



## Article

urn:lsid:zoobank.org:pub:2E9F7D3B-63A9-4A50-AAD6-07381274E787

### First records of peracarid crustaceans from the Cayo Matias Ocean Blue Hole, SW Cuba, with the description of two new species

MANUEL ORTIZ<sup>1</sup>, IGNACIO WINFIELD<sup>1,3</sup> & CARLOS VARELA<sup>2</sup>

<sup>1</sup>Laboratorio de Crustáceos, Facultad de Estudios Superiores Iztacala, UNAM. Av. de los Barrios 1, Los Reyes Iztacala, Tlalnepantla, Estado de México. C.P. 54090

<sup>2</sup>Avenida 21, Número 3605 e/36 y 42, Municipio Playa, Ciudad de la Habana, Cuba. C.P. 11300

<sup>3</sup>Corresponding author. E-mail: ignacioc@unam.mx

#### Abstract

First records of peracarid crustaceans obtained from the Cayo Matías Ocean Blue Hole, southwestern Cuba, are documented. In addition, two new species of isopod and amphipod are herein described. *Gnathia micheli* **n. sp.** (Isopoda, Gnathiidae) and *Boca normae* **n. sp.** (Amphipoda, Aristiidae) were associated with filamentous algae at a depth of 20 m. Both represent the first report for a blue hole and the amphipod constitutes the first record of the genus for Cuba and the Caribbean Sea. Three other isopods, i.e. *Gnathostenetroides* sp., *Cirolana parva*, and *Cirolana crenulitelson*, and the cumacean *Procampylaspis* sp. are documented for the first time from the same blue hole.

**Key words:** Crustacea, Peracarida, new species, Caribbean Sea

#### Resumen

Los primeros registros de crustáceos peracáridos del blue hole Cayo Matías, suroeste de Cuba, son documentados. Además, dos especies nuevas de isópodo y anfípodo son descritas en este trabajo. *Gnathia micheli* **n. sp.** (Isopoda, Gnathiidae) y *Boca normae* **n. sp.** (Amphipoda, Aristiidae) estaban asociadas con algas filamentosas a 20 metros de profundidad. Ambas especies representan el primer registro para un blue hole, mientras el anfípodo constituye el primer registro del género para Cuba y el Mar Caribe. Fueron registrados también, tres isópodos *Gnathostenetroides* sp., *Cirolana parva*, *Cirolana crenulitelson*, y el cumáceo *Procampylaspis* sp., por primera vez para el mismo blue hole.

**Palabras clave:** Crustacea, Peracarida, especies nuevas, Mar Caribe

#### Introduction

Blue holes, or submarine caves, are shallow marine ecosystems located on continental shelves, islands, or bank of the coral reef systems that connect with extensive, strongly tidal, submerged cave systems (Gutu & Iliffe 1998). Most of the caves associated with blue holes are fault caves with parallel walls and collapsed rubble on the bottom (Kornicker & Iliffe 2000). In Cuba, these submarine caves occur mainly in the archipelagos along the north and south of the island (pers. obs.). The fauna of these systems has poorly been studied, while activities in these areas have been limited mostly to scuba diving.

An oceanographic cruise was organized to collect benthic fauna associated with different marine environments in southwestern Cuba. Peracarid crustacean species were collected from the Cayo Matias Ocean Blue Hole. Representatives of the families Gnathiidae, Cirolanidae and Gnathostenetroididae (Isopoda, Flabellifera and Asellota), and Aristiidae (Amphipoda, Gammaridea) seem to be important in this type of ecosystems.

This paper presents the first records of peracarid crustaceans of an Ocean Blue Hole in Cuba, and description of new species of the genera *Gnathia* (Isopoda) and *Boca* (Amphipoda) are provided.

## Material and methods

Peracarids were collected from the Cayo Matias Blue Hole, SW Cuba, a submarine cave located at 22°07'06"N and 81°30'45"W. The entrance of this ocean blue hole is at a depth of 5 m on a sandy-rocky substrate mixed with *Thalassia testudinum*. The blue hole consists of an almost tubular 6 m lobby, covered mainly with rocks and seaweed, and with very turbid water. A triangular shaped (in cross section) 55 m deep sinkhole is located below the entrance, with very clear 35 *ups* water. The bottom is covered with very fine sediment that has settled forming a conic floor.

The crustaceans were collected on 18 July 2010 and found associated with filamentous algae at a depth of 20 m. Algae were collected by scraping the substrate with a knife, and were placed in sealed plastic bags while underwater. Once on shore, 10 ml of an alcohol solution were added to the algae to drive the crustaceans out of the samples. This produced 10 peracarid specimens that were immediately sorted and preserved in 70% ethanol.

The peracarids were transferred to glycerin for dissection, illustration and microstructure analysis under a Motic dissecting microscope (SMZ-175) at the Crustacean Laboratory, FES-Iztacala, Universidad Nacional Autónoma de México (UNAM). Figures were drawn using a camera lucida. The type material and the other peracarids are deposited in the Marine Collection of the Acuario Nacional de Cuba. The taxonomic concepts and terminology for setae and mouthparts are followed to Cohen and Poore (1994), Svavarsson (2006) and Lowry and Stoddart (1992, 1993, 1997).

## Results

### Taxonomy

#### Isopoda Latreille, 1817

#### Cymothoida Wägelle, 1989

#### Cymothooidea Leach, 1814

#### Gnathiidae Leach, 1814

The isopods of the family Gnathiidae constitute a polymorphic group. They are fish parasites during their larval stages. The adult males and females stop feeding and generally live in sponges, coral rubble and sediment, in contrast with the praniza larvae that forms part of the marine plankton (Kensley & Schotte 1989; Svavarsson 2006). Since the classic monograph of the group by Monod (1926), only Cohen and Poore (1994) have published an exhaustive revision of these crustaceans, with 10 valid genera. Up to date, 12 genera have been described for the family Gnathiidae (Schotte *et al.* 2012).

The genera *Bythognathia*, *Caecognathia* and *Gnathia* have been documented from the Gulf of Mexico and Caribbean Sea (Camp 1988; Schotte *et al.* 2009). *Gnathia* is the only gnathiid genus recorded from Cuba with the following four species: *G. maxillaris* (Montagu, 1804), *G. virginalis*, Monod, 1926, *G. puertoricensis* Menzies and Glynn, 1968 and *G. hemingwayi* Ortiz and Lalana, 1997. The finding of *Gnathia micheli* **n. sp.** increases the number of species described for this Caribbean archipelago to five.

#### *Gnathia micheli* **n. sp.**

(Figs 1–4)

**Material examined. Holotype.** Adult male, length 3.3 mm, (ANC07.1.3.009–Marine collections of the Acuario Nacional de Cuba), associated with filamentous algae at a depth of 20 m, from the Cayo Matias Blue Hole, SW Cuba, 22°07'06"N, 81°30'45"W, Carlos Varela coll., 18 July 2010.

**Paratype.** Adult male, length 2.8 mm; adult male, length 2.6 mm; praniza larva, all specimens deposited on ANC07.1.3.010–Acuario Nacional de Cuba, associated with filamentous algae at a depth of 20 m, from the Cayo Matias Blue Hole, SW Cuba, 22°07'06"N, 81°30'45"W, Carlos Varela coll., 18 July 2010.

**Diagnosis.** Cephalosome 1.25 times longer than wide, without posterior tubercle, dorsal notch wide and deep; mandible with 1 seta, blade with 11 teeth, inner and incisor lobes present; pylopod with 2 articles, basal article foliaceous with 3 long distal setae, distal article circular with 3 short subdistal setae; maxilliped with basal article foliaceous and subquadrate, subequal in length to other 4; pereonal segment 1 short, hardly visible; pleotelson with 2 teeth on each lateral margin.

**Description.** *Body* with cephalosome quadrate, half length of pereon, lateral margins convex; numerous very fine granules on cephalosome; pereonal segments 1–4 smooth, pereon 5 with one subterminal small tubercle on each side, pereon 6 bearing 2 small anterior tubercles, 1 at middle area and 1 posterior on each side. Eyes well developed, lateral and sessile, 0.25 length of cephalosome; frontal border transverse; mediofrontal process absent; inferior frontolateral process conical, half length of superior frontolateral process; superior frontolateral process conical with two setae on tip and one on basal inner side; lamina dentate not visible in dorsal view, with 9 teeth; external scissura shallow; supraocular lobe pronounced; ventral accessory supraocular lobe very small. Cephalosome with broad dorsal sulcus which is tapering backward, without posterior median tubercle at base of sulcus (Fig. 1A–C, F).

*Antenna 1* sparsely setose, article 3 elongate, flagellum of 6 articles (Fig. 1 E).

*Antenna 2* longer than antenna 1; flagellum of antenna 2 of 8 articles (Fig. 1 F).

*Mandible* curved half length of cephalosome; incisor present; unarmed carina; slight mandibular incisor halfway alone; ventral dentate; blade on proximal half, without pseudoblade; (Fig. 1C, D).

*Maxilliped* with 5 articles; external margins of articles 2–4 bearing long plumose setae; endite barely, reaching one third of article 3 (Fig. 2B).

*Pylopod 2*-articulated, internal margin of article 1 convex and covered with long plumose setae; with one long lateral and one short distal areolae; inner margin concave, covered with very short setae; distal border concave with 3 subdistal setae; distal article 0.15 times of basal, rounded with 3 small distal setae (Fig. 2A).

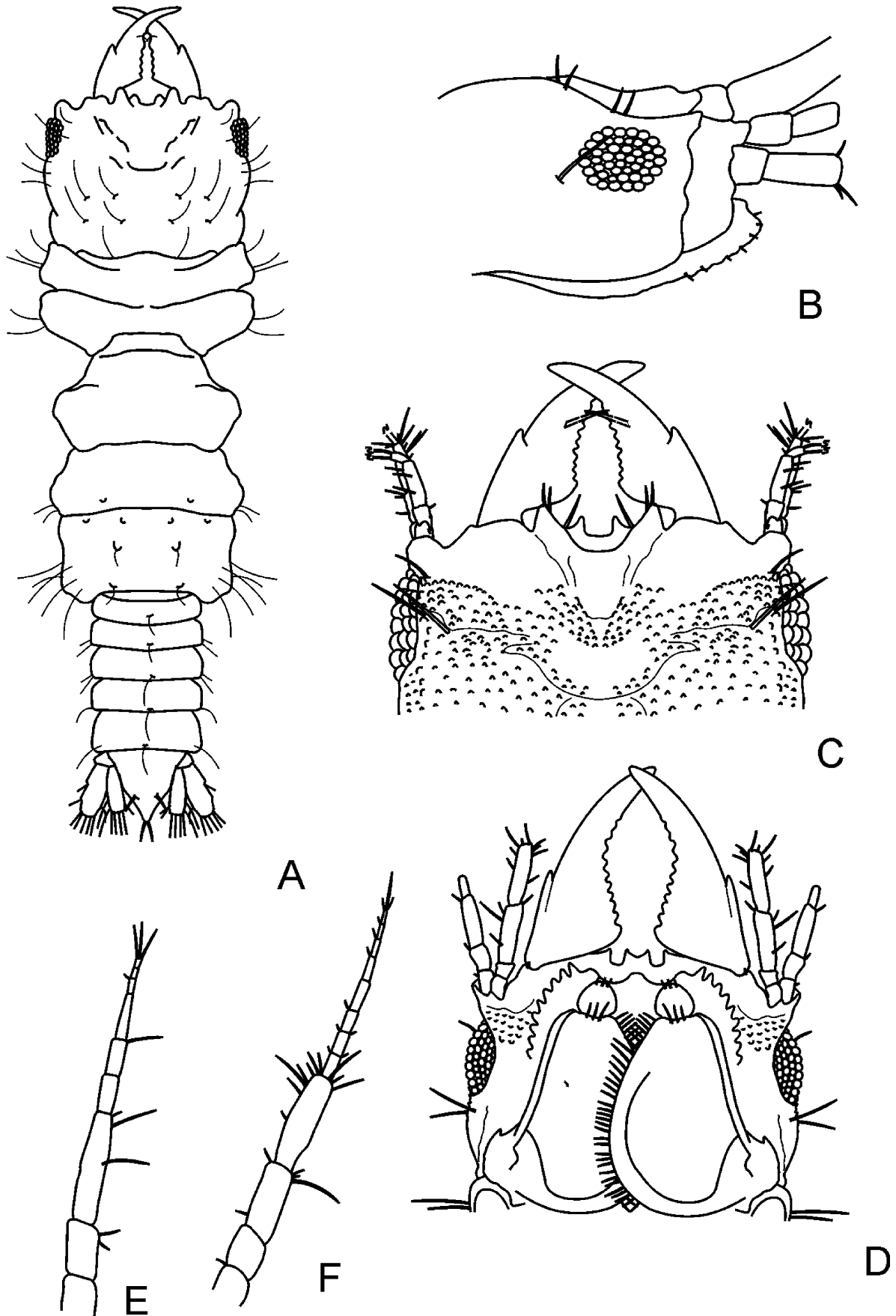
*Pereon* widest anteriorly, as wide as cephalosome. Pereonite 1 dorsally not reaching lateral margins; pereonites 2 and 3 subequal; pereonite 3 with posterolateral lobe; pereonite 4 with deep anterior constriction; pereonites 4–6 narrower than pereonite 3, as long as pereonites 2 and 3 combined; pereonite 6 posterolateral corner with 5 setae; pereonite 7 narrow overlapping pleon (Fig. 1A).

*Pereopod 2* article 2 narrow, anterior margin with 3 tubercles and 4 robust setae directed upward, posterior margin with 4 setae; article 3 with a long robust seta and a short subdistal seta on anterior margin; 4 short setae and 2 long setae on posterior margin; article 4 with one long and one short setae on anterior margin, 3 setae and one distal tubercle on posterior margin, article 5 with one distal seta on anterior margin and one tubercle and 4 robust setae on posterior margin, article 6 with 3 equidistant anterior setae, 4 robust setae, and 2 short and robust distal setae on posterior margin, article 7 with one posterior robust seta and 3 setae anterior to nail (Fig. 3A).

*Pereopod 3* article 2 wide, anterior margin with 8 tubercles and 5 setae, posterior margin with 8 very short setae and one long distal seta; article 3 with one long and one short seta on anterior margin, 8 short setae on posterior margin, distal half finely serrate; article 4 with one long seta on anterior margin, 7 tubercles and 3 setae on posterior margin; article 5 with 2 big tubercles among which there are 4 smaller ones, and 6 setae of different lengths; article 6 with 2 distal setae on anterodistal edge, 8 tubercles and one robust distal setae on posterior margin; article 7 with one long and one short seta (Fig. 3B).

*Pereopod 4* article 2 wide with 4 tubercles on posterior margin; article 3 with 2 long setae on anterior margin, 11 tubercles on posterior; article 4 with 5 tubercles and 5 setae on posterior margin; article 5 with one short seta on anterior margin and one big and 5 small tubercles on posterior; article 6 with 2 setae on anterior margin, and 7 tubercles, one robust intermediate seta and one distal seta on posterior; article 7 with one short and one long seta (Fig. 3C).

*Pereopod 5* article 2 narrow with 5 short and one long setae on anterior margin, 3 long and 2 short setae on posterior; article 3 with 2 setae on anterior margin, 5 setae on posterior serrate margin; article 4 with 3 subdistal tubercles, 2 distal setae on anterior margin, 2 setae on posterior; article 5 with 3 posterior robust setae and 3 long anterior setae on posterior margin; article 6 with 3 robust setae and one seta on anterior margin, a serrate margin on basal half of posterior margin, 3 setae on distal half; article 7 with 2 long robust posterior setae (Fig. 3D).



**FIGURE 1.** *Gnathia micheli* n. sp. Holotype. A, dorsal view of body; B, lateral view of cephalosome; C, dorsal view of cephalosome; D, ventral view of cephalosome; E, antenna 1; F, antenna 2.

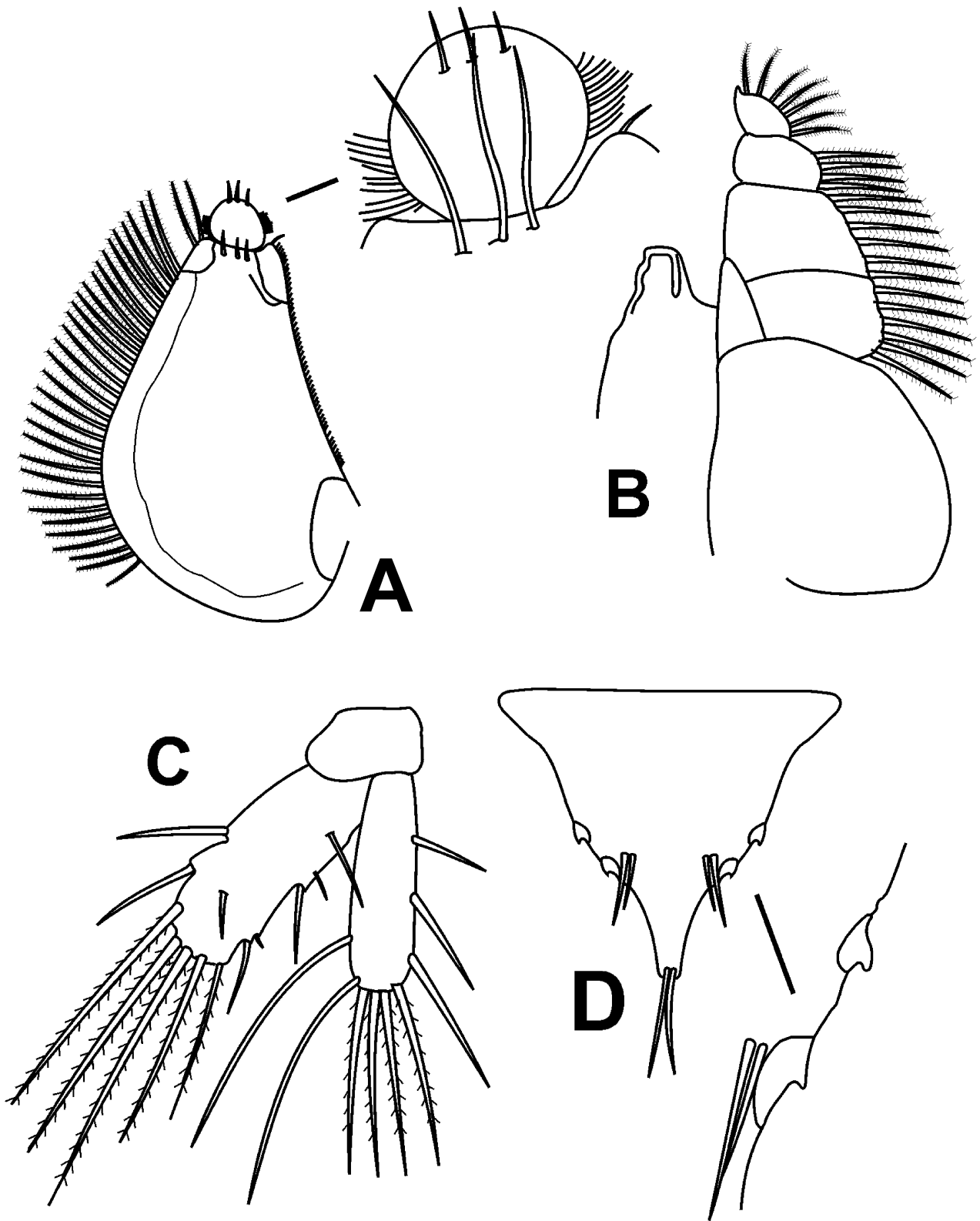
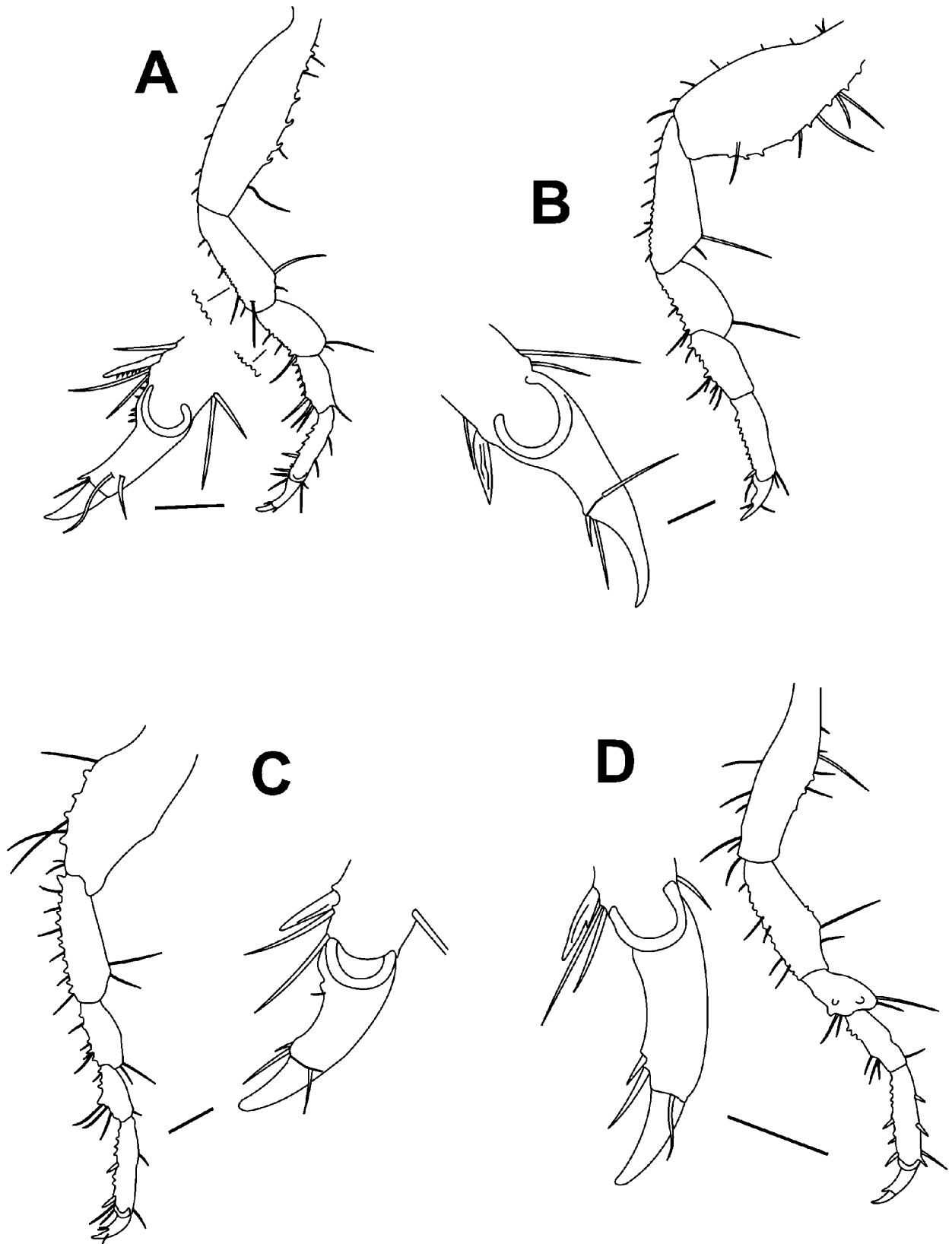
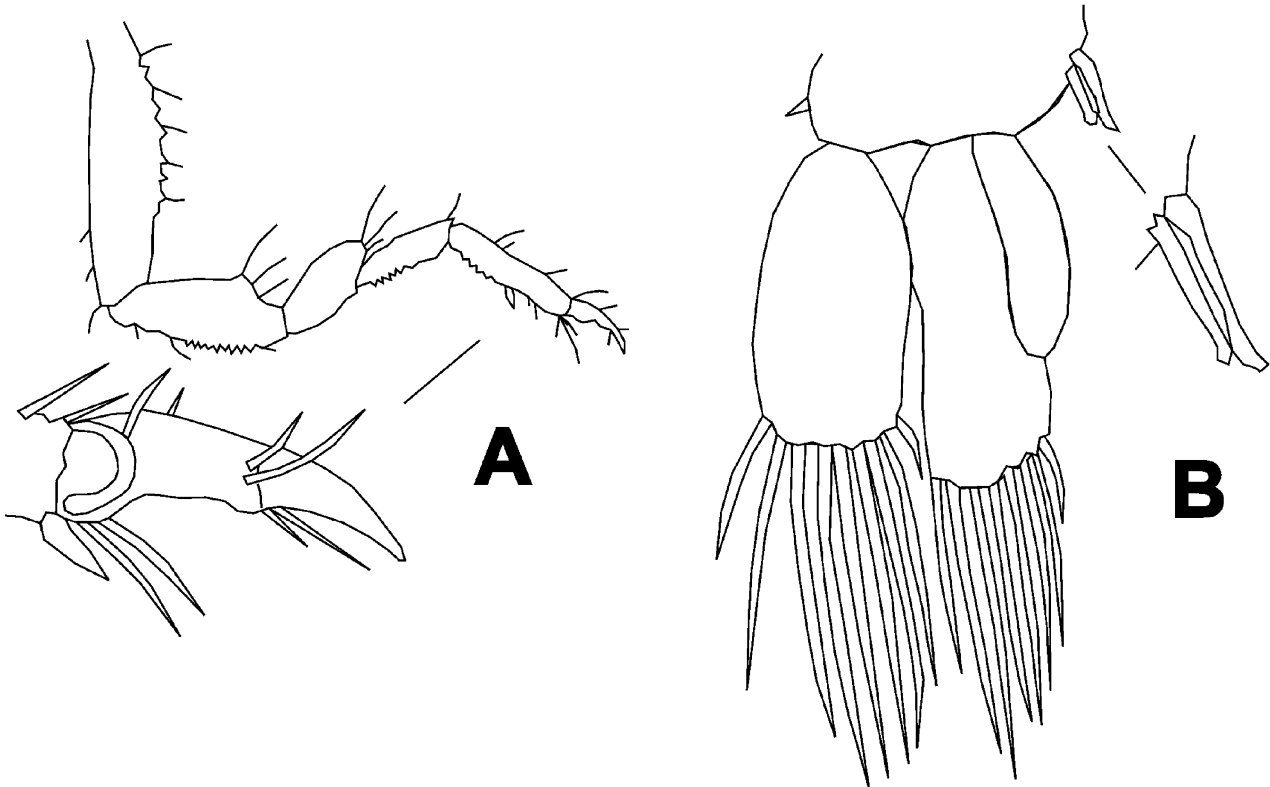


FIGURE 2. *Gnathia micheli* n. sp. Holotype. A, pylopod; B, maxilliped; C, uropod; D, pleotelson.



**FIGURE 3.** *Gnathia micheli* n. sp. Holotype. A, pereopod 2; B, pereopod 3; C, pereopod 4; D, pereopod 5.



**FIGURE 4.** *Gnathia micheli* n. sp. Holotype. A, pereopod 6; B, pleopod 2.

*Pereopod 6* article 2 narrow with 8 tubercles and 5 setae on anterior margin, 3 distal setae on posterior; article 3 with 3 setae on anterior margin, 2 setae on basal half and a serrate margin with 2 distal setae on posterior margin; article 4 with 3 distal setae on anterior margin and 3 on posterior; article 5 with one distal seta on anterior margin, a serrate margin on anterior half and 3 setae on distal half of posterior margin; article 6 with 4 setae on anterior margin, a serrate margin on basal half with 2 strong robust setae and 4 setae on distal margin; article 7 with 4 basal setae and 4 intermediate anterior setae (Fig. 4A).

*Pleopod 2* with 7 long and 2 short distal setae on exopod; 7 long and one short on endopod; appendix masculina wide, almost straight and 0.33 times length of endopod (Fig. 4B).

*Uropod* outer ramus longer and wider than inner; with 5 plumose distal setae on exopod; 4 plumose distal setae on endopod (Fig. 2C).

*Pleotelson* subtriangular, 2 teeth on each lateral margin, shorter than endopod of uropod (Fig. 2D).

**Etymology.** This species is named in honor of our friend Michel Hendrickx, researcher of Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México, for his extensive contributions to carcinology.

**Remarks.** *Gnathia micheli* n. sp. is closely related to *G. beethoveni* Paul and Menzies, 1971 and *G. hemingwayi*, Ortiz and Lalana, 1997. The new species may be separated from these species by the following characters: *G. beethoveni* and *G. hemingwayi* have four subequal frontolateral processes on the frontal margin of the cephalosome, while in *G. micheli* n. sp. the two internal processes are short and the external ones are longer. The ventral view of the cephalosome of *G. micheli* n. sp. bears 9 teeth on lamina dentata whereas in *G. beethoveni* and *G. hemingwayi* it has no teeth. The pylopod of *G. beethoveni* and *G. hemingwayi* has three articles, while *Gnathia micheli* n. sp. has two articles. In *G. micheli* n. sp., the pereonal segment 4 is long and narrow anteriorly, whereas in *G. beethoveni* and *G. hemingwayi* it is short. *Gnathia micheli* n. sp. has two robust setae on each lateral margin of the pleotelson, while *G. beethoveni* and *G. hemingwayi* have none.

## Amphipoda Latreille, 1816

### Gammaridea Latreille, 1802

#### Aristiidae Lowry and Stoddart, 1997

The family Aristiidae was represented by the genera *Aristias* Boeck, *Boca* Lowry and Stoddart and *Perrierella* Chevreux and Bouvier, with the addition of *Miramarassa* Ortiz, Lalana and Lio. Later, Lowry (2006) established the family Miramarassidae (monogeneric and monospecific) to include the species *M. sanchezi* Ortiz, Lalana and Lio, 1999, now endemic to Cuban waters. Three species of the genus *Boca* have been described up to the present: *B. campi* Lowry and Stoddart, 1997, *B. elvae* Lowry and Stoddart, 1997 and *B. megachela* Lowry and Stoddart, 1997, all collected in Florida waters. The description of the species *Boca normae* n. sp. increases the number of species of the genus to four.

#### *Boca normae* n. sp.

(Figs 5–7)

**Material examined. Holotype.** Adult female with oostegites, length 1.5 mm, presence of an embryo, (ANC07.1.3.011–Acuario Nacional de Cuba), associated with filamentous algae at a depth of 20 m, from the Cayo Matias Blue Hole, SW Cuba, 22°07'06"N, 81°30'45"W, Carlos Varela coll., 18 July 2010.

**Diagnosis.** Head short with big ovoid eyes. Antenna 1 with an accessory flagellum with 2 articles, second 0.5 times length of first. Epistome and upper lip fused. Mandible with mobile plate represented by one seta; molar rounded without setae; article 3 of mandibular palp with 2 distal setae, 8 long parallel setae and 5 very short setae on distal half. Maxilla 1 with 7 setae on outer lobe. Gnathopod 1 subchelate, article 7 almost straight. Coxa 1 reduced. Coxae 2 and 3 similar in shape and size. Coxa 5 with posteroventral lobe. Coxa 6 with reduced posteroventral lobe. Pereopods with anterodistal spur on article 6, article 7 ending in nail. Inner ramus of uropod 3 shorter than outer. Telson with lobes slightly separated. Gills sack-shaped without folds. Oostegites short and without setae.

**Description.** *Body* without setae, gnathopods and pereopods with few setae. Head shorter than pereonite 1; compound eye with big ommatidia occupying half of head; rostrum absent; lateral cephalic lobe big and at right angle (Fig. 5A, B).

*Antenna 1* subequal in length to head, 2 first segments of pereon combined; peduncle subequal in length to flagellum; 3 distoventral sensorial callinophores; article 2 of accessory flagellum with 2 terminal setae more than half length of main flagellum, this with 3 articles (Fig. 5E).

*Antenna 2* subequal in length to antenna 1; distoventral angle of article 4 of peduncle forming a small lobe directed towards front; flagellum with 4 articles (Fig. 5D).

*Mouthpart bundle* quadrangular in lateral view.

*Mandible* incisor with four teeth surrounding one big and central tooth; accessory setae absent; palp inserted in mandibular medial zone, 3 articles, first two without setae, article 3, 0.75 times length of second article, 1 A-3 seta, 3 submarginal B-3 setae, 12 B-3 setae (Fig. 5C).

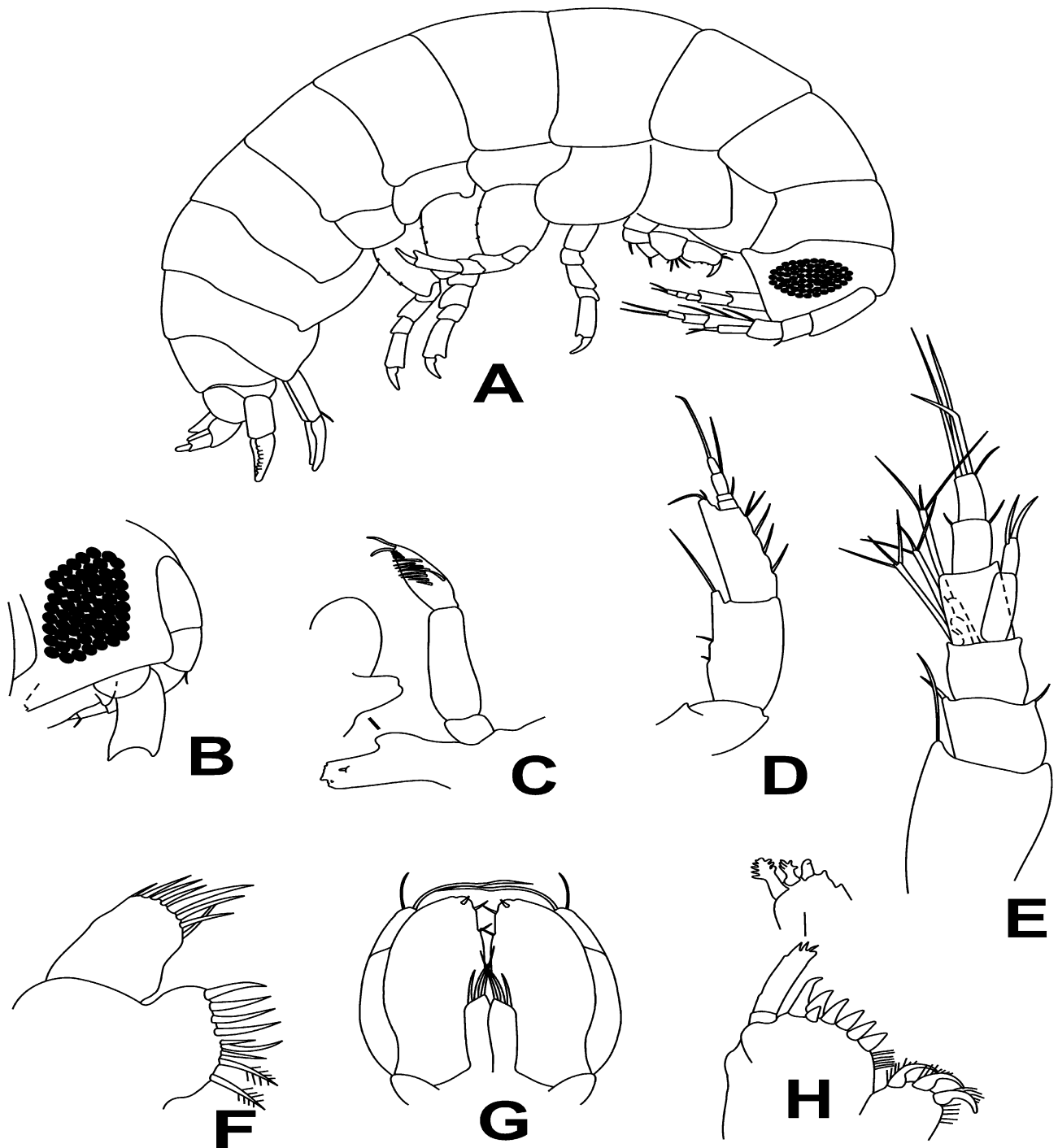
*Maxilla 1* with narrow inner lobe, 3 distal setae with setules; outer lobe widened, with 7 robust setae; ST1 long; ST 2, ST4 and ST7 short; STA and STD short; palp with 2 articles, second longer than first, with 3 robust setae toothed distally (Fig. 5H).

*Maxilla 2* with outer lobe with 8 distal setae, one long and strong; inner lobe short, armed with 7 simple setae, 2 with setules (Fig. 5F).

*Maxilliped* with inner lobe 0.5 times length of outer lobe, 3 apical setae; outer lobe foliaceous, 3 small subdistal setae; palp 2 articles; article 2 shorter than 1; one short seta and one long seta (Fig. 5G).

*Gnathopod 1* article 2 longer than others combined; one short robust posterodistal seta; article 3 with one long robust posterodistal seta; posterior margin of article 4 with tuft of 3 small and one long setae; article 5 forming small posterior lobe, armed with 4 long setae; article 6 oval with 2 short distal setae; distal half of palm margin with 4 short setae and setules; article 7 half length of 6 (Fig. 6A).





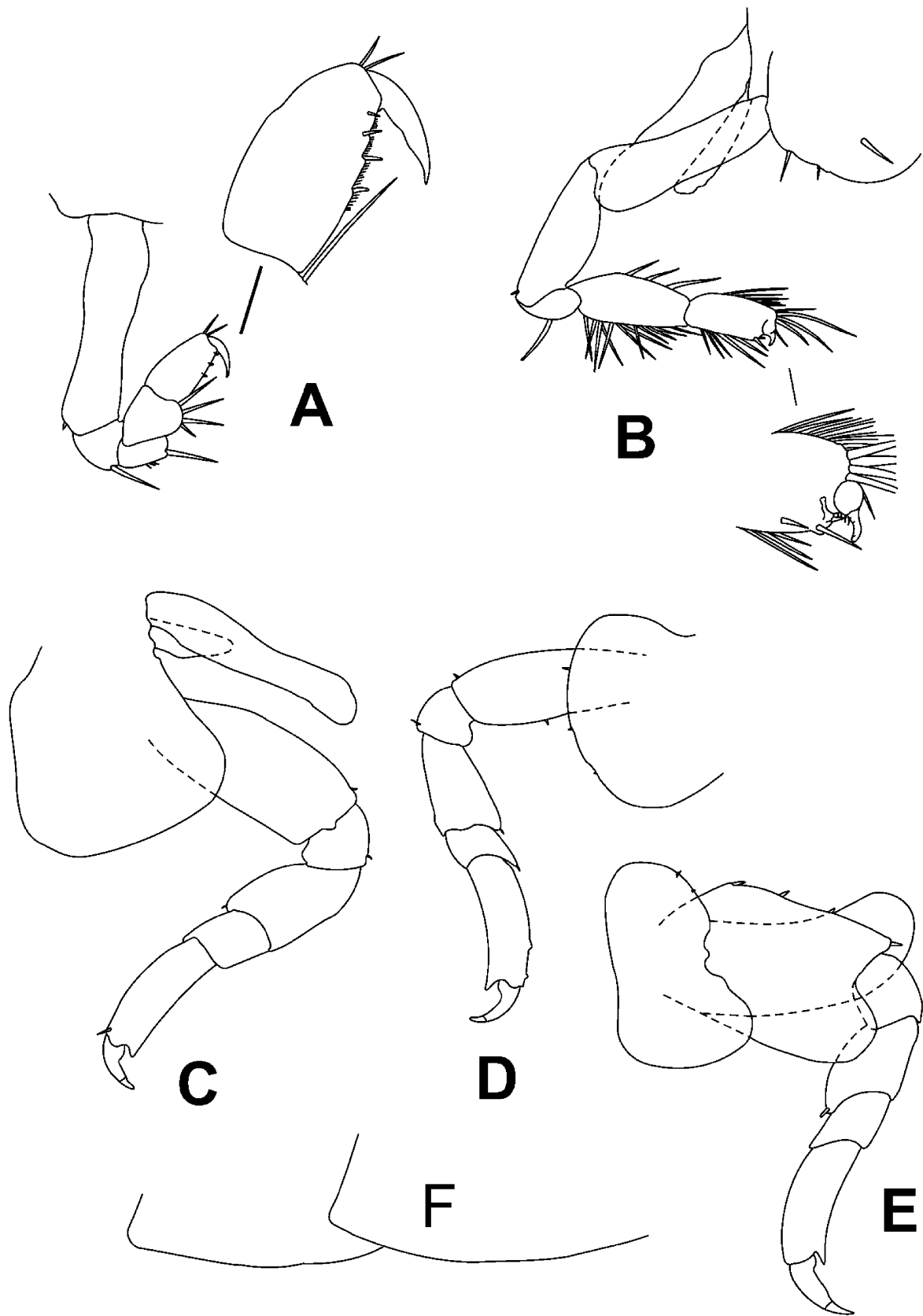
**FIGURE 5.** *Boca normae* n. sp. Holotype. A, lateral view of body; B, head; C, left mandible; D, antenna 2; E, antenna 1; F, maxilla 2; G, maxilliped; H, maxilla 1.

*Gnathopod 2* article 2 elongate and slightly curved backwards; article 3 with small posterodistal seta; article 4 short, with one long posterior seta; article 5 0.33 times longer than 6, anterior margin with 3 long setae, 12 long setae on posterior margin; article 6 forming small anterior lobe with 4 long setae, long setae on both margins, small chela; article 7 transformed into a diminutive mobile finger (Fig. 6B).

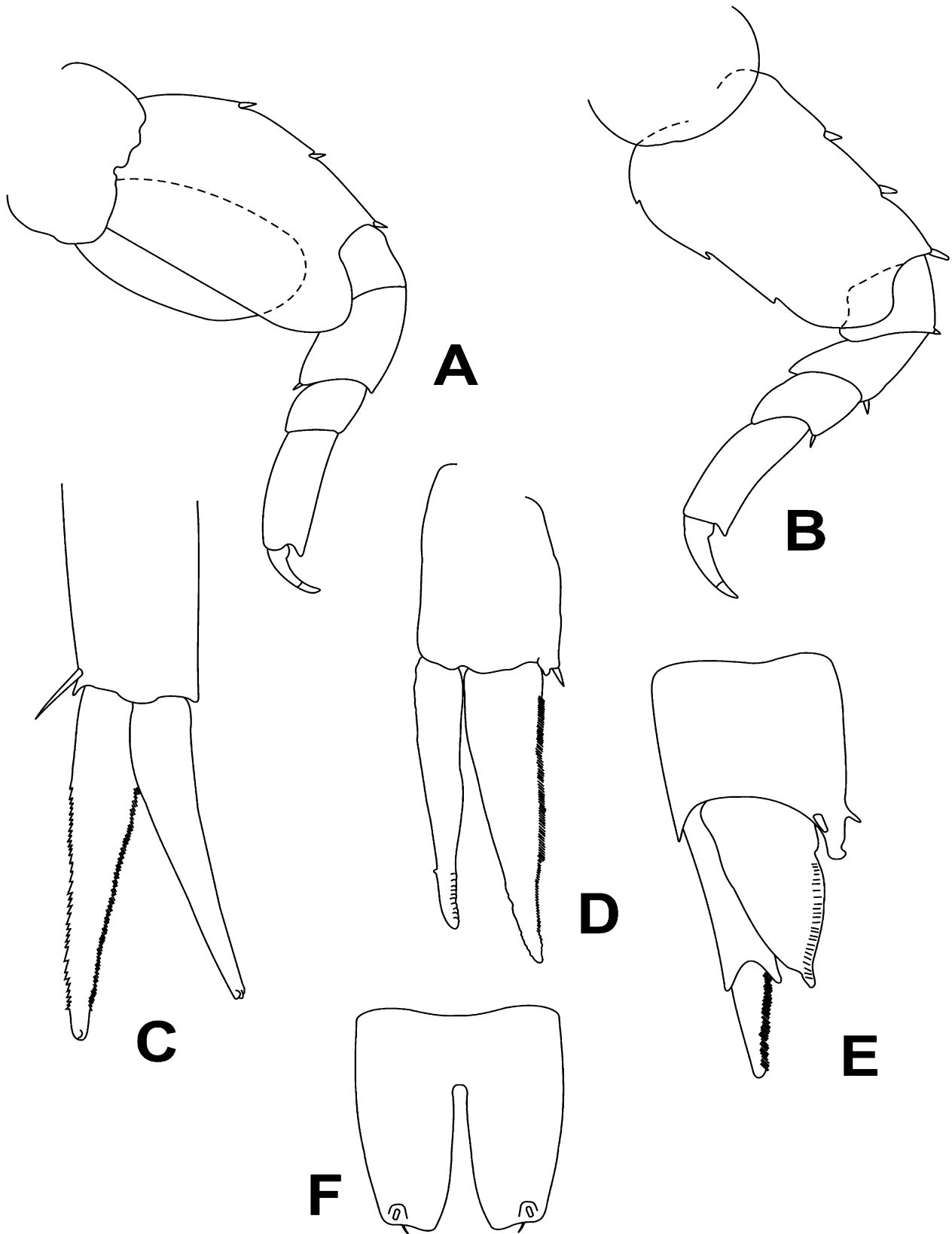
*Pereopod 3* article 2 narrow, subequal in length to articles 3, 4 and 5 combined; article 6 two times length of article 5, one posterodistal spur; article 7 with nail (Fig. 6C).

*Pereopod 4* similar to previous pereopod, anterior margin of article 6 with 2 small subdistal tubercles (Fig. 6D).

*Pereopods 5–7* article 2 widened, forming posterior lobe.



**FIGURE 6.** *Boca normae* n. sp. Holotype. A, gnathopod 1; B, gnathopod 2; C, pereopod 3; D, pereopod 4; E, pereopod 5; F, epimera 2–3.



**FIGURE 7.** *Boca normae* n. sp. Holotype. A, pereopod 6; B, pereopod 7; C, uropod 1; D, uropod 2; E, uropod 3; F, telson.

*Pereopod 5* anterior margin of article 2 with 4 robust setae; article 4 with one robust anterodistal seta (Fig. 6E).

*Pereopod 6* anterior margin of article 2 with 3 robust setae, 3 on posterior margin; article 4 with one robust posterodistal seta (Fig. 7A).

*Pereopod 7* article 2 quadrangular, posterodistally narrow; anterior margin with 3 robust setae, posterior margin with 3 posterior robust setae; articles 3, 4 and 5 with one robust anterodistal seta (Fig. 7B).

*Uropod 1* rami longer than peduncle, one long robust seta on posterodistal angle of peduncle; rami subequal in length, outer ramus finely serrate on both sides (Fig. 7C).

*Uropod 2* rami longer than peduncle, one short robust seta on posterodistal angle of peduncle; rami subequal in length, outer ramus finely serrate on posterior margin, inner ramus distally serrate on posterior margin (Fig. 7D).

*Uropod 3* peduncle with 2 short robust posterodistal setae, as long as inner ramus; outer ramus with 2 articles, article 1 subequal in length to inner ramus; article 2 less than half length of article 1, posterior margin finely serrate; article 2 of outer ramus with posterior margin serrate (Fig. 7E).

*Telson* subrectangular, deeply cleft; lobes obliquely truncate, with a short robust seta subdistally and minute seta marginally on apex of both lobes (Fig. 7F).

*Epimeron 2–3* with ventral margin rounded, posteriorly angular (Fig. 6F).

**Remarks.** *Boca normae* n. sp. differs from *B. megachela* in that the dactylus of gnathopod 1 reaches the middle of the palm margin, the mandibular palp lacks setae on article 2, article 3 is very setose, coxa 2 has no anterior cleft, and article 2 of the accessory flagellum is elongate. In *B. megachela*, the dactylus of gnathopod 2 fixes the palm completely, the mandibular palp has a distal seta on article 2, and article 3 has 2 distal setae. Compared with *B. elvae*, *Boca normae* n. sp. has an ovoid and large eye, whereas the eye in *B. elvae* is small and circular. Also, coxae 1, 2 and 3 have a spiny margin, and the anterior margin of articles 4, 5 and 6 of gnathopod 1 bear robust setae. Finally, it is different from *B. campi* in that it has a larger eye, article 2 of the accessory flagellum of antenna 1 is elongate, article 4 of antenna 2 forms a distal posterior lobe, the mandibular palp has no setae on article 2, article 3 is more setose, article 2 of the outer lobe of the maxilliped has a very long distal seta, and the inner lobe is half the length of the outer lobe. *Boca campi* has a smaller eye, article 2 of the accessory flagellum is shorter, article 4 of antenna 2 does not form a distal posterior lobe, the mandibular palp has 2 setae on article 2, article 3 has 2 distal setae, article 2 of the outer lobe of the maxilliped has short setae, and the inner lobe is less than half the length of the outer lobe.

*Boca normae* n. sp. constitutes the first record of the genus for the Caribbean Sea, Cuban waters, and for a blue hole worldwide. This result confirms the endemism of the genus *Boca* in the Tropical Western Atlantic that includes the Gulf of Mexico and the Caribbean Sea.

**Etymology.** This species is named in honor to Norma Montes Rodriguez, wife of the first author.

**Additional records.** The following peracarid crustaceans were collected from the Cayo Matias Blue Hole, SW Cuba, 22°07'06"N, 81°30'45"W, Carlos Varela coll., 18 July 2010) together with *Gnathia micheli* n. sp. and *Boca normae* n. sp.

## Asellota Latreille, 1803

### Gnathostenetroididae Kussakin, 1967

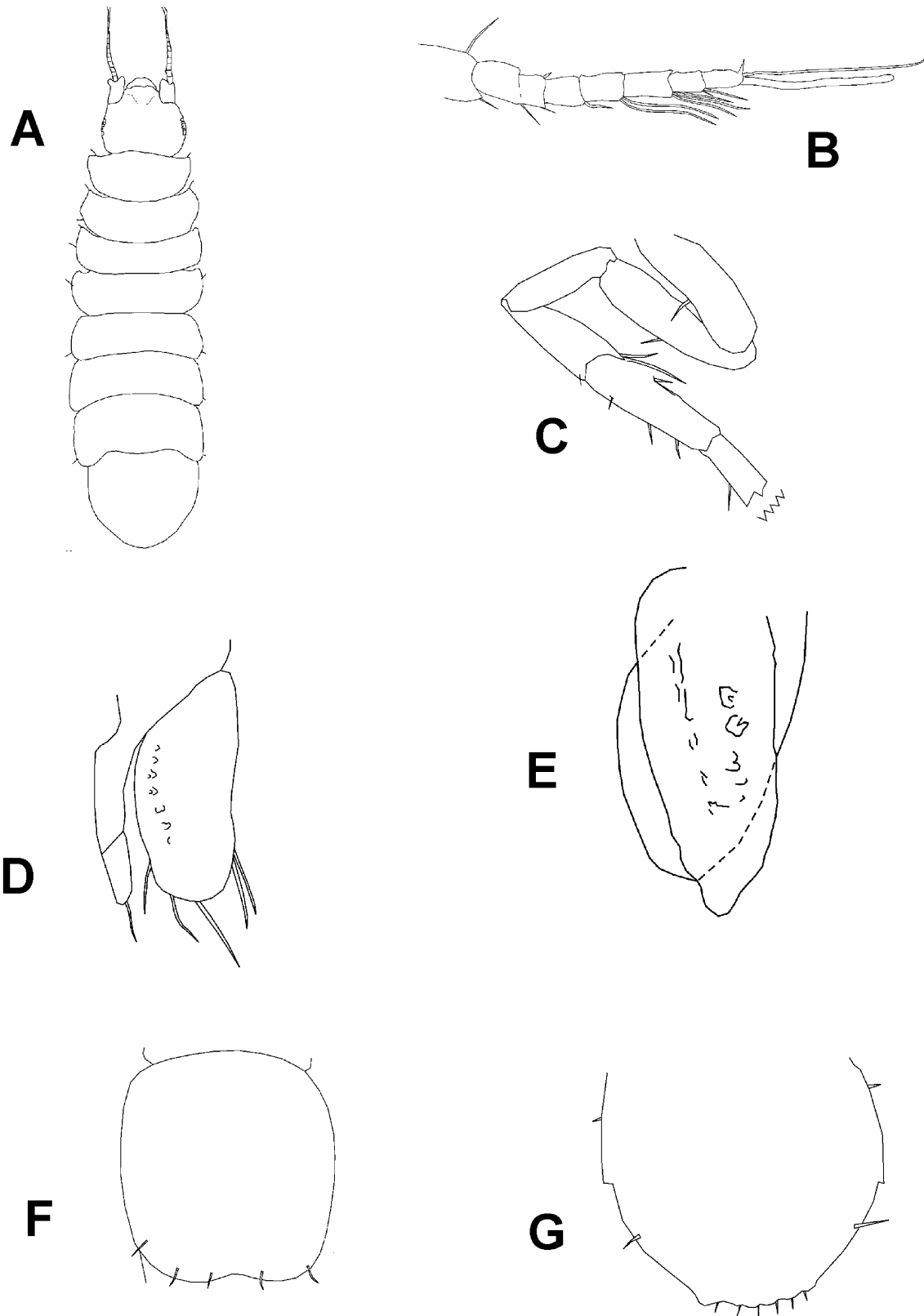
#### *Gnathostenetroides* Amar, 1957

#### *Gnathostenetroides* sp.

(Fig. 8)

**Material examined.** Juvenile female, non ovigerous, length 1.9 mm, collection of the Acuario Nacional de Cuba (ANC07.1.3.012)

**Remarks.** This species has small lateral eyes with 8 ommatidia; rostrum with a medial notch (Fig. 8A); antenna 2 with 8 articles, with distal aesthetasc (Fig. 8B); first pereonal segment almost as long as segment 2; article 2 of pereopod 2 shorter than article 3, article 4 as long as 2, article 5 shorter than 6, article 7 broken (Fig. 8C); pereopods 3–7 incomplete; pleopod 1 absent; pleopod 2 with rami fused into an almost round foliaceous plate (Fig. 8F); pleopod 3, inner ramus foliaceous and entire, outer with 2 article (Fig. 8D); pleopod 4, both rami wide and naked (Fig. 8E); pleotelson rounded with one notch each side, and distal end crenulated (Fig. 8G).



**FIGURE 8.** *Gnathostenetroides* sp. A, dorsal view of body; B, antenna 2. C, pereopod 2; D, pleopod 3; E, pleopod 4; F, pleopod 2; G, telson.

This is the first record of this genus for Cuban waters and the Caribbean Sea. Although there are only two species known in the world, i.e. *G. laodicense* Amar, 1957 described from the Mediterranean Sea, and *G. pugio*

Hooker, 1985 from the Middlegrounds in Florida (Kensley & Schotte 1989), we have decided not to describe a new species on the basis of this damaged specimen as there is very little information on the females of these rare isopods.

## **Flabellifera Sars, 1882**

### **Cirolanidae Dana, 1852**

*Cirolana parva* Hansen, 1890 (adult female, length 7.0 mm, with 3 embryos).

*Cirolana crenulitelson* Kensley & Schotte, 1987 (adult female, length 6.9 mm, with 6 embryos).

### **Cumacea Kroyer, 1846**

### **Nannastacidae Bate, 1866**

*Procampylaspis* sp. (adult male, length 2.5 mm)

This genus is the first time recorded from Cuba.

The two cirolanids, i.e. *Cirolana parva* and *C. crenulitelson*, as well as *Procampylaspis* sp. are deposited together at the collections of the Acuario Nacional de Cuba (ANC07.1.3.013)

## **Acknowledgments**

We gratefully acknowledge the programs PAPIME-UNAM 207311 and PAPIIT-UNAM-2010-2011- project number IN229011. Special acknowledge to Sergio Cházaro Olvera and Guillermo San Martin Peral.

## **References**

- Camp, D. (1988) *Bythognathia yucateensis* new genus, new species from abyssal depths in the Caribbean Sea, with a list of *Gnathia* species described since 1926 (Isopoda, Gnathiidae). *Journal of Crustacean Biology*, 8(4), 668–678.
- Cohen, B.F. & Poore, G.C.B. (1994) Phylogeny and biogeography of the Gnathiidae (Crustacea: Isopoda), with descriptions of new genera and species, mostly from south-eastern Australia. *Memoirs of the Museum of Victoria*, 54, 271–397.
- Gutu, M. & Iliffe, T.M. (1998) Description of a new hirsutiid (n.g., n.sp.) and reassignment of this family from order Mictacea to the new order, Bochusacea (Crustacea, Peracarida). *Travaux du Museum d'Histoire naturelle Grigore Antipa*, 40, 93–120.
- Kensley, B. & Schotte, M. (1989) Guide to the marine isopod crustaceans of the Caribbean. Smithsonian Institution Press, Washington D.C., 308 pp.
- Kensley, B., Schotte, M. & Poore, G.C.B. (2009) Gnathiid isopods (Crustacea, Isopoda, Gnathiidae), mostly new from the Indian Ocean. *Proceeding of the Biological Society of Washington*, 122(1), 32–35.
- Kornicker, L.S. & Iliffe, T.M. (2000) Myodocopid Ostracoda from Exuma Sound, Bahamas, and from marine caves and blue hole in the Bahamas, Bermuda, and Mexico. *Smithsonian Institution Press*, 606, 1–21.
- Lowry, J.K. (2006) New families and subfamilies of amphipod crustaceans. *Zootaxa*, 1254, 1–28.
- Lowry, J.K. & Stoddard, H.E. (1992) A revision of the genus *Ichnopus* (Crustacea, Amphipoda, Lysianassoidea, Uristidae). *Records of the Australian Museum*, 44 (2), 185–244.
- Lowry, J.K. & Stoddard, H.E. (1993) Crustacea Amphipoda: Lysianassoids from Philippine and Indonesian waters. In: Crosnier, A. (Ed.), *Resultats des Campagnes MUSORSTOM*. Memoirs du Museum National d'Histoire Naturelle, Paris, Serie A, Zoology, 10, 55–109
- Lowry, J. K. & Stoddard, H.E. (1997) Amphipoda Crustacea IV. Families Aristiidae, Cyphocarididae, Endeavouridae, Lysianassidae, Scopelocheiridae, Uristidae. *Memoirs of the Hourglass Cruises*, 10(1), 1–148.
- Monod, T. (1926) Les Gnathiidae. Essai monographique (Morphologie, Biologie, Systematique). *Mémoires de la Société des Sciences Naturelles du Maroc*, 13, 1–668.
- Schotte, M., Kensley, B.F. & Shilling, S. (2012 onwards). World list of Marine, Freshwater and Terrestrial Crustacea Isopoda. National Museum of Natural History Smithsonian Institution: Washington D.C., USA. <http://invertebrates.si.edu/isopod/>
- Schotte, M., Markham, J.C. & Wilson, G.D.F. (2009) Isopoda (Crustacea) of the Gulf of Mexico. In: Felder, D. & Camp, D. (Eds), *Gulf of Mexico, Origin, Waters and Biota, Vol. 1, Biodiversity*. Texas A&M University Press USA, pp. 973–986.
- Svavarsson, J. (2006) New species of Gnathiidae (Crustacea, Isopoda, Cymothoide) from seamounts off northern New Zealand. *Zootaxa*, 1173, 39–56.