aapseudes batillus* also seems to be related to *Deidamiapseudes poseidon* n. gen., n. sp. (see Bamber 2007). Both are deep-sea species, have a down-curving rostrum, and a large spine on the outer distal angle of the first article of antennule. In turn, *A. batillus* can be differentiated from *D. poseidon* by lacking spines on the inner margin of the antennule peduncle 1, and by having many circumplumose setae on pereopods 5 and 6, as well as on pleopods.

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## References

- Alberico NA, Roccatagliata DC (2008) *Diastylis fabrizioi*, a new species and brief redescription of *D. Planifrons* Calman, 1912 (Crustacea: Cumacea: Diastylidae) from South America. *J Nat Hist* 42:1039–1063. doi:10.1080/00222930701858359
- Băcescu M (1987) New abyssal Apseudomorpha (Crustacea, Tanaidacea) of NW Madagascar. *Trav Mus Natl Hist nat Grigore Antipa* 29:19–33
- Bamber RN (2007) New apseudomorph tanaidaceans (Crustacea, Peracarida, Tanaidacea) from the bathyal slope off New Caledonia. *Zoosystema* 29(1):51–81
- Cerino N, Lauretta D (2013) *Armadillogorgia albertoi* sp. nov.: a new primnoid from the Argentinean deep sea. *Zootaxa* 3741(3):369–376. doi:10.11646/zootaxa.3741.3.5
- Coleman CO (2003) Digital inking: how to make perfect line drawings on computers. *Org Diver Evol* 3(4):303–304
- Drumm DT (2010) Phylogenetic relationships of Tanaidacea (Eumalacostraca: Peracarida) inferred from three molecular loci. *J Crust Biol* 30(4):692–698. doi:10.1651/10-3299.1
- Eliás R, Campodónico MS, Gravina MC, Vallarino EA (2001) Primer registro de *Kalliapseudes schubarti* Mañé-Garzón, 1949 (Crustacea: Tanaidacea: Peracarida) en aguas argentinas. *Neotropica* 47:97–99
- Fieber FX (1858) Kriterien zur generischen Theilung der Phytocoriden (Capsini aut.). *Wiener entomol Monatschr* 2(10):289–327
- Gardiner LF (1973) New species of the genera *Synapseudes* and *Cyclopoapseudes* with notes on morphological variation, postmarsupial development, and phylogenetic relationships within the family Metapseudidae (Crustacea: Tanaidacea). *Zool J Linn Soc* 53:25–58
- Garm A, Watling L (2013) The crustacean integument: setae, setules, and other ornamentation. In: Watling L, Thiel M (eds) *Functional morphology & diversity (the natural history of the crustacean series)*. Oxford University Press, New York, pp 167–198
- Giachetti CB, Roccatagliata D (2014) *Acutihumerus patagoniensis* (Sieg, 1986) (Tanaidacea: Kalliapseudidae): supplementary description and remarks on its taxonomic status. *Zootaxa* 3861(4):345–354. doi:10.11646/zootaxa.3861.4.4
- Guțu M (1996) Tanaidaceans (Crustacea, Peracarida) from Brazil, with description of new taxa and systematic remarks on some families. *Trav Mus Natl Hist nat Grigore Antipa* 36:23–133
- Guțu M (2002) New apseudid and metapseudid taxa (Crustacea: Tanaidacea) from the Gulf of Mexico, and new diagnoses of some genera. *Trav Mus Natl Hist nat Grigore Antipa* 44:41–68
- Guțu M (2006) New apseudomorph taxa (Crustacea, Tanaidacea) of the world ocean. *Curtea Veche, București*
- Guțu M (2008) On the systematic position of the genera *Trichapseudes* Barnard and *Hoplomachus* Guțu, and the description of a new metapseudid subfamily (Crustacea: Tanaidacea: Apseudomorpha). *Trav Mus Natl Hist nat Grigore Antipa* 51:71–77
- Guțu M, Iliffe TM (1985) The redescription of *Aapseudes* (?) *propinquus* Richardson, 1902 (Crustacea, Tanaidacea) from Bermuda caves. *Trav Mus Natl Hist nat Grigore Antipa* 27:55–62
- Hessler RR, Sanders HL (1967) Faunal diversity in the deep-sea. *Deep-Sea Res* 14:65–78. doi:10.1016/0011-7471(67)90029-0
- ICZN [International Commission on Zoological Nomenclature] (1999) *International code of zoological nomenclature*, 4th edn. Int Trust Zool Nomencl, London

- Larsen K (2003) Proposed new standardized anatomical terminology for the Tanaidacea (Peracarida). *J Crust Biol* 23:644–661
- Larsen K, Shimomura M (2006) Tanaidacea (crustacea: peracarida) from Japan. I. Apseudomorpha from the east china Sea, Seto inland Sea, and nansei islands. *Zootaxa* 1341:29–48
- Larsen K, Guțu M, Sieg J (2015) Order Tanaidacea Dana, 1949. In: von Vaupel Klein JC, Charmantier-Daures M, Schram FR (eds) *Treatise on zoology — Anatomy, Taxonomy, Biology. The Crustacea*, volume 5. Brill Academic Publishers, Leiden, pp 249–330
- Martinez MI, Solís-Marín A, Penchaszadeh PE (2014) *Benthodytes violeta*, a new species of a deep-sea holothuroid (Elasipodida: Psychropotidae) from Mar del Plata Canyon (south-western Atlantic Ocean). *Zootaxa* 3760:89–95. doi:10.11646/zootaxa.3760.1.6
- Ocampo EH, Fariás NE, Luppi TA (2014) New record of the deep-sea crab *Ethusina abyssicola* from the Mar del Plata Canyon, Argentina. *N Z J Zool* 41(3):218–221. doi:10.1080/03014223.2014.927773
- Pfeffer P (1888) Zur Fauna von Süd-Georgien. *Jahrb Hamburg Wiss Anst* 6(2):37–55
- Richardson H (1902) The marine and terrestrial isopods of the Bermudas, with descriptions of new genera and species. *Trans Conn Acad Arts Sci* 11:277–310
- Santos KC, Hansknecht T (2007) *Taraxapseudes* n. gen., *Taraxapseudes diversus* (Lang, 1968) n. comb. and two new species of *Atlantapseudes* Băcescu, 1978 (Tanaidacea: Apseudidae) from Brazil and Madagascar, with a key for the genus. *Zootaxa* 1639:23–39
- Schmidt A (1999) Die Tanaidaceenfauna des Beagle-Kanals und ihre Beziehung zur Fauna des Antarktischen Festlandssockels. *Ber Polarforsch Meeresforsch* 333:1–112
- Shiino SM (1970) Paratanaididae collected in Chile Bay, Greenwich Island by the XXII Chilean Expedition, with an *Apseudes* from Porvenir Point, Tierra del Fuego Island. *Inst Antárt Chil, Ser Cient* 1(2):77–122
- Sieg J (1986) Crustacea Tanaidacea of the Antarctic and the Subantarctic. 1. On material collected at Tierra del Fuego, Isla de los Estados, and the west coast of the Antarctic Peninsula. In: Korniker LS (ed) *Biology of the Antarctic Seas* 18. *Antarct Res Ser* 45. American Geophysical Union, Washington DC
- Voigt I, Henrich R, Preu BM, Piola AR, Hanebuth TJJ, Schwenk T, Chiessi CM (2013) A submarine canyon as a climate archive — Interaction of the Antarctic Intermediate Water with the Mar del Plata Canyon (Southwest Atlantic). *Mar Geol* 341:46–57. doi:10.1016/j.margeo.2013.05.002