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New data on the Tanaidacea (Crustacea: Peracarida) from the Canary Islands, with a description of a new species of *Apseudopsis*

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Abstract

Benthic samples from two harbours at El Hierro and Tenerife (Canary Islands) yielded three species of Tanaidacea. *Tanais dulongii* and *Leptochelia savignyi* are recorded for the first time in Tenerife and El Hierro, respectively. A new species of Apseudomorpha, *Apseudopsis rogi,* was collected in both harbours and can be differentiated from other species of the genus by the male having a cheliped merus with a distinctive, cylindrical dorso-proximal spur. This is the first species of *Apseudopsis* described for the Macaronesian region. A key to the Atlantic and Mediterranean species of *Apseudopsis* is provided.

Key words: Atlantic Ocean, Macaronesian Region, El Hierro, Tenerife, distribution, cheliped merus, *Apseudopsis,* identification key

Introduction

The Canary Islands form one of the archipelagos belonging to the Macaronesian biogeographical region. Here, the interaction between the cold Northwest African upwelling and the Canary current creates a longitudinal temperature gradient from east to west that results in a mosaic of environmental conditions that allows the presence and distribution of tropical, subtropical, warm-temperate and cold temperate marine species (Tuya *et al*. 2012). Moreover, the location of the Canarian archipelago between the Atlantic-Mediterranean and tropical Atlantic regions makes it suitable for studying and assessing zoogeographical connections between regions and as a reference for studies of tropicalization processes caused by global sea warming (Riera *et al.* 2014).

Although the tanaidacean faunas of the Macaronesian archipelagos have been studied in recent taxonomic and biogeographic works (Bamber & Costa 2009; Bamber 2012; Larsen 2012a, b; Larsen *et al.* 2012), there are few studies of the Canary Islands and records are scarce (see Table 1). The first report of littoral Tanaidacea from the Canary Islands was made by Sanz *et al*. (2003), who listed four species: *Apseudes talpa* (Montagu, 1808), *Parapseudes latifrons* (Grube, 1864), *Tanais dulongii* (Audouin, 1826) and *Leptochelia dubia* (Krøyer, 1842) in the intertidal and shallow subtidal seabeds of Lanzarote, Fuerteventura, Tenerife and El Hierro. Since then, a few records have been added: Bamber & Costa (2009) found specimens of *Zeuxo exsargasso* Sieg, 1980 in Tenerife; Larsen *et al.* (2012) reported *Leptochelia savignyi* (Krøyer, 1842) in Gran Canaria; and Bamber (2012) newly recorded *Z. exsargasso* in Lanzarote, La Palma, Gran Canaria and Fuerteventura, *Leptochelia caldera* Bamber & Costa, 2009 in La Palma and described *Parapseudes mortoni* Bamber, 2012 from Lanzarote. Although colonization patterns are not yet solved, only *P. mortoni* is suggested to be native (see Bamber 2012).

Apseudopsis Norman, 1899 is a tanaidacean genus that inhabits sedimentary bottoms in temperate waters worldwide. It comprises a total of 23 species (Anderson 2015) five of them distributed in the East Atlantic: *Apseudopsis adami* Esquete & Bamber (see Esquete *et al.* 2012a); *A. arguinensis* (Guţu, 2002); *A. cuanzanus* Bochert, 2012; *A. isochelatus* Guţu, 2006 and *A. latreillii* (Milne-Edwards, 1828). Nevertheless, no *Apseudopsis*

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has been so far recorded in the Macaronesian region. In the present work, a new species is described from Tenerife and El Hierro, and additionally, two recognised tanaidomorphan species were found in the sampling stations.

TABLE 1. Tanaidacean species recorded in the Canary Islands, their presence in other Macaronesian archipelagos and general distribution of each species. Data obtained from: this study; Sanz *et al*. 2003; Bamber & Costa 2009; Bamber 2012; Larsen & Froufe 2013.

	Lanzarote	Tenerife	La Palma	Gran Canaria	Fuerteventura	El Hierro	Azores	Cape Verde	Madeira	Distribution elsewhere
Apseudopsis rogi **sp.n.**		X				X				
Apseudes talpa	X	X				X				Atlantic Europe, Mediterranean
Parapseudes latifrons		X								Atlantic Europe, Mediterranean
Parapseudes mortoni	X									
Zeuxo exsargasso	X	X	X	X	X			X		Bermuda
Leptochelia caldera			X				X			
Leptochelia dubia	X				X					Brazil
Leptochelia savignyi				X		X	X	X	X	Atlantic Europe, Mediterranean
Tanais dulongii	X	X						X	X	Atlantic Europe, Mediterranean

Material and methods

In September 2013 the soft bottoms of Los Cristianos harbour, Tenerife (station LC4) and La Estaca harbour, El Hierro (station LE4) (Figure 1) were sampled within the framework of an ecological assessment study about the sediment quality inside harbours.

Samples were taken by means of a modified "Cak Foster" dredge with a capacity of 28 l, sieved over a 0.5 mm mesh and fixed in 4% buffered formaldehyde for sorting and identification of the fauna. Faunal specimens were preserved in 70% ethanol. Grain size, total phosphorus, Kjeldahl nitrogen and organic matter content analyses were performed on sediments.

Morphological terminology follows that of Bamber & Sheader (2005); serially repetitive body parts, such as the subdivisions of the antennal flagella and those of the uropodal rami are segments, while those with independent musculature, such as the parts of the pereopods are articles. Measurements were made axially, dorsally on the body and antennae, and laterally on other appendages. Identification of developmental stages follows Esquete *et al.* (2012b):

Juvenile: morphologically as female, but with no oostegites. Often with antennule outer flagellum incomplete. Cheliped not differentiated (i.e. merus not ornamented, carpus four times as long as broad, chela cutting edges not ornamented; see female cheliped description below).

Preparatory female: hyposphenium present on pereonite 6. Oostegites present. Cheliped not differentiated.
Copulatory female: complete marsupium. Cheliped not differentiated.

Male I: penial tubercle present on pereonite 6. Cheliped not differentiated. Oostegites and hyposphenia absent.

Male II: penial tubercle present on pereonite 6. Cheliped differentiated (i.e. merus ornamented, carpus 2.3 times as long as broad, chela cutting edge ornamented; see description and figures below).

Type material was deposited in the Museo Nacional de Ciencias Naturales, Madrid (MNCN). Other material was deposited in the Biological Research Collection of the Departamento de Biologia, Universidade de Aveiro (DBUA).

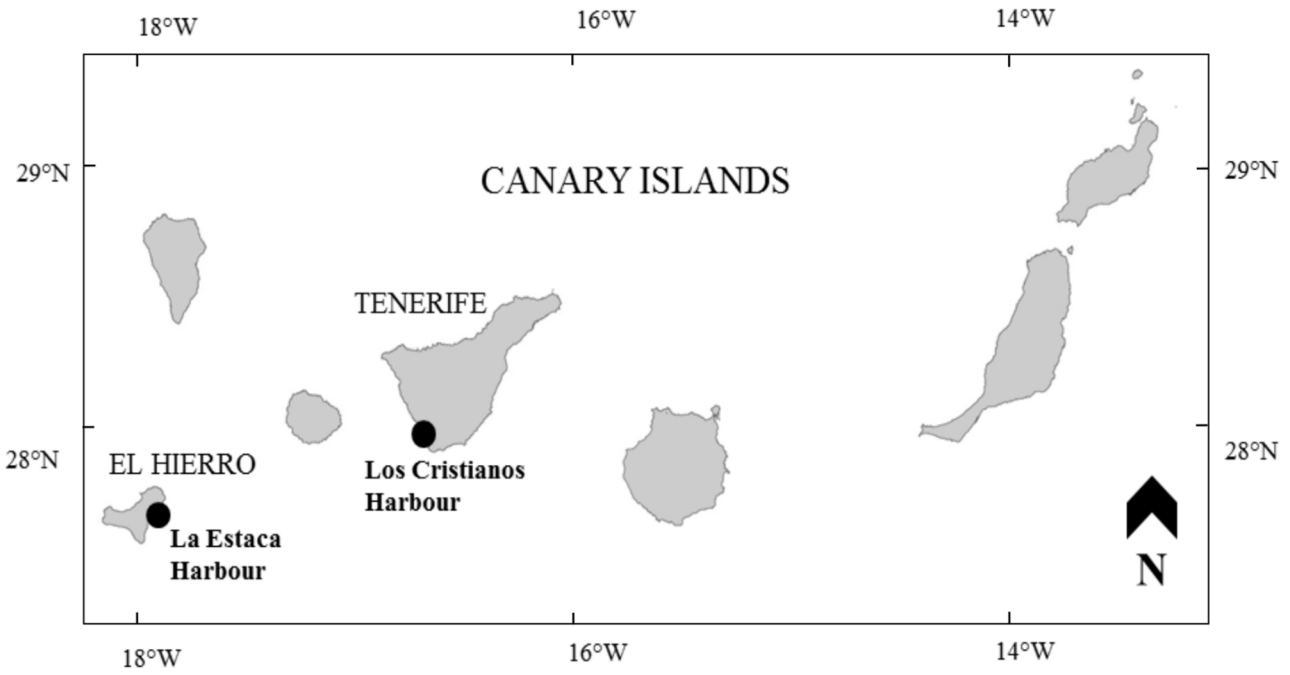

FIGURE 1. Location of the sampling sites.

Systematics

Order TANAIDACEA Dana

Suborder APSEUDOMORPHA Sieg

Family APSEUDIDAE Leach

Genus *APSEUDOPSIS* Norman, 1899

***Apseudopsis rogi* Esquete, sp. nov.**

Material examined. **Holotype**—male II MNCN 20.04/10183, station LC 4-C, Los Cristianos harbour, Tenerife, 28º 2' 49'' N, 16º 42' 53''W, 11 m depth, unvegetated sand, "Cak Foster" dredge, September 2013, coll. E. Ramos & R. Riera.

Paratypes—copulatory female allotype MNCN 20.04/10184; three male II MNCN 20.04/10185; male II MNCN 20.04/10186; male II MNCN 20.04/10187; preparatory female MNCN 20.04/10188, two copulatory females and eight male II, DBUA0001872.01-02 station LC 4-C, 28º 2' 49'' N, 16º 42' 53''W, 11 m depth, unvegetated sand; "Cak Foster" dredge, September 2013, coll. E. Ramos & R. Riera.

Other material—six juveniles, six preparatory females, four males, DBUA0001873.01-03, station LE 4-C, 27º 46' 55''N, 17º 54' 9''W, 6 m depth, unvegetated sand; All "Cak Foster" dredge, September 2013, coll. E. Ramos & R. Riera.

Etymology. Named after Roger N. Bamber, also known as "Rog", in recognition of his great contribution to the knowledge of the Tanaidacea.

Diagnosis. *Apseudopsis* with no marked posterolateral apophyses nor ventral hyposphenia on pereonites; rostrum pointed with rounded anterolateral margins; antennular inner flagellum with three segments, outer flagellum with nine segments; pereopod 1 merus without dorsodistal spine, propodus with four ventral spines; male II cheliped basis as long as broad, merus with dorsoproximal spur, propodus ventral margin perpendicular to cutting edge, cutting edge with proximal invagination followed by rounded apophysis; uropod outer ramus of three segments.

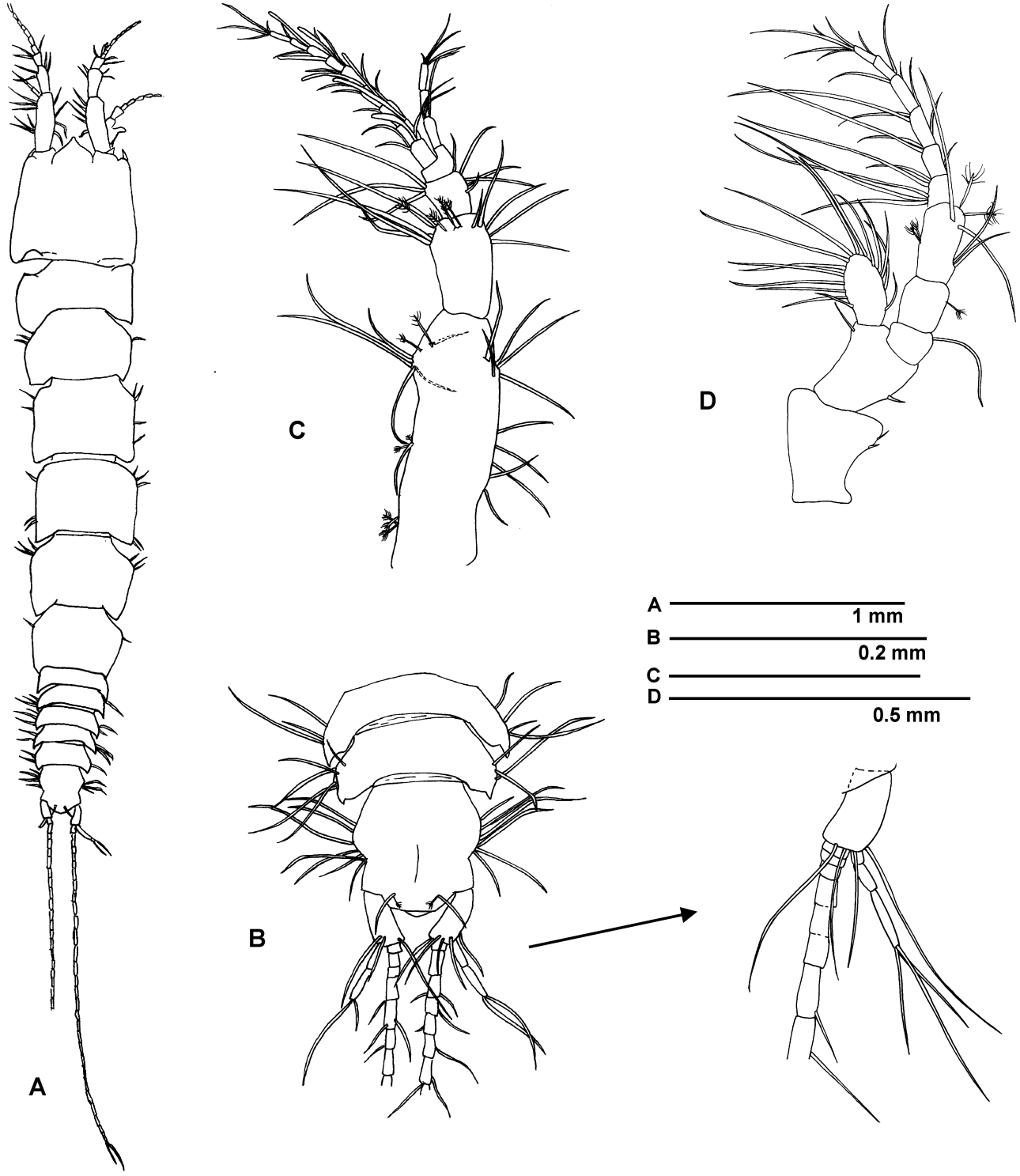

FIGURE 2. *Apseudopsis rogi* **sp. nov.** male II paratype MNCN 20.04/10185. A, habitus; B, last pleonites and pleotelson; C, antennule; D, antenna.

Description. Male II paratype MNCN 20.04/10185. Body (Figure 2A) length 3 mm, 5.3 times as long as broad. Cephalothorax about as long as broad, as long as pereonites 1–2, rostrum pointed with rounded shoulders (anterolateral margins); eyelobes with ommatidia present. Pereon with pereonites all without apophyses, without hyposphenians, margins with scattered setae. Pleon 0.14 times as long as body, pleonites (Figure 2A, B) alike, lateral margins pointed with simple setae. Pleotelson (Figure 2B) about as long as broad, lateral margins with simple setae, distal margin with two subdistal pairs of one simple and one penicillate setae.

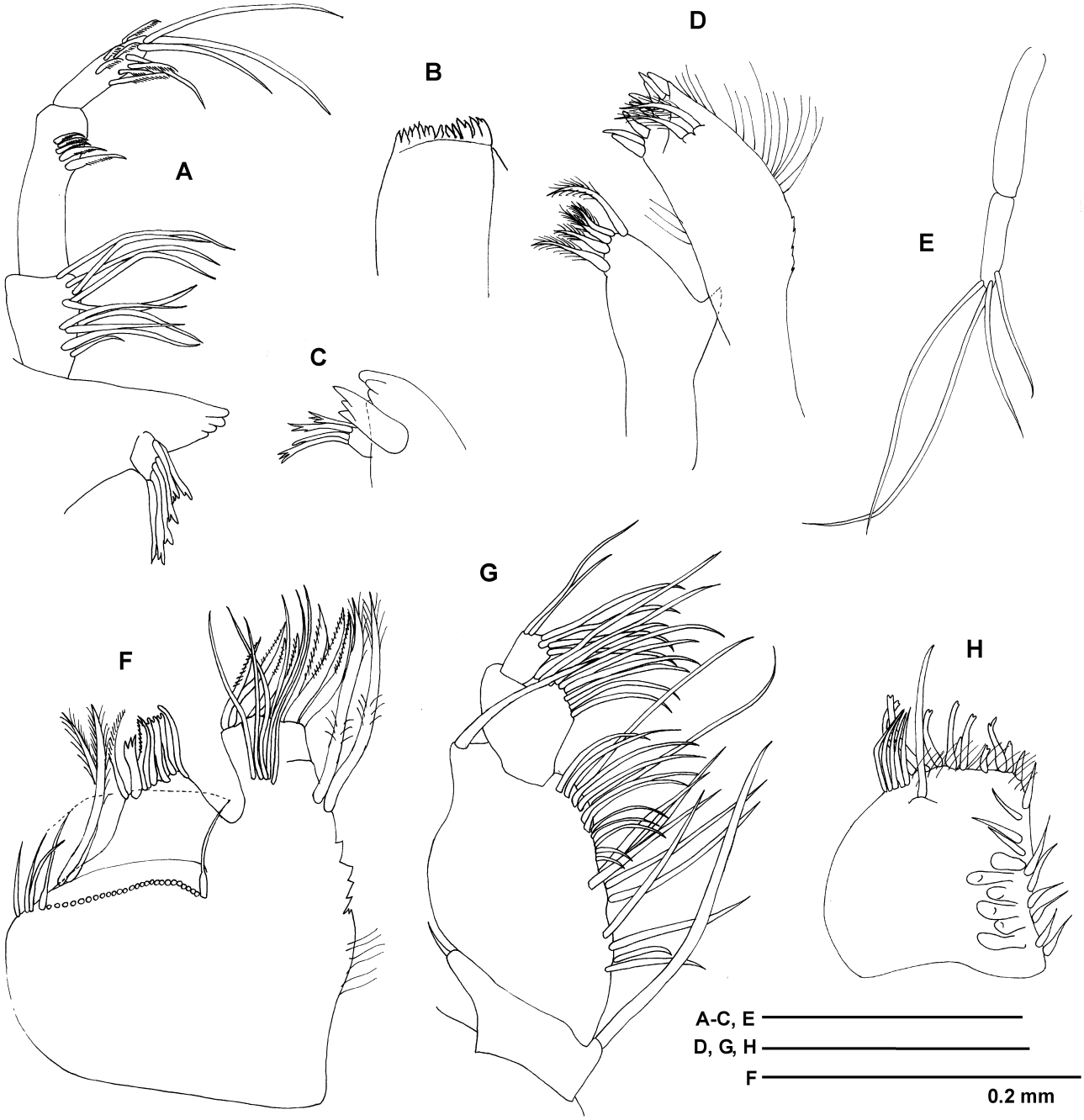

FIGURE 3. *Apseudopsis rogi* **sp. nov.** male II paratype MNCN 20.04/10186. A, right mandible; B, right molar; C, left mandible incisor, *lacinia mobilis* and setal row; D, maxillule; E, maxillule palp; F, maxilla; G, maxilliped palp; H, maxilliped endite.

Antennule (Figure 2C) peduncle article 1 3.1 times as long as broad, inner margin with simple setae, outer margin with proximal tuft of three penicillate setae, medial tuft of two simple and two penicillate setae, subdistal tuft of five simple setae and two penicillate setae; article 2 0.4 times as long as article 1, subdistally with nine simple setae and four penicillate setae; article 3 0.4 times as long as article 2, inner margin with five simple setae, outer margin with three distal setae. Flagellum common article naked; inner flagellum of three segments, segments 1 and 3 with setae, outer flagellum of nine segments, all segments with setae, segments 1–7 with one aesthetasc each.

Antenna (Figure 2D) peduncle article 1 1.2 times as long as broad, inner lobe with two small setae; article 2 1.3 times as long as broad, with inner small seta, bearing squama with 15 long marginal setae; article 3 0.3 times as long as article 2, 0.7 times as long as broad, with one long inner seta; article 4 1.6 times as long as article 3, with

inner penicillate seta; article 5 1.5 times as long as article 4, twice as long as broad, with two inner proximal simple setae, two distal simple setae, two inner distal penicillate setae and two inner medial penicillate setae. Flagellum of six segments, all bearing inner short and outer long setae.

FIGURE 4. *Apseudopsis rogi* **sp. nov.** A, male II paratype MNCN 20.04/10185 cheliped, with detail of the chela; B, exopodite of the same; C, female paratype MNCN 20.04/10188 cheliped.

Mouthparts. Labrum (not illustrated) bilobed, with setules. Right mandible (Figure 3A) molar (Figure 3B) triturative, with spiniform processes; pars incisiva with four denticles; setiferous lobe with five bifurcate and trifurcate setae. Palp article 1 1.3 times as long a broad, with ten setae on inner margin; article 2 1.7 times as long

as article 1, 4.1 times as long as broad, with row of five pectinate spines, proximal spine longest; article 3 0.5 times as long as article 2, 3.7 as long as broad, with seven subterminal pectinate spines, one subterminal seta and three terminal setae. Left mandible (Figure 3C) with tridentate lacinia mobilis and setiferous lobe bearing four multifurcate setae; pars incisiva with four denticles. Maxillule (Figure 3D) inner endite with marginal apophysis, bearing five distal setulose setae; outer endite bearing eight distal spines and two subdistal pectinate setae, outer and inner margin with fine setae; palp (Figure 3E) with four terminal setae. Maxilla (Figure 3F) outer margin serrated, outer lobe of fixed endite with simple setae, and bifurcate, trifurcate and pectinate spines. Inner lobe of fixed endite with row of numerous simple setae in front of two pectinate setae. Outer lobe of movable endite with five pectinate setae, a row of six simple setae, and two strong, plumose setae with medial setules on outer margin. Inner lobe of movable endite with five pectinate setae. Labium (not illustrated) with outer margin serrated, palp with three distal setae and marginal setae and setules.

Maxilliped basis simple; palp (Figure 3G) first article with one longer inner seta and outer distal spine; second article inner margin with 21 setae, outer margin with one distal seta; third article with eight setae along inner margin; distal article with six distal setae; endite (Figure 3H) inner margin with row of spines, distal margin with setules, row of bilobed setae, one subdistal long seta, and outer corner with row of five simple setae. Epignath (not illustrated) as in other species of the genus, with one circumplumose seta.

Cheliped (Figure 4A) exopod first article 3.1 times as long as broad, naked, distal article pentagonal, with five plumose setae; basis robust, as long as broad, with one ventral spine and seta, ventrodistal tuft of three setae and five dorsal setae. Merus posteriorly with a dorsal marked spur, ventrally with tuft of nine setae. Carpus 2.3 times as long as broad, with one dorsodistal and five ventral setae, and one inner distal simple seta. Chela robust and compact, propodus 1.2 times as long as broad, dorsal margin almost parallel to ventral margin, ventral margin perpendicular to cutting edge, fixed finger with four ventral and three dorsodistal setae, palm inner face with four setae near dactylus insertion and a row of seven setae and three more setae near cutting edge, cutting edge with proximal invagination followed by rounded apophyses, rest slightly convex with spinules. Dactylus with two dorsal setae.

Pereopod 1 (Figure 5A) exopod first article 3.1 times as long as broad, naked, distal article pentagonal, with five plumose setae; coxa with anterior apophysis and anterodorsal a tuft of five simple setae. Basis about twice as long as broad, with two dorsal short simple setae and tuft of simple setae on ventrodistal corner. Ischium with two ventral simple setae. Merus broader distally, with lateral row of four setae, dorsodistal tuft of setae, ventral margin with row of setae, and ventrodistal spine. Carpus 0.8 times as long as merus, bearing two distal and two ventral setae, a dorsodistal tuft of setae, and two ventral and one dorsodistal spines. Propodus about as long as carpus, with two distal and four ventral spines; dorsal and ventral margins with setae. Dactylus and unguis about 0.8 times as long as propodus, dactylus with two dorsal and one ventral spinules.

Pereopod 2 (Figure 5B) basis cylindrical, 2.7 times as long as broad, with five dorsoproximal setae, five ventrodistal setae and three ventral medial setae. Ischium 0.7 times as long as broad, with four ventral setae. Merus broader distally, with four dorsodistal setae, row of twelve ventral setae, and one ventrodistal spine. Carpus 0.9 times as long as merus, with dorsal and ventral setae, one dorsodistal and one ventrodistal spine. Propodus as long as carpus plus half of merus, three times as long as broad, dorsal margin with six setae, ventral margin with eight setae, subproximal and subdistal thin spines, distal margin with three two thin spines and three setae. Dactylus and unguis together 0.7 times as long as propodus, with dorsodistal setule.

Pereopod 3 (Figure 5C) basis with two subproximal setae, one medial seta, two subdistal setae, and four ventrodistal setae. Ischium wider than long, with one ventral setae. Merus with two ventral spines and eight ventral setae. Carpus as long as merus, with lateral row of three spines and six setae, ventral margin with row of setae. Propodus with lateral row of three spines, one ventral spine, three terminal serrate spines, one dorsal penicillate seta and simple setae on ventral, dorsal and terminal margins. Dactylus and unguis about as long as propodus, dactylus with dorsal setule.

Pereopod 4 (Figure 5D) basis about twice as long as broad, naked. Ischium with four ventral setae. Merus with three ventral spines and seven simple setae. Carpus 1.4 times as long as merus, with nine ventral spines and several simple setae. Propodus 0.8 times as long as carpus, with seven ventral setae, one dorsal penicillate seta, distally with six short and nine long pectinate spines. Dactylus and unguis together 0.9 times as long as propodus.

Pereopod 5 (Figure 5E) basis about twice as long as broad, with two dorsal penicillate setae and two ventrodistal simple setae. Ischium wider than long, with two simple setae. Merus with three ventral spines, five

ventral setae and one dorsal seta. Carpus twice as long as merus, ventrally with eight spines and 13 simple setae. Propodus 0.8 times as long as carpus, with eight ventral spines, four ventral setae and one dorsal penicillate seta. Dactylus and unguis together 0.8 times as long as propodus, dactylus with one ventral setule.

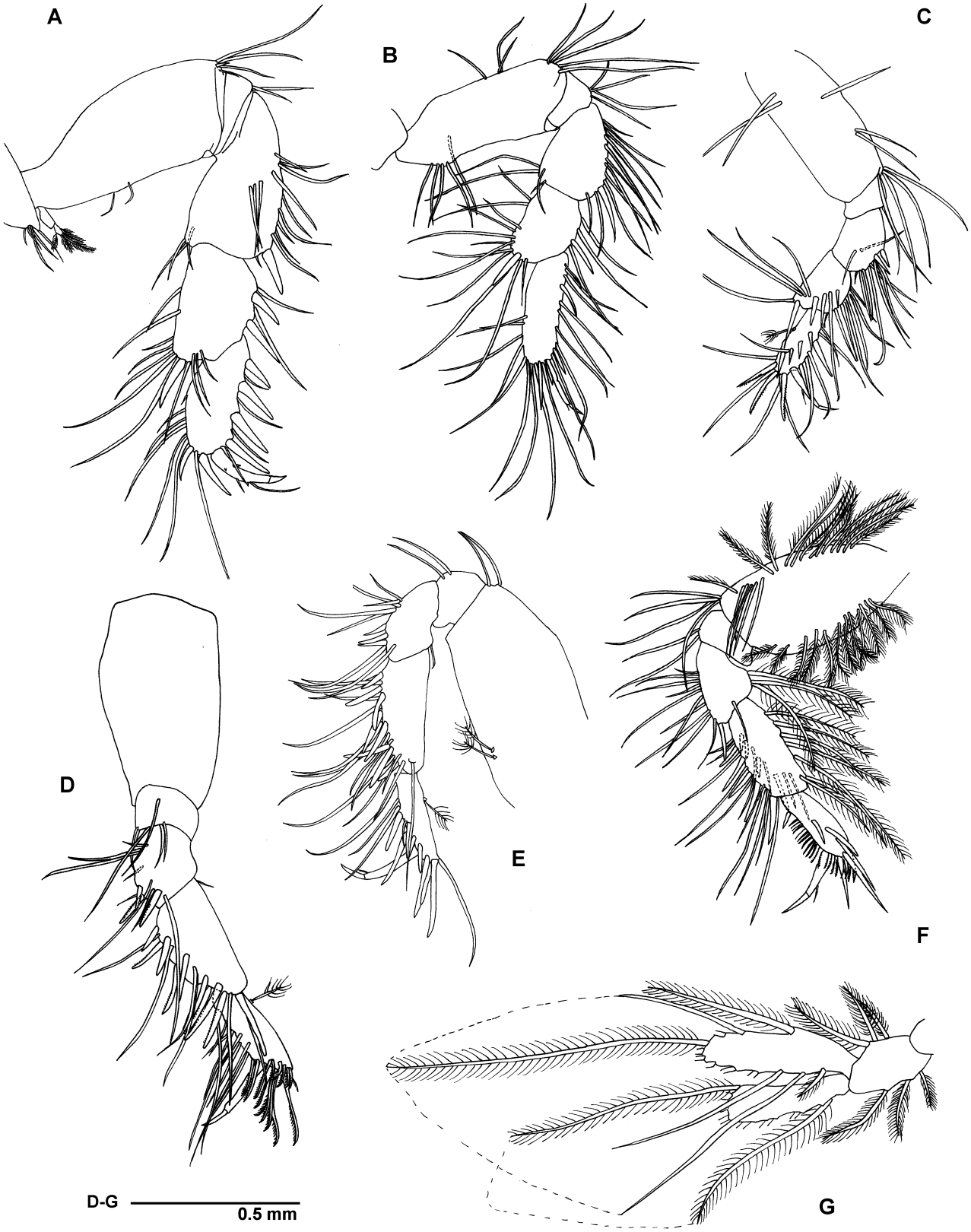

FIGURE 5. *Apseudopsis rogi* **sp. nov.** male II paratype MNCN 20.04/10185. A, pereopod 1; B, pereopod 2; C, pereopod 3; D, pereopod 4; E, pereopod 5; F, pereopod 6; G, pleopod 5.

Pereopod 6 (Figure 5F) basis fusiform, about twice as long as broad, dorsal and ventral margins with row of twelve plumose setae, ventral margin distally with row of five simple setae, ventrodistal corner with four simple setae. Ischium wider than long, with two ventral simple setae. Merus wider distally, dorsal margin with three plumose setae, ventral margin with eleven simple setae, distal margin with one medial simple seta, ventrodistal corner with spine. Carpus 1.5 times as long as merus, with two ventral rows of five spines, ventral margin with nine simple setae, dorsal margin with seven plumose setae. Propodus 0.7 times as long as carpus, with a row of four lateral spines, ventral margin with one proximal short spine followed by a row of pinnate spines that continues along distal margin, dorsodistal margin with one long spine. Dactylus and unguis about as long as propodus, dactylus bearing a dorsal setule.

Pleopods 1 and 2 bases with five inner and six outer plumose setae; pleopods 3 and 4 with five inner and three outer plumose setae; pleopod 5 (Figure 5G) with three inner and three outer plumose setae. Both rami with numerous distal and outer marginal plumose setae, endopod with one inner marginal plumose seta.

Uropods (Figure 2B) basis with 5 distal setae. Endopod with over 30 segments, many of them with simple setae. Exopod with three segments, proximal segment shortest, distal segment about as long as first two segments, bearing two distal setae.

Preparatory female paratype MNCN 20.04/10188. Pereonite 6 with hyposphenium. Cheliped (Figure 4B) exopodite present, as in male; basis 1.5 times as long as broad, dorsal margin with three proximal and two medial simple setae, ventral margin with simple seta and spine and pair of distal setae. Merus as long as basis, ventral margin with tuft of nine simple setae. Carpus cylindrical, 0.9 times as long as merus, ventral margin with 12 simple setae, dorsodistal corner with two setae, outer face with three setae proximally and two setae subdistally. Propodus dorsal margin with one dorsal setae and four setae near dactylus insertion, ventral margin four setae near claw; palm with two setae and tuft of six setae near dactylus insertion; cutting edge with row of setules. Dactylus with tuft of tree dorsal setae.

Otherwise as male.

Juveniles. Antennule inner flagellum of 7–9 segments. Otherwise as preparatory female.

Remarks. Species of *Apseudopsis* are distinguished by a combination of characters that do not vary through the developmental stages, as follows (see Esquete et al., 2012a): Shape of the rostrum, presence of apophysis on pereonites, presence or absence of dorsodistal spine on pereopod 1 merus, and number of ventral spines on pereopod 1 propodus. Other diagnostic characters include the number and position of hyposphenia on juveniles II and females, and features of the male II cheliped. The number of segments of the antennular flagella are useful for mature specimens (i.e. preparatory, copulatory and intermediate females and males II) of certain species. *Apseudopsis rogi* sp. nov. has a pointed rostrum with rounded shoulders, pereonites without apophyses, absence of dorsodistal spine on pereopod 1 merus, four ventral spines on pereopod 1 propodus, females with hyposphenium on pereonite 6 only. The most notable character of this new species is the male cheliped carpus with spur, which is unique for the genus. Apart from that, *Apseudopsis arguinensis* from Mauritania is different from *Apseudopsis rogi* in having hyposphenia on female pereonite 2 and 6 and six ventral spines on the pereopod 1 propodus. *Apseudopsis isochelatus,* also from Mauritania, differs from *A. rogi* in having lateral invaginations and hyposphenia in all pereonites, a more slender cheliped basis, carpus and chela in males, presence of a dorsodistal spine on the merus and five ventral spines on pereopod 1 propodus, and absence of anteroproximal protuberance with setae on pereopod 2.

Other Atlantic and Mediterranean species of *Apseudopsis* are very similar to *A. rogi* in having a pointed rostrum with rounded shoulders and four ventral spines on pereopod 1 propodus, but differ in other relevant characters: *A. adami*, from the northwestern Iberian Peninsula has posterolateral apophysis on pereonites 2–5 that are absent on *A. rogi* and ten instead of nine segments on the antennular inner flagellum in mature specimens; *A. mediterraneus* (Băcescu, 1961) has posterolateral apophyses on pereonites 1–6, hyposphenia on pereonites 2 and 6 and a maximum of eight segments on the antennal main flagellum; *A. bacescui* (Guţu, 2002), from the Mediterranean Sea, has posterolateral apophyses on pereonites 1–6, hyposphenians on pereonites 2, 3 and 6 and a maximum of seven segments on the antennal main flagellum. *Apseudopsis ostroumovi* Băcescu & Cărăuşu, 1947, from the Black Sea, has posterolateral apophyses on pereonites 1–6, hyposphenia on pereonites 2–6 and a maximum of eight segments on the antennal main flagellum.

A summary of these and other characters distinguishing species of *Apseudopsis* are given in the key, below.

With regard to observed sex ratios and female fecundity, in sample LE4, the male: female ratio was 4: 6. All

males were male II stage, and no copulatory females were found. By contrast, in sample LC4 the male: female ratio was 8: 4, and the four females were copulatory, with a fecundity of 6–8 embryos.

Key to the Atlantic and Mediterranean species of *Apseudopsis*

1. Pereopod 1 merus with dorsodistal spine. . . . 2
- Pereopod 1 merus without dorsodistal spine. . . . 4
2. Pereonites 2–6 with apophyses on anterior and posterior corners; antennula inner flagellum of four segments, outer flagellum of 4–8 segments in mature specimens; pereopod 1 propodus with five ventral spines; male with hyposphenia on pereonites 2–5, female with hyposphenia on pereonites 2–6 . . . . . ***A. elisae*** **(Băcescu, 1961)** [Monaco, Mediterranean]
- Pereonites without anterolateral or posterolateral apophyses 3
3. Antennula inner flagellum of 7–9 segments, outer flagellum of 15–16 segments in mature specimens; pereopod 1 propodus with four spines on ventral margin; male with hyposphenia on pereonites 2–5, female with hyposphenia on pereonites 1–6. . . . . ***A. robustus*** **(Sars 1882)** [Mediterranean]
- Antennula inner flagellum of four segments, outer flagellum of 8–10 segments; pereopod 1 propodus with three spines on ventral margin; only female with hyposphenia, on pereonites 2–6 . . . . . ***A. latreillii*** **(Milne-Edwards, 1828)** [European Atlantic]
4. Pereonites without apophyses 5
- Some pereonites with anterolateral or posterolateral apophyses 6
5. Rostrum pointed with rounded shoulders; pereopod 1 propodus with four ventral spines; male cheliped merus with spur, chela fixed finger cutting edge with proximal invagination; females with hyposphenium on pereonite 6 only. . . . . ***A. rogi*** **Esquete, sp. nov.** [Canary Islands]
- Rostrum pointed, short, subtriangular; pereopod 1 propodus with three ventral spines; male cheliped merus without spur, chela fixed finger with semicircular apophysis; females with hyposphenia on pereonites 3 and 6. . . . . ***A. apocryphus*** **(Guţu, 2002)** [Israel, Mediterranean]
6. Pereopod 1 propodus with five or more ventral spines. . . . 7
- Pereopod 1 propodus with four or fewer ventral spines 10
7. Pereopod 1 propodus with five ventral spines 8
- Pereopod 1 propodus with six ventral spines 9
8. Rostrum short; all pereonites with posterolateral acute apophyses; female with hyposphenium on pereonite 6 only; male chela fixed finger cutting edge with semicircular apophysis . . . . ***A. annabensis*** **(Guţu, 2002)** [Algeria, Mediterranean]
- Rostrum relatively long, acute, with rounded shoulders; all pereonites with posterolateral hook-like apophyses, female with hyposphenia on pereonites 2 and 6 (males unknown). . . . . ***A. cuanzanus*** **Bochert, 2012** [Angola]
9. Rostrum short, pointed; all pereonites with posterolateral apophyses; female with hyposphenia on pereonites 2 and 6; male chela fixed finger with semicircular apophysis. . . . . ***A. arguinensis*** **(Guţu, 2002)** [Mauritania]
- Rostrum long, acute; pereonites 2–5 with short posterolateral hooks; females with hyposphenia on pereonites 2–6; cheliped not sexually dimorphic, slender, merus about 3.5 times as long as broad, chela cutting edges not ornamented. . . . . ***A. isochelatus*** **Guţu, 2006** [Mauritania]
10. Rostrum acute, with rounded lobes; pereonites with posterolateral apophyses; pereopod 1 propodus with three ventral spines (sole specimen known is a copulatory female). . . . . ***A. minimus*** **(Guţu, 2002)** [Israel, Mediterranean]
- Pereopod 1 propodus with four ventral spines 11
11. Pereonites 3–6 with anterolateral and posterolateral apophyses. . . . 12
- No pereonite with anterolateral apophyses. . . . 13
12. Rostrum long, acute; anterolateral apophyses on pereonites 3–6 directed forward; females with hyposphenia on pereonites 2, 3, 5 and 6 (male unknown). . . . . ***A. acutifrons*** **(Sars 1882)** [Gulf of Naples, Mediterranean]
- Rostrum short, pointed; anterolateral apophyses on pereonites 3–6 not directed forward, but perpendicular to the main axis of the body; females with hyposphenia on pereonites 1–6; male chela fixed finger with triangular apophysis on cutting edge. . . . . ***A. ostroumovi*** **(Băcescu & Cărăuşu, 1947)** [Black Sea]
13. Pereonites 1–6 with posterolateral apophyses; mature specimens' outer flagellum of antennule of 6–8 segments. 14
- Only pereonites 2–6 with posterolateral apophyses; mature specimens' outer flagellum of antennule of ten segments; females with hyposphenium on pereonite 6 only; male chela fixed finger with semicircular and triangular apophyses on cutting edge. . . . . ***A. adami Esquete &*** **Bamber, 2012**. [Atlantic Iberian Peninsula].
14. Females with hyposphenia on pereonites 2, 3 and 6; male chela with apophysis on fixed finger cutting edge and proximal apophysis on dactylus cutting edge. . . . . ***A. bacescui*** **(Guţu, 2002)** [Balearic Sea, Mediterranean].
- Females with hyposphenia on pereonites 2 and 6. Male cheliped fixed finger cutting edge with proximal semicircular apophyses and invagination . . . . ***A. mediterraneus*** **(Guţu, 2002)** [Israel, Mediterranean coast of France].

Suborder TANAIDOMORPHA Sieg

Family TANAIDIDAE Nobili

Genus *TANAIS* Latreille

***Tanais dulongii* (Audouin, 1826)**

Material examined. One female, length 2.5 mm, station LC 4-C, 28º 2' 49'' N, 16º 42' 53''W, 11 m depth, unvegetated sand, "Cak Foster" dredge, September 2013, coll. E. Ramos & R. Riera.

Remarks. *Tanais dulongii* was described from the coast of Egypt and has a broad distribution on Atlantic and Mediterranean coasts (Hamers *et al*. 2000; Bamber 2012) where it dwells littoral algae. In the Macaronesian region, early records of the species in the Azores were partially clarified by Bamber & Costa (2009), and later Bamber (2012) confirmed its presence in Cabo Verde and Madeira. This is the first record of *T. dulongii* for Tenerife, and the second for the Canary Islands after Sanz *et al*. (2003) found it in subtidal seabeds in SW Lanzarote.

Family LEPTOCHELIIDAE Lang

Genus *LEPTOCHELIA* Dana

***Leptochelia savignyi* (Krøyer 1842)**

Material examined. Two females (1.7–1.9 mm), LE 4-C, 27º 46' 55''N, 17º 54' 9''W, 6 m depth, unvegetated sand, "Cak Foster" dredge, September 2013, coll. E. Ramos & R. Riera.

Remarks. *Leptochelia savignyi* is distributed along the Atlantic coast of Europe, from the British Isles to south of Portugal (Bamber 2010, 2012). The species was originally described from the archipelago of Madeira (Krøyer 1842) and is widely distributed in the Macaronesian region, with records in Azores, Cabo Verde and the Canary Islands (Bamber 2012; Larsen & Froufe 2013); This is the first record of *L. savignyi* for El Hierro and the second for the Canary Islands after Larsen & Froufe (2013) reported it from a sandy beach on the east coast of Gran Canaria.

Ecology of El Hierro and Tenerife harbours. In Tenerife, the sampling station was characterized by a dominance of fine sands (D_{50}=0.5 μm) with a small percentage of gravels (1.09%) and silts (0.92%). The total organic carbon was low (0.39%). Total phosphorus obtained was 21.9 gP/kg, and Kjeldahl nitrogen was 85.2 mgN/kg. In El Hierro, the sediment was composed mainly of medium sands, (D_{50}=0.4 μm) with a percentage of gravels (7.42%) and silts (1.20%). The total organic carbon was low (0.41%). Total phosphorus obtained was 4.47 gP/kg, and Kjeldahl nitrogen was 17.8 mgN/kg.

The most abundant accompanying species in the stations collected in Tenerife were the amphipods *Ampelisca brevicornis* (Costa) and *Urothoe puchella* (Costa), the gastropods *Bittium latreillii* (Payraudeau) and *Nassarius cuvierii* (Payraudeau); the polychaetes *Aponuphis bilineata* (Baird), *Cirriformia tentaculata* (Montagu), *Notomastus latericeus* Sars, 1851, *Scoloplos armiger* (Müller) and *Scoloplos rubra* (Webster); the ostracod *Cypridina mediterranea* Costa, and unidentified species of Ostracoda and Turbellaria. In El Hierro, the most abundant accompanying species were the amphipods *Harpinia antennaria* Meinert, and *Photis longicaudata* (Bate & Westwood,) and the polychaete *Chone arenicola* Langerhans.

Discussion

The tanaidacean species collected in the Macaronesian region show affinities to faunas from different ecoregions, the most common being those species with an Atlantic-Mediterranean distribution, i.e. *Parapseudes latifrons, Leptochelia savignyi, Tanais dulongii* and *Apseudes talpa*. Two species (*Parapseudes mortoni* and *Leptochelia caldera*) have been exclusively recorded in the Macaronesian region, i.e. Azores, Madeira, Canary Islands and Cape Verde. The remaining two tanaidacean species display an amphiAtlantic distribution, having been collected in the Bermudas (*Zeuxo exsargasso*) and Brazil (*Leptochelia dubia*) (Table 1).

It is necessary to conduct extensive field surveys in order to get a reliable picture about the diversity of tanaidaceans in the Macaronesian region. In spite of the low number of species, this group shows an important ecological role in subtidal seabeds in Macaronesia, being dominant in sandy bottoms (e.g. *Apseudes talpa*) (Riera et al. 2015) and as a component of epifauna on benthic macroalgae (e.g. *Tanais dulongii*) (Riera et al. 2013). Moreover, marine ecosystems that may constitute suitable habitats for tanaidaceans, notably deep sandy bottoms or seamounts remain overlooked in the Macaronesian region.

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