Zootaxa 3647 (3): 479–487
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3647.3.5
http://zoobank.org/urn:lsid:zoobank.org:pub:B26A23E1-D23F-4268-903C-558E83A5BF79

Pseudobranchiomysis arenae, a new genus and species of Leptomysinae (Crustacea: Mysida) in Argentinian sandy beaches

CECILIA CARCEDO[1,4], SANDRA FIORI[1,2] & MÓNICA HOFFMEYER[1,3]

[1]*Instituto Argentino de Oceanografía (IADO) – Centro Científico Tecnológico de Bahía Blanca (CCT-BB) Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Camino la Carrindanga km 7.5, B8000FWB Bahía Blanca, Argentina*
[2]*Universidad Nacional del Sur (UNS), Perú 670, B8000, Bahía Blanca*
[3]*Facultad Regional Bahía Blanca, Universidad Tecnológica Nacional, 11 de Abril 461, F8000LMI, Bahía Blanca.*
[4]*Corresponding author: E-mail:ccarcedo@iado-conicet.gob.ar*

Abstract

A new genus of Leptomysinae Hansen, 1910, constituting a new type species for science, is described: *Pseudobranchiomysis arenae*. This new mysid is characterized by a combination of the following characters: antennal scale lanceolate and setose all around with a pointed apex, telson with apical cleft armed with many fine spines on the convex margins, and well-developed pseudobranchial lobes in male pleopods. Individuals of this species were found in the surf zone of two sandy beaches in Argentina and constitute a stable population.

Key words: Leptomysinae, *Pseudobranchiomysis* **n. gen.**, *P. arenae* **n. sp.**, Argentina, South Atlantic.

Introduction

Nineteen species of the order Mysida have been reported as inhabiting an area from the Uruguayan coast to South Georgia Island, South West Atlantic Ocean (Murano 1999), four of these: *Arthromysis magellanica* (Cunningham, 1871), *Mysidopsis tortonesei* Bacescu, 1968, *Neomysis americana* (S.I. Smith, 1873) and *Mysidopsis rionegrensis* Hoffmeyer, 1993 are the most frequented species on the shelf and in coastal waters of Argentina from the Rio de la Plata River estuary in the north to the San Matías Gulf region in the south and first described in the Argentinian coastal waters by Tattersall (1955), Schiariti *et al.* (2004), González (1974) and Hoffmeyer (1993), respectively. The mysid described herein is the type species of a new genus to be placed within the subfamily Leptomysinae Hansen, 1910.

Materials and methods

Within the framework of a project involving the integrated study of sandy beaches in the south of Buenos Aires province (Argentina) (2009–2010), seasonal samplings were carried out in the surf zone of Monte Hermoso (38°59´S, 61°06´W) and Pehuen Có (39°00´S, 61°37´W) sandy beaches. Macrobenthic fauna was sampled with a sledge equipped with a 1 mm-mesh net and samples were fixed with a solution of 4% formalin in seawater. At the laboratory, specimens were sorted and stored separately in 70% ethanol for later examination. Cephalic, thoracic and abdominal appendages were dissected under stereoscopic microscope (Nikon SMZ 1500) and temporarily mounted on slides. Illustrations were copied from photos taken with a microscope (Eclipse 80i) fitted with a digital camera (Nikon DXM1200F - software: Nikon ACT-1). The type specimens are deposited in the Natural Science Museum of La Plata city, Buenos Aires Prov., Argentina (DZI-MLP). Other specimens examined are deposited in the Benthos Lab, IADO, Bahía Blanca city, Buenos Aires Prov., Argentina (LB–CR). Mysida taxonomy follows WoRMS (Mees 2012) and Meland & Willassen (2007).

Accepted by K. Meland: 4 Apr. 2013; published: 10 May 2013

Taxonomy

Order Mysida Haworth, 1825

Family Mysidae Haworth, 1825

Subfamily Leptomysinae Hansen, 1910

Genus *Pseudobranchiomysis* n. gen.

Type species. *Pseudobranchiomysis arenae* **n. sp.**

Diagnosis. Body robust with pigmented spots throughout. Carapace covering more than half of the cephalothorax in dorsal view, with anterior margin produced into a triangular rostrum with a rounded apex. Eyes well developed, with reniform cornea. Antennular peduncle of male with processus masculinus well developed and very hirsute. Antennal scale large, lanceolate, setose on both margins, with a pointed apex and absence of distal suture. Mandibles with well-defined molar process. Maxilla with distal segment of endopod expanded, longer than broad. Labrum without frontal process. Endopod of thoracopods with 5- to 7-segmented carpopropodus. Male pleopods biramous, with a well-developed pseudobranchial lobe; endopod of 1st pair very small and unjointed, 11-segmented exopod; 2nd to 5th pairs with both rami long and subequal, endopod 11-segmented and exopod 11- to 14-segmented; exopod of 4th pair with modified setae on antepenultimate, penultimate and ultimate segments. Female pleopods reduced, small and narrow. Telson with posterior cleft armed with many fine spines on convex margins and two long plumose setae at centre. Uropods densely furnished with setae. Inner uropod with row of seven spiniform setae on inner margin, extending from statocyst edge to nearly three-quarters of uropod length.

Etymology. The generic name refers to the well-developed pseudobranchial lobes present in male pleopods.

Remarks. According to Mauchline's (1980) identification key of Mysidae, the mysids reported here belong to the subfamily Leptomysinae, as demonstrated by the following diagnostic characters: antennal scale entire, setose all around, without terminal spine; labrum normal and symmetrical; endopods of 3rd to 8th thoracic limbs with carpus and propodus fused and subdivided, no oblique articulation; pleopods of male biramous; statocyst present; exopod of uropod undivided and outer margin of uropod exopod without spines.

Our specimens were compared to all recognized genera included in the World Register of Marine Species (WoRMS) website (Mees 2012) for Leptomysinae, and were found to bear a closest resemblance to the genus *Pseudomysis* Sars, 1879. Similar characters to this species where seen in the shape and armature of the telson, particularly in the distal cleft with each apical lobe convex and armed with fine spines, lateral margins with regularly arranged spiniform setae and two long and plumose setae at the base of the cleft. However, there are some small differences: whereas in *Pseudomysis* each apical lobe has single, long and stout spiniform setae at the apex, in our specimens each apical lobe has two spiniform setae at the apex, the external setae longer than the internal setae. Also, *Pseudobranchiomysis*, has more spinose setae on the lateral margin of the telson and more spines on the cleft margin than in *Pseudomysis*. Our specimens also differ from *Pseudomysis* in the form of the anterior margin of the carapace; the absence of a distal articulation on the antennal scale; the presence of large pseudobranchial lobes in male pleopods; the lower number of endopod and exopod segments in the male pleopods, and the different arrangement of spiniform setae in the uropodal endopods.

We assign our specimens to a proposed new genus *Pseudobranchiomysis*, characterized by a combination of the three main features: antennal scale setose all around with a pointed apex and distal suture absent; male pleopods with large pseudobranchial lobes and telson with posterior cleft armed with many fine spines on the convex margins.

Pseudobranchiomysis arenae n. sp.

(Figs. 1–6)

Type specimens. Holotype: adult male, 18 mm, (DZI-MLP 26.847). Allotype: adult female, 25 mm, (DZI-MLP 26.848). Paratypes: two adult males and two adult females (DZI-MLP 26.848).

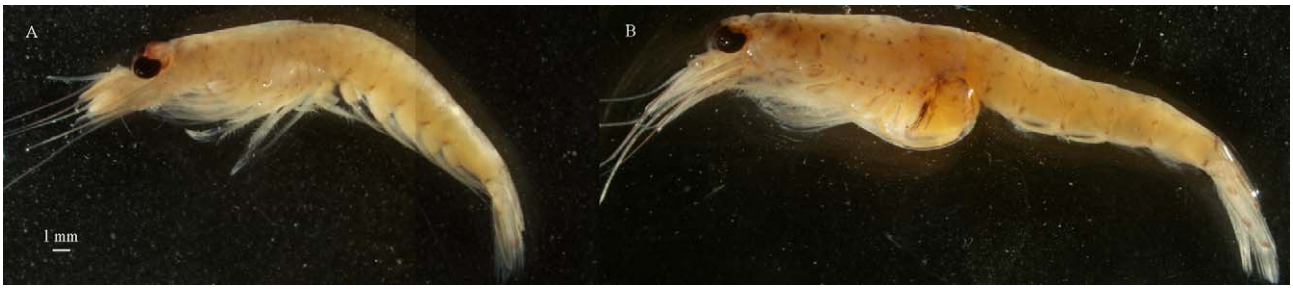

FIGURE 1. *Pseudobranchiomysis arenae* **n. sp.**: A, holotype (male—18 mm); B, allotype (female—25 mm).

Other specimens examined. 10 females, 22.44–29.02 mm (LB-CR 8A); 10 males, 14.55–19.48 mm (LB-CR 8B), 10 juveniles 7.20 mm - 12.62 mm (LB-CR 8C).

Type locality. Monte Hermoso, Buenos Aires Prov., Argentina (38°59´S, 61°06´W), 25 November 2010, 1 m, sledge with net, collected by Cecilia Carcedo.

Description. Body robust. Carapace (Figs. 1A, B) covering more than half the cephalothorax in dorsal view, with anterior margin produced into triangular rostrum.

Eyes (Fig. 2A) large, depressed dorsoventrally; cornea well pigmented, reniform in dorsal view; peduncles short and stout.

Antennular peduncle of male (Figs. 2A, B) more robust than that of female; first segment 1.2 times as long as broad, with two strong plumose setae and three minor at distal end of outer margin; second segment short, inner margin longer than outer, with a protuberance at distal corner of inner margin with about ten plumose setae; third segment robust, as long as broad, with a small protuberance on superior margin with three setae. Processus masculinus well developed and very hirsute. Female antennular peduncle (Figs. 3A, B) with first segment as in male and with a strong plumose seta near distal end of inner margin in dorsal view; second segment as in male; third segment as long as broad, with row of six plumose setae near distal end of outer margin, a small protuberance on superior margin with three setae and seven plumose setae at distal end of inner margin.

Antennal scale (Fig. 2C) lanceolate, with pointed apex, without distal suture; about five times as long as broad, more than twice as long as peduncle; densely furnished with plumose setae on both margins. Antennal peduncle (Fig. 2C) 3-segmented, first segment short, second and third segments 1.5 times as long as broad, with eight to ten setae at distal end of inner margin.

Mandible (Fig. 2D) with well-defined molar process; mandibular palp 3-segmented; first segment inconspicuous, second segment very dilated, 1.5 times as long as third; second and third segments with plumose setae on lateral margins. Maxillule (Fig. 2F) with outer lobe bearing robust setae on distal margin, inner lobe with plumose setae. Maxilla (Fig. 2E) with endopod 2-segmented; distal segment expanded, longer than broad and furnished with numerous strong setae on outer margin; exopod with 22 setae.

Labrum (Fig. 2G) without anterior process. Marsupial pouch in female formed by three pairs of oostegites increasing backward in size, anterior pair small, posterior pair large.

First and second thoracopods (Figs. 4A, B) with endopod short, robust, with five segments and exopod 14- and 15-segmented respectively; third to eighth thoracopods robust with terminal claw. Endopod of third thoracopod (Fig. 4C) with ischium one-third longer than merus and 5-segmented carpopropodus. Endopod of fourth (Fig. 4D) to seventh thoracopods with ischium one-third longer than merus and 6-segmented carpopropodus. Endopod of eighth thoracopod (Fig. 4E) with ischium one-third longer than merus and 7-segmented carpopropodus. Exopod of third to eighth thoracopods 15-segmented.

Pleopods of male developed, two branched, with well-developed pseudobranchial lobes. First pleopod (Fig. 5A) with endopod reduced to unsegmented lobe, exopod 11-segmented. Second pleopod (Fig. 5B) with endopod 10-segmented and exopod 11-segmented. Third pleopod (Fig. 5C) with endopod 10-segmented and exopod 12-segmented. Fourth pleopod (Fig. 5E) with endopod 10-segmented and exopod 14-segmented; antepenultimate segment of exopod armed with long and strong seta; penultimate and ultimate segments both armed with long spiniform seta (Fig. 5D). Fifth pleopod (Fig. 5F) with 12-segmented exopod; 10-segmented endopod. Pleopods of female (Fig. 5G) reduced to unsegmented single lobes, flattened and knife-shaped.

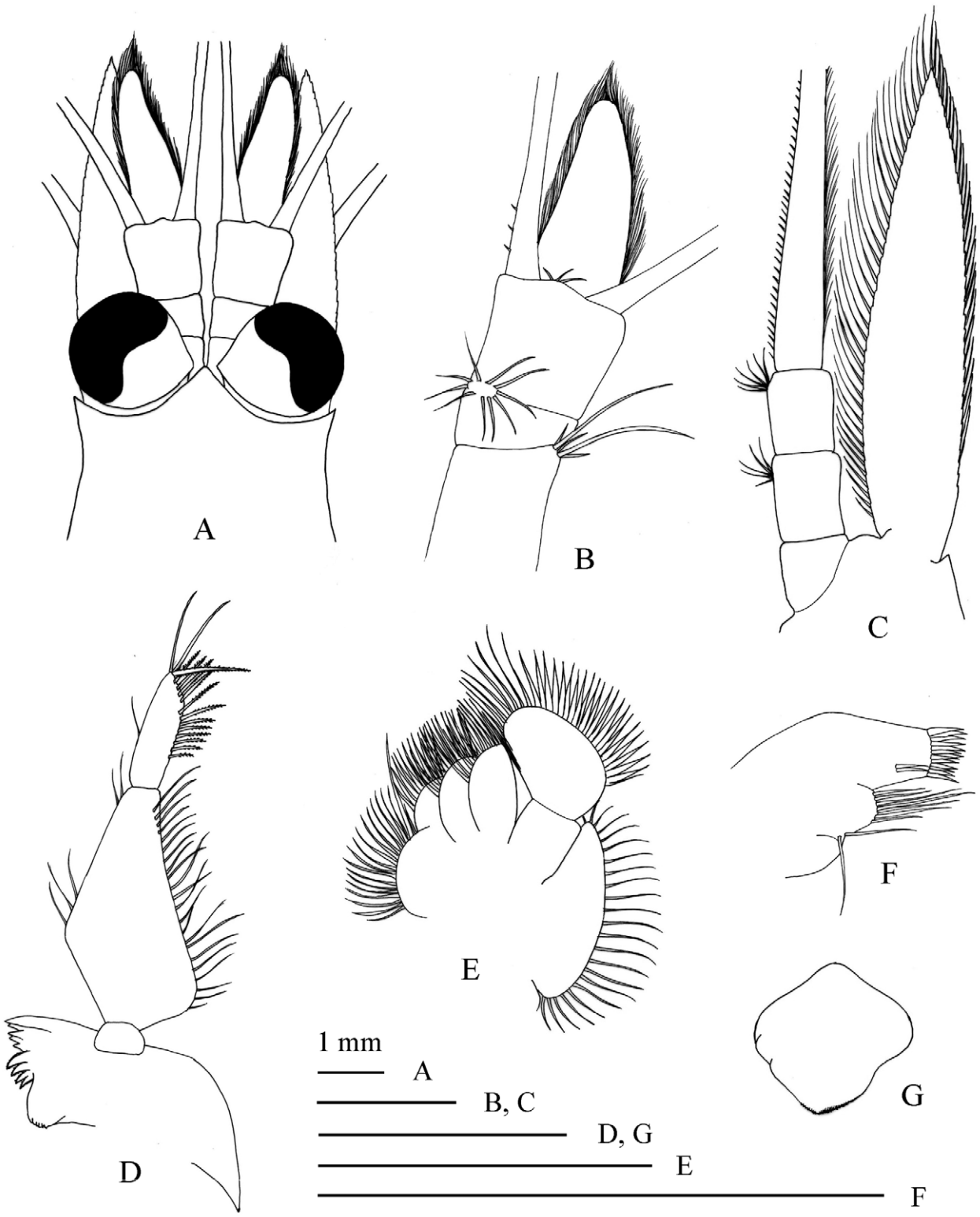

FIGURE 2. *Pseudobranchiomysis arenae* **n. sp.**: holotype (male). A, view of the anterior body part; B, antennule; C, antenna in dorsal view; D, mandible; E, maxilla; F, maxillule; G, labrum.

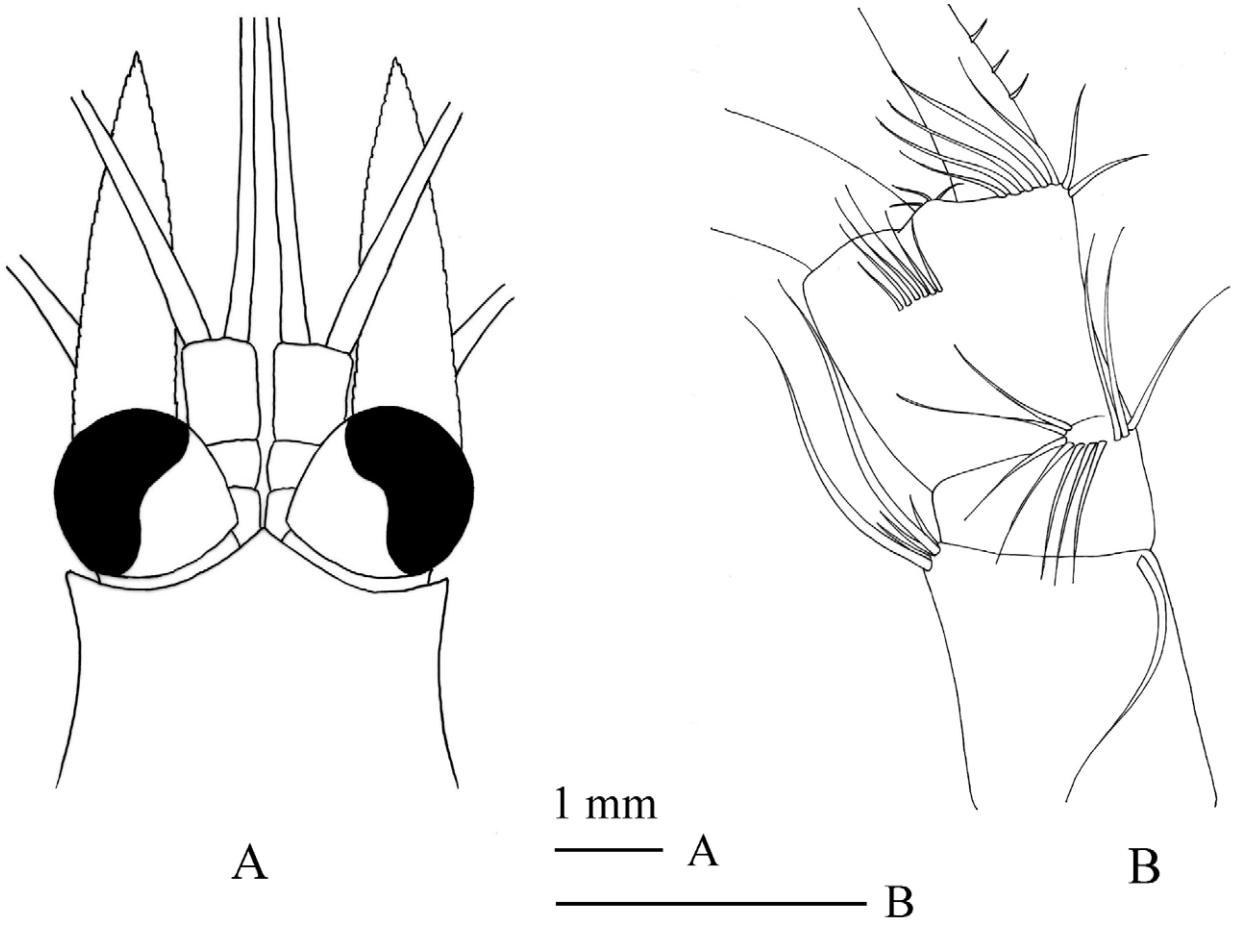

FIGURE 3. *Pseudobranchiomysis arenae* **n. sp.**: allotype (female). A, view of the anterior body part; B, antennule.

Telson (Figs. 6A, B) about twice as long as broad, equal in length to sixth abdominal somite. Apex of telson cleft, sides of notch convex, furnished with fine close-set pectinate spines and centre defined by two long plumose setae. Cleft about 1/7 of length of telson. Lateral margins of telson armed with 23 spinose setae, including two pairs of terminal setae.

Uropods (Fig. 6C) broadly lanceolate in form and densely setose on both margins. Outer uropod unjointed, 1.3 times longer than inner uropod. Inner uropod with large statocyst, 1.2 times longer than telson, inner margin with row of seven spinose setae, extending from statocyst edge to near three-quarters of uropod length; proximal setae closely set, distal ones more separated (Fig. 6D).

Etymology. The specific name is derived from the Latin *arenae*, sand grains, and refers to the pigmented spots throughout the body segments, giving it the appearance of grains of sand from the beach.

Ecological note. This species occurred in large numbers throughout the entire sampling period (two years) in the surf zone (0–1 m depth) of Monte Hermoso and Pehuen Có sandy beaches. Females were observed carrying eggs or larvae in the brood pouch during spring-summer, mainly during November and December of both years. The large number of specimens found in samples indicates that this species is a gregarious form and likely endemic to this particular zone. The population of this mysid shared the surf community mainly with *Arthromysis magellanica* (Mysida), *Artemesia longinaris* (Decapoda), *Leptoserolis bonaerensis* (Isopoda) and *Monocorophium insidiosum* (Isopoda). Temperature conditions ranged between 11.5ºC and 23.3ºC and salinity between 25.3 and 36.6.

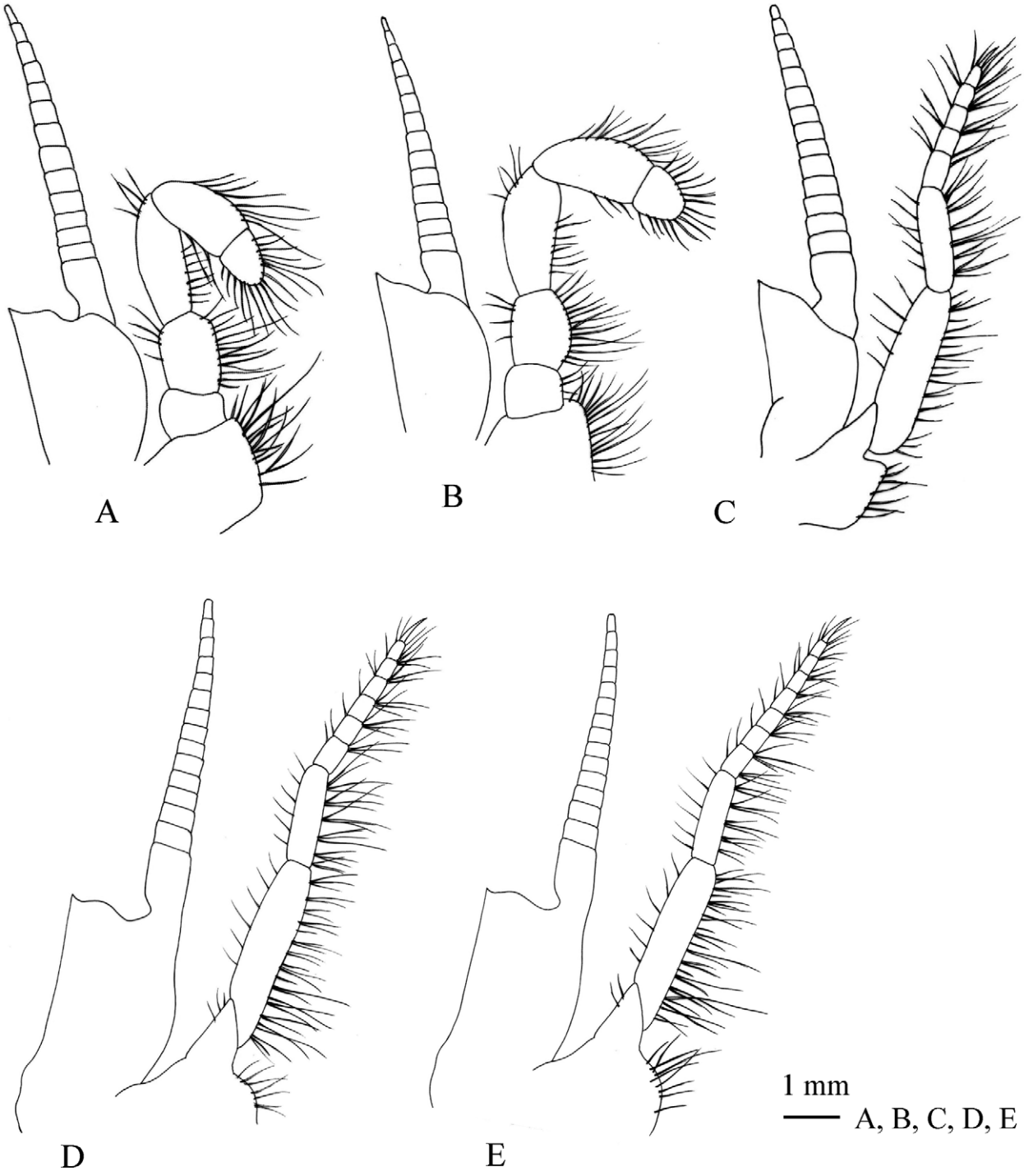

FIGURE 4. *Pseudobranchiomysis arenae* **n. sp.**: holotype (male). A, first thoracic limb; B, second thoracic limb; C, third thoracic limb; D, fourth thoracic limb; E, eighth thoracic limb.

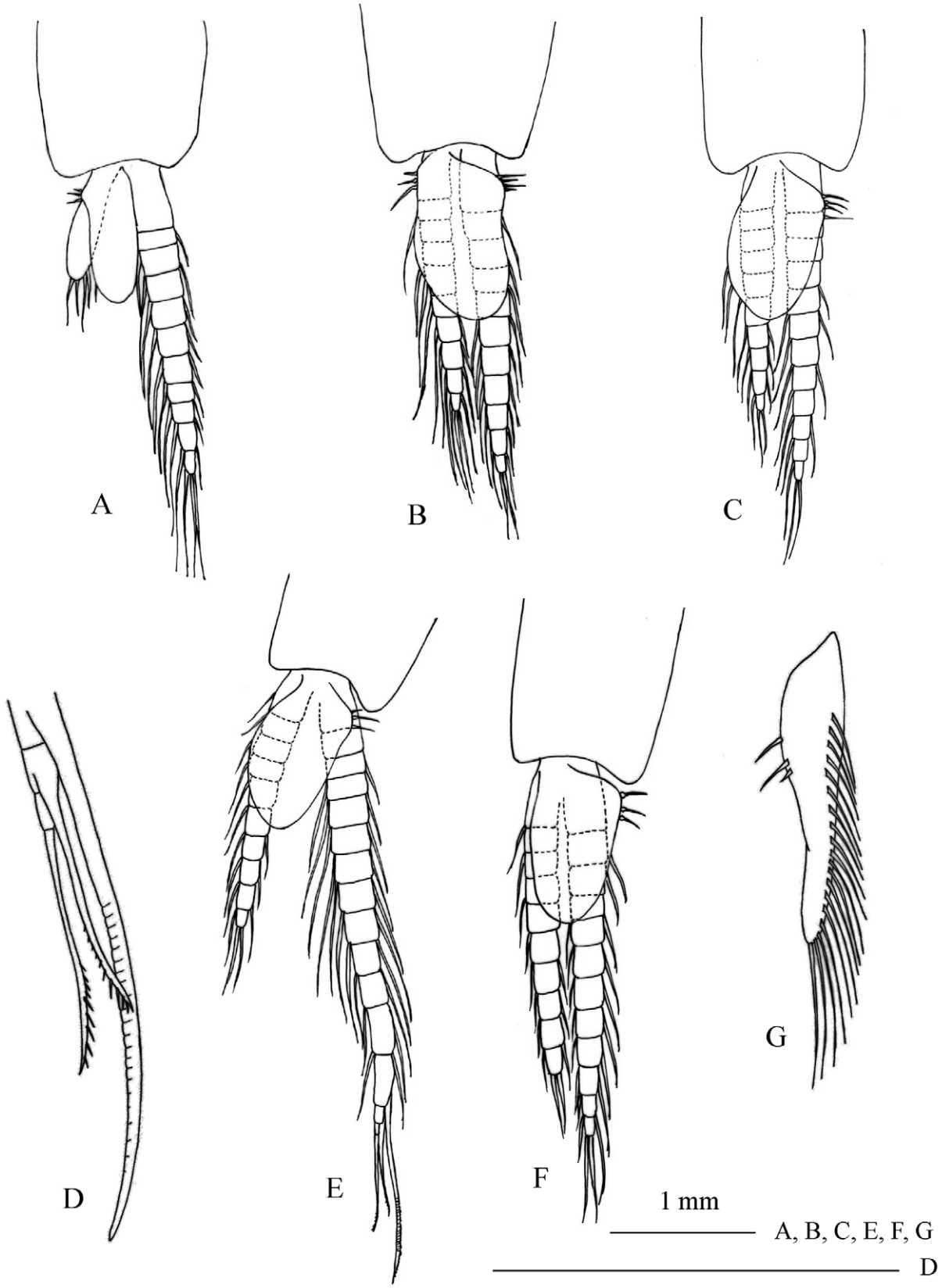

FIGURE 5. *Pseudobranchiomysis arenae* **n. sp.**: holotype (male). A, first pleopod; B, second pleopod; C, third pleopod; D, modified setae of fourth pleopod; E, fourth pleopod; F, fifth pleopod; G, first pleopod (female).

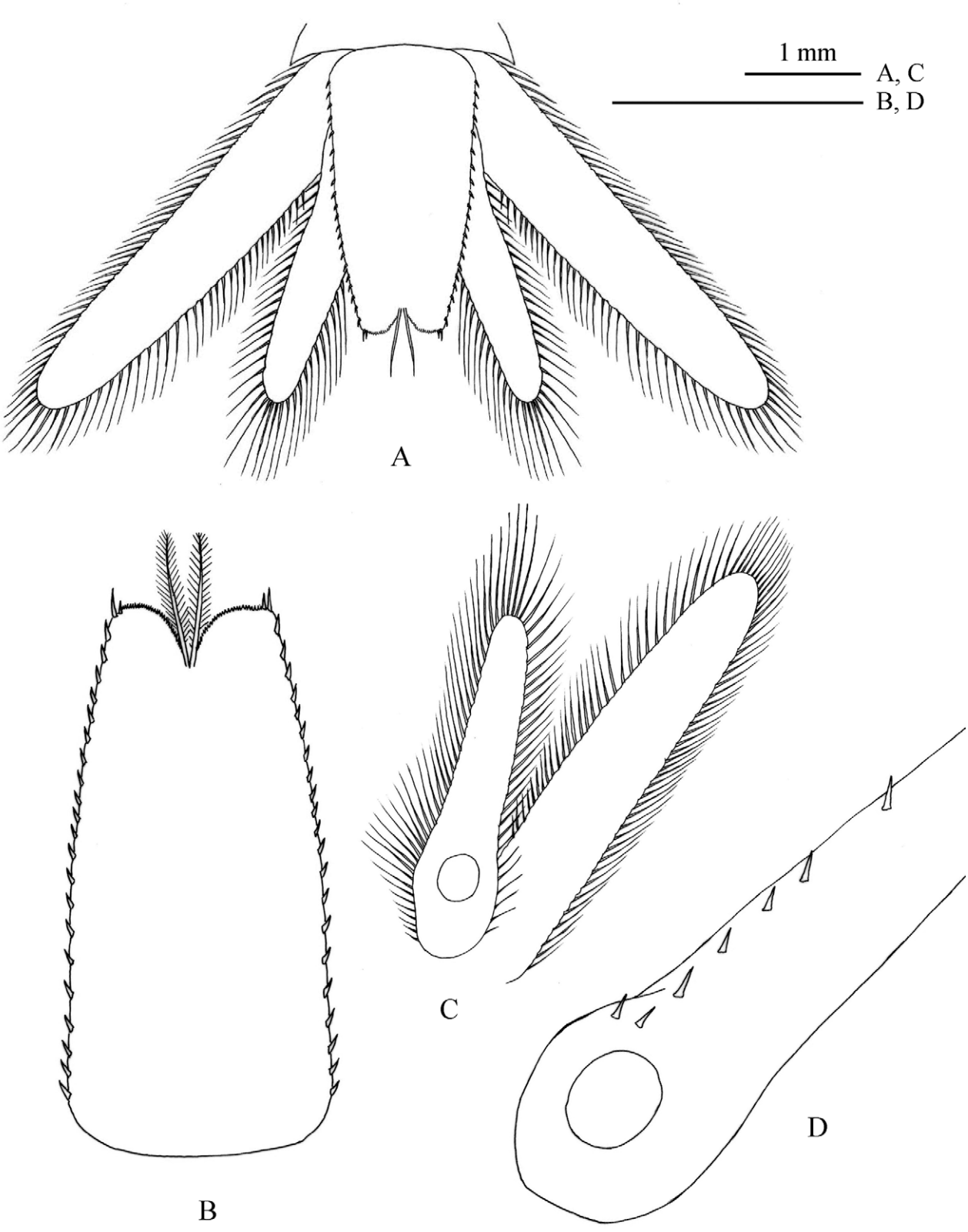

FIGURE 6. *Pseudobranchiomysis arenae* **n. sp.**: holotype (male). A, view of posterior body part; B, telson; C, uropod; D, endopod of uropod in ventral view.

Acknowledgments

We very much appreciate the constructive suggestions of associate editor Dr. Kenneth Meland. We also thank the valuable contributions of Dr. Wayne Price and Dr. Kouki Fukuoka, and the useful comments of Dr. M. Murano and an anonymous reviewer.

Invaluable literature on Mysida taxonomy sent by Dr. G. Anderson is also gratefully acknowledged. This work was financially supported by the Secretaría de Ciencia y Técnica de la Universidad Nacional del Sur (PGI 24/ZB40 to SF).

References

Cunningham, R.O. (1871) Notes on the Reptiles, Amphibia, Fishes, Mollusca, and Crustacea obtained during the voyage of H.M.S. "Nassau" in the years 1866-69. *Transactions of the Linnean Society of London*, 27, 465–502. http://dx.doi.org/10.1111/j.1096-3642.1871.tb00219.x

Bacescu, M. (1968) Étude des quelques Leptomysini (Crustacea Mysidacea) des eaux du Brésil et de Cuba; Description d´un genre et de cinq autres taxons nouveaux. *Annali del Museo Civico di Storia Naturale Giacomo Doria*, 77, 232–249

González, L.A. (1974) Hallazgo de *Neomysis americana* Smith (1873) (Crustacea: Mysidacea) en el Río de la Plata. *Revista Biológica del Uruguay*, 11(2), 119–130.

Hansen, H.J. (1910) The Schizopoda of the "Siboga Expedition". *"Siboga" Reports*, 37, 1–123.

Hoffmeyer, M.S. (1993) *Mysidopsis rionegrensis*, a new species of Mysidacea from San Matias Gulf, Argentina. *Physis. Sección A: Los Oceanos y sus Organismos*, 48(114–115), 15–19.

Mauchline, J. (1980) The biology of mysids and euphausiids. *Advances in Marine Biology*, 18, 1–680.

Mees, J. (2012) Leptomysinae and Mysinae. World Register on Marin Species. Available from http://www.marinespecies.org (Accessed 25 January 2013)

Meland, K. & Willassen, E. (2007) The disunity of "Mysidacea" (Crustacea). *Molecular Phylogenetics and Evolution*, 44, 1083–1104. http://dx.doi.org/10.1016/j.ympev.2007.02.009

Murano, M. (1999) Mysidacea. *In*: Boltovskoy, D. (Ed.), *South Atlantic Zooplankton, Vol. 1*. Backhuys Publishers, Leiden, pp. 1099–1140.

Sars, G.O. (1879) Crustacea et Pycnogonida nova in itinere 2do et 3tio Expeditionis Norvegicae anno 1877 & 78 collecta (Prodromus descriptionis). *Archiv for Mathematik og Naturvidenskab*. Fjerde bind, 427–476.

Schiariti, A., Mianzan, H.W. & Ramirez, F.C. (2004) New records of *Mysidopsis tortonesei* Bacescu, 1968 and *M. rionegrensis* Hoffmeyer, 1993 (Mysidacea) from the Rio de la Plata estuary and Buenos Aires coastal waters. *Crustaceana*, 77(7), 887–893.

Smith, S.I. (1873) Report upon the invertebrate animals of Vineyard Sound and the adjacent waters, with an account of the physical characters of the region. *In:* Verrill, A.E., & Smith, S.I., 1874, (Eds.), *Report Upon the Invertebrate Animals of Vineyard Sound and Adjacent Waters with an Account of the Physical Features of the Region*. Miscellaneous Document, U.S. Senate, 42, Congress (Report of the Commission of Fish and Fisheries), Washington, Government Printing Office, pp. 295–778.

Tattersall, O.S (1955) *Mysidacea*. *Discovery Reports*, 28, 1–190.