

Taxonomy and systematics

A new species of *Ampelisca* (Crustacea: Amphipoda: Ampeliscidae) from Santa Margarita Island, west of the Baja California Peninsula, Mexico

Una especie nueva de Ampelisca (Crustacea: Amphipoda: Ampeliscidae) de la isla Santa Margarita, oeste de la península de Baja California, México

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Abstract

A new species of the genus *Ampelisca* Krøyer, 1842 is described and illustrated in detail. The specimens were collected from soft bottom at 15 m depth in the northern coast of Santa Margarita Island, Mexico. *Ampelisca capetilloi* sp. nov. is characterized by: head as long as pereonite 1-2 combined; mandible with 8 rakers; maxilla 1 palp article 2 expanded distally; gnathopod 1 propodus anterior margin with 7 distal setae; pereopod 7 basis reaching middle portion of merus, posterodistal lobe of merus large, extending one-third of carpus; pleonite 3 dorsal margin smooth; urosomite 1 slightly sinuous dorsally; telson bilobate, each lobe with 3 dorsal setae. The new species is similar to *Ampelisca mexicana* Barnard, 1954 and *A. pugetica* Stimpson, 1864, but can be easily recognized with the identification key included herein. A checklist for *Ampelisca* species documented from the Eastern Tropical Pacific, including their geographic distribution, habitat, and depth range, is provided.

Keywords: Crustacea; Malacostraca; Shallow water; Taxonomy

Resumen

Una especie nueva del género *Ampelisca* Krøyer, 1842 es descrita e ilustrada a detalle. Los organismos fueron recolectados de fondo suave a 15 m de profundidad, en la costa norte de la isla Santa Margarita, México. *Ampelisca*

capetilloi sp. nov. es caracterizada por: cabeza tan larga como pereonites 1-2 combinados; mandíbula con 8 setas accesorias; artejo 2 del palpo de maxila 1 expandido distalmente; gnatópodo 1 con margen anterior del propodio con 7 setas distales; base del pereópodo 7 alcanzando la mitad del mero, lóbulo posterodistal del mero muy largo, extendiéndose un tercio del carpo; pleonite 3 con margen dorsal liso; urosomita 1 ligeramente sinuoso dorsalmente; telson bilobulado, cada lóbulo con 3 setas dorsales. La especie nueva es similar a *Ampelisca mexicana* Barnard, 1954 y *A. pugetica* Stimpson, 1864, que pueden ser reconocidas con la clave de identificación incluida. Se presenta una lista de las especies del género *Ampelisca* registradas para el Pacífico tropical oriental con información sobre su distribución geográfica y profundidad del hábitat.

Palabras clave: Crustacea; Malacostraca; Aguas someras; Taxonomía

Introduction

The genus *Ampelisca* Krøyer, 1842 is the most speciose of the family Ampeliscidae with more than 150 benthic species distributed worldwide inhabiting sediments as tubicolous infauna from intertidal to 4,000 m depth (Souza-Filho et al., 2009). The first records of the American Tropical Pacific species of the genus *Ampelisca* were documented by Holmes (1908). Later, Chapman (2007) and Cadien et al. (2018) contributed to the knowledge of *Ampelisca* fauna of the Northeastern Pacific Ocean; however, the most important contribution to the taxonomy of this genus in the Eastern Pacific Ocean was published by Barnard (1954). So far, 14 species of *Ampelisca* have been recorded from the Gulf of California (Brusca & Hendrickx, 2005), and 25 species from the Eastern Tropical Pacific Ocean as benthic components (García-Madrigal, 2007).

The organisms analysed in the present paper were obtained in a research project focused on marine invertebrates inhabiting the sandy bottom from northern Santa Margarita Island, off the west coast of the Baja California Peninsula, Mexico. Within these organisms, specimens of the genus *Ampelisca* were examined and turned out to belong to an undescribed new species. The present work contributes with the description of a new species of *Ampelisca* and presents an identification key for the 3 most similar *Ampelisca* species. In addition, a checklist for *Ampelisca* species documented from the Eastern Tropical Pacific, including their geographic distribution and habitat depth, is provided herein (Table 1).

Material and methods

The material was obtained with a van Veen grab of 0.3 m² from sandy bottom samples at the northern coast of Santa Margarita Island, Mexico. Samples were filtered with 0.5 and 1 mm sieves and fixed with 75% ethanol. The amphipods were separated and identified at the Crustacean Laboratory, of the Facultad de Estudios Superiores

Iztacala (FES-I) of UNAM. Specimens of *Ampelisca* were examined, dissected and illustrated using a dissecting stereoscopic microscope MOTIC SMZ-168 equipped with a camera lucida. Mouthparts and small appendages were illustrated using a MOTIC BA-210 compound microscope also equipped with a camera lucida. Illustrations were completed in Corel Draw V.12. The terminology and taxonomic classification were taken from Barnard (1954) and Souza-Filho et al. (2009). Specimens are deposited in the National Crustacean Collection (CNCR), of the Instituto de Biología, UNAM, in Mexico City, and in the Collection of the Crustacean Laboratory (CLI), at FES-I, UNAM.

Description

Order Amphipoda Latreille, 1816

Suborder Amphilocheida Boeck, 1871

Family Ampeliscidae Krøyer, 1842

Genus *Ampelisca* Krøyer, 1842

Ampelisca capetilloi sp. nov. Ortiz, Winfield & González-Salazar

(Figs. 1-4)

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Diagnosis. Head longer than pereonites 1-2 combined, ventral margin oblique. Antenna 1 reaching end of antenna 2 peduncle. Antenna 2 peduncle article 4, 1.3 × length article 5. Mandible with 8 accessory setae; palp article 3, 0.8 × as article 2 length. Coxae 2-3 with small concavity on anterior margin. Gnathopod 1 propodus palm margin with 7 distal setae. Gnathopod 2 merus with 4 long posterodistal setae; carpus posterior margin with 28 long simple setae. Pereopod 4 merus anterior margin with 22 setae; posterior margin with 24 long setae. Pereopod 7 basis reaching mid portion of merus; posterior margin almost straight; ventral margin with 26 short setae; merus posterodistal lobe very large, extending to end of carpus; with 10 plumose setae. Pleonite 3 dorsal margin smooth. Epimeron 3 posteroventral angle produced into large

Table 1

Checklist, geographical distribution and depth of the *Ampelisca* species documented from the Eastern Tropical Pacific (ETP). Information was taken from Barnard (1954) and García-Madrigal (2007).

Species	ETP	Depth (m)
<i>A. agassizi</i> (Jud, 1896)	Canada-Ecuador	1-450
<i>A. anversensis</i> G. Karaman, 1975	Antarctic ocean-Gulf of California	200-500
<i>A. brevisimulata</i> J. L. Barnard, 1954	Baja California-Panamá	11-172
<i>A. cristata</i> Holmes, 1908	Oregon-Ecuador	6-152
<i>A. cristoides</i> J. L. Barnard, 1954	Baja California-Colombia	3-80
<i>A. cucullata</i> J. L. Barnard, 1954	Nayarit, México	4-16
<i>A. eoa</i> Gurjanova, 1951	Southern Baja California	421-708
<i>A. fageri</i> Dickinson, 1982	British Columbia-Baja California	0-40
<i>A. furcigera</i> Bulyceva, 1936	Southern Baja California	950-2,840
<i>A. hancocki</i> J. L. Barnard, 1954	Monterrey Bay-Costa Rica	9-200
<i>A. hermosa</i> J. L. Barnard, 1961	Gulf of Panama	500
<i>A. indentata</i> J. L. Barnard, 1954	Gulf of California	33-98
<i>A. lobata</i> Holmes, 1908	Canadá-Perú	0-234
<i>A. mexicana</i> J. L. Barnard, 1954	Baja California-Perú	9-73
<i>A. milleri</i> J. L. Barnard, 1954	San Francisco Bay-Ecuador	0-187
<i>A. pacifica</i> Holmes, 1908	Monterrey Bay-Panamá	20-550
<i>A. plumosa</i> Holmes, 1908	California-Baja California	10-16
<i>A. pugetica</i> Stimpson, 1864	Baja California-Perú	9-183
<i>A. romigi</i> J. L. Barnard, 1954	Monterrey Bay- Ecuador	3-504
<i>A. schellenbergi</i> Shoemaker, 1933	Baja California-Ecuador	0-128
<i>A. schrichtii</i> Kroyer, 1842	Baja California (Cicuntropical)	
<i>A. shoemakeri</i> J. L. Barnard, 1954	Baja California-Perú	7-76
<i>A. unsocalae</i> Barnard, 1960	Sothern California- Baja California	50-1,720
<i>A. venetiensis</i> Shoemaker, 1916	California-Ecuador	0-84
<i>A. capetilloi</i> sp. nov.	Santa Margarita Island, Baja California Sur	15

spine. Urosomite 1 slightly sinuous dorsally. Telson cleft $0.7 \times$ length; each lobe with 3 dorsal setae.

Description. Based on holotype female (CNCR 35569); female body 7.2 mm length. Lateral view (Fig. 1). Head longer than pereonites 1 and 2 combined; anterior front margin slightly incised; lower front margin oblique, straight; upper pair of eyes behind upper margin of antenna 1; lower pair at lateral angle on head. Antenna 1 reaching end of peduncle of antenna 2; peduncle article 1 not dilated distally, devoid of setae; peduncle article 2, $1.3 \times$ article 1 length; peduncle article 3, 0.8 article 1 length; flagellum 7-articulate. Antenna 2 reaching pereonite 6; peduncle article 4, 1.3 article 5 length, devoid of setae ventrally; flagellum 1.3 length peduncle; flagellum 14-articulate.

Mouthparts (Fig. 2A-G). Maxilliped (Fig. 2A-C), inner plate not reaching end of palp article 1; apex with 1 molariform tooth and 5 long and 1 short setae; outer plate not reaching end of palp article 2; 7 molariform setae at inner margin; 5 robust setae on distal margin; inner margin of palp article 2 with 26 long setae; outer margin with 3 distal setae, $2.8 \times$ article 3 length; article 3 quadrangular with 16 distal robust setae; article 4 as long as 3, with 4 distal setae. Maxilla 1 (Fig. 2D), inner plate small, expanded, with apical and subapical setae; outer plate with 9 robust setae; palp article 2 expanded distally; $4 \times$ length article 1, with 3 distal cusps, 4 robust setae, and 10 simple facial setae. Lower lip (Fig. 2E), inner plate not fully developed; outer plate rounded, with tiny setae on inner

side of each plate; mandible lobe present. Maxilla 2 (Fig. 2F), outer plate $1.4 \times$ wider than inner plate; inner plate with 20 long distal simple setae, 6 oblique facial simple setae, 14 long curved tip setae, and 7 simple short setae. Mandible with 5 incisive teeth (Fig. 2G); *lacinia mobilis* with 5 teeth; accessory setal row with 8 rakers; molar well developed, triturative; palp article 2 not expanded, 10 setae on inner margin; 4 on outer margin; article 3, $0.8 \times$ as length article 2; 5 setae on inner margin; one midway on outer margin; palp article 3 with 2 long simple distal setae; 5 long simple setae on inner margin; one seta on outer margin.

Gnathopod 1 (Fig. 3A). Coxa $2.6 \times$ longer than wide; general surface covered with sparse short setae; ventral margin rounded, lined with short setae; basis posterior margin proximal half with 6 marginal and 2 submarginal setae; distal posterior margin with 2 separated setae; anterior margin with 5 setae; ischium posterior margin with 1 short and 3 long pectinate setae; merus distal half with long lateral and posterior setae; anterior margin with 9 equidistant setae; carpus as thick as merus; $1.2 \times$ propodus length; anterior margin with 7 distal setae; posterior margin distal half with 5 long, 2 robust and 4 short setae; dactylus $0.5 \times$ length propodus; with 5 distal setae.

Gnathopod 2 (Fig. 3B). Coxa $1.4 \times$ longer than wide; anterodistal margin rounded; with a subdistal set of setae. Both oostegite and gill $0.9 \times$ coxa 2 length; basis as long as merus and carpus combined; with 16 long setae; ischium with 2 postero distal long setae; merus with 4 long posterodistal setae; carpus posterior margin with 28 long simple setae; anterodistal corner with one distal seta; propodus anterior margin with 8 long simple setae; distal half of posterior margin with 15 long simple setae; dactylus as long as propodus; posterior margin with 4 setae.

Pereopod 3 (Fig. 3C). Coxa twice as long as wide; distal margin rounded with subdistal set of setae; oostegite and gill, 1.2 times coxa 3 length; basis 1.1 length of merus and carpus combined; basis posterior margin with 11 setae; anterior margin with short setae; ischium posterior margin with short setae; merus anterior margin with 7 setae, posterior margin with 8 long and 2 short setae; carpus 0.5 length of propodus; posterior margin with 6 long setae; anterior margin naked; propodus anterior margin with 7 setae; posterior margin naked; dactylus as long as carpus and propodus combined, slender.

Pereopod 4 (Fig. 3D). Coxa as long as wide; quadrangular; with well-developed posterior lobe; ventral margin covered with tiny setae; oostegite and gill 1.2 times coxa 4 length; basis as long as merus, carpus and propodus combined; posterior margin distal half covered with tuft of 17 long setae; anterior margin with 8 short setae; ischium

naked; merus anterior margin with 22 setae; posterior margins covered with 24 long setae; carpus short; with 7 long setae; dactylus 1.2 times carpus and propodus length combined, naked.

Pereopod 5 (Fig. 3E). Basis nearly rounded, anterior margin with 19 setae; posterior margin rounded, with 4 tiny setae; ischium short, naked; merus $0.8 \times$ propodus length, naked; carpus anterior margin with 9 tiny and 3 distal setae; posterior margin with 3 submarginal, 4 distal setae; propodus anterior margin with 6 tiny setae; posterior margin with 2 submarginal setae; dactylus short, with 3 accessory spines and 2 setae.

Pereopod 6 (Fig. 3F). Basis subquadrate; anterior margin with 16 setae; merus $0.7 \times$ length carpus; anterior margin with 2 long and 2 short setae; carpus $1.3 \times$ propodus length; posterodistal corner drawn out, bearing 3 long and 3 short setae; posterior margin with 3 robust submarginal setae; anterior margins with 10 setae; propodus anterior margin with 13 setae; dactylus short with 4 short and 1 long accessory spines and 2 setae.

Pereopod 7 (Fig. 3G). Basis reaching mid portion of merus; posterior margin almost straight, ventral margin with 26 short setae; ischium shorter than merus; anterodistal corner with 2 setae; merus posterodistal lobe very large; longer than carpus; lobe margin with 10 plumose setae; anterodistal corner with 2 setae; carpus anterodistal corner with 2 setae; propodus $2.3 \times$ carpus length, expanded, twice as long as wide; posteroventral corner with 1 seta; dactylus $0.5 \times$ propodus length, curved anterodistally.

Uropod 1 not reaching end of uropod 2 (Fig. 4B, E); peduncle $1.1 \times$ rami length; a distal robust seta; rami subequal in length; outer ramus naked, inner ramus with 3 robust setae on inner margin. Uropod 2 peduncle $1.2 \times$ rami length (Fig. 4C, E); 2 robust setae on outer margin; outer ramus with 10 lateral short robust setae, and 1 long subdistal; inner ramus with 5 lateral robust setae and 1 distal one. Uropod 3 peduncle $0.6 \times$ rami length (Fig. 4D, E); rami poorly foliaceous; outer ramus with 5 subdistal setae; inner ramus with tuft of setae medially, 1 long and 1 short subdistally. Telson cleft $0.7 \times$ length; each lobe with 3 dorsal setae placed in line; notched tip with simple setae (Fig. 4A).

Pleonite 3 dorsal margin smooth (Fig. 4E); urosomite 1 slightly sinuous dorsally, with 2 tiny posterodorsal setae. Epimera (Figs. 1, 4E). Epimera 1-2 posteroventral corners rounded; epimeron 3 posteroventral corner with strong tooth, with no previous large, rounded process.

Taxonomic summary

Type material. Holotype ovigerous female (5 eggs); 7.2 mm length; van Veen grab; 15 m depth; sandy bottom; March 13, 2017; collector Jan González Salazar; N Santa

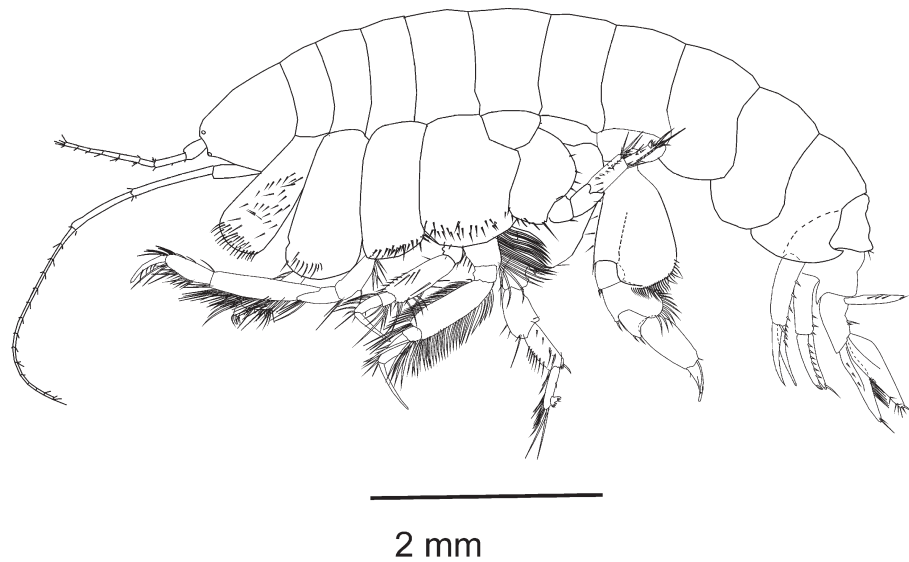


Figure 1. *Ampelisca capetilloi* sp. nov. Lateral view of body. CNCR35569.

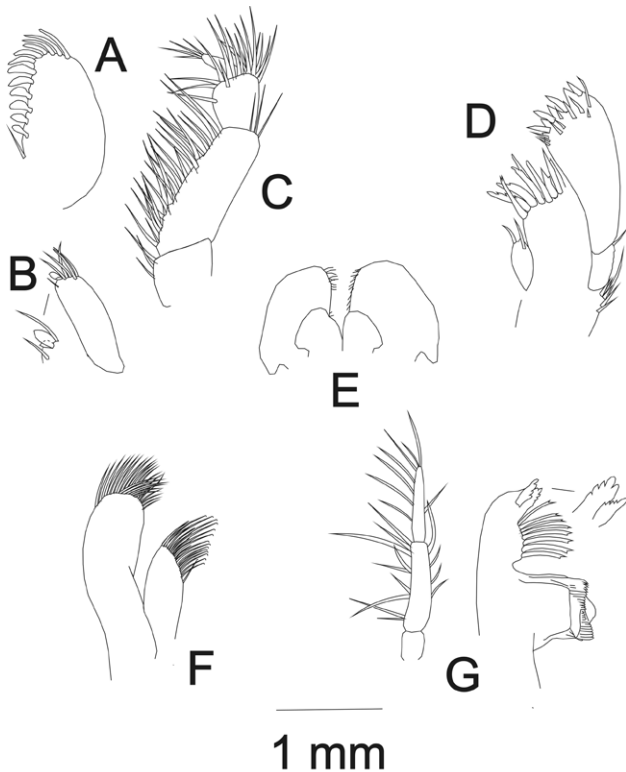


Figure 2. *Ampelisca capetilloi* sp. nov. A-C, Maxilliped; A, outer lobe; B, inner lobe; C, palp; D, maxilla 1; E, lower lip; F, maxilla 2; G, mandible and palp. CNCR35569.

Margarita Island, off the west coast of the Baja California Peninsula, Mexico; CNCR35569. Paratypes: 2 juvenile females; 4.9 and 4.1 mm; somewhat damaged; collected with holotype; CLI-141.

Type locality. North coast of Santa Margarita Island, off the west coast of the Baja California Peninsula, Baja California Sur, Mexico, 24°30'10.34" N, 111°59'53.23" W.

Etymology. Species dedicated to Norberto Capetillo Piñar, Federación de Sociedades Cooperativas Pesqueras Zona Centro, Baja California Sur, México.

Distribution. This species is known only from the type locality, north coast of Santa Margarita Island, off the west coast of the Baja California Peninsula, Mexico.

Discussion

Of all the American Tropical Pacific species of the genus *Ampelisca* (Table 1), only *A. brevisimulata* Barnard, 1954, *A. eoa* Gurjanova, 1951, *A. hancocki* Barnard, 1954, *A. mexicana*, Barnard, 1954, *A. macrocephala* Liljeborg, 1862, *A. pacifica* Holmes, 1908, and *A. capetilloi* sp. nov., have posteroventral corner of epimeron 3 with strong tooth. Of them, *A. mexicana*, *A. pugetica*, and *A. capetilloi* sp. nov., also have merus of pereopod 7 highly dilated backward.

On the other hand, Barnard (1954) did not present graphical information on the mouthparts of the species of Ampeliscidae collected by the Velero III and Velero IV, which makes its identification difficult, especially when it comes to closely related species. This is the case

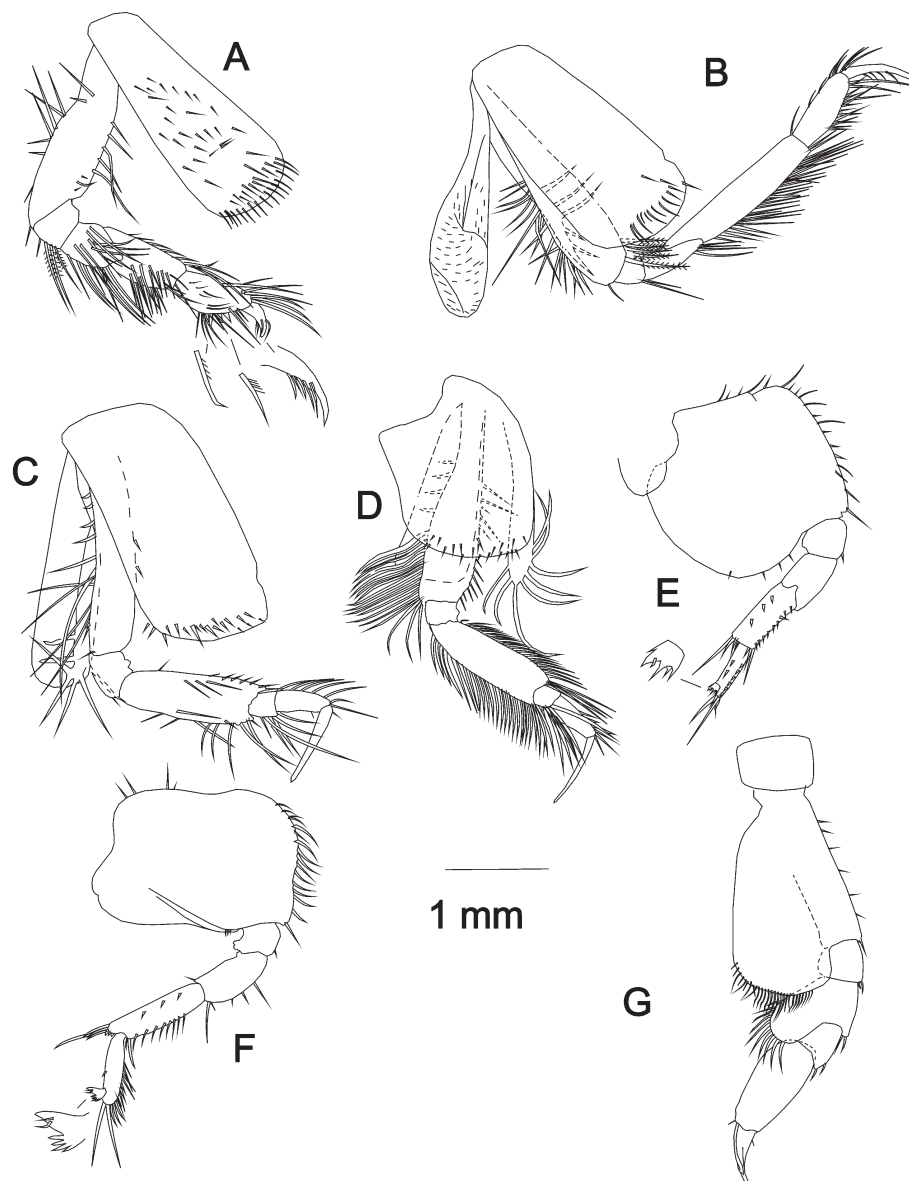


Figure 3. *Ampelisca capetilloi* sp. nov. A, Gnathopod 1; B, gnathopod 2; C, pereopod 3; D, pereopod 4; E, pereopod 5; F, pereopod 6; G, pereopod 7. CNCR35569.

of *A. mexicana* and *A. capetilloi* sp. nov., both are very similar if the mouthparts and certain complementary details of the morphology of the former are not given (see the taxonomic key included below). The figures of *A. mexicana* presented by Barnard are generally considered sufficient for its identification (Jiménez et al., 2018). So, it is very likely that specimens of *A. capetilloi* sp. nov. have been previously misidentified as *A. mexicana*, especially when the current distribution of *A. mexicana* is so wide (from Punta Canoas, Baja California to Peru) (Barnard,

1954; García-Madrigal, 2007; Jiménez et al., 2018) (Table 1). The analysis of additional material to be collected in the region could confirm this assumption.

Moreover, *A. capetilloi* sp. nov. differs from *A. araucana*, Guerrero, 1963, with a South Pacific Eastern American distribution, by having the antenna 1 as long as the tip of peduncle article 5 of antenna 2 (shorter in *A. araucana*), lower border of head straight (convex in *A. araucana*), coxae 2 and 3 anterior margin with concavity (none in *A. araucana*), uropod 1 not surpassing tip of

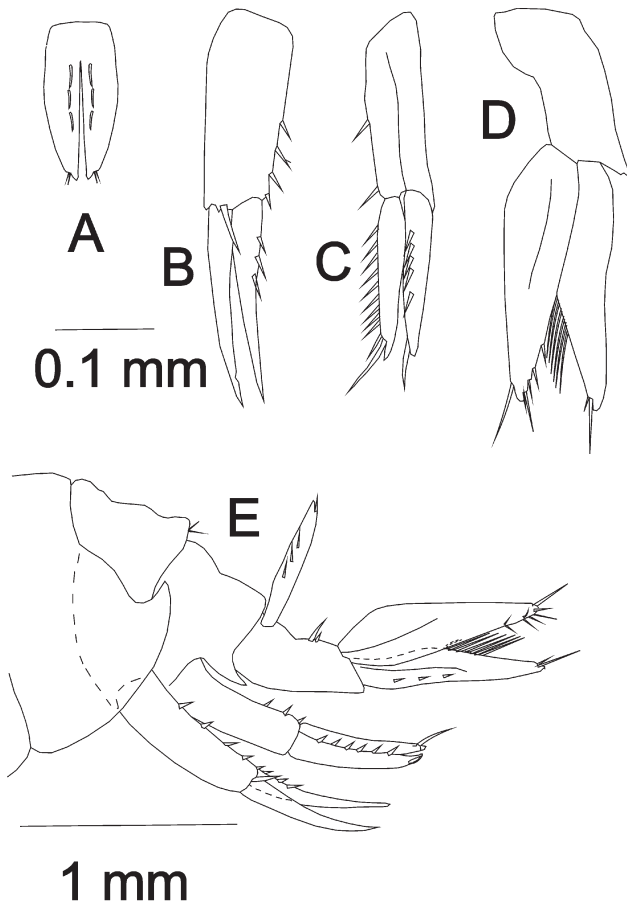


Figure 4. *Ampelisca capetilloi* sp. nov. A, Telson; B, uropod 1; C, uropod 2; D, uropod 3; E, lateral view of pleonal segment 3, urosoma, pleopods and telson. CNCR35569.

uropod 2 (surpassing in *A. araucana*), pereopod 4 basis posterior margin with a tuft of 18 long setae (10 in *A.*

araucana), basis posteroventral margin pereopod 7 with 26 setae (20 in *A. araucana*), and dactylus half-length of propodus (0.8 x length of propodus in *A. araucana*).

Further, *A. capetilloi* sp. nov. differs from *A. moreirai* Valerio-Berardo and Wakabara, 2006, a species from Brazilian waters by having the antenna 1 reaching the tip of antenna 2 peduncle (shorter in *A. moreirai*); mandibular palp article 3 with 1 distal and 6 marginal setae (3 distal and 1 subdistal setae in *A. moreirai*), 8 mandible rakers (9 in *A. moreirai*); maxilla 2 inner plate with 13 distal curved setae (all straight in *A. moreirai*), lower lip well developed (not so in *A. moreirai*), coxae 2 and 3 with anterior margin concavity (without concavities in *A. moreirai*), pereopod 4 basis with long setae on posterior margin (long setae on both margins in *A. moreirai*), pereopod 6 basis wider than long (longer than wide in *A. moreirai*), telson dorsally with 3 setae located longitudinally and in line (devoid of setae in *A. moreirai*).

Finally, *A. capetilloi* sp. nov. differs from *A. longipropoda* Valerio-Berardo, 2007, another Brazilian species (Valerio-Berardo, 2007), by having the antenna 1 reaching the peduncle of antenna 2 (shorter in *A. longipropoda*), mandible with 8 rakers and 8 setae on article 2 of palp (with 6 rakers and one seta on article 2 of palp in *A. longipropoda*), maxilla inner plate with 14 curved tip setae (10 straight setae in *A. longipropoda*), coxa 1 with entire anterior margin (with notch on posteroventral margin in *A. longipropoda*), gnatopod 1 propodus shorter than carpus (subequals in *A. longipropoda*), gnatopod 2 posterior margin of basis and carpus densely setose (with less setae in *A. longipropoda*), coxa 2 with submarginal ventral setae (marginals in *A. longipropoda*), pereopod 6 dactylus with 4 short and 1 large accessory spines and 2 setae (2 short and 1 long accessory spines in *A. longipropoda*); basis of pereopod 7 with 26 setae (9 in *A. longipropoda*).

Identification key for the 3 most similar species *Ampelisca*: *A. pugetica*, *A. mexicana*, and *A. capetilloi* sp. nov.

- 1A- Coxa 3 anterior margin without concavity; pereopod 7 carpus anteroventral corner forming a discrete bifid lobe; propodus not inflated; mandible spine row with 11-12 spines; maxilla 1 outer plate with 11 robust setae.....*A. pugetica*
- 1B- Coxa 3 anterior margin with concavity; pereopod 7 carpus anteroventral corner not forming a discrete lobe; propodus inflated; mandible spine row with 7-8 spines; maxilla 1 outer plate with 9 robust setae 2
- 2A- Coxa 3 anterior margin with concavity in upper half; antenna 2 article 5 with short and long setae; pereopod 4 articles 2 and 4 posterior margins devoid of tuft of long setae; anterior margin with 5-8 setae; mandible with 7 spines in spine row; palp article 3 as long as 2; gnatopod 1 palmar margin with 7 robust setae; pereopod 5 article 2 posterior margin with two convexities; pereopod 7 article 2 ventral margin with 17 setae; surface of each lobe of telson with one basal and two median setae obliquely arranged *A. mexicana*
- 2B- Coxa 3 anterior margin with concavity in lower half; antenna 2 article 5 devoids of setae; pereopod 4 articles 2 and 4 posterior margins with tuft of long setae; anterior margin completely covered with long setae; mandible with 8 spines in spine row; palp article 3 0.8 times as 2; gnatopod 1 palmar margin with 2 robust setae; pereopod 5 article 2 posterior margin rounded; pereopod 7 article 2 ventral margin with 26 setae; surface of each lobe of telson with 3 setae located longitudinally in a row*A. capetilloi* sp. nov.

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