

A new species of *Amphiascoides* Nicholls, 1941 (Crustacea, Copepoda, Harpacticoida) from the Caribbean coast of Mexico

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Abstract

During the analysis of the stomach contents of the hardhead silverside *Atherinomorus stipes* (Müller & Troschel, 1847), a tropical littoral-feeding coastal fish collected in the Yucatan Peninsula, several specimens of harpacticoid copepods were recovered. Among those that were in condition for taxonomic study, was an undescribed species of the miraciid genus *Amphiascoides*. The new species, *A. walteri*, is described based on a group of female specimens. It can be distinguished by a combination of characters not found in any other of the 20 species known to be contained in this genus: aesthetasc on the fourth antennular segment not reaching the last segment of the antennule, 7 setae on the third exopodal segment of the fourth swimming leg, a female fifth leg exopod over 2.3 times longer than wide, a fifth leg baseopod not reaching half the length of the exopod; additional differences were found with respect to the female sixth legs. The number of recognized species of the genus rises to 21; their general distribution is also presented herein. The new species represents the third species of the genus known from the Neotropical region and it is the first record of the genus in Mexican waters.

Key words: marine crustacean fauna, copepods, neotropical, meiobenthos

Introduction

The knowledge of the marine harpacticoid copepod fauna of Mexico is still limited to a few works scattered along both the Pacific and the Atlantic coasts (Suárez-Morales *et al.* 2000); however, recent efforts are increasing the Pacific local lists (i.e. Gómez 2000 a, b, 2001 a–c, Gómez & Conroy-Dalton 2002, Gómez & Seifried 2001). Up to 32 marine harpacticoid species have been recorded in coastal waters of the Gulf of Mexico and the Mexican Caribbean (Fiers 1995; Suárez-Morales & Gasca 1998; Suárez-Morales *et al.* 2000).

While analyzing the stomach contents of several marine coastal fishes captured in a locality named Rio Huach, in southern Quintana Roo, Mexican Caribbean Sea, several

harpacticoid copepods were recovered. Most of them were in too poor a condition for taxonomic examination; however, among these damaged specimens we found some that were identified as belonging to a previously undescribed species of the miraciid genus *Amphiascoides* Nicholls, 1941. These specimens were found in the stomach contents of the hard-head silverside *Atherinomorus stipes* (Müller & Troschel, 1847), a widespread tropical fish species common in coastal waters of the Northwestern Atlantic. Other interesting copepods were found recently in the same area but in the stomach contents of the fish *Eucinostomus jonesi* (Günther, 1879) (Suárez-Morales *et al.* 2002). In this work, we describe the new species and provide comments on the regional records and overall distribution of the genus.

Study area

The surveyed area is located on the southeastern coast of the Yucatan Peninsula, which is part of the Mexican Caribbean. Rio Huach is an epicontinental semi-enclosed lagoon connected to the adjacent coastal zone of the Caribbean Sea by a narrow channel (Fig. 1). The geographic coordinates of the area are: 18° 25' 22"–18° 25' 15" N; 87° 46' 13"–87° 45' 56" W. The approximate surface of the inner lagoon is over 4 km²; the channel length is about 1.5 km. Therefore, the lagoon shows widely fluctuating conditions during the dry and rainy seasons. The salinity during the period when specimens of *A. stipes* were captured was 34 PSU (Practical Salinity Units). There are at least other 38 fish species recorded in this system (Avilés-Torres *et al.* 2001).

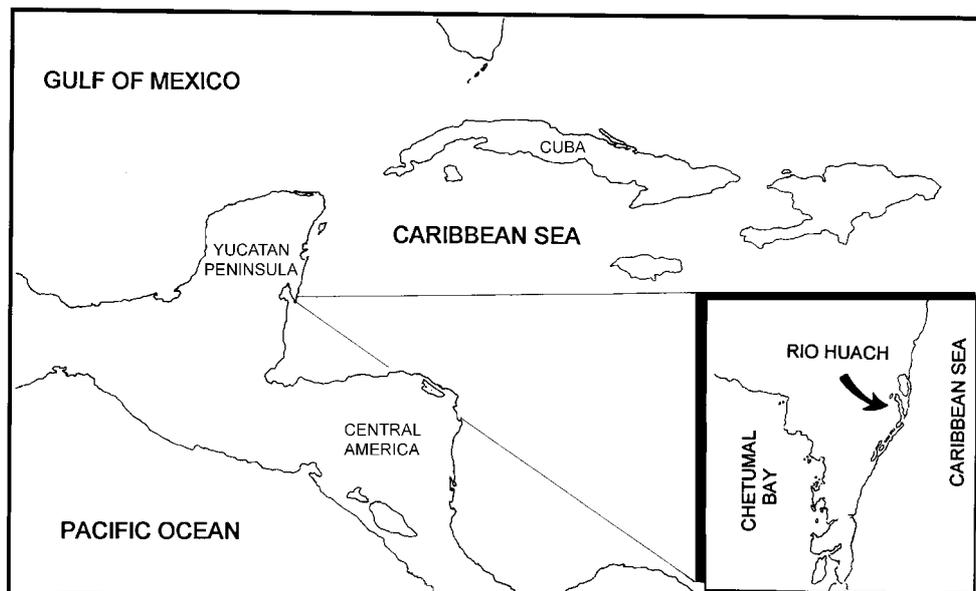


FIGURE 1. Location of the surveyed area showing the type locality (Rio Huach, Quintana Roo, Mexico) for *Amphiascoides walteri* n.sp. in the western Caribbean Sea.

Material and methods

The biological material examined herein was obtained as part of a project to study the trophic ecology of several coastal fishes dwelling in different areas along the coast of Quintana Roo. Fish were collected in March 1998 using different methods, which included traps and seine nets. Several specimens of the hardhead silverside *Atherinomorus stipes* were captured and fixed in a solution of formalin (10%). At least seven specimens of this species were dissected to obtain their stomach contents; all the contents were examined under the stereomicroscope and copepods were sorted from the entire sample and then transferred to 70% ethanol. The taxonomic analysis included dissection of specimens, light staining with Methylene Blue, and semi-permanent mounting in glycerine. Drawings were prepared with the aid of a camera lucida.

Order Harpacticoida Sars, 1903

Family Miraciidae Dana, 1846

Genus *Amphiascoides* Nicholls, 1941

Amphiascoides walteri, new species

(Figs. 2–5)

Material examined: Holotype. Adult female, Rio Huach, Quintana Roo, Mexico (18° 25' 22"; 87° 46' 13"W). March 15, 1998, coll. Silvia Avilés-Torres, stomach contents of the hardhead silverside *Atherinomorus stipes*. Specimen dissected, mounted on glycerine sealed with Entellan. ECO-CHZ-01328. Paratype. Adult female, ethanol-preserved, dissected, slide on glycerine sealed with Entellan, from stomach contents of *A. stipes*. Rio Huach, Quintana Roo (ECO-CHZ--01329). Holotype and one paratype deposited in the Zooplankton Collection of El Colegio de la Frontera Sur, Chetumal, Mexico. Paratype: adult female, same locality and date, undissected, ethanol-preserved; deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM-1008307). Additional specimens in samples deposited in the Zooplankton Collection of El Colegio de la Frontera Sur, at Chetumal.

Type locality: Rio Huach, Quintana Roo, Yucatan Peninsula, Mexico. Station number: 98-001, 15 March 1998, coll. Silvia Avilés-Torres.

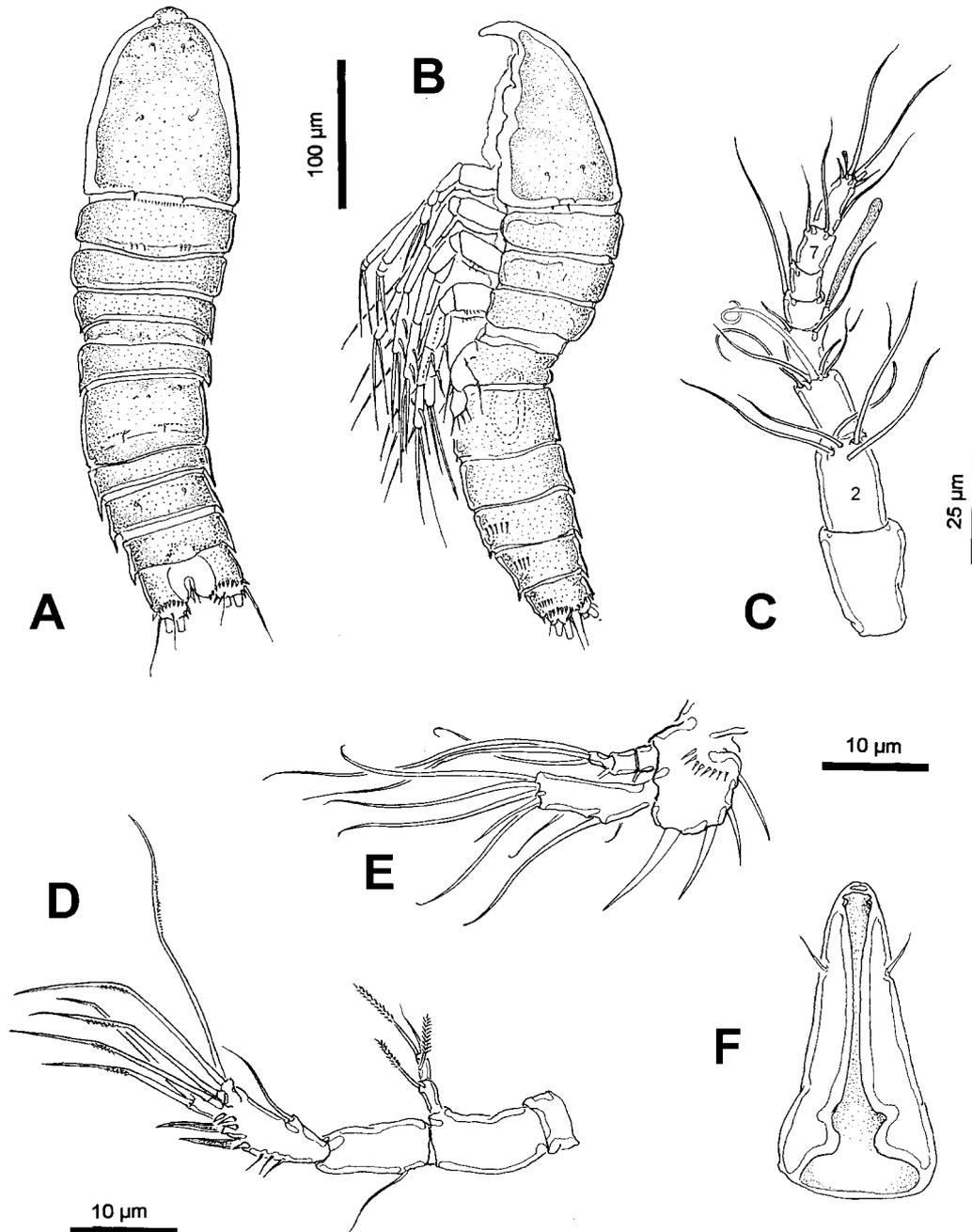
Description

Female (holotype): Body (Figs. 2A,B) almost cylindrical, cephalic region wide; length range of nine individuals from tip of rostrum to posterior margin of anal somite: 0.42–0.45 mm, average length 0.44 mm. Length of holotype 0.43 mm. Cephalothorax with slightly convex lateral margins, widest in medial part, tapering weakly toward the posterior edge. Last thoracic and abdominal somites with straight lateral margins with pointed posterior

projections; posterior width almost identical in each urosomite. Genital somites fused with a distinct medio-dorsal transversal suture band comparable with posterior margins of succeeding somites. Genital double-somite with genital area as in Fig. 5D. Two postgenital somites with row of spinules on ventral and lateral surfaces. Anal somite with parallel lateral margins; anal area moderately deep. Proximal margin with row of 8–9 long spinules on ventral surface (Fig. 5E); distal margin with row of 14–17 large spinules at insertion area of furcal rami on ventral view (Fig. 5E). Same row continued around lateral margin of anal somite (Fig. 5A). Anal operculum weakly developed, represented by short, bilobed, widely rounded edge partially covered by row of long, slender spinules (Fig. 5E). Caudal ramus reduced, subquadrate, tapering slightly towards the posterior edge and about 1.3 times as long as wide. Caudal rami with five seta, following nomenclature by Huys & Boxshall (1991), setae I–VI present (Fig. 5E). Dorsal seta (III) relatively long, slender, about 2.5 times length of inner margin of ramus. Outer lateral seta (I) short and slender, naked. Next inner seta (II) strong, spiniform, biserially spinulose, implanted on distal end of lateral margin. Terminal setae IV, V strong, subequal in length. Inner apical seta (VI) slightly longer than outermost seta (II). Distal outer surface of each ramus with spinules arranged in two clusters. First cluster inserted along inner margin, near base of seta VI; second cluster near outer margin at insertion point of outer furcal seta (seta II). Terminal margin of rami with row of minute spinules. Rostrum articulating with cephalothorax; rostral tip slightly prominent and rounded with blunt tip, with usual subterminal pair of sensillae (Fig. 2F).

Integumental structures: head and cephalothorax area with a few scattered pits and sensilla; dorsal surface of genital somite with rows of tiny spinules and paired sensillae (Fig. 2A); abdominal somites furnished with regular pattern of spinules on ventral and lateral surfaces (Figs. 2B, 5A). Postgenital somite with two ventral rows of spinules, one incomplete near anterior margin, another complete near posterior margin. Dorsal margins of abdominal somites incised forming lip-shaped processes. Integument of furcal rami smooth except for two groups of spinules at insertion of furcal setae and minute spinules along distal margin, near implantation of principal setae.

Antennule (Fig. 2C): 8-segmented; first segment about as long as second, unarmed. Second segment with five subequal setae inserted as a cluster near distal margin of segment. Third segment with three relatively long subequal seta, plus two smaller ones, all inserted along distal margin of segment. Fourth segment with relatively short, slender aesthetasc barely reaching distal 1/3 of outer margin of last antennular segment, plus one long and one short seta, this about 1/3 the length of the former, both inserted on distal margin of segment. Fifth and sixth segments each with one seta inserted on distal margin, long on the fifth segment (longer than aesthetasc), short on sixth segment. Seventh segment with two setae, one short, one long, both inserted on distal margin of segment. Last segment with one medial seta inserted on inner margin, plus group of three apical setae and two subapical small setae, and single small terminal aesthetasc.



FIGURES 2A–F. *Amphascoides walteri* n.sp. adult female from Quintana Roo, Mexico. Holotype specimen. A. habitus, dorsal view; B. habitus, lateral view; C. antennule; D. antenna; E. mandibular palp; F. rostrum, ventral view.

Antenna (Fig. 2D) coxa and basis separated, both unarmed; coxa reduced, basis about three times as long as coxa, with exopodite inserted on distal end. Exopod reduced, two-

segmented, somewhat elongated, first exopodal segment bearing one biserially setulated seta on inner distal corner; second segment with three setae subequal in length and breadth, one on inner medial margin, biserially setulated, two terminal, one long biserially setulated, one short, naked. First endopodal segment with single seta, second endopodal segment with row of three short setules and two large spines on inner margin; row of 4–5 spinules on surface near base of large spines (Fig. 5). Two subapical and four apical distal setae; five of these setae geniculated (see Fig. 5).

Mandible (Fig. 2E) palp with broad, subquadrate base bearing four short setae on inner edge; distalmost seta strongest. Endopod elongate, one-segmented, with one slender, long seta on middle section of inner margin; distal margin with five terminal setae. Exopod three-segmented, about half the length of endopod; first and second segments each armed with one long seta; third segment with three terminal seta, two of them very long. Gnathal edge with 4–6 strong teeth, row of spinules near ventralmost teeth (see Fig. 3A).

Maxillule (Fig. 3C), praecoxa with patch of blister-like cuticular ornamentations on anterior surface. Arthrite relatively reduced, with naked surface, bearing seven distal short, stout setae. Coxa partially fused to basis with two terminal, subequal setae. Basis with five inner setae, one shorter than others; distal margin with two short setules and one subterminal seta. Exopod and endopod one-segmented, with 2 and 4 setae, respectively.

Maxilla (Fig. 3B), syncoxa with single long row of relatively strong spinules along distal margin. Syncoxa with three endites, first endite bearing two short setae subequal in length and breadth; second endite with three setae, third with two. Basis with distal margin of endite bearing separate claw with adjacent seta inserted near base of claw. Endopod two-segmented, with one short seta on proximal segment, four subequal setae on distal segment.

Maxilliped (Fig. 3D), slender, subchelate: syncoxa with two biserially setulated setae reaching proximal 1/3 of succeeding basal segment, with curved rows of small spinules along outer margin. Basis 3.2 times as long as syncoxa, with two longitudinal rows of spinules, one along anterior surface, from proximal 1/3 to distal 1/3, second row along inner margin reaching same distal point on segment; single seta borne on middle section of basis (see Fig. 3D). First endopodal segment relatively long, armed with short subterminal slender seta; segment about 3 times shorter than basis. Endopodal claw moderately strong, slightly curved, about 1.5 times longer than supporting segment, with two short accompanying spiniform setae on inner margin.

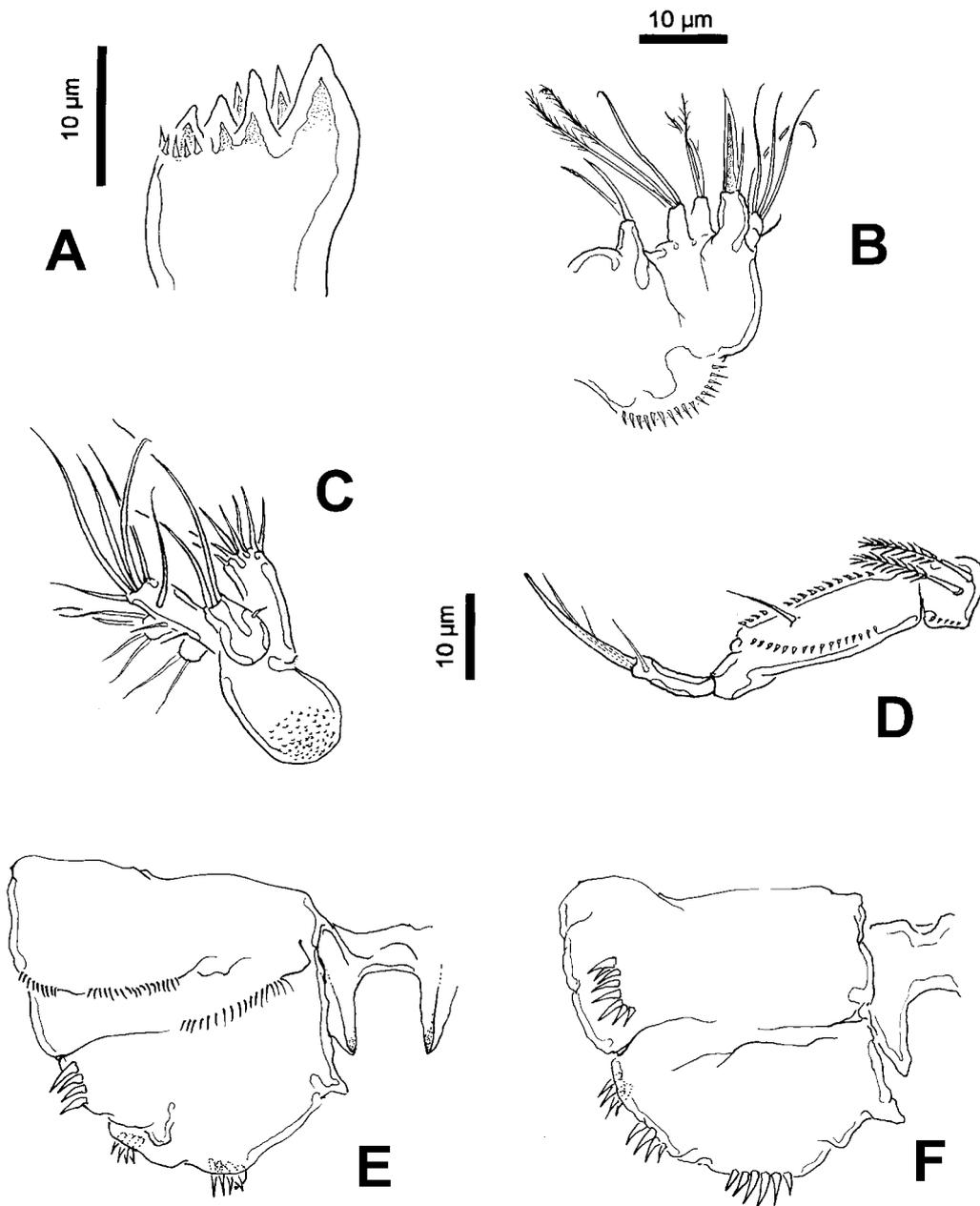
Armature of swimming legs as (spines in Roman numerals, setae in Arabic):

	coxa	basis	endopodite	exopodite
leg 1	0-0	II-0	0-1;0-0;0-3	I-0;I-0;0,3
leg 2	0-0	I-0	0-1;0-1;1,3	I-0;I-0;II,3
leg 3	0-0	0-1	0-1;0-1;2,3	I-0;I-0;II,3,I
leg 4	0-0	0-1	0-1;0-1;1,3	I-0; I-1; II,3,2

Leg 1 (Fig. 4A): intercoxal sclerite unornamented, deeply incised; coxa sub-quadrate, posterior surface with transverse rows of small spinules on proximal 1/3, near outer edge, plus row of spinules near middle of segment; row of 4–6 strong spinules along outer lateral margin plus two more clusters on distal margin (Fig. 3E). Anterior surface with vertical row of strong spinules near outer margin (Fig. 3F). Basis subrectangular, with curved outer margin, inner margin straight, with row of spinules; additional row of small spinules near insertion of endopodal and exopodal rami. Exopod three-segmented, first segment with row of 4–5 strong, short spinules along outer margin; additional row of small spinules near base of outer spiniform seta. Second segment with row of 3–4 long spinules along outer margin, row of 5–6 slenderer spinules along inner margin. Third exopodal segment with row of 4–5 spinules along outer margin, inner margin naked. Endopod 1.7 times as long as exopod, three-segmented, first segment representing 70% of endopod ramus, both margins naked except for single subterminal seta on distal inner margin; second segment with row of 2–3 spinules on outer margin, inner margin naked. Third segment with row of 2–4 spinules along outer margin.

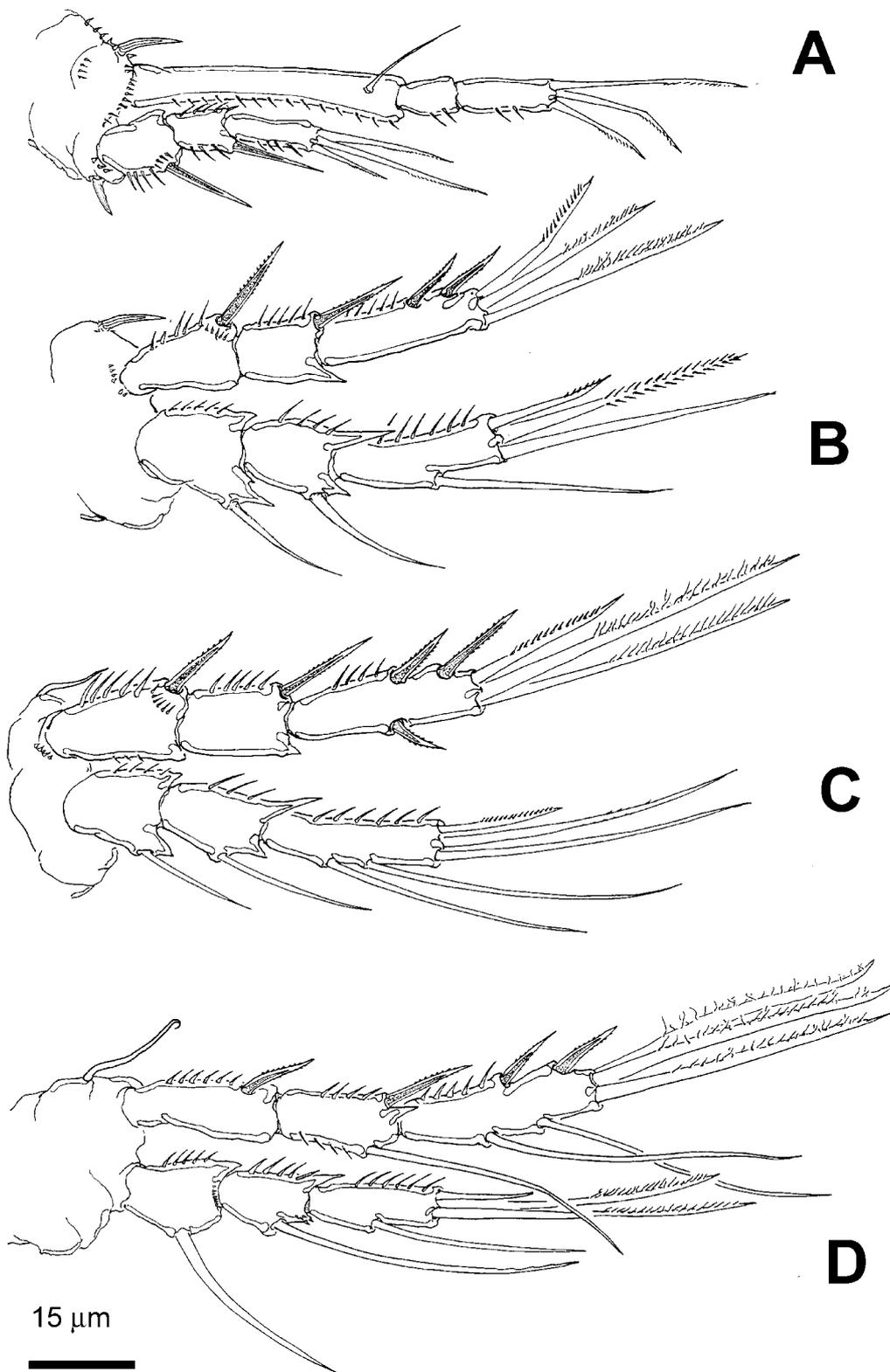
Leg 2 (Fig. 4B): coxa as in P1, but row of spinules near proximal margin, and spinules smaller. Basis with single short naked seta and row of mixed strong and small spinules from outer margin. Exopodite three-segmented, with rows of spinules along outer margins of each. Row of spinules near insertion point of outer spiniform seta on first exopodal segment and on outer margin of same segment. Second segment with spinules on outer margin; third segment about 1.5 times as long as preceding second segment, terminal setae subequal in length. Endopod about as long as exopod, three-segmented, first and second segments relatively short, with slender spinules along outer margin; second segment with row of spinules on distal margin, with spiniform process on outer distal margin. Third segment longest of ramus, representing 40% of endopod, with row of small spinules along outer margin.

Leg 3 (Fig. 4C) intercoxal sclerite with row of small spinules on posterior margin; coxa sub-quadrate, with rows of small spinules on outer distal edge. Basis subrectangular, with curved inner margin, outer margin straight, with basipodal seta on distal outer corner; distal margin with arc-like cluster of strong spinules near insertion of exopodal ramus. Exopod three-segmented, first segment with row of 6–7 strong, long spinules along outer margin; curved row of spinules near base of outer spiniform seta. Second segment with row of strong spinules along outer margin, continued to insertion point of outer exopodal spiniform seta. Third exopodal segment longest, representing 42% of ramus, with row of 4 spinules along outer margin between first and second outer spiniform setae, inner margin naked. Endopod shorter than exopod, three-segmented, first and second segments short, with rows of spinules as described in leg 2; second segment with spiniform process on outer margin. Third endopodal segment longest of ramus, representing almost 50% of endopod, with row of small spinules along outer margin.



FIGURES 3A–I. *Amphiascoides walteri* n.sp. adult female from Quintana Roo, Mexico. Paratype female. A. detail of mandible cutting blade; Holotype: B. maxilla; C. maxillule; D. maxilliped; E. posterior view of coxa of first leg; F. anterior view of coxa of first leg.

FIGURE 4A–E. *Amphiascoides walteri* n.sp. adult female from Quintana Roo, Mexico. Holotype female. A. first leg, anterior view; B. second leg, anterior view; C. third leg, anterior view; D. fourth leg, anterior view.



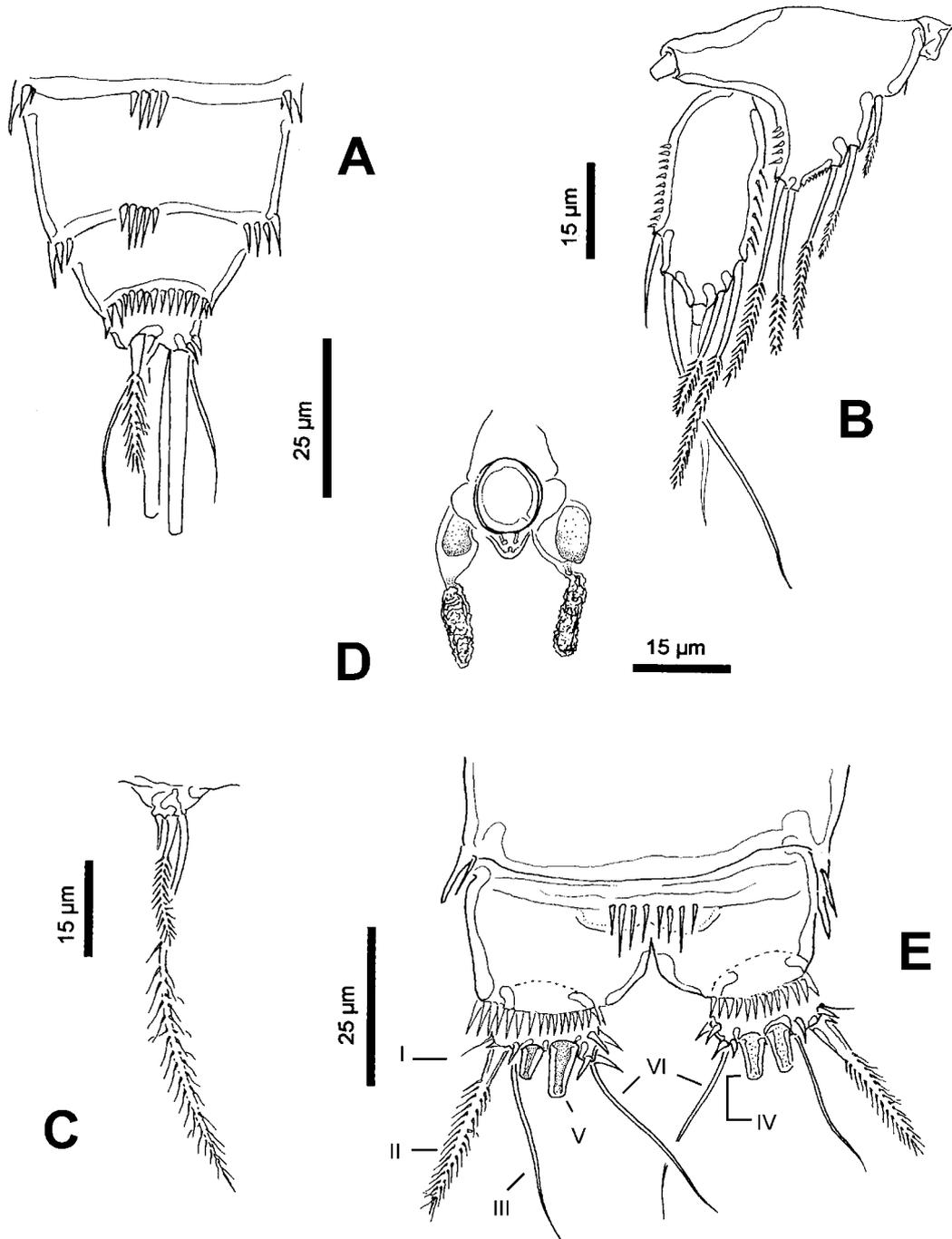


FIGURE 5. *Amphiascoides walteri* n. sp. adult female from Quintana Roo, Mexico. Holotype specimen. A. last urosomites, lateral view, showing spinulation pattern; B. fifth leg, anterior view; C. sixth leg; D. genital field; E. anal somite and caudal rami, ventral view showing setae identified by nomenclature proposed by Huys & Boxshall (1991).

Leg 4 (Fig. 4D) coxa sub-quadrate, with cluster of 2–3 spinules on outer distal edge. Basis with curved inner margin, armed with short spine; outer margin straight, with basipodal seta on distal corner. Exopod three-segmented, first segment with row of 6–7 long spinules, distal one strongest, along outer margin; curved row of small spinules on distal margin of segment. Second segment with row of 4 spinules along outer margin, cluster of 2–3 spinules near distal margin of segment. Third exopodal segment slightly longer than previous two, representing 36% of ramus, with row of 4 spinules along outer margin between proximal margin and first outer spiniform seta. Endopod shorter than exopod, three-segmented, all with row of spinules along inner margins; second segment with additional cluster of 3–4 short spinules near distal margin and spiniform process on outer margin (see Fig. 13).

Leg 5 (Fig. 5B) well developed, with baseoendopod and exopod distinct. Baseoendopod with inner expansion reaching about proximal 1/3 of exopodal segment; armed with three inner pinnate setae increasing in size distally, plus two apical pinnate setae. Margin between two setal groups with row of spinules; outer margin of expansion with row of 4–5 spinules. Exopod with elongated ellipsoidal shape, about 2.5–2.6 times longer than wide, with inner and outer margins each bearing row of short spinules. Segment with two inner and two outer subterminal setae plus an apical seta; innermost subterminal outer seta longest.

Leg 6 (Fig. 5C) represented by short somital bulbous expansion armed with three apical elements: inner short spine, middle short pinnate seta, and long, biserially setulated seta, about 2.5 times as long as middle one.

Male: unknown.

Etymology: The new species was named in honour of Dr. Chad Walter (National Museum of Natural History, Smithsonian Institution, Washington, D.C.) for his constant efforts to maintain and improve the Wilson Copepod Library and for developing the linked bibliographic database, a relevant tool for copepodologists worldwide.

Remarks

The genus *Amphiascoides* was considered a member of the family Diosaccidae Sars, 1906 since its creation in 1941; however, a recent revision by Willen (2002) synonymized Diosaccidae with the older (1846) family Miraciidae. Therefore, all the genera previously contained in this family, including *Amphiascoides*, now belong to the Miraciidae.

When first erected by Nicholls (1941) as the morphological link between *Schizopera* and *Amphiascus*, the genus *Amphiascoides* contained 20 species plus at least one more: *A. brevifurca*, of which he had not enough data at that time but that is currently known to be a valid species (Bodin 1997). Later on, Lang (1948, 1965) described several other species assignable to this genus and recognized about 25 nominal species. Lotufo & Fleeger (1995) considered that the number of species known was around 20. In the most recent and comprehensive revision of the marine harpacticoids by Bodin (1997), the number of species in *Amphiascoides* was reduced to only 16, but this catalog did not include four species

of *Amphiascella* Lang, 1944, a genus synonymized to *Amphiascoides* by Lang (1948). These species are: *A. littoralis* (T. Scott, 1903), *A. neglectus* (Norman & Scott, 1905), *A. proximus* (T. Scott, 1914), and *A. sterilis* (Monard, 1926). *Amphiascoides arabicus*, described by Noodt (1964), was considered by Lang (1965) as belonging to another genus; there are still other nominal species related to this group whose taxonomic status is still uncertain (see Bodin 1997). Historically, the lack of information on basic morphology and of the key characters for many species has generated hesitation among taxonomists, particularly in classifying closely related forms.

The most recent description of a species of this genus was published by Lotufo & Fleeger (1995) for *A. atopus* Lotufo & Fleeger, 1995, found in bioassay cultures, but with an uncertain geographical or ecological origin. These authors sorted out two species groups containing each about half the number of the 20 species they included in their analysis. One group has 7 elements on the third exopodal segment of the fourth swimming leg, and the other only 6. They assigned their new species to the first one, sharing this character with at least 10 other species: *Amphiascoides brevifurca* (Czernivaski, 1886), *A. breviararticulatus* Kunz, 1983, *A. bulbiseta* Pallares 1975a, *A. dimorphus* Lang, 1965, *A. koltuni* Kunz, 1983, *A. lancisetiger* Lang, 1965, *A. neglectus* (Norman & Scott, 1905), *A. nichollsi* Lang, 1965, *A. petkovskii* Lang, 1965, and *A. subdebilis* (Willey, 1935). This single but useful character allowed us to accommodate our new species into this first subgroup as it has 7 elements in the terminal exopodal segment of the fourth leg (see Fig. 13). As mentioned by Lotufo & Fleeger (1995), the only species not assignable to either of these two groups is *A. proximus* (T. Scott, 1914), a poorly described species which has four setae on the baseoendopod of the female fifth leg, *versus* five setae present in all the other hitherto known species of the genus, including the new species, *A. walteri*. Furthermore, this was another species not recognized by Bodin (1997). All but one (*A. neglectus*), were recognized in Bodin's (1997) catalogue as valid species, but it was considered in our comparative analysis as well as the two other species of *Amphiascella* not included in Bodin (1997) but accounted by Lang (1948): *A. littoralis* and *A. sterilis*.

Amphiascoides walteri differs from the other known species of its group in the combination of several characters, the first three are related to the morphometry of certain structures as follows: 1) The relative length of the first endopodal segment of the first leg with respect to the exopodal ramus; the figure for the 11 species compared ranged between 55 and 100%; six species show relative lengths under 75% (*A. nanus*, *A. bulbiseta*, *A. brevifurca*, *A. dimorphus*, and the former members of *Amphiascella* *A. littoralis* and *A. sterilis*), thus marking a difference with the other seven species—including the new one—all having values ranging between 80–100%. 2) Another morphometric analysis was performed to obtain the length/width ratio of the female fifth leg exopod; values ranged from 1.3 for very strong, subquadrate shapes, to over 2.5 for clearly elongated, ellipsoid segments. Only four species (*A. walteri*, *A. neglectus*, *A. breviararticulatus*, and *A. subdebilis*) had ratios over 2.0, the highest being *A. neglectus* (2.6–3.0) and *A. walteri* (2.3); *A. littoralis*

had 1.5. 3) Yet another easily observable character is the length of the usual fourth segment aesthetasc; in all the species compared (i.e. *A. atopus*, *A. nanus*, *A. bulbiseta*, *A. brevifurca*, *A. neglecta*, *A. lancisetiger*, *A. petkovskii*, *A. dimorphus*, *A. koltuni*, *A. breviarticulatus*), and even in (formerly *Amphiascella*) *A. sterilis*, this antennular element clearly reaches beyond the distal end of the antennule (see Lang 1948, 1965; Kunz 1983; Chislenko 1977; Lotufo & Fleeger 1995). The aesthetasc in the new species does not reach the distal margin of the last antennular segment; this is the only known species in the genus with this relatively short aesthetasc.

Additionally, the new species differs from *A. atopus* and *A. koltuni* in having spinules on the base of spiniform setae on second endopod of antennae. Moreover, the size of the baseoendopod in both species is different from *A. walteri*. From *A. brevifurca*, *A. dimorphus*, *A. neglectus*, and *A. breviarticulatus*, the new species differs in the setal size and arrangement on the fifth leg of female; the shape and size of the baseoendopod is also different, in the new species the baseoendopod does not reach halfway of the exopod whereas in the other species this structure is much more developed, reaching even the distal margin of the exopod. *Amphiascooides bulbiseta*, *A. lancisetiger*, *A. petkovskii*, and *A. dimorphus* have one row of spinules along the basipod of the maxilliped vs two longitudinal rows found in the new species.

Amphiascooides is a very widely distributed genus (see Lang 1948, 1965), present in tropical and subtropical areas and even in the Arctic (Chislenko 1977) and Antarctic zones (Pallares, 1975a,b) (see Fig. 6). The most widespread species is *A. debilis*, regarded as a cosmopolitan form; also, *A. subdebilis* has been recorded in widely different geographical areas, such as Bermuda (Willey, 1935; Coull, 1970), Tierra del Fuego (Pallares 1975b), Firth of Clyde (Moore & Pearson 1986), Nanaimo, Canada (Kask et al. 1983), and the Suez Canal (Por & Marcus 1973) ("Asd" in Fig. 6). Overall, the genus has been recorded mainly from Europe (Lang 1948, 1965; Kunz 1983, Ceccherelli & Rossin 1979, Ceccherelli & Ferrari 1982, Moore & Pearson 1986), but there are several records from South America (*A. bulbiseta*, *A. subdebilis*, *A. proximus*) (Lang 1948, Pallares 1975a,b) and North America (5 species, *A. atopus*, *A. lancisetiger*, *A. petkovskii*, *A. dimorphus*, *A. debilis*, *A. subdebilis*) (Lang 1965; Lotufo & Fleeger 1995; Kask et al. 1983) (see Fig. 6). To our knowledge, there are only two records of *Amphiascooides* in the neotropical region, those of Willey (1935) and Coull (1970) in the Bermuda area (*A. subdebilis* and *A. debilis*) (see Reid 1990; Bodin 1997). This is the first record of this genus in Mexico and in the Caribbean Sea. Only another species of benthic marine Miraciidae, *Pseudostenhelia wellsi* Coull & Fleeger has been known to occur in Mexico (Gulf of California) (Gómez 2000a). Apparently, the new species is very abundant in the sediments of the Rio Huach area as it was one of the commonest elements in the stomach contents of *A. stipes* (Avilés-Torres, pers. obs.). At least another species of the genus (*A. atopus*) has been mentioned as having a remarkably active reproduction, even advanced for mass culture (Lotufo & Fleeger 1995).

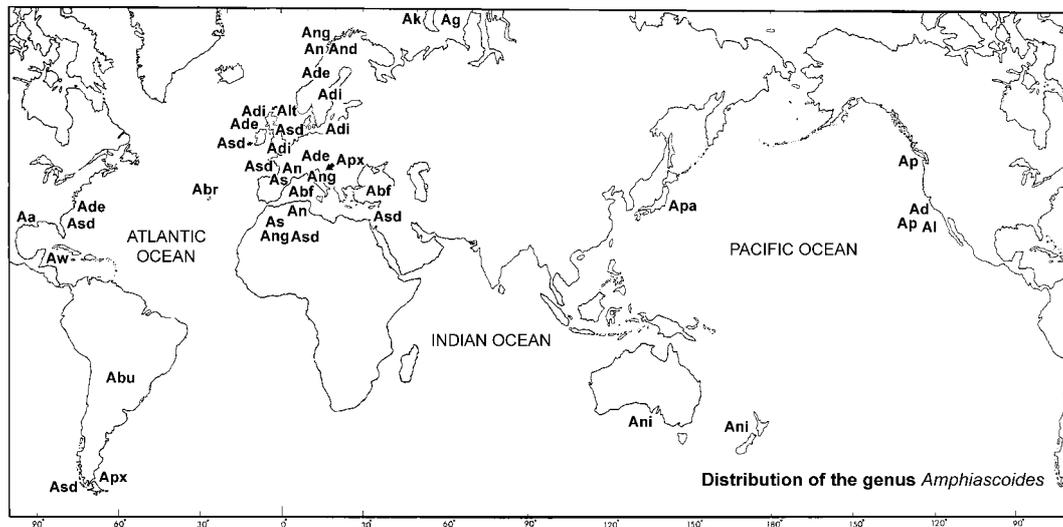


FIGURE 6. World distribution of the known species of *Amphiascoides* based on Nicholls (1941), Noodt (1955a,b), Lang (1948, 1965), Por & Marcus (1972), Mielke (1974), Marcotte & Coull (1975), Pallares (1975a,b), Hicks (1977), Chislenko (1977, 1978), Ceccherelli & Rossin (1979), Ceccherelli & Ferrari (1982), Kask et al., (1983), Kunz (1983), Bodin (1997), and Lotufo & Fleeger (1995). Key for the abbreviations of names: Aa= *Amphiascoides atopus*; Abr= *A. breviarticulatus*; Abf= *A. brevifurca*; Abu= *A. bulbiseta*; Ade= *A. debilis*; Ad= *A. dimorphus*; Adi= *A. dispar*; Ag= *A. golikovi*; Ak= *A. koltuni*; Al= *A. lancisetiger*; Alt= *A. littoralis*; An= *A. nanus*; And= *A. nanoides*; Ang= *A. neglectus*; Ani= *A. nicholli*; Apa= *A. paradebilis*; Ap= *A. petkovski*; Apx= *A. proxima*; As= *A. sterilis*; Asd= *A. subdebilis*; Aw= *A. walteri* n.sp.

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