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CARIDEA (CRUSTACEA, DECAPODA: DISCIADIDAE, PALAEMONIDAE, PROCESSIDAE, RHYNCHOCINETIDAE) FROM ROCAS ATOLL INCLUDING TWO NEW SPECIES OF *PERICLIMENAEUS* BORRADAILE, 1951 [1]

(With 46 figures)

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ABSTRACT: *Periclimenaeus caraibicus*, a species never recorded in Brazilian waters, is described, two new species of the genus *Periclimenaeus* are described: *P. brucei* sp.nov. and *P. crosnieri* sp.nov. Furthermore, six species previously recorded in Brazilian waters are redescribed: *Discias serratirostris*, *Brachycarpus biunguiculatus*, *Leander tenuicornis*, *Processa fimbriata*, *Processa brasiliensis*, and *Cinetorhynchus rigens*. Of these six species, only the two *Processa* were previously recorded in Rocas Atoll.

Key words: Caridea. Pontoniinae. *Periclimenaeus brucei* sp.nov. *Periclimenaeus crosnieri* sp.nov. Rocas Atoll.

RESUMO: Caridea (Crustacea, Decapoda: Disciadidae, Palaemonidae, Processidae, Rhynchocinetidae) de Atol das Rocas incluindo duas novas espécies de *Periclimenaeus* Borradaile, 1951.

Redescreve-se *Periclimenaeus caraibicus*, uma espécie nunca registrada no litoral brasileiro, e descrevem-se duas novas espécies do gênero *Periclimenaeus*: *Periclimenaeus brucei* sp.nov. e *Periclimenaeus crosnieri* sp.nov. Além disso, redescrevem-se seis espécies previamente registradas na costa brasileira: *Discias serratirostris, Brachycarpus biunguiculatus*, *Leander tenuicornis*, *Processa fimbriata*, *Processa brasiliensis* e *Cynertorhynchus rigens*. Destas seis, apenas as duas espécies de *Processa* já haviam sido registradas no Atol das Rocas.

Palavras-have: Caridea. Pontoniinae. *Periclimenaeus brucei* sp.nov. *Periclimenaeus crosnieri* sp.nov. Atol das Rocas.

INTRODUCTION

The Infraorder Caridea Dana, 1852 includes 36 families. The family Disciadidae Rathbun, 1902 includes three genera, only one of which occurs in Brazilian waters. The family Palaemonidae Rafinesque, 1815 is subdivided in two subfamilies: Palaemoninae Rafinesque, 1815 with 18 genera, nine of which occur in Brazilian waters, and Pontoniinae Kingsley, 1878 with 90 genera, five of which occur in Brazilian waters. The family Processidae Ortmann, 1890 presents three genera, two of which occur in Brazilian waters. The family Rhynchocinetidae Ortmann, 1890 presents two genera, and only one occurs in Brazilian waters (HOLTHUIS, 1993; RAMOS-PORTO & COELHO, 1998).

This study intends to describe the caridean shrimps (except Alpheidae) collected in the Rocas Atoll (03°52'S,33°48'W). A total of nine species are treated herein; seven of them are redescribed and two new species are described.

The carapace length was measured from rostrum base to the carapace end. The nomenclature of the mouth parts that cited by MCLAUGHLIN (1980) (Fig.1) and the nomenclature of the setae is that proposed by WATLING (1989) and GARM (2004) (Fig.2).

SYSTEMATICS

Family Disciadidae Rathbun, 1902

Discias Rathbun, 1902

Discias RATHBUN, 1902:289; LEBOUR, 1949:1107; KENSLEY, 1983:2.

Diagnosis – Carapace with rostrum short, dorsoventrally flattened; with or without antennal

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and branchiostegal spine. Mandible with or without palp; incisor and molar process widely separated. Pereopods 1 and 2 with ischium and merus fused. Pereopod 1 with highly specialized chela with circular dactyl. Dactyl of pereopod 3 simple (modified from KENSLEY, 1983).

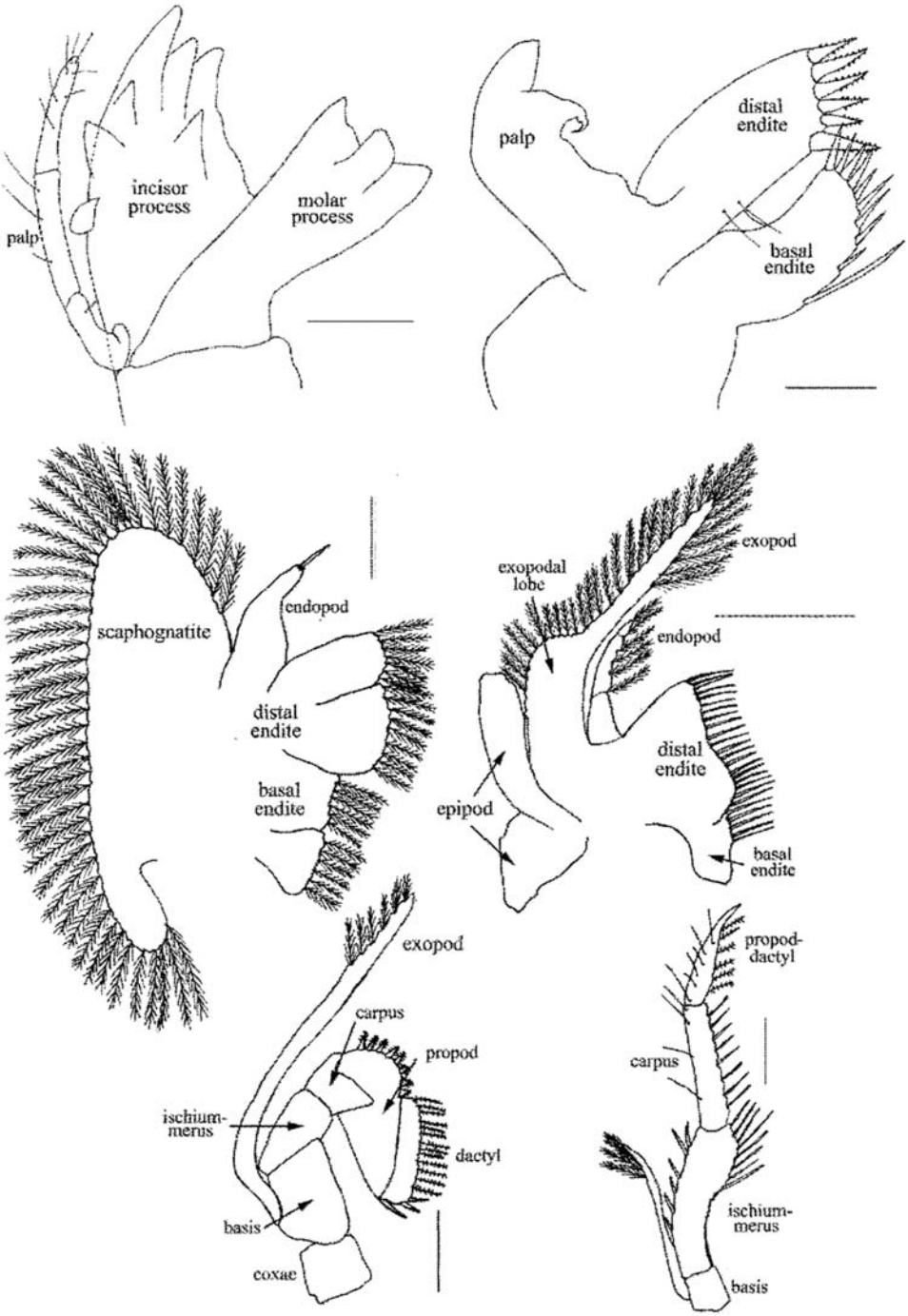

Fig.1- Mouth parts nomenclature. Hypothetical caridean. (A) left mandible; (B) left maxilla 1; (C) left maxilla 2; (D) left maxilliped 1; (E) left maxilliped 2 (bas-basis; c-carpus; cx-coxa; d-dactyl; i-m-ischio-merus; pr-propod); (F) left maxilliped 3 (bas=basis; c=carpus; i-m=ischio-merus; p-d=propod-dactyl).

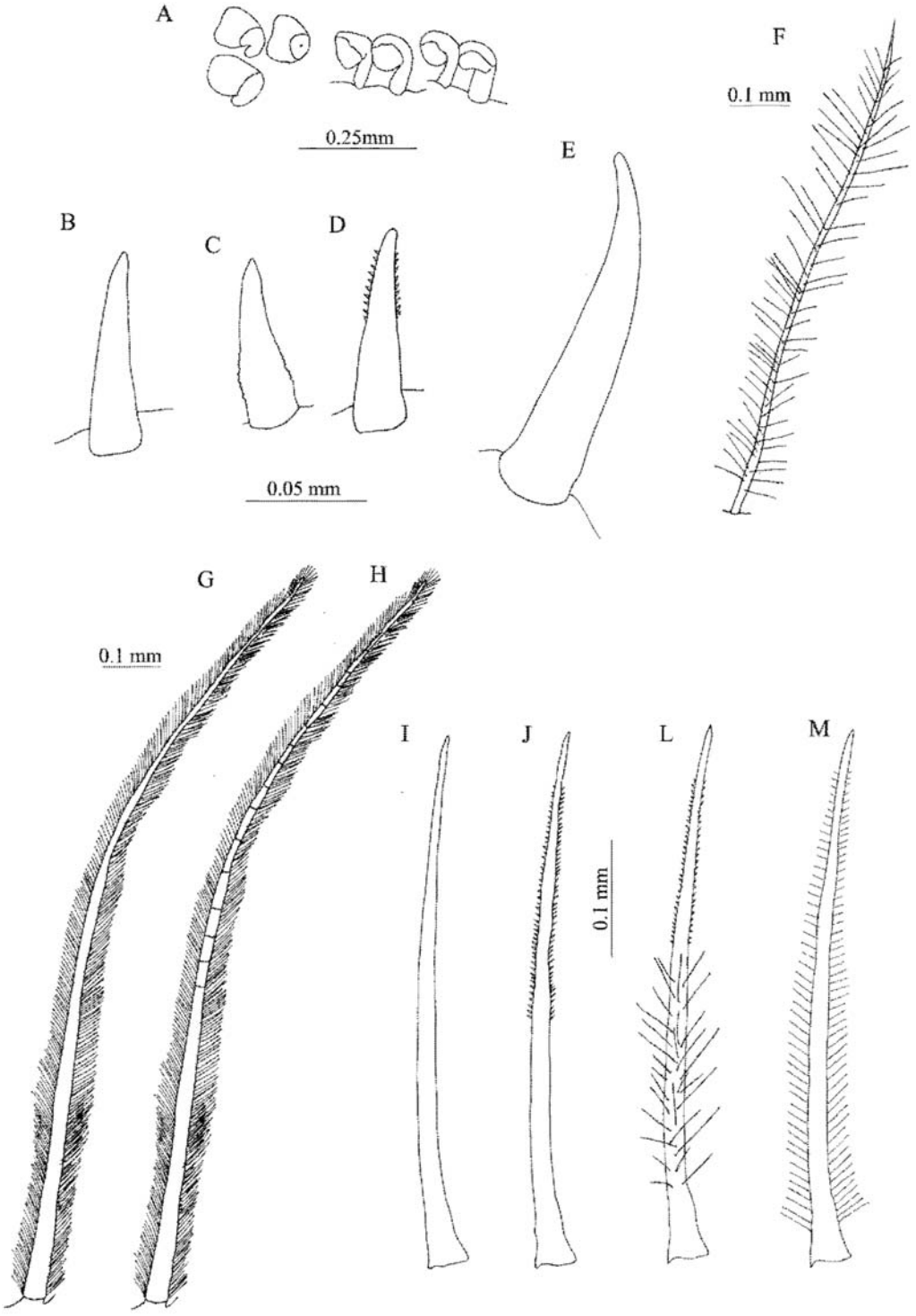

Fig.2- Types of setae found in material examined. (A) hook; (B) cuspidate; (C) cuspidate serrate; (D) cuspidate denticulate; (E) long cuspidate; (F) pappose; (G) densely plumose; (H) densely plumose articulated; (I) simple; (J) serrulate; (L) papposerrate; (M) scattered plumose.

Discias serratirostris Lebour, 1949
(Figs.3-6)

Discias serratirostris Lebour, 1949:1107, figs.1, 2; Bruce, 1970:315; 1975:34; 1976:129; Chace, 1972:16; Holthuis, 1981:791; Kensley, 1983:15, figs.13-14.

Material examined – Rocas Atoll, central lagoon, near Guarapirá pool, 1♂ (1.2mm), MNRJ 19038.

Diagnosis – Carapace with rostrum short, lanceolate; point acute; lateral margins serrate; with antennal spine on carapace margin, branchiostegal spine small; branchiostegal groove absent. Stylocerirte reaches ½ of basal antennular article; anterolateral tooth of basal article reaches ½ of second antennular article. Scaphocerite without distal teeth. Telson with 3 pairs of distal setae. Uropod exopod without serrate outer margin.

Description – Carapace with rostrum short, lanceolate, point acute, lateral margins serrate; with antennal spine on carapace margin, and small branchiostegal spine; branchiostegal groove absent (Fig.3A, B). Broad stylocerite ending in sharp point, half of basal antennular article length; anterolateral tooth reaching half of second antennular article; second antennular article without lobe on inner margin (Fig.3C). Scaphocerite without distolateral tooth; blade elongate, with anterior margin truncate (Fig.3D). Maxilla 2 with broad scaphognathite with densely plumose setae on all margins; endopod short, less than half of scaphognathite length; two bilobed endites, distal larger than basal, both with densely plumose setae on inner margin (Fig.4A). Maxilliped 1 with large epipod; broad, short exopodal lobe with densely plumose setae on outer margin; exopod short; endopod three-fourths exopod length, with several densely plumose setae on inner margin; endite with densely plumose setae on straight inner margin (Fig.4B). Maxilliped 2 with merus and ischium fused; carpus short; propodus elongate, with serrulate setae on inner margin; dactyl rounded, with serrulate setae on inner margin (Fig.4C). Maxilliped 3 with tufts of slender setae on all articles; propod-dactyl broad, with cuspidate setae on outer margin, and serrulate setae on inner margin (Fig.4D). Pereopod 1 robust, ischio-merus with distal cuspidate setae on outer margin; carpus reduced; dactyl circular, one-third propodus length; propodus with one cuspidate seta at distal inner angle (Fig.5A). Pereopods 3-5 with simple dactyl. Pereopod 3, ischium with one cuspidate seta on inner margin; merus with four cuspidate setae on inner margin; propodus with five small cuspidate setae on inner margin, last one at inner distal angle (Fig.5B). Pereopod 4, ischium with two cuspidate setae on inner margin; merus with four cuspidate setae on inner margin; propodus with five cuspidate setae on inner margin (Fig.5C). Pereopod 5, ischium with two cuspidate setae on inner margin; merus with two cuspidate setae on inner margin; propodus with six small cuspidate setae on inner margin (Fig. 5D). Abdomen with dorsal spine on somite 2 (Fig.6C). Male endopod of pleopod 1 leaf shaped, with simple setae on distal margin (Fig. 6A). Endopod of pleopod 2 with slender appendix interna, with many hook setae distally; appendix masculina slender, with several acute, simple setae distally (Fig.6B). Abdomen with dorsal spine on somite 2 (Fig.6C). Telson with three pairs of dorsolateral cuspidate setae; three pairs of distal setae, outer pair cuspidate and inner pair simple; distal end slightly rounded (Fig.6D). Exopod of uropod without diaresis, lateral margin not ending in sharp triangular projection, with strong posterolateral stout seta that not overreaches exopod tip (Fig. 6D).

Distribution – Western Atlantic Ocean: Bermuda, Florida, Belize, Gulf of Mexico, Brazil (Espírito Santo and Rocas Atoll).

Remarks – Only *Discias atlanticus* Gurney, 1939 and *D. serratirostris* (Chace, 1972) are recorded in the Atlantic Ocean. These two species occur in Brazilian waters, the former from Maranhão to Ceará and the latter in the Espírito Santo (Ramos-Porto & Coelho, 1998). Others previous records of *D. serratirostris* were from Bermuda, Florida, Belize, and Gulf of Mexico (Lebour, 1949; Kensley, 1983).

Discias atlanticus has a narrow rostrum, with subparalell margins and the sixth abdominal somite is twice as long as the fifth, while *D. serratirostris* has the rostrum broadly triangular, with serrate lateral margins and the sixth abdominal somite is a little longer than the fifth.

The specimen examined agrees with the description of Lebour (1949) in the triangular rostrum and serrate lateral margins, by the mouth parts shape, and by the pereopod 1 propodus and dactyl shape (the pereopod 2 was lost in the specimen). However, the small distolateral tooth on scaphocerite cited by Lebour (1949) was not observed, and the cuspidate setae on ischium, merus and propodus of pereopods 3-5 presents some variation in number and position. The diagnostic characters cited by Kensley (1983) are: rostrum lanceolate, apically acute with lateral margins serrate; dorsal spine on abdominal somite 2; scaphocerite without distolateral tooth and telson with three pairs of cuspidate setae on distal margin

and uropod exopod without diaresis. All these characters agree with material examined except the telson that has two pairs of distal cuspidate setae and four pairs of dorsolateral cuspidate setae. The number and position of cuspidate setae on ischium, merus and propodus of pereopods 4 and 5 is similar to that figured by KENSLEY (1983), who did not figured the pereopod 3.

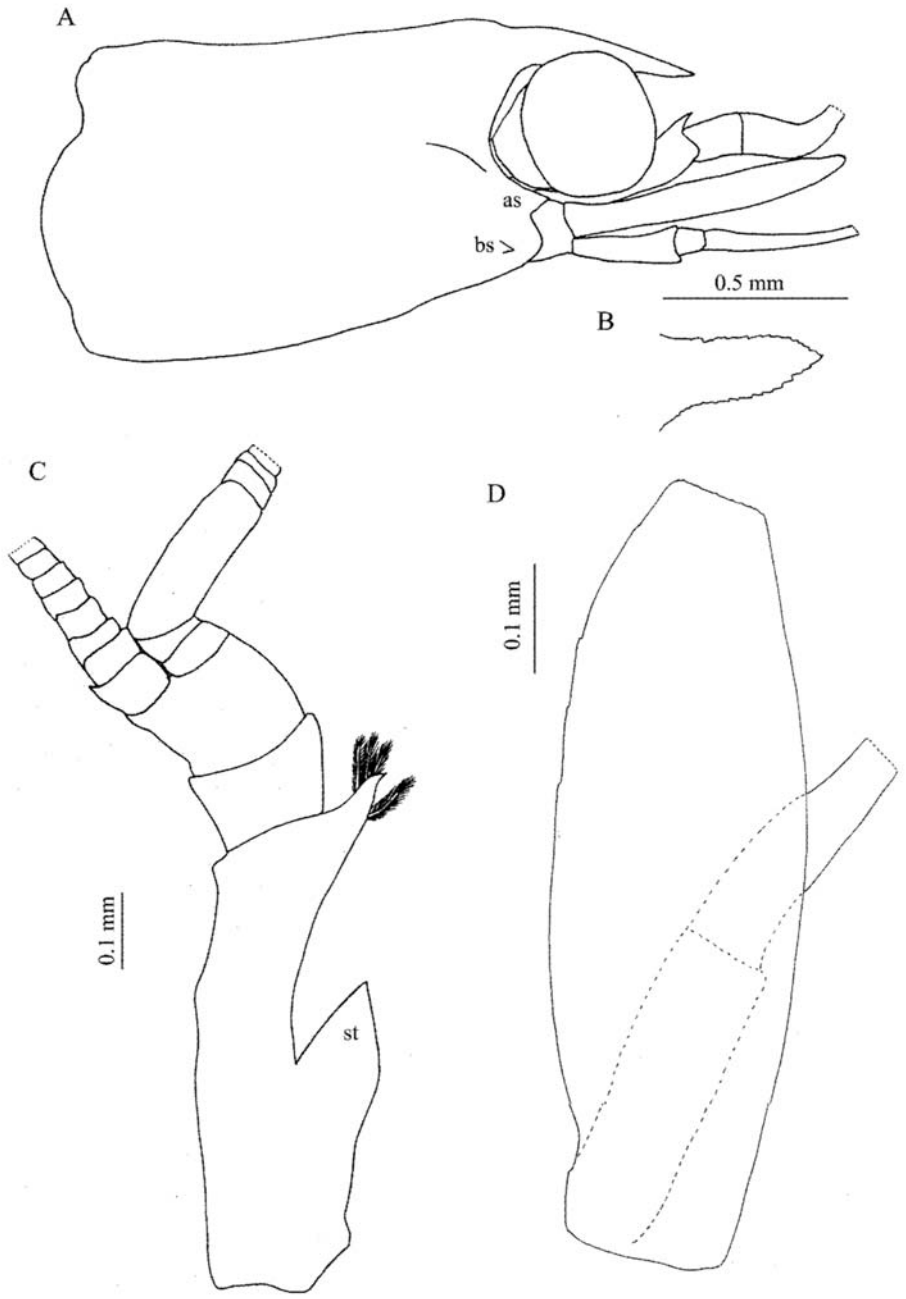

Fig.3- *Discias serratirostris* Lebour, 1949, ♂, MNRJ 19038 (carapace length 1.2mm). (A) carapace and cephalic appendages, lateral (as=antennal spine; bs=branchiostegal spine); (B) rostrum, dorsal; (C) right antennula, dorsal (st=stylocerite); (D) right scaphocerite, dorsal.

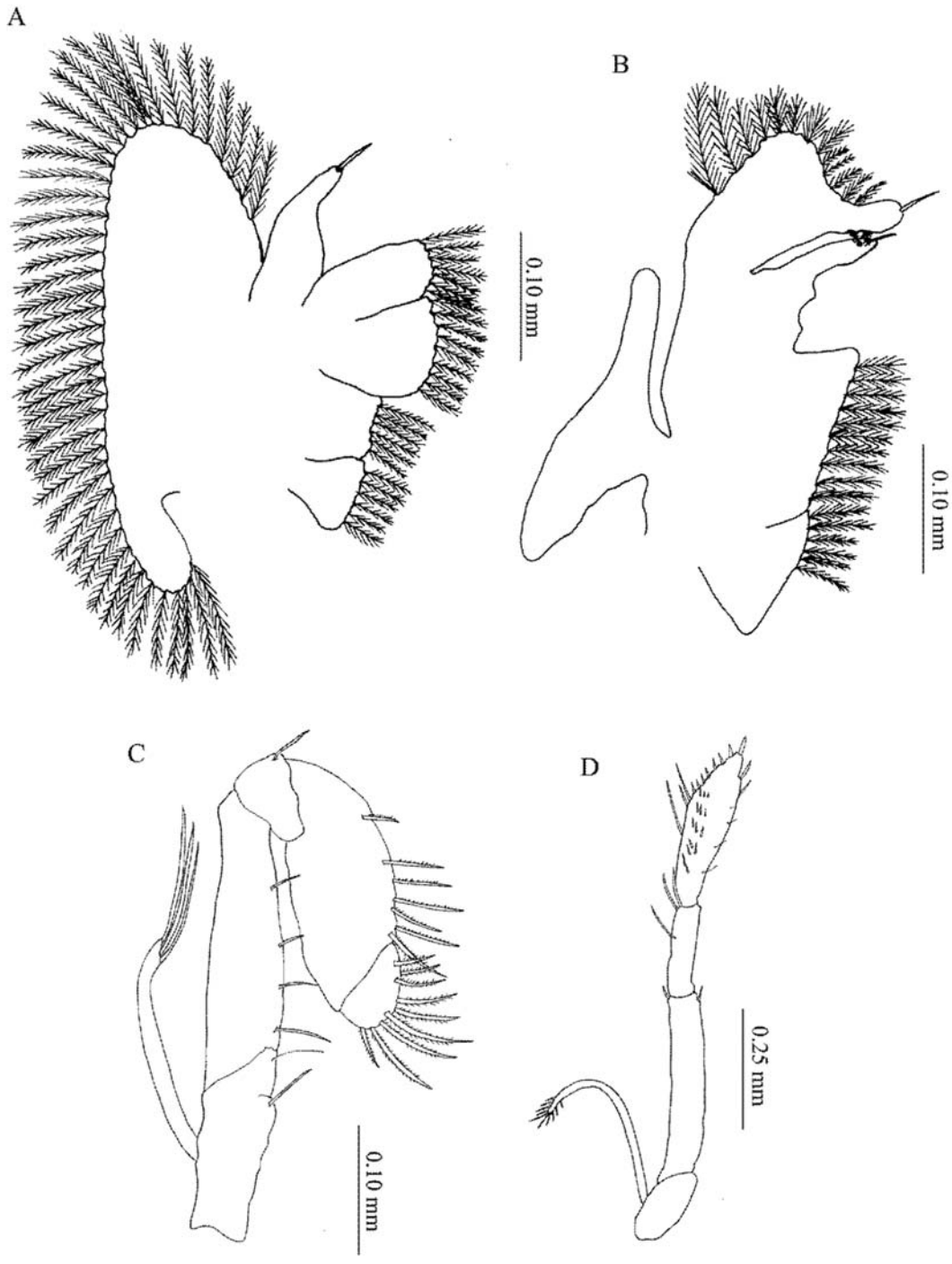

Fig.4- *Discias serratirostris* Lebour, 1949, ♂, MNRJ 19038 (carapace length 1.2mm). (A) left maxilla 2, dorsal (end=endite; enp=endopod;sc=scaphognathite); (B) left maxilliped 1, dorsal (el=exopodal lobe; end=endite; enp=endopod; ep=epipod; exp=exopod); (C) left maxilliped 2, dorsal (exp=exopod); (D) left maxilliped 3, dorsal (exp=exopod).

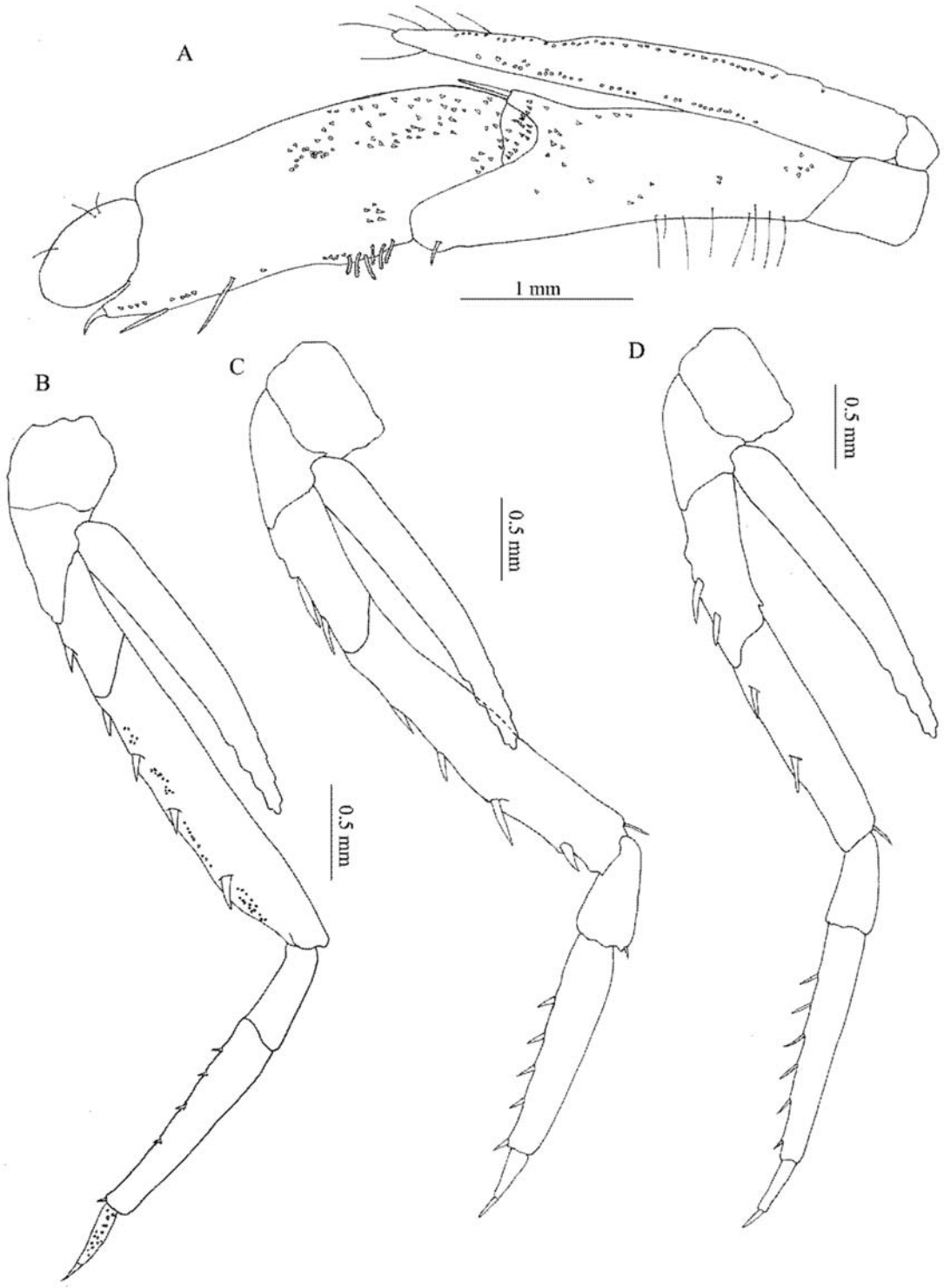

Fig.5- *Discias serratirostris* Lebour, 1949, ♂, MNRJ 19038 (carapace length 1.2mm). (A) right pereopod 1, lateral; (B) left pereopod 3, lateral; (C) left pereopod 4, lateral; (D) left pereopod 5, lateral.

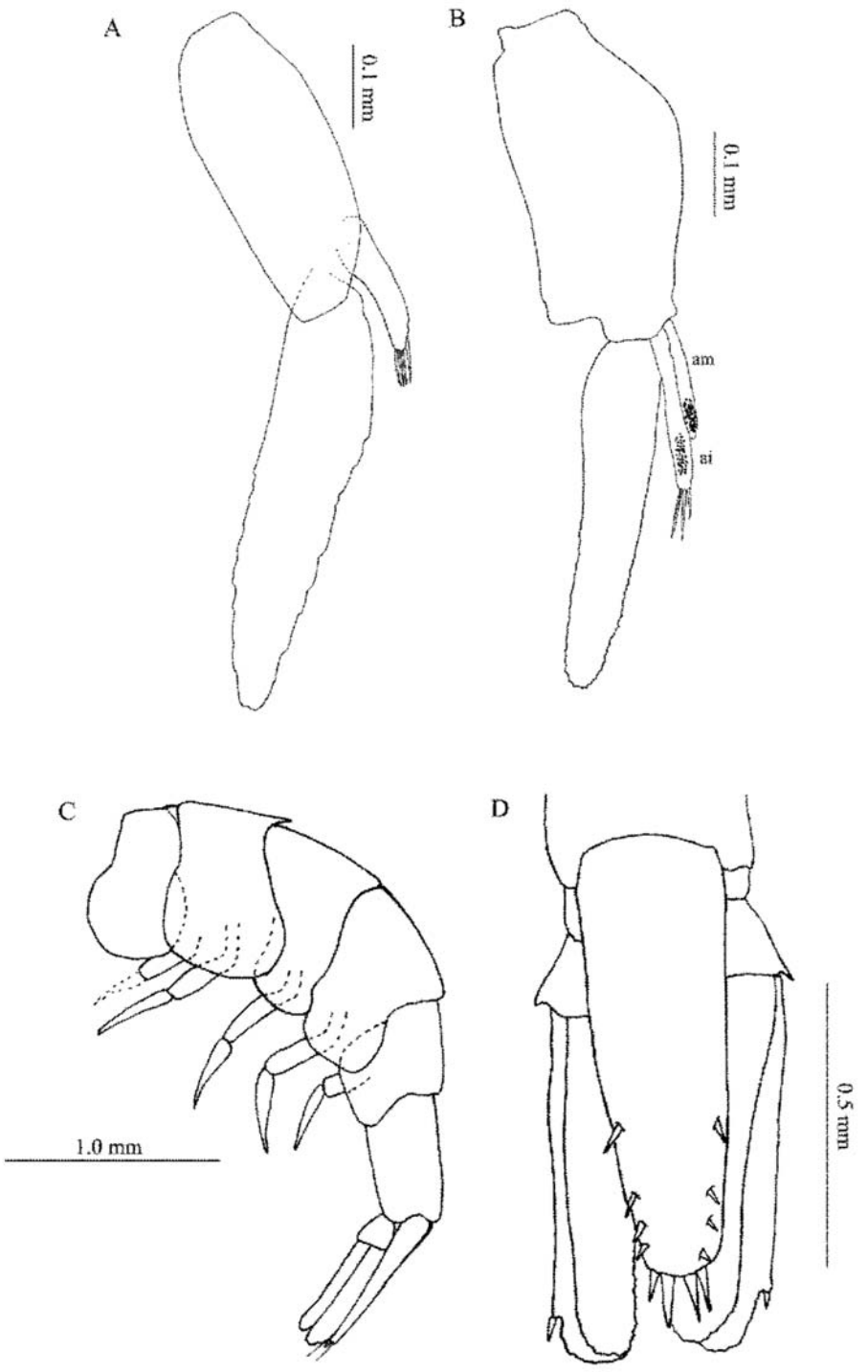

Fig.6- *Discias serratirostris* Lebour, 1949, ♂, MNRJ 19038 (carapace length 1.2mm). (A) left pleopod 1, lateral; (B) left pleopod 2, lateral (ai=appendix interna; am=appendix masculina); (C) abdomen, lateral; (D) telson and uropods, dorsal.

Family Palaemonidae Rafinesque, 1815

Subfamily Palaemoninae Rafinesque, 1815

Brachycarpus Bate, 1888

Brachycarpus BATE, 1888:795; HOLTHUIS, 1952a:2.

Diagnosis – Carapace with rostrum long; with antennal and hepatic spines. Mandibular palp with three articles. Dactyl of pereopods 1-3 bifid. Telson with two pairs of dorsal cuspidate setae (modified from HOLTHUIS, 1952a).

Brachycarpus biunguiculatus (Lucas, 1846)
(Figs.7-10)

Palaemon biunguiculatus LUCAS, 1846:45, pl.4, fig.4.

Brachycarpus savignyi BATE, 1888:795, pl.129, fig.4.

Brachycarpus biunguiculatus – HOLTHUIS, 1952:3, pl.1, figs.a-q (with synonym); CHACE, 1972:18.

Material examined – Rocas Atoll, pool, 1♂ (14.0mm), MNRJ 19030; pool, 1 ovigerous ♀ (11.0mm), 1♀ (11.5mm) MNRJ 19031; pool, 2♀ (11.0, 6.0mm), MNRJ 19032; pool, 1♀ (10.5mm), MNRJ 19033; no detailed locality, 1 juvenile (3.0mm), MNRJ 19037.

Diagnosis – Carapace, rostrum upper margin with seven or eight teeth, lower margin with three teeth; antennal and hepatic spines present. Stylocerite half of basal antennular article length, anterolateral tooth reaches end of second antennular article. Scaphocerite with strong terminal tooth overreaching end of scale. Dactyl of pereopods 3 to 5 bifid (modified from HOLTHUIS, 1952a).

Description – Carapace with rostrum long, reaching end of scaphocerite, upper margin bearing eight teeth, lower margin with three teeth and distal part unarmed; with antennal spine slender; hepatic spine present; without branchiostegal spine (Fig.7A). Stylocerite half basal antennular article length, anterolateral tooth reaching distal margin of second article (Fig.7B). Scaphocerite with distal tooth strong, distinctly overreaching end of scale (Fig.7C). Mandible, incisor process with three acute distal teeth, three acute median teeth, and a lateral tubercle; molar process with three strong triangular teeth distally; palp three-articulated, reaching almost the end of incisor process (Fig.8A). Maxilla 1 with one endite, with long cuspidate setae on inner margin; palp bilobed, lower lobe with curved acute point (Fig.8B). Maxilla 2 with broad scaphognathite with densely plumose setae on all margins; endopod one-third of scaphognathite length; endite bilobed with simple setae on inner margin (Fig.8C). Maxilliped 1 with short rounded exopodal lobe, densely plumose setae on outer margin; slender and elongate exopod with densely plumose setae on inner margin; endopod almost one-fifth of exopod length, with several papposerrate seta on inner and anterior margins; endite bilobed, basal lobe rounded, distal lobe straight, both with serrulate setae (Fig. 8D). Maxilliped 2 with ischio-merus elongate; carpus short; curved propodus, with long cuspidate serrulate seta on distal and inner margins; dactyl with serrulate setae on inner margin, long stout simple setae on posterior margin; exopod elongate with plumose setae on outer and distal margins (Fig.8E). Maxilliped 3 ischio-merus with simple setae on inner margin, six long cuspidate setae on outer margin; carpus with simple setae on inner margin; propod-dactyl with serrulate setae on inner margin; exopod with densely plumose setae on outer margin (Fig.8F). First pereopod with carpus as long as propodus; dactyl slightly overreaching propodus length; propodus and dactyl with tufts of setae, more dense distally; chela with slender lamina in inner margin (Fig.9A). Pereopod 2 longer and much stronger than first, dactyl half propodus length; propodus and dactyl with tufts of setae; chela with slender lamina in inner margin (Fig.9B). Pereopod 3 to 5 slender, dactyls bifid. Pereopods 3 and 4, propodus with six cuspidate setae on inner margin (Fig.9C, D). Pereopod 5 longer than pereopod 3-4 propodus with four cuspidate setae on inner margin (Fig.9E). Male endopod of pleopod 1 rounded, with anterior distal lobe with hook setae short plumose setae on anterior margin (Fig.10A). Male endopod of pleopod 2 with appendix interna slender, with numerous hook setae distally; appendix masculina subequal in length to appendix interna, with serrulate setae distally (Fig.10B). Female endopod of pleopod 1 leaf like with plumose setae on all margins (Fig.10C). Female endopod of pleopod 2 with appendix interna slender, elongate, with hook setae at point (Fig.10D). Telson with two pairs of dorsolateral cuspidate setae; two pairs of distal setae, outer cuspidate setae and inner simple setae (Fig.10E). Exopod of uropod with incomplete diaresis; lateral margin ending in sharp triangular projection; with a posterolateral cuspidate seta that not overreaches exopod tip (Fig.10E).

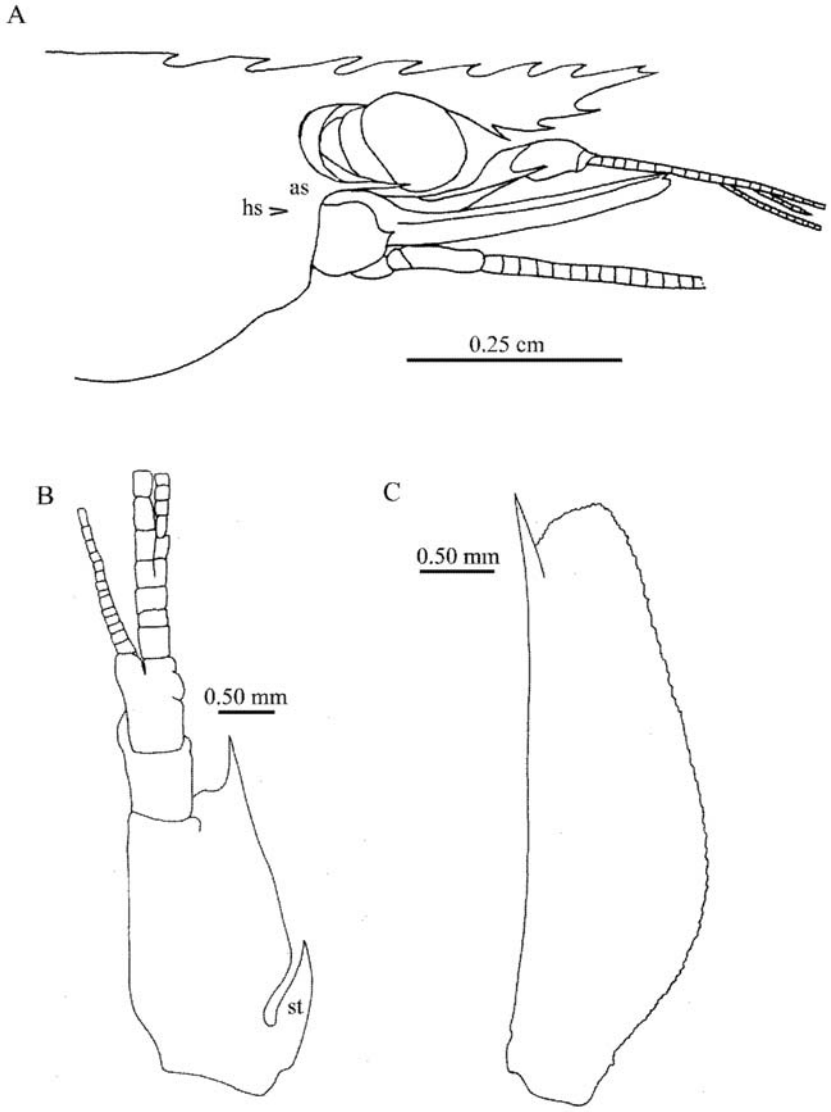

Fig.7- *Brachycarpus biunguiculatus* (Lucas, 1846), ♀ , MNRJ 19033 (carapace length 10.5mm). (A) carapace and cephalic appendages, lateral (as=antennal spine; hs=hepatic spine); (B) right antennula, dorsal (st=stylocerite); (C) right scaphocerite, dorsal.

Distribution – Pacific and Indian Oceans: American western coast (Clipperton Island); Red Sea, Tanganyika, Ceylon, Japan, Hawaii. Mediterranean Sea. Atlantic Ocean: West Africa (Liberia), American eastern coast, Caribbean Sea, Brazil: from Amapá to Espírito Santo, Fernando de Noronha and Rocas Atoll.

Remarks – The genus *Brachycarpus* is represented in the Western Atlantic by two species that occur in Brazilian waters: *Brachycarpus biunguiculatus* and *B. holthuisi* Fausto Filho, 1966. *Brachycarpus holthuisi* has the rostrum convex dorsally; dorsal cuspidate setae on telson submarginal and directed laterally; anterolateral tooth of basal article of antennular peduncle not reaching the tip of second article; mandibular palp reduced, not reaching half of incisor process length, first pereopod carpus half as long as propodus, in contrast to *B. biunguiculatus* which has rostrum straight dorsally, dorsal cuspidate setae on telson not submarginal and directed posteriorly; antero lateral tooth of basal antennular article reaching the tip of second article; mandibular palp not reduced, reaching at least, to distal third of incisor process, and first pereopod carpus slightly longer than chela.

The specimens agree mostly with the description of HOLTHUIS (1952a) and with the diagnostic characters cited by CHACE (1972) in the key of western Atlantic species of *Brachycarpus*. The only distinction observed was that the first pereopod carpus is slightly shorter than the propodus, and not slightly longer as cited by these authors.

Leander Desmarest, 1849

Leander DESMAREST, 1849:92; HOLTHUIS, 1952a:154.

Diagnosis – Carapace with rostrum long; with antennal and branchiostegal spines; without branchiostegal groove. Mandibular palp with 2 articles. All maxillipeds with exopods. Dactyl of pereopods 1-3 simple (modified from HOLTHUIS, 1952a).

Leander tenuicornis (Say, 1818)
(Figs.11-14)

Palaemon tenuicornis Say, 1818:249.

Leander tenuicornis – Kingsley, 1878:66; Holthuis, 1952a:155, pl.41, figs.a-g; pl.42, figs.a-f (with synonym).

Material examined – Rocas Atoll, 03°51.68'S, 33°49.64'W, 19m, 1♀ (9.5mm), MNRJ 19034.

Diagnosis – Carapace with rostrum long, larger in female than in male, upper margin with eight to 14 teeth, lower margin with five to seven teeth; antennal and branchiostegal spines present; branchiostegal groove absent; cornea with dark colored horizontal bands. Stylocerite reaches two-thirds of basal antennular article; anterolateral tooth of basal article reaches distal margin of second antennular article. Scaphocerite with distal tooth strong, overreaching end of scale (modified from Holthuis, 1952a).

Description – Carapace with rostrum long, larger in female than in male, reaching end of scaphocerite, upper margin with 11 teeth and lower with six teeth, with minute simple setae between this teeth; antennal and branchiostegal spines present; branchiostegal groove absent; cornea with dark colored horizontal bands (Fig.11A). Stylocerite reaches two thirds of basal antennular article; anterolateral tooth of basal article reaches distal margin of second antennular article (Fig.11B). Scaphocerite with distal tooth, overreaching end of scale (Fig.11C). Mandible with incisor process with three acute teeth; molar process with strong rounded teeth at distal end; palp biarticulated (Fig.12A). Maxilla 1 with two endites, basal endite with cuspidate setae on inner margin, distal endite with stout and serrulate setae on inner margin; palp bilobed distally, basal lobe with curved acute point (Fig.12B). Maxilla 2 with broad scaphognathite with densely plumose setae on all margins; endopod is one-fourth of scaphognathite length; endite bilobed, slender, elongate, with simple setae on inner margin (Fig.12C). Maxilliped 1 with epipod bilobed, basal endite sub-quadrate, distal endite rounded, both with serrulate setae on inner margin; short sub-quadrate exopodal lobe, with densely plumose setae on outer margin; slender and elongate exopod, with densely plumose setae on outer margin and distally; endopod almost one-fifth of exopod length, with slender long cuspidate setae; endite bilobed, with serrulate setae on inner margin, basal lobe rounded, twice length of distal lobe (Fig.12D). Maxilliped 2 with merus elongate, carpus short triangular, propodus with short simple setae on inner margin; dactyl rounded, with short serrulate setae on inner margin; exopod elongate with plumose setae distally (Fig.12E). Maxilliped 3, ischio-merus with simple setae on distal inner and outer margins; carpus with simple setae on inner margin and serrulate setae on outer margin; propod-dactyl with serrulate setae on all margins and tufts of serrulate setae on dorsal surface; exopod with densely plumose setae on outer margin (Fig.12F). Pereopod 1 slender, reaching tip of scaphocerite; dactyl more than half propodus length (Fig. 13A). Pereopod 3-5 slender with simple dactyl. Pereopod 3 with propodus less than three times longer than dactyl, with four cuspidate setae on inner margin, and two pairs of distal cuspidate setae, one at inner and one at outer angle (Fig.13B). Pereopod 4, propodus three times longer than dactyl, with four cuspidate setae on inner margin, two pairs of distal cuspidate setae, one at inner and one at outer angle (Fig.13C). Pereopod 5 with propodus more than three times longer than dactyl, with ten cuspidate setae on inner margin, one pair of cuspidate setae on distal angle (Fig.13D). Female endopod of pleopod 1 rounded, with densely plumose setae on all margins (Fig.14A). Endopod of pleopod 2 with appendix interna slender elongate, with numerous hook setae distally (Fig.14B). Telson with two pairs of dorsolateral cuspidate setae; three distal cuspidate setae, and pair of simple setae (Fig.14C). Exopod of uropod without complete diaresis; lateral margin ending in sharp triangular projection (Fig.14C).

Distribution – Tropical and Subtropical seas all over the world, except for the American western coast. It occurs in shallow waters near the seashore between seaweeds (Holthuis, 1952a). Brazil: from Maranhão to São Paulo and Rocas Atoll.

Remarks – The genus *Leander* includes four species, two occurring in the Western Atlantic and in Brazilian waters: *Leander paulensis* Ortmann, 1897 and *L. tenuicornis* (Say, 1818). Manning (1961a) redescribed *L. paulensis* and presented a table distinguishing both Atlantic species. *Leander paulensis* does not show sexual dimorphism in the shape of the rostrum; the outer margin of basal antennular article is convex; the stylocerite is short, reaching the middle of the basal antennular article and the scaphocerite is slender in both sexes. On the other hand, *L. tenuicornis* has sexual dimorphism in the shape of the rostrum; the female has a broadened ventral margin; the outer margin of basal antennular article is straight and the stylocerite is long, reaching the distal third of the basal antennular article. The only female examined agrees in all characters observed by Holthuis (1952a) and Manning (1961a).

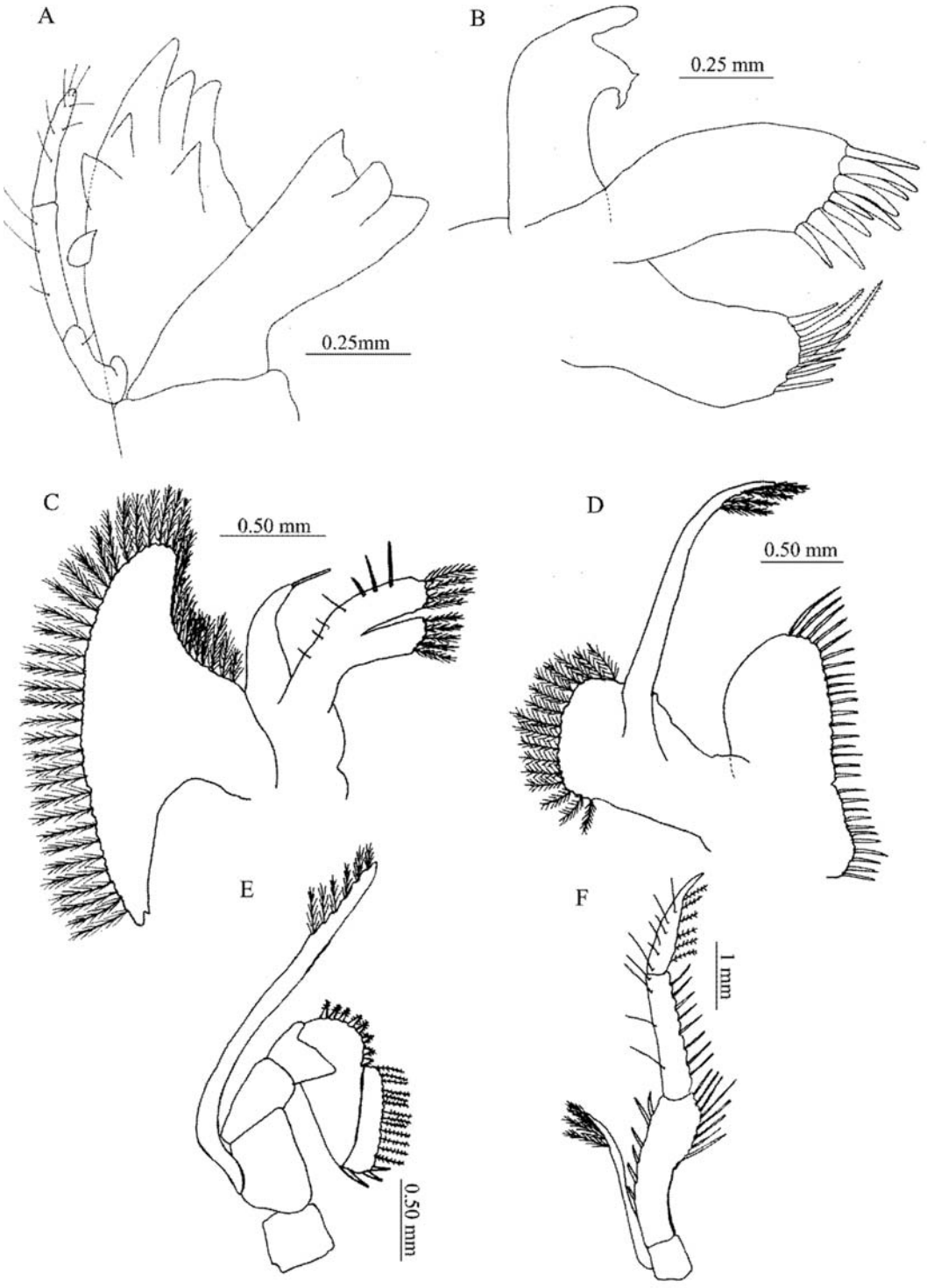

Fig.8- *Brachycarpus biunguiculatus* (Lucas, 1846), ♀ , MNRJ 19033 (carapace length 10.5mm). (A) left mandible, dorsal (ip=incisor process; mp=molar process; p=palp); (B) left maxilla 1, dorsal (end=endite; p=palp); (C) left maxilla 2, dorsal (end=endite; enp=endopod; sc=scaphognathite); (D) left maxilliped 1, dorsal (el=exopodal lobe; end=endite; enp=endopod; exp=exopod); (E) left maxilliped 2, dorsal (exp=exopod); (F) left maxilliped 3, dorsal (exp=exopod).

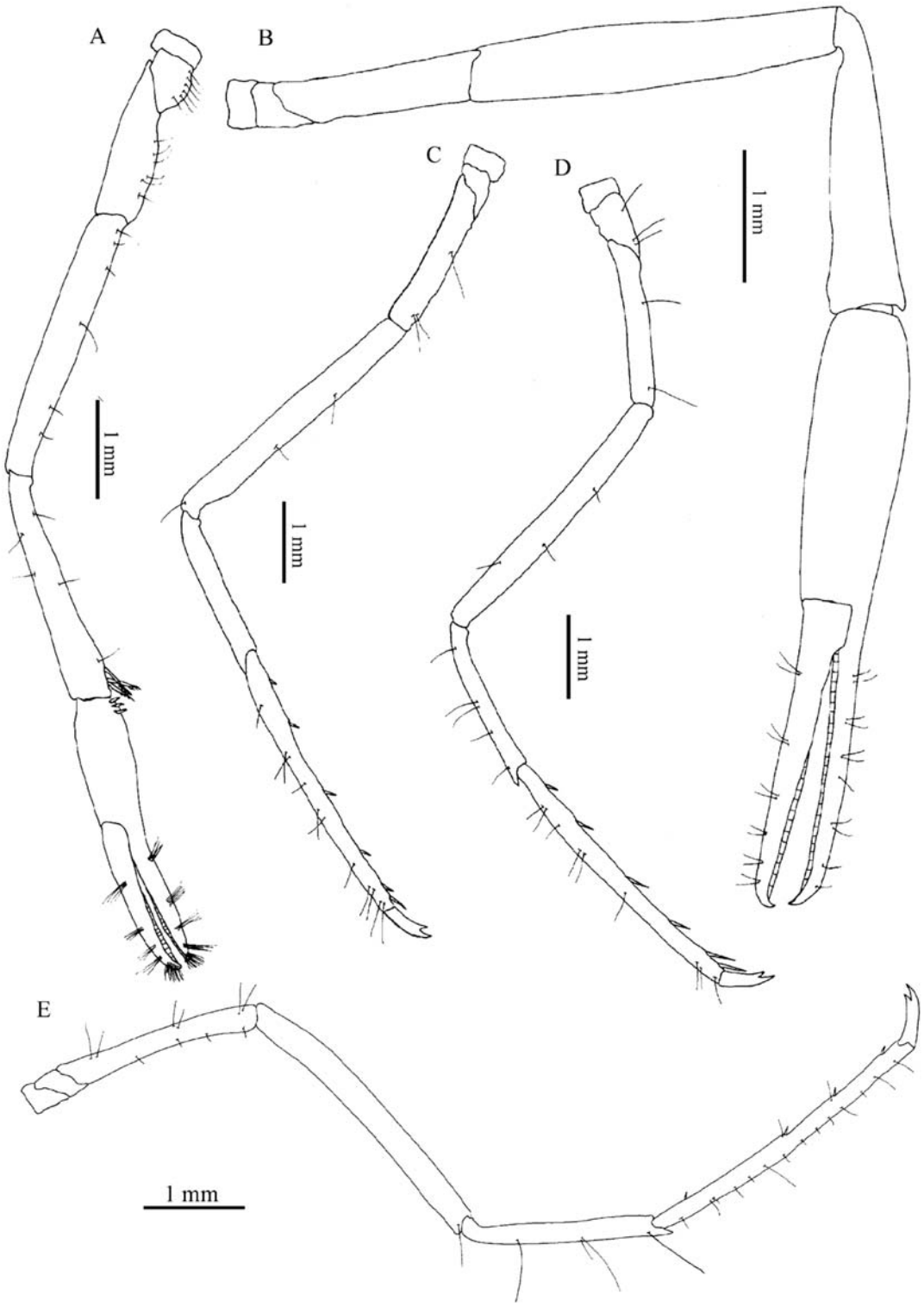

Fig.9- *Brachycarpus biunguiculatus* (Lucas, 1846), 1895, ♀ , MNRJ 19033 (carapace length 10.5mm). (A) right pereopod 1, lateral; (B) right pereopod 2, lateral; (C) right pereopod 3, lateral; (D) right pereopod 4, lateral; (E) right pereopod 5, lateral.

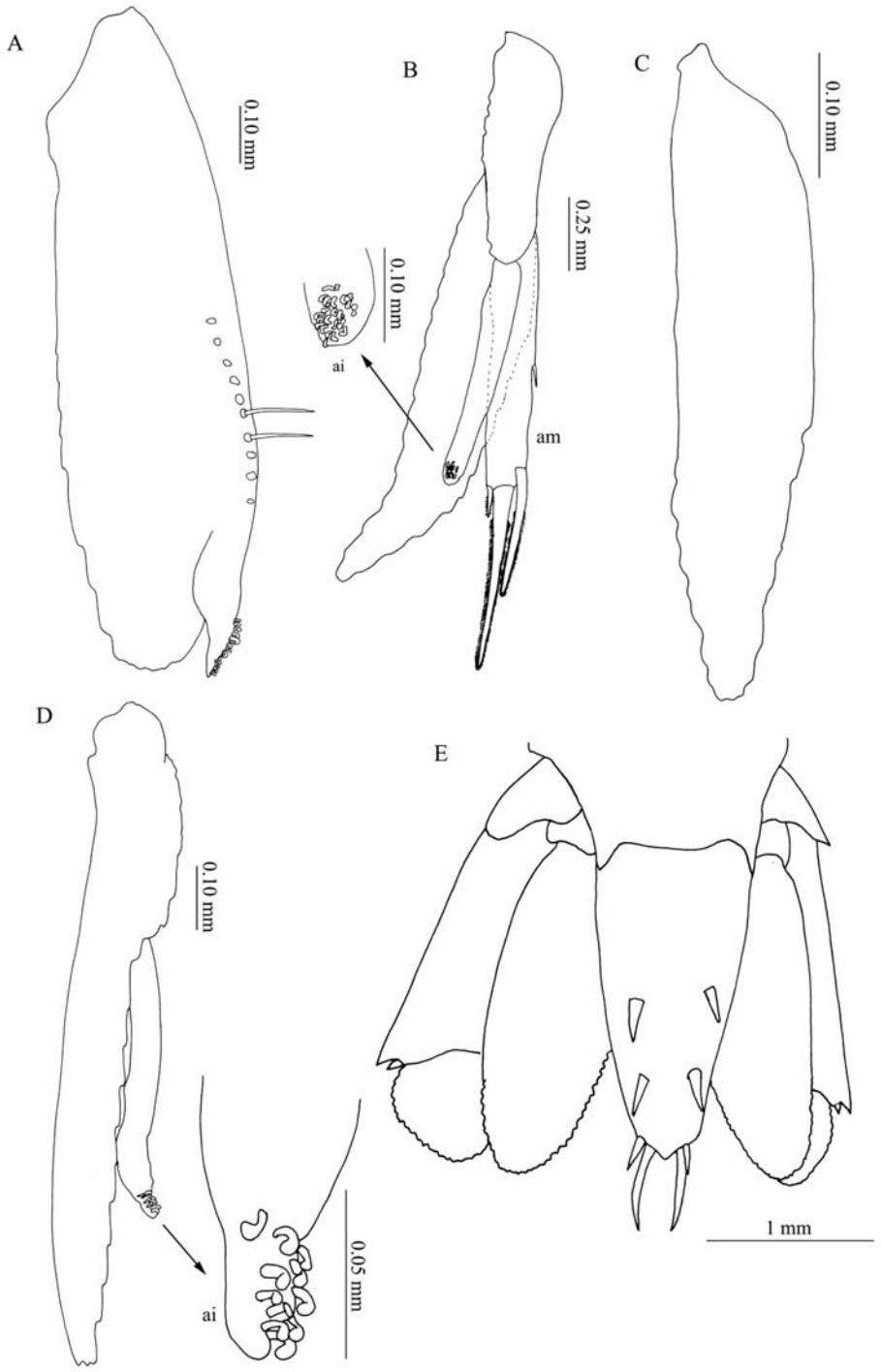

Fig.10- *Brachycarpus biunguiculatus* (Lucas, 1846), ♂ , MNRJ 19030 (carapace length 14mm). (A) left endopod of pleopod 1, lateral; (B) left pleopod 2, lateral (ai=appendix interna; am=appendix masculina). *Brachycarpus biunguiculatus* (Lucas, 1846), ♀ , MNRJ 19033 (carapace length 10.5mm); (C). left endopod pleopod 1, lateral; (D) exopod and appendix interna of pleopod 2 (ai=appendix interna); (E) telson and uropods.

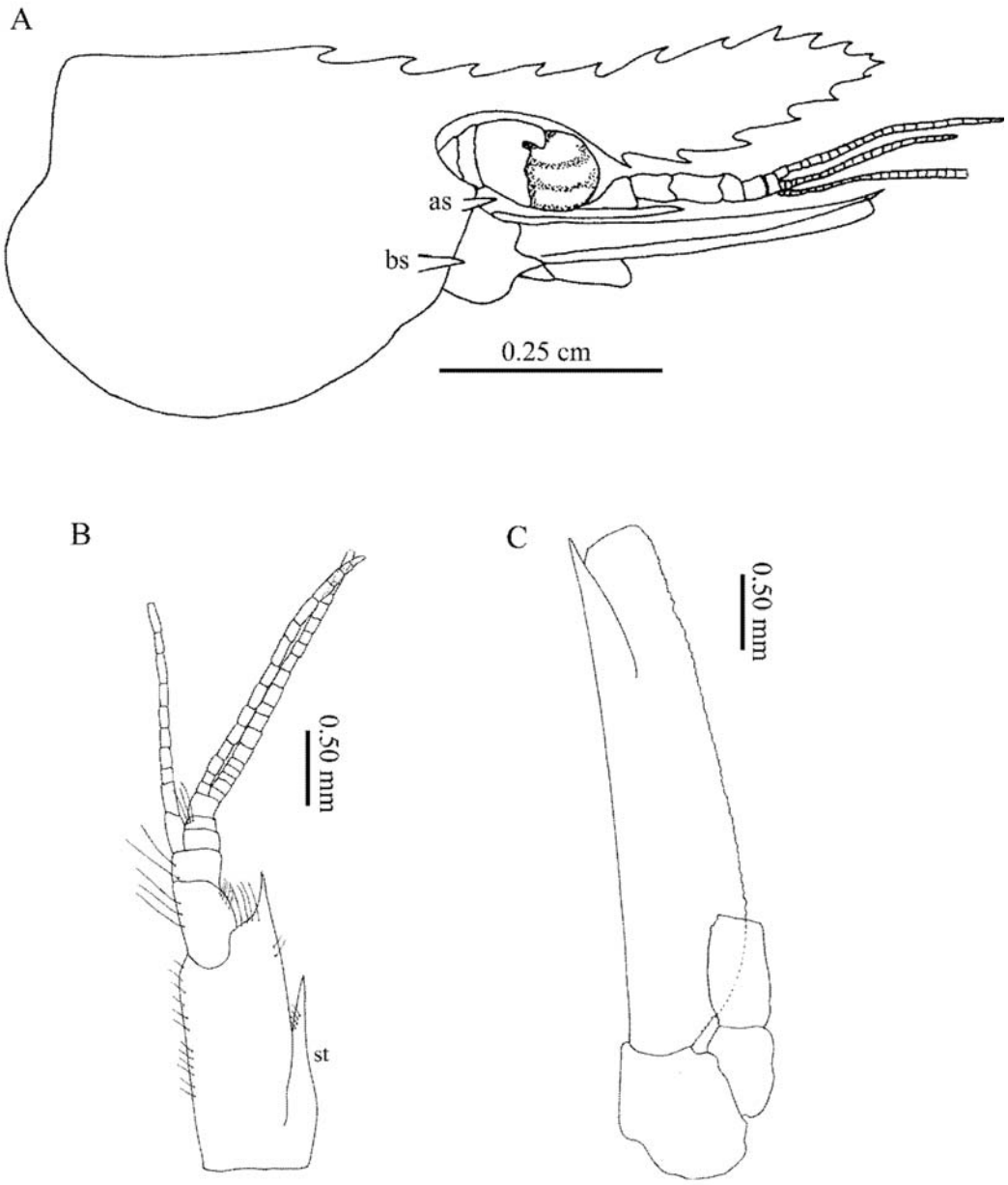

Fig.11- *Leander tenuicornis* (Say, 1818), ♀ , MNRJ 19034 (carapace length 9.5mm). (A) carapace and cephalic appendages, lateral (as=antennal spine; bs=branchiostegal spine); (B) right antennula, dorsal (st=stylocerite); (C) right scaphocerite, dorsal.

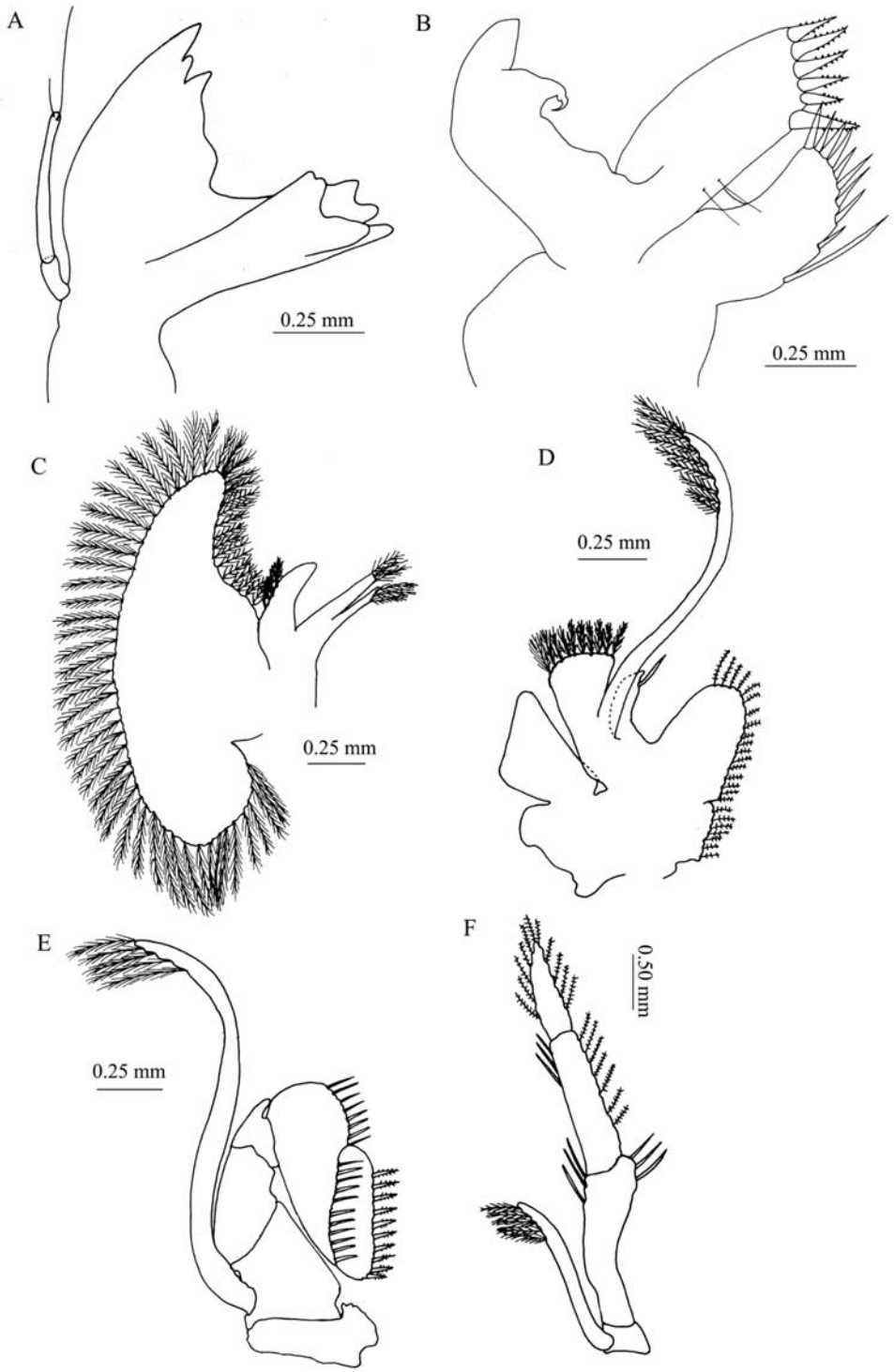

Fig.12- *Leander tenuicornis* (Say, 1818), ♀ , MNRJ 19034 (carapace length 9.5mm). (A) left mandible, dorsal (ip=incisor process; mp=molar process); (B) left maxilla 1, dorsal (end=endite; p=palp); (C) left maxilla 2, dorsal (end=endite; enp=endopod; sc=scaphognathite); (D) left maxilliped 1, dorsal (el=exopodal lobe; end=endite; enp=endopod; ep=epipod; exp=exopod); (E) left maxilliped 2, dorsal (exp=exopod); (F) left maxilliped 3, dorsal (exp=exopod).

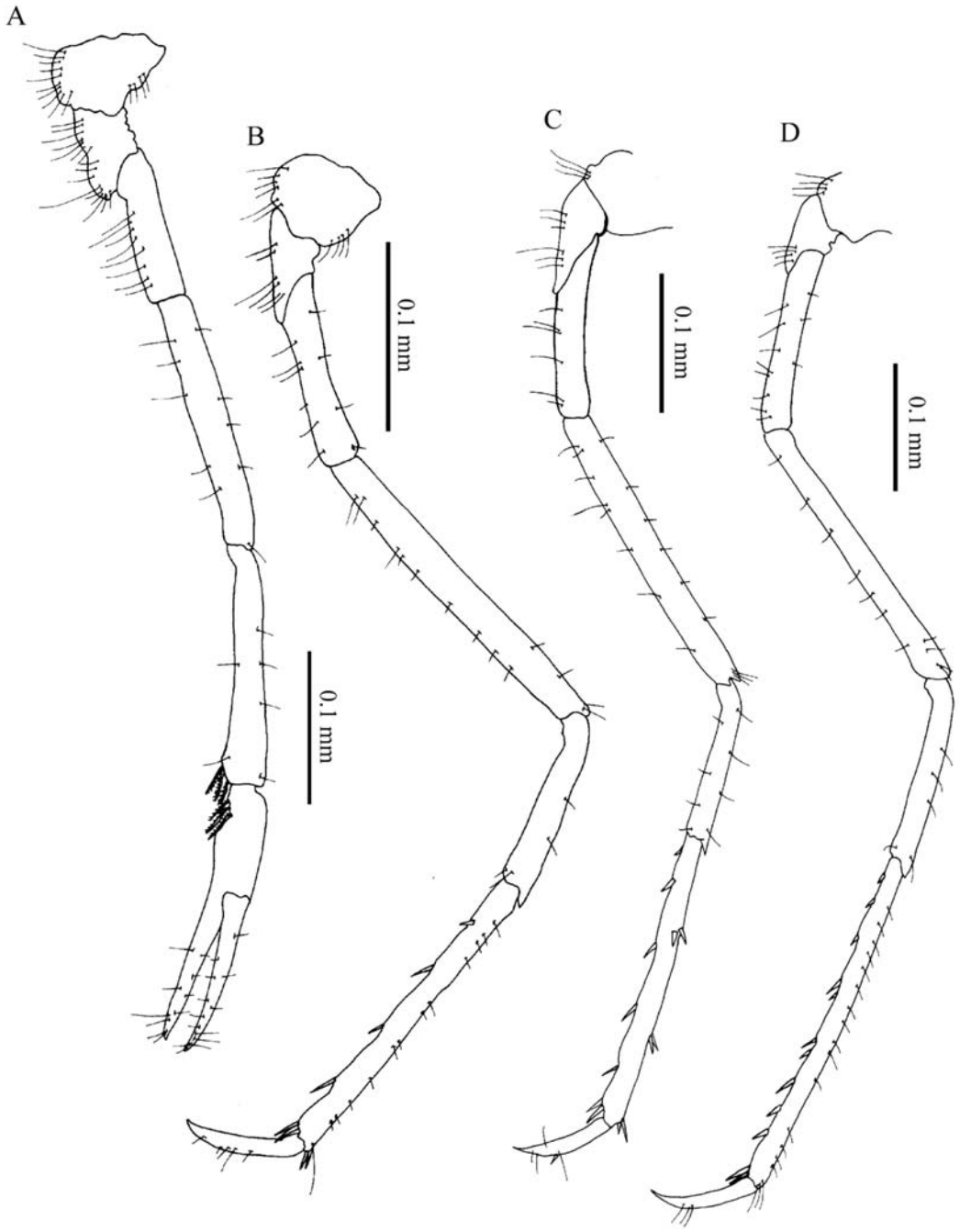

Fig.13- *Leander tenuicornis* (Say, 1818), ♀ , MNRJ 19034 (carapace length 9.5mm). (A) left pereopod 1, lateral; (B) left pereopod 3, lateral; (C) left pereopod 4, lateral; (D) left pereopod 5, lateral.

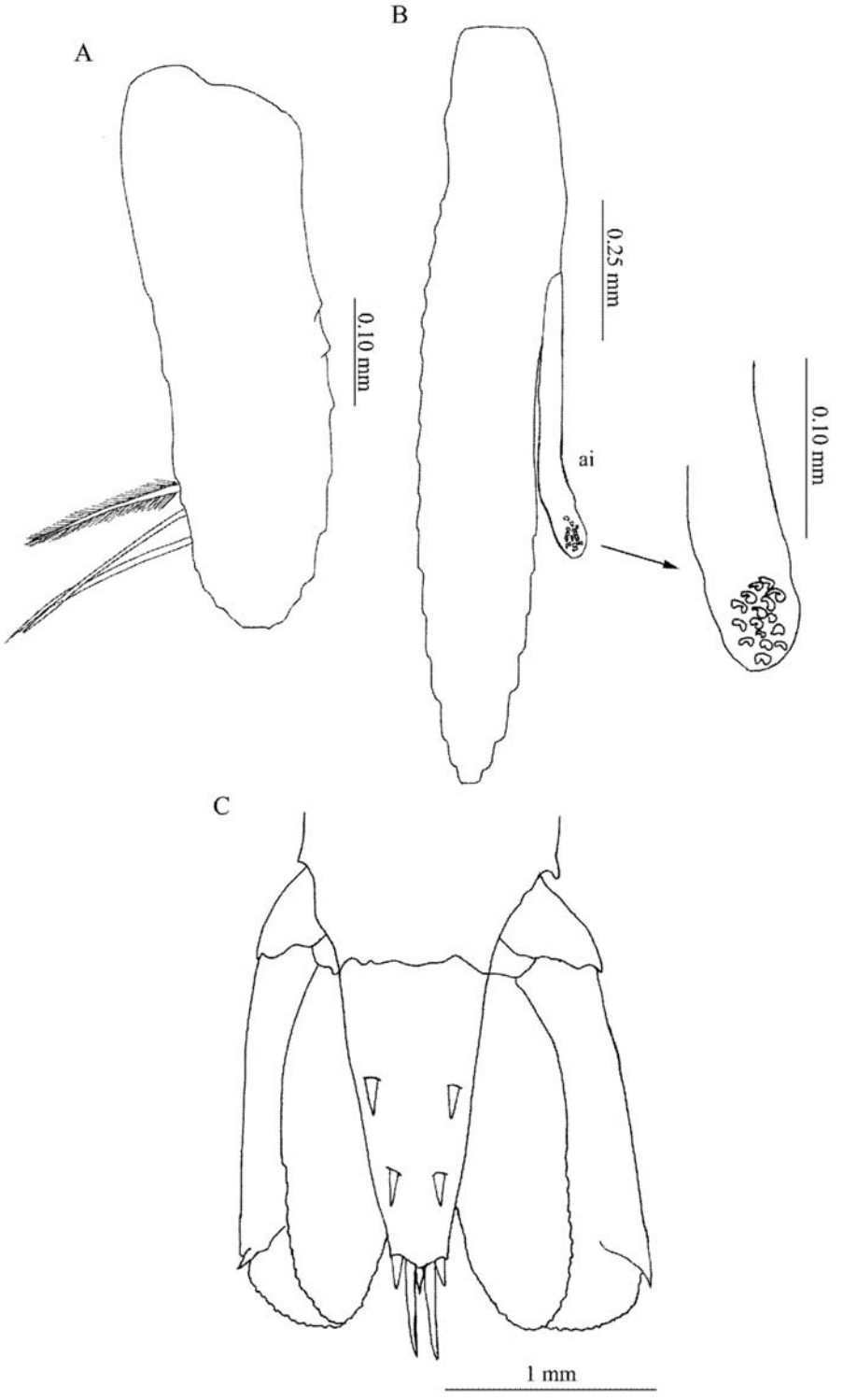

Fig.14- *Leander tenuicornis* (Say, 1818), ♀ , MNRJ 19034 (carapace length 9.5mm). (A) left endopod of pleopod 1, lateral; (B) left exopod and appendix interna of pleopod 2, lateral (ai=appendix interna); (C) telson and uropods, dorsal.

Subfamily Pontoniinae Kingsley, 1878

Periclimenaeus Borradaile, 1915

Periclimenaeus Borradaile, 1915; Holthuis, 1951:76.

Diagnosis – Carapace with rostrum short; supra orbital spine present or absent; with antennal spine; without hepatic spine. Mandible with incisor and molar process widely separated; without palp. Pereopod 2 strong, generally markedlly unequal, fingers hammer-shaped. Pereopods 1-3 slender with dactyl simple or bifid (modified from Holthuis, 1951).

Key to Atlantic species of *Periclimenaeus* (modified from Chace, 1972)

1a. Telson with anterior pair of cuspidate setae arising from its anterior fourth (Fig.19D) 2
1b. Telson with anterior pair of cuspidate setae arising at end of its anterior third or posterior to it 10
2a. Telson with three pairs of distal cuspidate setae inserted in continuous line 3
2b. Telson with outer pair of distal cuspidate setae inserted distinctly anterior to the other two pairs 5
3a. Rostrum with one ventral tooth; carapace with denticle or tubercle posterior to orbit (Fig.15A) ..... *P. caraibicus*
3b. Rostrum without ventral tooth; carapace without denticle or tubercle posterior to orbit 4
4a. Maxilliped 3 with two distal articles broad; pereopod 1 with movable finger tapering to tip, not strongly convex; minor pereopod 2 with fingers longer than palm ..... *P. ascidiarum*
4b. Maxilliped 3 with two distal articles slender; pereopod 1 with movable finger strongly convex; minor pereopod 2 with fingers much shorter than palm ..... *P. pearsei*
5a. Rostrum with four dorsal teeth ..... *P. chacei*
5b. Rostrum with seven to 12 dorsal teeth 6
6a. Pereopod 1 distinctly long and slender, carpus nearly twice as long as chela ..... *P. perlatus*
6b. Pereopod 1 not distinctly long and slender, carpus less than once and a half as long as chela 7
7a Rostrum with seven to eigth dorsal teeth; telson with posterior pair of dorsolateral cuspidate setae arising from anterior half of its segment 8
7b. Rostrum with ten to 12 dorsal teeth; telson with posterior pair of dorsolateral cuspidate setae arising from its posterior half of segment ..... *P. wilsoni*
8a. Carapace inflated; major pereopod 2 with dactyl elongate, strongly overreaching propod (Figs.26A, 28A) ..... *P. crosnieri* sp. nov.
8b. Carapace not inflated; major pereopod 2 with dactyl not overreaching or slightly overreaching propod 9
9a. Rostrum with eigth teeth; major and minor pereopod 2 o with rows of strong tubercles (Figs.20A, 22A) ..... *P. brucei* sp. nov.
9b. Rostrum with seven to eigth teeth; major and minor pereopod 2 sub-rectangular, with scattered tubercles ..... *P. bredini*
10a. Scaphocerite blade without distal tooth; pereopod 3 with dactyl bifid ..... *P. schmitti*
10b. Scaphocerite blade with distal tooth; pereopod 3 without distinct accessory tooth on flexor margin of dactyl 11
11a. Rostrum with four dorsal teeth; scaphocerite with large distal tooth reaching distal margin of blade ..... *P. atlanticus*
11b. Rostrum with one or two dorsal teeth; scaphocerite with small distal tooth not reaching distal margin of blade ..... *P. maxillulidens*

Periclimenaeus caraibicus Holthuis, 1951
(Figs.15-19)

Periclimenaeus caraibicus Holthuis, 1951:110, pl.32, figs.h-j, pl.34.

Material examined – Rocas Atoll, pool, 1 ovigerous ♀ (3,0mm), 2♀ (2.5, 3.0mm), MNRJ 19035; pool, 1 ovigerous ♀ (1.3mm), 4♀ (1.2 to 2.8mm), 1 juvenile (1.2mm), MNRJ 17892; Barretão, 1 ovigerous ♀ (2.0mm), MNRJ 19036; pool, 1 ovigerous ♀ (2.0mm), 1♀ (1.3mm), MNRJ 17918.

Diagnosis – Carapace with rostrum short, upper margin with six teeth, lower margin slightly convex, with one tooth; with small supraorbital spine and strong antennal spine. Broad stylocerite ending in a sharp point. Scaphocerite with strong distal tooth that overreaches the scale. Female endopod of pleopod 1 leaf shaped, with papposerrate seta on distal part of anterior and posterior margins, and on inner surface. Endopod of pleopod 2 with appendix interna slender, short, with hook setae distally. Telson with anterior pair of dorsolateral cuspidate setae arising from its anterior fourth; three pair of distal setae inserted in continuous line (modified from HOLTHUIS, 1951 and CHACE, 1972).

Description – Carapace with rostrum directed slightly downwards, upper margin with six teeth, lower margin slightly convex, with one tooth; with small supraorbital spine and strong antennal spine (Fig.15A). Stylocerite broad end acute, less than half of basal antennular article length; strong anterolateral tooth reaching two-thirds of the second antennular article; second antennular article with small rounded lobe on inner margin with a slender setae (Fig.15B). Scaphocerite with strong distal tooth overreaching scale, distal tooth is one-fourth of the scale length; inner margin of scale broad and rounded (Fig.15C). Mandible with incisor process with 13 small acute distal teeth; molar process distally straight with row of slender setae on inner margin and acute anterior tooth (Fig.16A). Maxilla 1 with two endites, both with cuspidate serrulate seta and papposerrate seta on inner margin; palp short, with curved acute point (Fig.16B). Maxilla 2 with elongate epipod; broad scaphognathite with densely plumose setae on all margins; endopod unarmed, less than half of scaphognathite length; endite short, bilobed, with papposerrate seta on inner margin (Fig.16C). Maxilliped 1 with short exopodal lobe, anterior margin truncate, with densely plumose setae; slender and elongate exopod, with densely plumose articulated setae on anterior margin; endopod short, one-fourth of exopod length; endite broad, inner margin straight, with papposerrate seta (Fig.16D). Maxilliped 2 with ischio-merus short; carpus short, triangular; propodus and dactyl rounded, with setae on inner margin (Fig.16E). Maxilliped 3 with carpus and propod-dactyl with densely plumose setae on inner margin (Fig.16F). Pereopod 1 slender, dactyl one-third propodus length; propodus and dactyl with tufts of setae, more dense distally (Fig.17A). Pereopods 2 very unequal in size and shape, right stronger than left; in both carpus short triangular; propodus densely tuberculate and with small cuspidate setae; dactyl with strong, rounded tooth that fits in a concavity on the propodus cutting edge (Figs.17B, C). Major pereopod 2 with broad dactyl forming strong claw (Fig.17B). Minor pereopod 2 with dactyl elongate, forming strong claw (Fig.17C). Pereopod 3, propodus with eight cuspidate setae on inner margin, and a pair of cuspidate setae on distal inner angle (Fig.17D). Pereopod 4, propodus with five cuspidate setae on inner margin, and pair of cuspidate setae on distal inner angle (Fig.17E). Pereopod 5, propodus with five cuspidate setae on inner margin (Fig.17F). Pereopod 3, dactyl with five teeth distributed on median inner margin and one tooth on outer margin, sharp tip (Fig.18A). Pereopod 4, dactyl with seven teeth distributed on entire inner margin, without tooth on outer margin, sharp tip (Fig.18B). Pereopod 5, dactyl with six teeth distributed on distal inner margin, basal inner margin serrate, blunt tip (Fig.18C). Female endopod of pleopod 1 leaf shaped, with papposerrate seta on distal part of anterior and posterior margins, and on inner surface (Fig.19A). Endopod of pleopod 2 with appendix interna slender, short, with hook setae distally (Fig.19B, C). Telson with two pairs of dorsolateral cuspidate setae; three pairs of posterior marginal setae, outer cuspidate setae and two inner simple setae; distal end slightly rounded (Fig.19D). Exopod of uropod without diaresis; lateral margin ending in triangular projection, with a strong posterolateral stout seta that sligthly overreaches exopod (Fig.19D).

Distribution – Western Atlantic: Caribbean Sea (Tobago, Barbuda, Dominica, Santa Lucia), Brazil: Rocas Atoll.

Remarks – This species has never been recorded in Brazilian waters and was collected associated with sponges in Rocas Atoll (Brazil). According to CHACE (1972), *P. caraibicus* can be found in a variety of habitats as turtle-grass flats, near mangrove swamps or associated with coral incrusted rocks. From Maranhão to Paraíba, four species of *Periclimenaeus* are known: *P. ascidiarum* Holthuis, 1951, *P. atlanticus* Rathbun, 1902, *P. pearsei* (Schmitt, 1936), and *P. perlatus* (Boone, 1930) (YOUNG, 1986; RAMOS-PORTO & COELHO, 1998).

According to HOLTHUIS (1951, 1952b), BRUCE (1969, 1970, 1976, 1978, 1991, 1993, 1996) and others (BARNARD, 1958; FUJINO & MYIAKE, 1968; DURIS, 1990), the genus *Periclimenaeus* comprises a total of 70 species, 46 of which occur in the Indo-West Pacific and three in Eastern Pacific. The Atlantic species are: *P. atlanticus*, *P. wilsoni* Hay, 1917, *P. perlatus*, *P. pearsei*, *P. maxillulidens* Schmitt, 1936, *P.*

ascidiarum, *P. caraibicus*, *P. schmitti* Holthuis, 1951, *P. chacei* Abele, 1971 and *P. bredini* Chace, 1972.

Of the 10 species that occur in the West Atlantic, three species have the telson with the anterior pair of dorsolateral cuspidate setae arising from its anterior third, the remaining species, including *P. caraibicus* have the telson with the anterior pair of dorsolateral cuspidate setae arising from its anterior fourth. Of the remaining seven species only *P. caraibicus*, *P. ascidiarum* and, *P. pearsei* have the telson with three pairs of distal setae inserted in a continuous line. Of these three species, only *P. caraibicus* presents a rostrum with a ventral tooth, a carapace with supraorbital spine or tubercle and a scaphocerite with distolateral tooth distinctly overreaching scale.

The specimens examined agree with HOLTHUIS' (1951) description in most characters observed, such as rostrum shape, presence of supraorbital and antennal spines, and stylocerite, scaphocerite and mouth parts shape. The outer pair of distal setae on telson is inserted slightly anteriorly to the mesial and inner pairs.

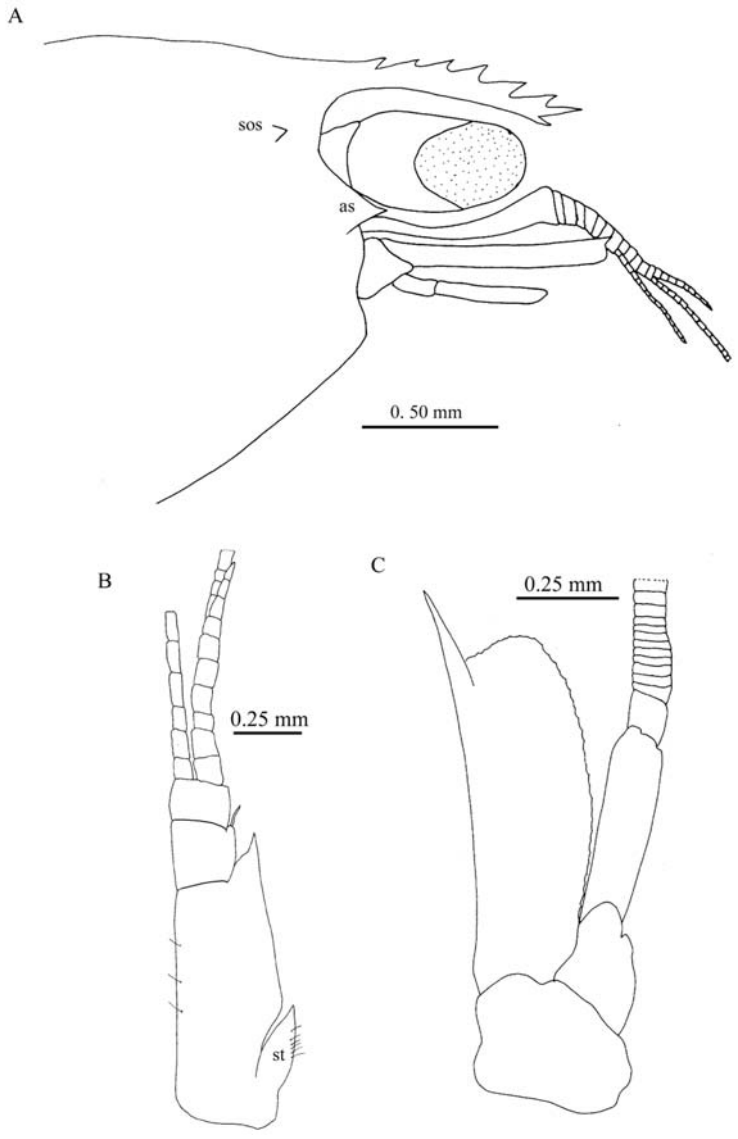

Fig.15- *Periclimenaeus caraibicus* Holthuis, 1951, ovigerous ♀ , MNRJ 19035 (carapace length 3.0mm). (A) carapace and cephalic appendages, lateral (as=antennal spine; sos=supraorbital spine); (B) right antennula, dorsal (st=stylocerite); (C) right scaphocerite, dorsal.

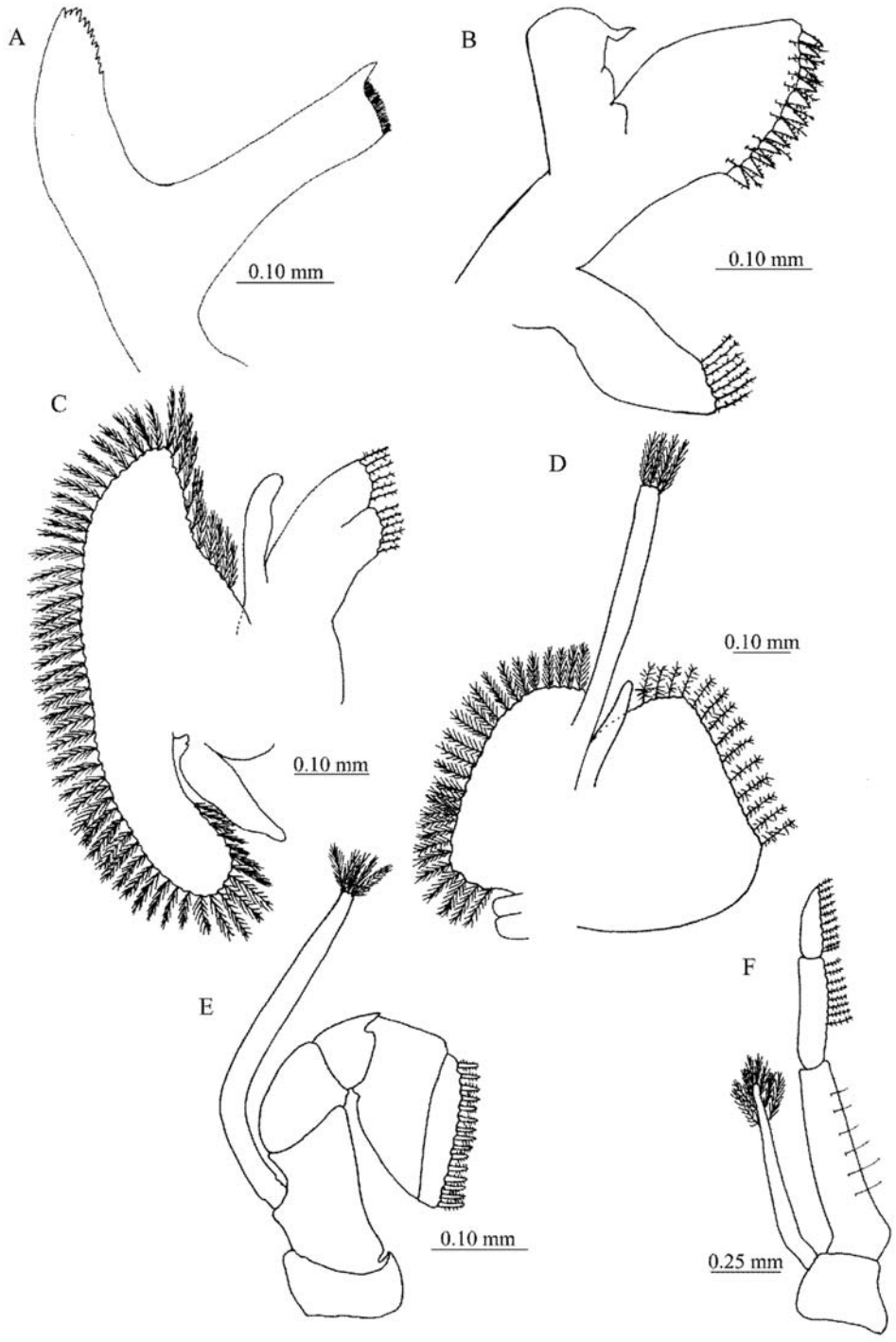

Fig.16- *Periclimenaeus caraibicus* Holthuis, 1951, ovigerous ♀ , MNRJ 19035 (carapace length 3.0mm). (A) left mandible, dorsal (ip=incisor process; mp=molar process); (B) left maxilla 1, dorsal (end=endite; p=palp); (C) left maxilla 2, dorsal (end=endite; enp=endopod; ep=epipod; sc=scaphognathite); (D) left maxilliped 1, dorsal (el=exopodal lobe; end=endite; enp=endopod; ep=epipod; exp=exopod); left maxilliped 2, dorsal (exp=exopod); left maxilliped 3, dorsal (exp=exopod).

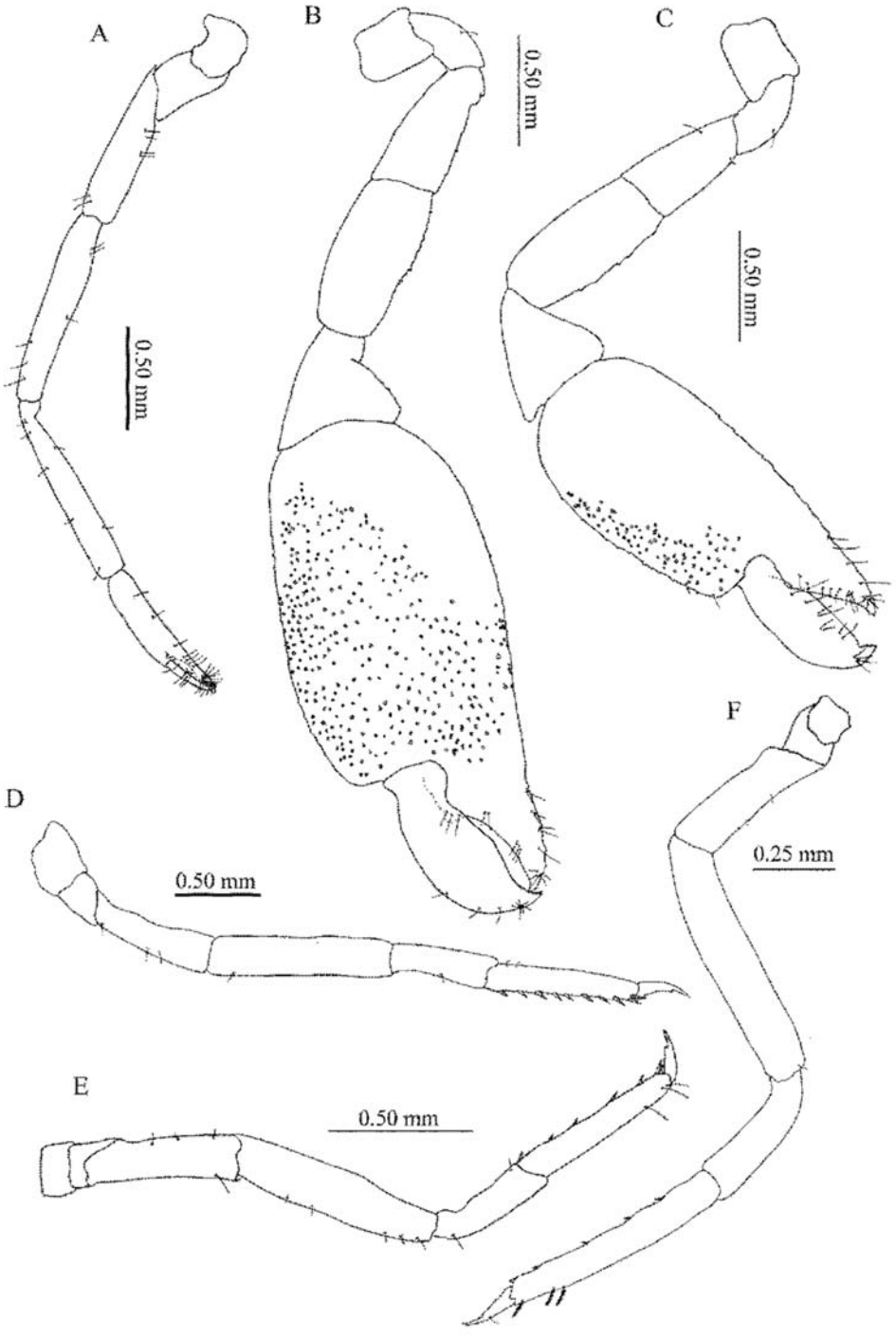

Fig.17- *Periclimenaeus caraibicus* Holthuis, 1951, ovigerous ♀ , MNRJ 19035 (carapace length 3.0mm). (A) right pereopod 1, lateral; (B) right pereopod 2 , lateral; (C) left pereopod 2, lateral; (D) right pereopod 3, lateral; (E) right pereopod 4, lateral; (F) right pereopod 5, lateral.

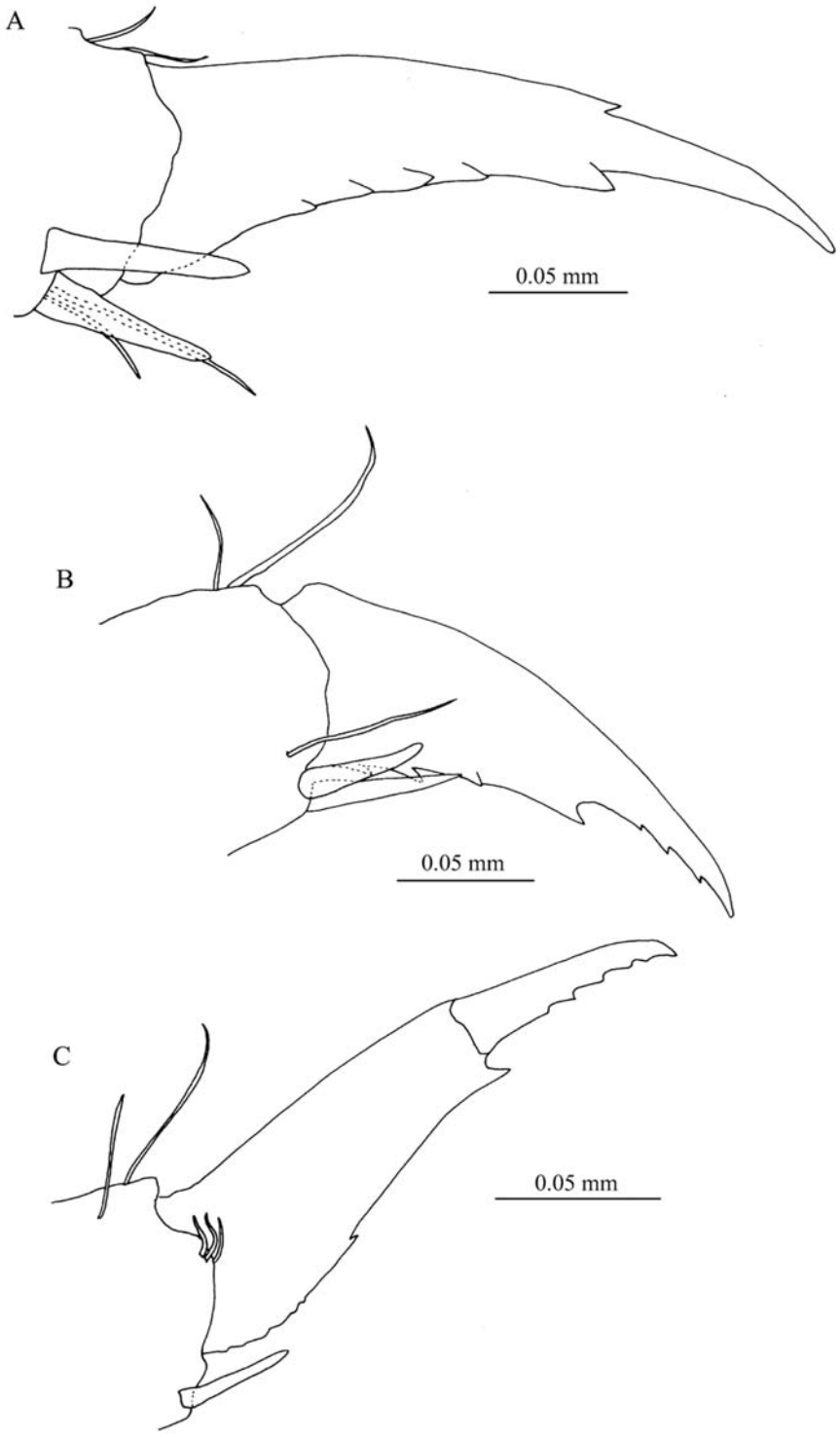

Fig.18- *Periclimenaeus caraibicus* Holthuis, 1951, ovigerous ♀ , MNRJ 19035 (carapace length 3.0mm). (A) Pereopod 3 dactyl lateral; (B) pereopod 4 dactyl lateral; pereopod 5 dactyl lateral.

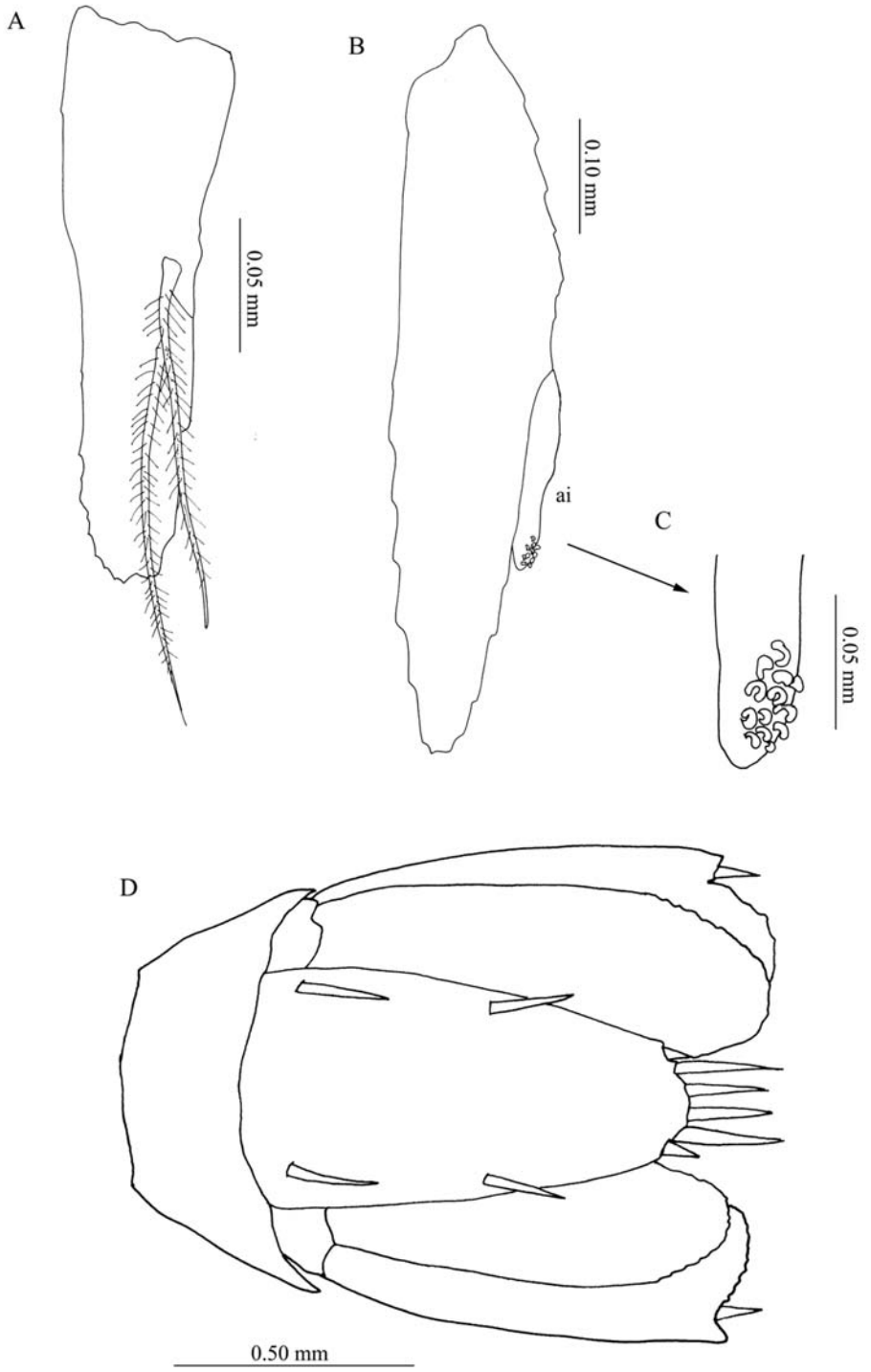

Fig.19- *Periclimenaeus caraibicus* Holthuis, 1951, ovigerous ♀ , MNRJ 19035 (carapace length 3.0mm). (A) left endopod of pleopod 1; (B) exopod and appendix interna of left pleopod 2 (ai=appendix interna); (C) appendix interna of left pleopod; (D) telson and uropods, dorsal.

Periclimenaeus brucei sp.nov.
(Figs.20-25)

Material examined – Rocas Atoll, outer reef, 20m, holotype: 1 ovigerous ♀ (3.0mm); paratypes: 1♀ (2.5mm), 1♂ (2.1mm), MNRJ 19040, in *Ircina* sp. (Porifera).

Diagnosis – Carapace with rostrum short, upper margin with eight teeth, lower margin unarmed, convex; without supraorbital spine; with sharp antennal spine. Stylocerite broad ending in a sharp point. Scaphocerite with small distal tooth that do not overreach scale. Major pereopod 2 with tooth on dactyl margin, fitting in a cavity on propod. Telson with anterior pair of dorsolateral cuspidate setae arising from its anterior fourth; lateral pair of distal setae inserted distinctly anterior to intermediate and mesial pairs.

Description – Carapace, rostrum directed downwards, upper margin with eight teeth, lower margin unarmed, convex; without supraorbital spine; with sharp antennal spine present (Fig.20A). Stylocerite broad ending in sharp point, less than half of basal antennular article length; strong anterolateral tooth reaching two-thirds of second antennular article; second antennular article without small rounded lobe on inner margin (Fig.20B). Scaphocerite with small distal tooth, not overreaching scale; inner margin of scale broad and rounded (Fig.20C). Mandible with incisor process slender, blade shaped, ending in a sharp point; molar process with acute distal teeth and a distal strong tooth (Fig.21A). Maxilla 1 with two endites, basal endite with eight long cuspidate setae on inner margin; distal endite short and rounded, with simple setae on inner margin; palp short and broad (Fig.21B). Maxilla 2 with broad scaphognathite, densely plumose setae on all margins; endopod one-third of scaphognathite length; endite short, with densely plumose setae on inner margin (Fig.21C). Maxilliped 1 with epipod rounded, bilobed; elongate exopodal lobe with densely plumose setae on all margins, anterior margin rounded; slender and elongate exopod with densely plumose setae on distal margin; endopod short, one-third of exopod length; endite broad with densely plumose setae on inner margin (Fig.21D). Maxilliped 2 with ischio-merus short; carpus short, triangular; propodus and dactyl curved, with serrulate setae on inner margin (Fig.21E). Maxilliped 3 with simple setae on inner margin of all articles (Fig.21F). Pereopod 1 slender, dactyl one-third of propodus length; propodus and dactyl with tufts of setae (Fig. 23A). Pereopods 2 very unequal in size and shape, right stronger than left; both with carpus short, triangular; propodus covered with many rows of sub-quadrate tubercles and with rounded concavity where a strong hammer shaped tooth of dactyl fits; broad dactyl forming strong claw; dactyl less than one-third of propodus length (Figs.22A, B). Pereopod 3, propodus with five cuspidate setae on inner margin (Fig.23B). Pereopod 4, propodus with four cuspidate setae on inner margin (Fig.23C). Pereopod 5, propodus with two small cuspidate setae on inner margin (Fig.23D). Pereopods 3-5 with dactyls bifid. Pereopods 3 and 4 with dactyl outer margin very concave (Fig.24A, B). Pereopod 5 with dactyl outer margin slightly concave (Fig.24C). Male endopod of pleopod 1 leaf like, with densely plumose setae on all margins (Fig.25A). Endopod of pleopod 2 with appendix interna slender, short, with numerous hook setae distally; appendix masculina short, with one simple acute setae distally (Fig.25B, C). Telson with three pairs of dorsolateral cuspidate setae; two pairs of distal slender setae; distal end truncate (Fig.25D). Exopod of uropod without complete diaresis; lateral margin not ending in sharp triangular projection; with a strong posterolateral stout seta that overreaches exopod and endopod (Fig.25D).

Distribution – Known only from the type-locality, Barretão, Rocas Atoll, Brazil, 20m, in *Ircina* sp.

Etymology – In honor of Dr. Alexander Bruce (Queensland Museum, Australia), who has contributed so much to knowledge of Caridea, especially the Pontoniinae.

Remarks – *Periclimenaeus brucei* sp.nov. has the anterior pair of dorsolateral cuspidate setae arising posteriorly to its anterior fourth. *Periclimenaeus pearsei*, *P. ascidiarum*, and *P. caraibicus* have the three distal setae of telson inserted in a continuous line, distinct from *P. brucei* sp.nov. which has the outer pair of distal setae situated anteriorly to the others. *Periclimenaeus perlatus* has the pereopod 1 with carpus nearly twice as long as propod, while *P. brucei* sp.nov. has the carpus less than three-fourths as long as propod. *Periclimenaeus wilsoni* has ten to twelve teeth on rostrum and major pereopod 2 subretangular, with tubercles arranged in a honeycomb pattern; *P. bredini* has seven teeth on rostrum and major pereopod 2 subretangular, with scattered tubercles; and *P. brucei* sp.nov. has eight teeth on rostrum and major pereopod 2 broad at base, tapering distally, with scattered strong tubercles (Tab.1).

The three specimens of *P. brucei* sp.nov. were collected in sponges, *Ircina* sp., at 20m depth, therefore probably this species is an obligate symbiont. Most of the species of this genus live in sponge and cnidarians.

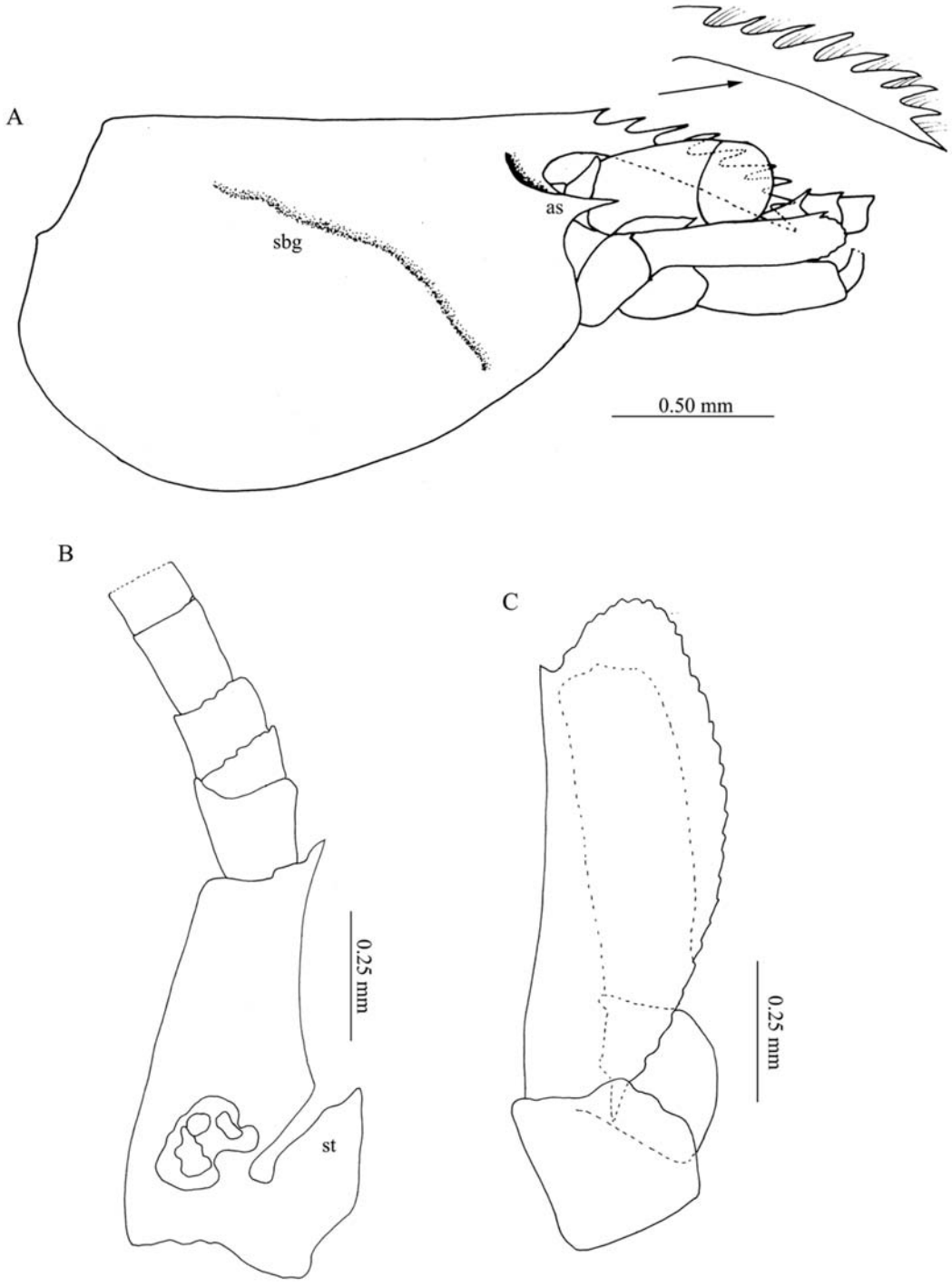

Fig.20- *Periclimenaeus brucei* sp.nov., ovigerous ♀ , holotype, MNRJ 19040 (carapace length 3.0mm). (A) carapace and cephalic appendages, lateral (as=antennal spine; sbrg=suprabranchial groove); (B) right antennula, dorsal (st=stylocerite); (C) right scaphocerite, dorsal.

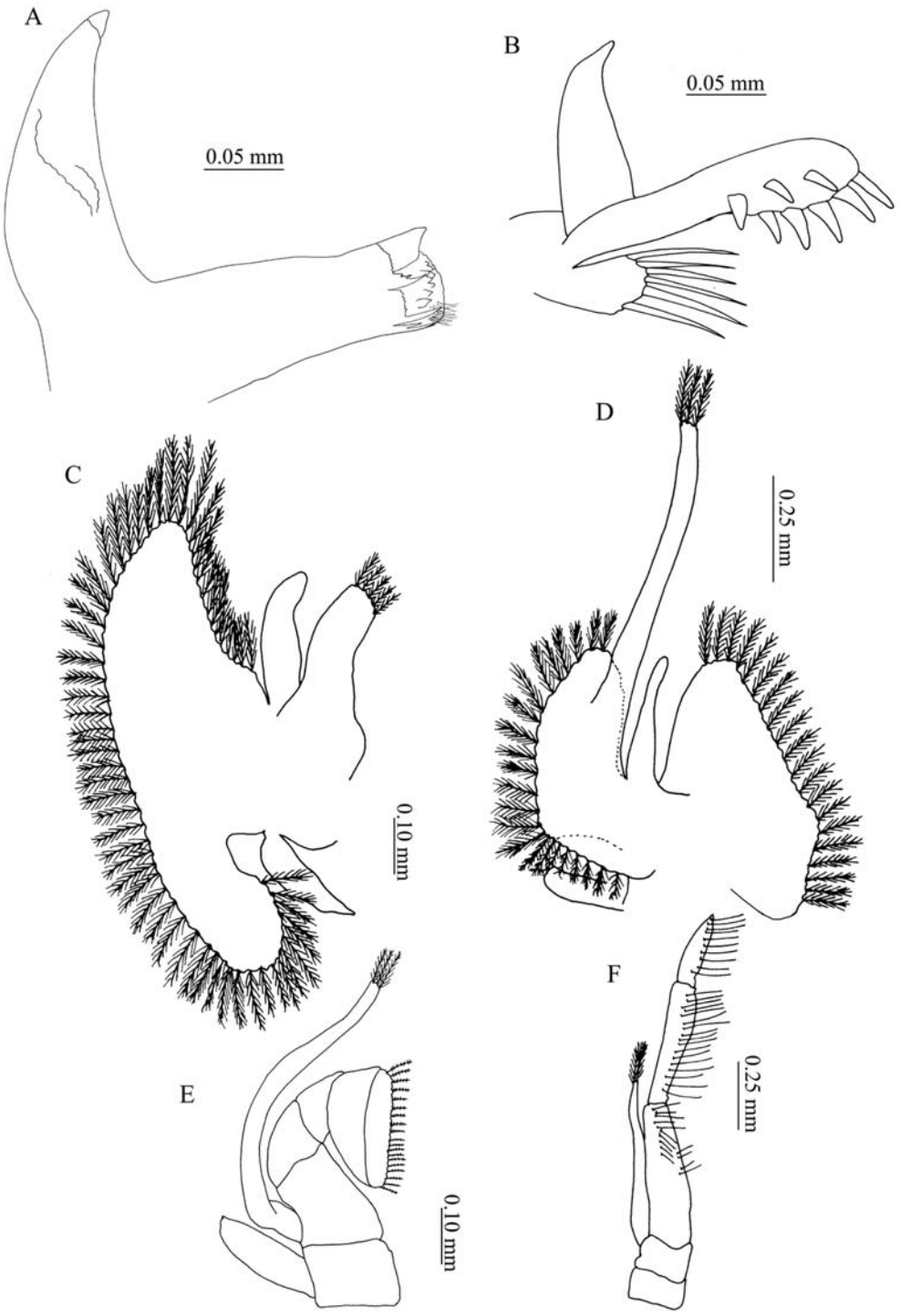

Fig.21- *Periclimenaeus brucei* sp.nov., ovigerous ♀ , holotype, MNRJ 19040 (carapace length 3.0mm). (A) left mandible, dorsal (ip=incisor process; mp=molar process); (B) let maxilla 1, dorsal (end=endite; p=palp); (C)left maxilla 2, dorsal (end=endite; enp=endopod; ep=epipod; sc=scaphognathite); (D) left maxilliped 1, dorsal (el=exopodal lobe; end=endite; enp=endopod; ep=epipod; exp=exopod); (E) left maxilliped 2, dorsal (exp=exopod); (F) left maxilliped 3, dorsal (exp=exopod).

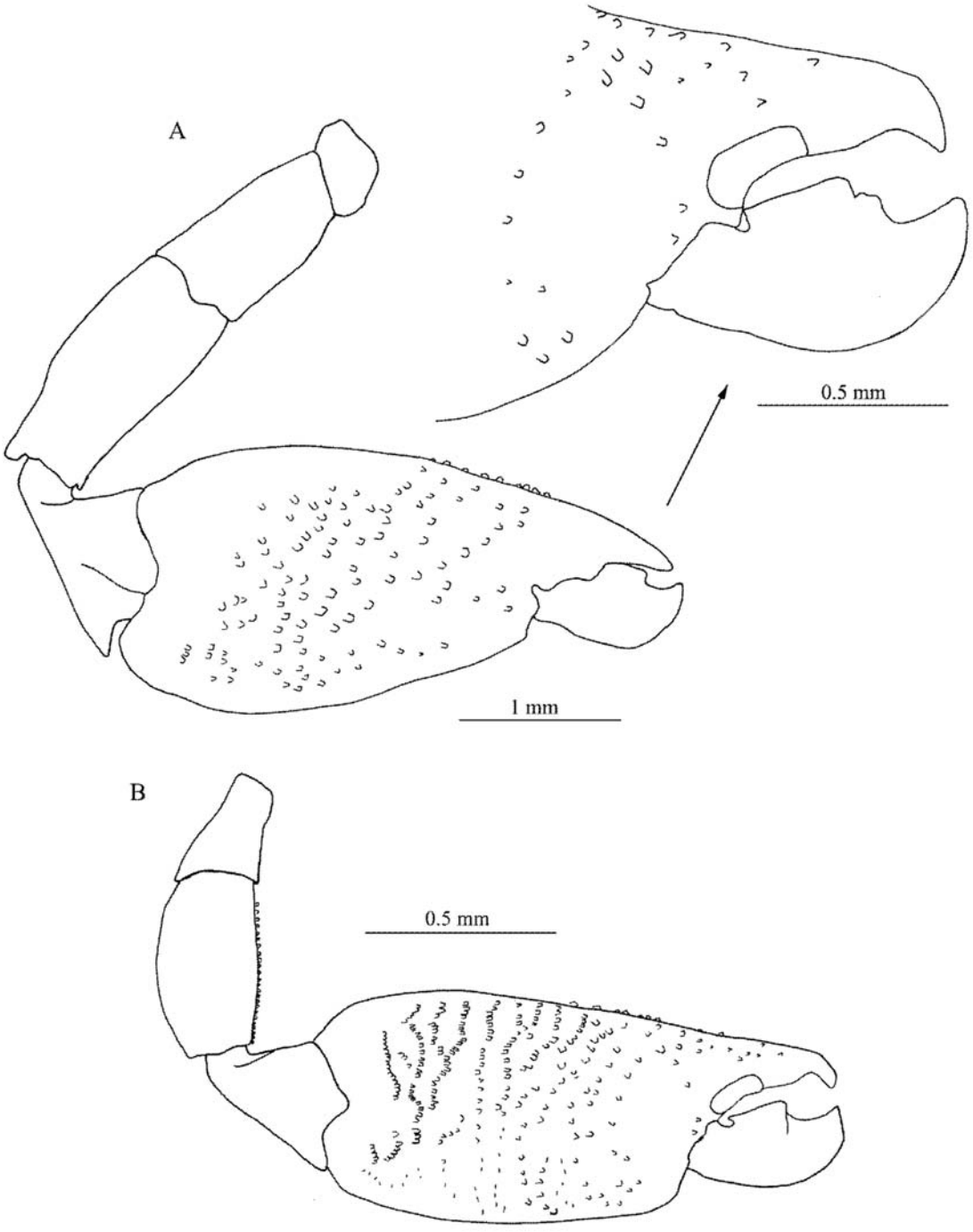

Fig.22- *Periclimenaeus brucei* sp.nov., ovigerous ♀ , holotype, MNRJ 19040 (carapace length 3.0mm). (A) left pereopod 2, lateral; (B) right pereopod 2, lateral.

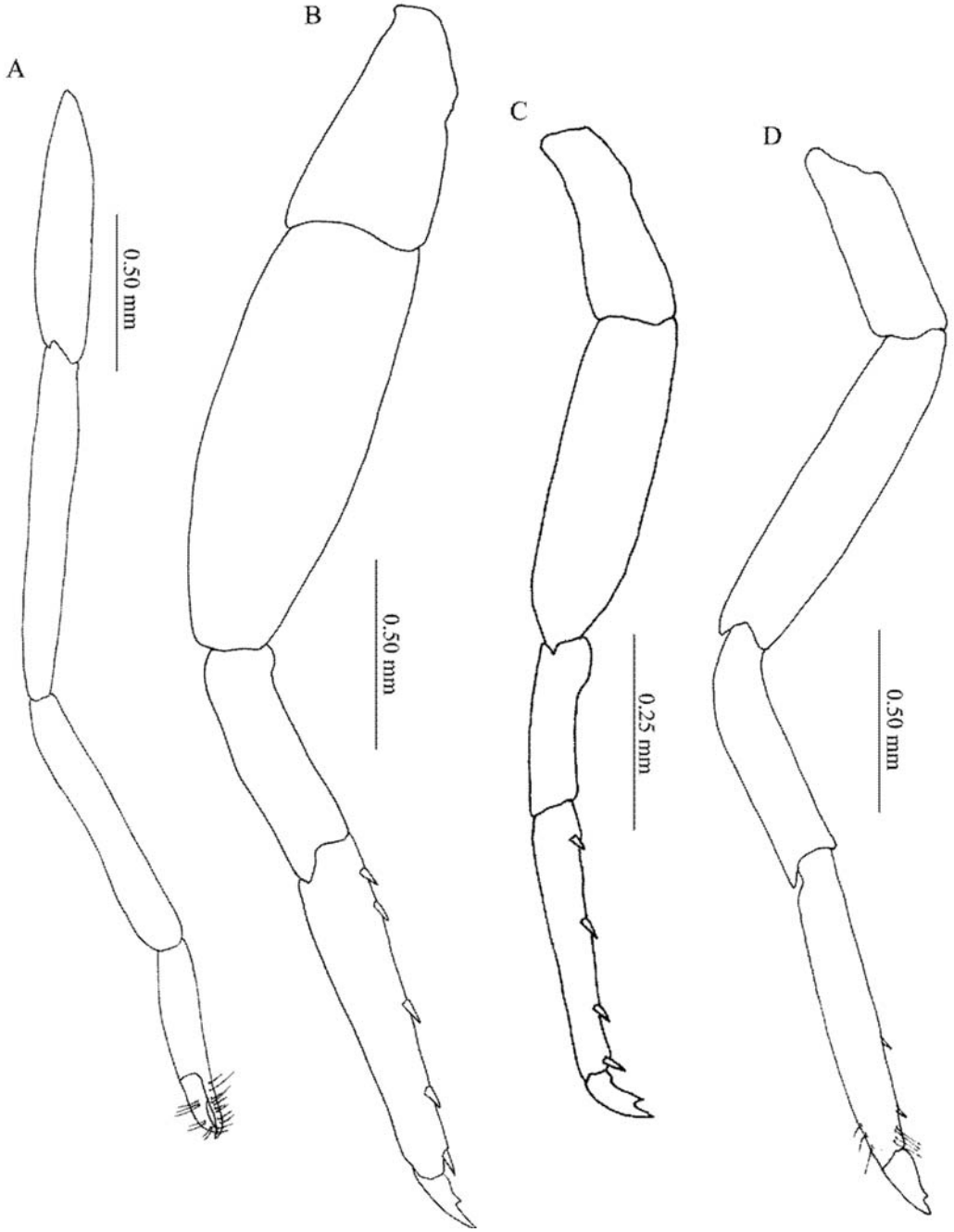

Fig.23- *Periclimenaeus brucei* sp.nov., ovigerous ♀ , holotype, MNRJ 19040 (carapace length 3.0mm). (A) right pereopod 1, lateral; (B) right pereopod 3, lateral; (C) right pereopod 4, lateral; (D) right pereopod 5, lateral.

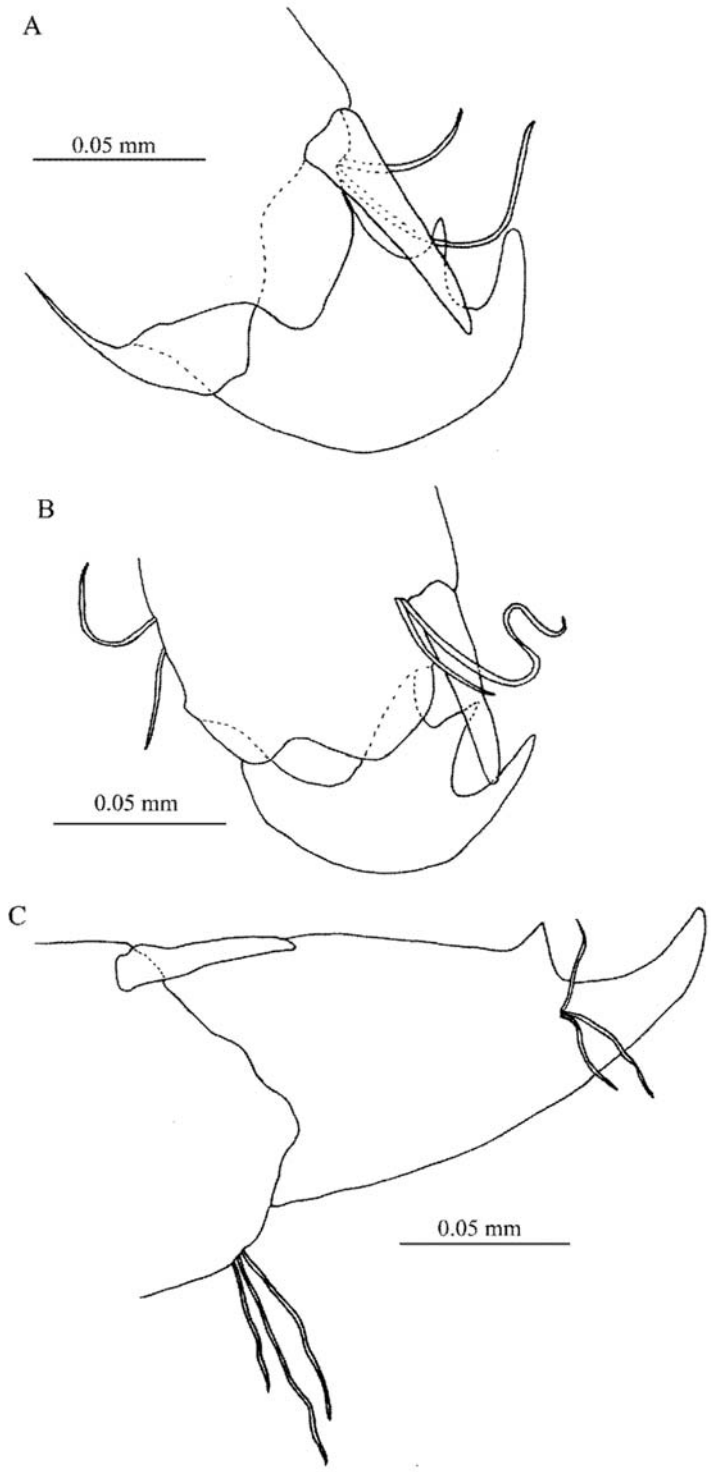

Fig.24- *Periclimenaeus brucei* sp.nov., ovigerous ♀, holotype, MNRJ 19040 (carapace length 3.0mm). (A) Pereopod 3 dactyl lateral; (B) pereopod 4 dactyl lateral; pereopod 5 dactyl lateral.

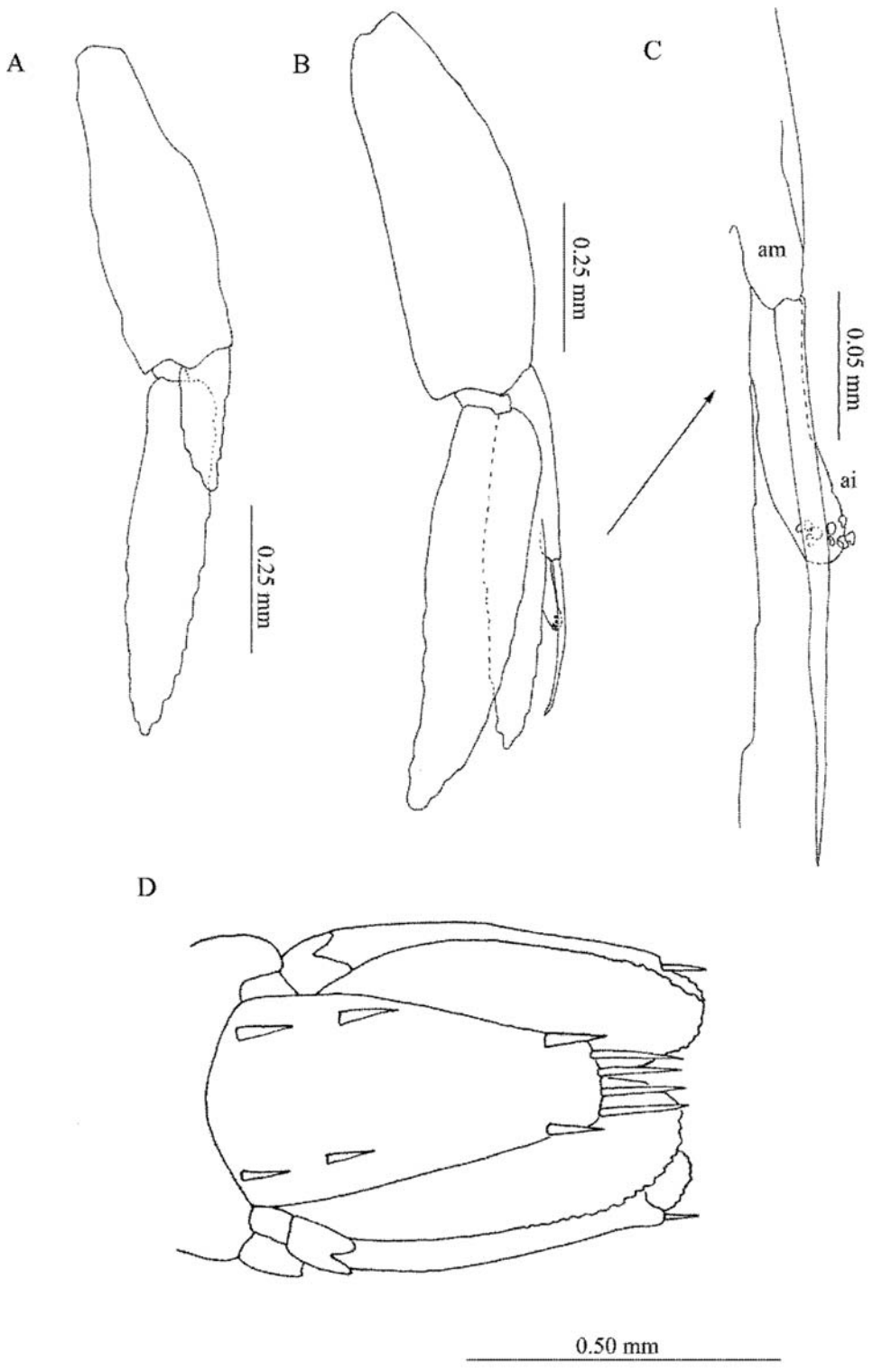

Fig.25- *Periclimenaeus brucei* sp.nov., ♂ , paratype, MNRJ 19039 (carapace length 2.1mm). (A) right pleopod 1, lateral; (B) right pleopod 2, lateral; (C) appendix interna and masculina of pleopod 2, lateral (ai=appendix interna; am=appendix masculina). *Periclimenaeus brucei* sp.nov., ovigerous ♀ , holotype, MNRJ 19040 (carapace length 3.0mm); (D) telson and uropods, dorsal.

TABLE 1. Comparison between *Periclimenaeus brucei* sp.nov., *Periclimenaeus crosnieri* sp.nov. and closely related species.

	P. pearsei	*P. wilsoni*	*P. chacei*	*P. bredini*	*P. brucei* sp.nov.	*P. crosnieri* sp.nov.
Teeth on rostrum	4 (serrate)	10-12	4	7	8	7
Carapace	inflated	not inflated	not inflated	not inflated	not inflated	inflated
Dactyl of major P 2	sightly overreach propod	not overreach propod	strongly overreach propod	not overreach propod	sightly overreach propod	strongly overreach propod
Major P 2 dactyl shape	curved upward	normal, rounded	elongate	normal, rounded	normal, rounded	elongate
Major P 2 propodus shape	broaden	almost retangular	elongate	almost retangular	broaden	elongate
Major P 2 ornamentation	smooth	with tubercles	smooth	scattered tubercles	strong tubercles	smooth, but spotted
Minor P2 ornamentation	smooth	several tubercles	-	scattered tubercles	rows of strong tubercles	smooth
Minor P 2 shape	almost retangular	almost retangular	-	broaden	almost retangular	broad at base tapering distally
Posterior pair of dorsolateral setae on telson arising	from its posterior half	from its anterior half	from its posterior half	from its anterior half	from its anterior half	from its anterior half

(P) pereopod.

Periclimenaeus crosnieri sp.nov.
(Figs.26-31)

Material examined – Rocas Atoll, outer reef, 15 to 20m, holotype: 1♀ (5.3 mm), MNRJ 17914, in sponge.

Diagnosis – Carapace dorsoventrally expanded, rostrum short, upper margin with seven teeth, lower margin slightly convex; without supraorbital spine; with short antennal spine. Stylocerite broad, end acute. Scaphocerite with strong distal tooth that not overreaches the scale. Major pereopod 2 with tooth on dactyl margin, fitting in a cavity on propod. Telson with anterior pair of dorsolateral cuspidate setae arising from its anterior fourth; lateral pair of distal cuspidate setae inserted distinctly anterior to intermediate and mesial pairs.

Description – Carapace dorsoventrally expanded, with rostrum directed slightly downwards, upper margin with six teeth, lower margin unarmed, slightly convex; without supraorbital spine; with short antennal spine; branchiostegal angle rounded, anteriorly produced (Fig.26A). Stylocerite broad ending in sharp point, half of basal antennular article length; strong anterolateral tooth reaching one-third of second antennular article; second antennular article without small rounded lobe on inner margin (Fig.26B). Scaphocerite with strong distal tooth not overreaching scale; inner margin of scale broad and rounded (Fig.26C). Mandible with incisor process blade shaped, ending in cutting edge; molar process distally straight with subquadrate anterior tooth (Fig.27A). Maxilla 1 with two endites, distal endite with stout and papposerrate seta on inner margin; basal endite with serrulate setae on inner margin; palp short, with curved acute point (Fig.27B). Maxilla 2 with broad scaphognathite with densely plumose setae on all margins; endopod one-third of scaphognathite length; endite short, with

simple setae on inner margin (Fig.27C). Maxilliped 1 with broad exopodal lobe with densely plumose setae on outer margin; slender and elongate exopod, with articulated plumose setae on distal margin; endopod short, less than half exopod length, with a simple setae on inner margin; endite broad with papposerrate seta on inner margin (Fig.27D). Maxilliped 2 with ischio-merus and carpus short; propodus and dactyl curved, with denticulate and densely plumose setae on inner margin (Fig.27E). Maxilliped 3 with tufts of densely plumose setae on inner margin of all articles; exopod with densely plumose articulated setae on distal margin (Fig.27F). Pereopod 1 slender, dactyl less than one-third propodus length; propodus and dactyl with distal tufts of setae (Fig.29A). Pereopods 2 very unequal in size and shape, right stronger than left; in both, carpus short, triangular; propodus covered with lines forming a mosaic and with rounded concavity, where a strong hammer shaped tooth of dactyl fits; broad dactyl forming strong claw that distinctly overreaches propodus tip, dactyl less than one-third propodus length (Figs.28A, B). Pereopod 3, propodus with three cuspidate setae on inner margin, and one cuspidate seta near articulation with dactyl (Fig.29B). Pereopod 4, propodus with one cuspidate seta on inner margin, and one cuspidate seta near articulation with dactyl (Fig.29C). Pereopod 5, propodus without cuspidate setae (Fig.29D). Pereopods 3-5 with dactyls bifid (Fig.30A-C). Pereopod 5, dactyl with two basal tubercles on inner margin (Fig.30C). Female endopod of pleopod 1 leaf shaped, with densely plumose setae on all margins (Fig.31A). Endopod of pleopod 2 with appendix interna slender, with numerous hook setae distally (Fig.31B, C). Telson with three pairs of dorsolateral cuspidate setae; two pairs of distal slender setae; distal end truncate (Fig.31D). Exopod of uropod without complete diaresis; lateral margin ending in sharp triangular projection; with strong posterolateral stout seta not overreaching exopod and endopod (Fig.31D).

Distribution – Known only from the type-locality in the Rocas Atoll, Brazil, 15-20m.

Etymology – In honor of Dr. Alain Crosnier (Muséum National d´Histoire Naturelle, France) in recognition of his very important contributions to caridean knowledge.

Remarks – *Periclimenaeus crosnieri* sp.nov. is closely related to *P. brucei* sp.nov., *P. wilsoni*, and *P. bredini*. These species have the anterior pair of dorsolateral cuspidate setae on telson arising posteriorly to its anterior fourth; the outer pair of distal setae on telson anteriorly situated and the pereopod 1 has the carpus less than three-fourths as long as propodus. *Periclimenaeus wilsoni* has ten to 12 teeth on rostrum, carapace not inflated and dactyl of larger pereopod 2 not overreaching propodus tip, whereas *P. crosnieri* sp.nov. has seven teeth on the rostrum, carapace inflated and the dactyl of major pereopod 2 strongly overreaching propodus tip. *Periclimenaeus bredini* does not have inflated carapace, the dactyl of major pereopod 2 not overreaches propodus tip and the minor and major pereopods 2 has scattered tubercles, while *P. crosnieri* sp.nov. has inflated carapace, the dactyl of major pereopod 2 strongly overreacing propodus tip and both pereopods 2 smooth.

Furthermore, despite *P. chacei* Abele, 1971 presents a distinct position of the distal setae on telson, it has the dactyl very similar to *P. crosnieri* sp.nov. Both dactyl strongly overreach their propodus tip. In the same way, *P. pearsei* (Schmitt, 1936) has a distinct positioning of the distal setae on telson but it has a carapace shape very similar to *P. crosnieri* sp.nov.; their carapaces are very inflated, with their height more than three-fourths of its length.

Table 1 lists the differential characters of the species closely related to *P. brucei* sp.nov. and to *P. crosnieri* sp.nov.

The only female of *P. crosnieri* sp.nov. was collected in sponges at a depth of 15 to 20m, and probably this species is another obligate sponge associate.

Family Processidae Ortmann, 1890

Processa Leach, 1815

Processa Leach, 1815: plate 41; De Man, 1920:197; Holthuis, 1955:116; Nouvel & Holthuis, 1957:7.

Diagnosis – Mandible without incisor process and palp. Only one of first pereopods chelate, the other with simple dactyl; both first pereopods lacking exopods.

simple setae on inner margin (Fig.27C). Maxilliped 1 with broad exopodal lobe with densely plumose setae on outer margin; slender and elongate exopod, with articulated plumose setae on distal margin; endopod short, less than half exopod length, with a simple setae on inner margin; endite broad with papposerrate seta on inner margin (Fig.27D). Maxilliped 2 with ischio-merus and carpus short; propodus and dactyl curved, with denticulate and densely plumose setae on inner margin (Fig.27E). Maxilliped 3 with tufts of densely plumose setae on inner margin of all articles; exopod with densely plumose articulated setae on distal margin (Fig.27F). Pereopod 1 slender, dactyl less than one-third propodus length; propodus and dactyl with distal tufts of setae (Fig.29A). Pereopods 2 very unequal in size and shape, right stronger than left; in both, carpus short, triangular; propodus covered with lines forming a mosaic and with rounded concavity, where a strong hammer shaped tooth of dactyl fits; broad dactyl forming strong claw that distinctly overreaches propodus tip, dactyl less than one-third propodus length (Figs.28A, B). Pereopod 3, propodus with three cuspidate setae on inner margin, and one cuspidate seta near articulation with dactyl (Fig.29B). Pereopod 4, propodus with one cuspidate seta on inner margin, and one cuspidate seta near articulation with dactyl (Fig.29C). Pereopod 5, propodus without cuspidate setae (Fig.29D). Pereopods 3-5 with dactyls bifid (Fig.30A-C). Pereopod 5, dactyl with two basal tubercles on inner margin (Fig.30C). Female endopod of pleopod 1 leaf shaped, with densely plumose setae on all margins (Fig.31A). Endopod of pleopod 2 with appendix interna slender, with numerous hook setae distally (Fig.31B, C). Telson with three pairs of dorsolateral cuspidate setae; two pairs of distal slender setae; distal end truncate (Fig.31D). Exopod of uropod without complete diaresis; lateral margin ending in sharp triangular projection; with strong posterolateral stout seta not overreaching exopod and endopod (Fig.31D).

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Remarks – *Periclimenaeus crosnieri* sp.nov. is closely related to *P. brucei* sp.nov., *P. wilsoni*, and *P. bredini*. These species have the anterior pair of dorsolateral cuspidate setae on telson arising posteriorly to its anterior fourth; the outer pair of distal setae on telson anteriorly situated and the pereopod 1 has the carpus less than three-fourths as long as propodus. *Periclimenaeus wilsoni* has ten to 12 teeth on rostrum, carapace not inflated and dactyl of larger pereopod 2 not overreaching propodus tip, whereas *P. crosnieri* sp.nov. has seven teeth on the rostrum, carapace inflated and the dactyl of major pereopod 2 strongly overreaching propodus tip. *Periclimenaeus bredini* does not have inflated carapace, the dactyl of major pereopod 2 not overreaches propodus tip and the minor and major pereopods 2 has scattered tubercles, while *P. crosnieri* sp.nov. has inflated carapace, the dactyl of major pereopod 2 strongly overreacing propodus tip and both pereopods 2 smooth.

Furthermore, despite *P. chacei* Abele, 1971 presents a distinct position of the distal setae on telson, it has the dactyl very similar to *P. crosnieri* sp.nov. Both dactyl strongly overreach their propodus tip. In the same way, *P. pearsei* (Schmitt, 1936) has a distinct positioning of the distal setae on telson but it has a carapace shape very similar to *P. crosnieri* sp.nov.; their carapaces are very inflated, with their height more than three-fourths of its length.

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Processa Leach, 1815

Processa Leach, 1815: plate 41; De Man, 1920:197; Holthuis, 1955:116; Nouvel & Holthuis, 1957:7.

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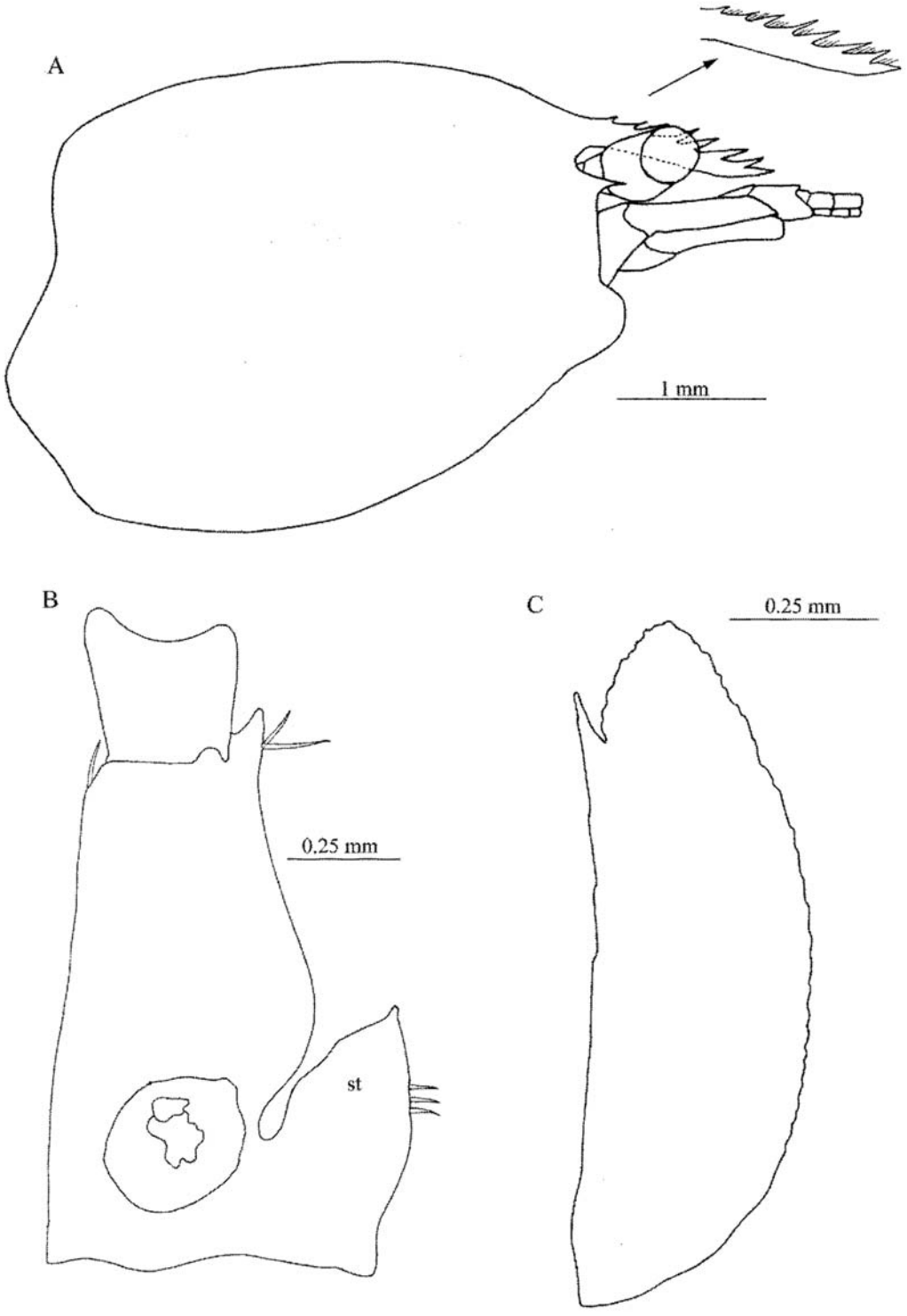

Fig.26- *Periclimenaeus crosnieri* sp.nov., ♀ , holotype, MNRJ 17914 (carapace length 5.3mm). (A) carapace and cephalic appendages, lateral (as=antennal spine); (B) right antennula, dorsal (st=stylocerite); (C) right scaphocerite, dorsal.

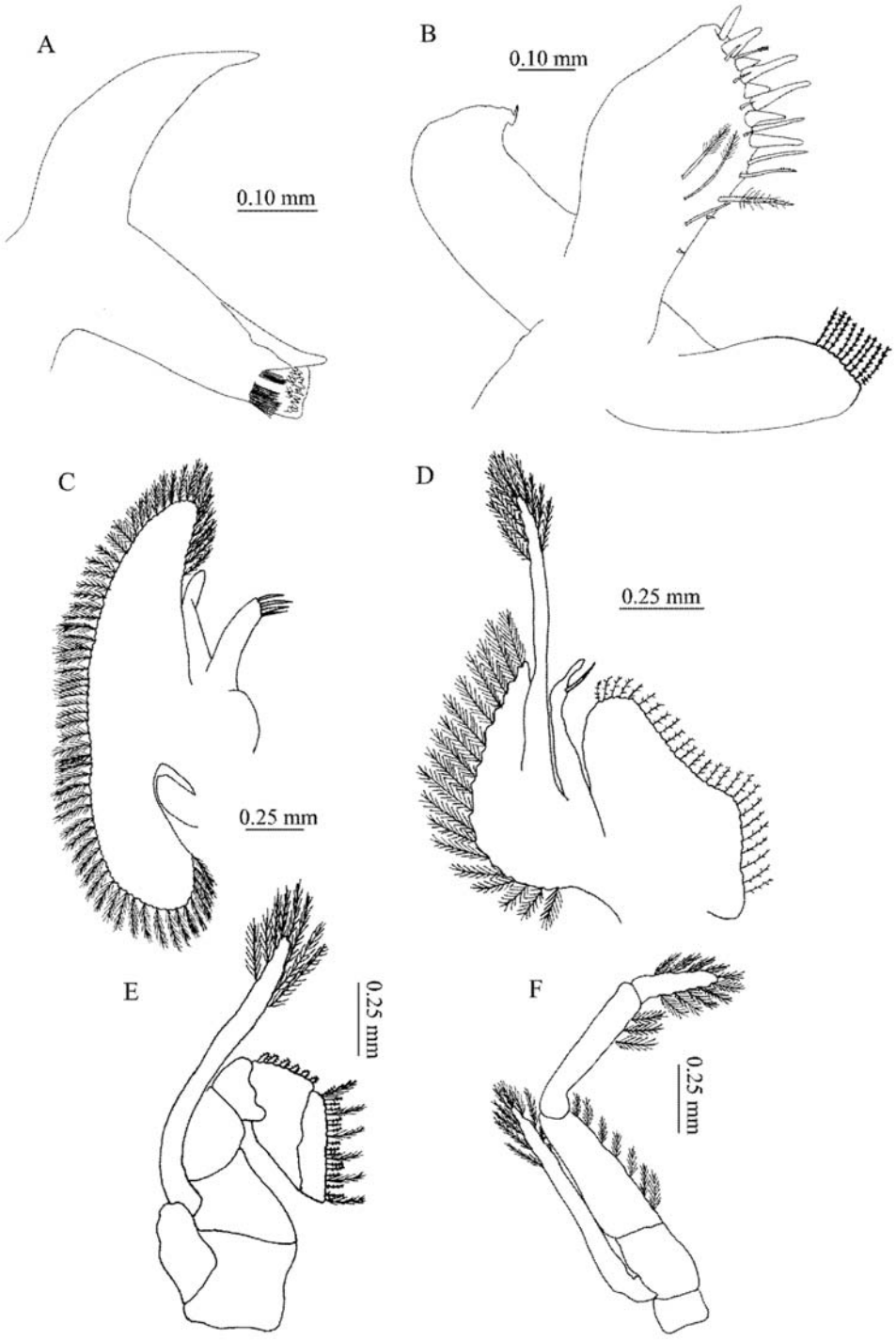

Fig.27- *Periclimenaeus crosnieri* sp.nov., ♀ , holotype, MNRJ 17914 (carapace length 5.3 mm). (A) left mandible, dorsal (ip=incisor process; mp=molar process); (B) left maxilla 1, dorsal (end=endite; p=palp); (C) left maxilla 2, dorsal (end=endite; enp=endopod; ep=epipod; sc=scaphognathite); (D) left maxilliped 1, dorsal (el=exopodal lobe; end=endite; enp=endopod; ep=epipod; exp=exopod); (E) left maxilliped 2, dorsal (exp=exopod); (F) left maxilliped 3, dorsal (exp=exopod).

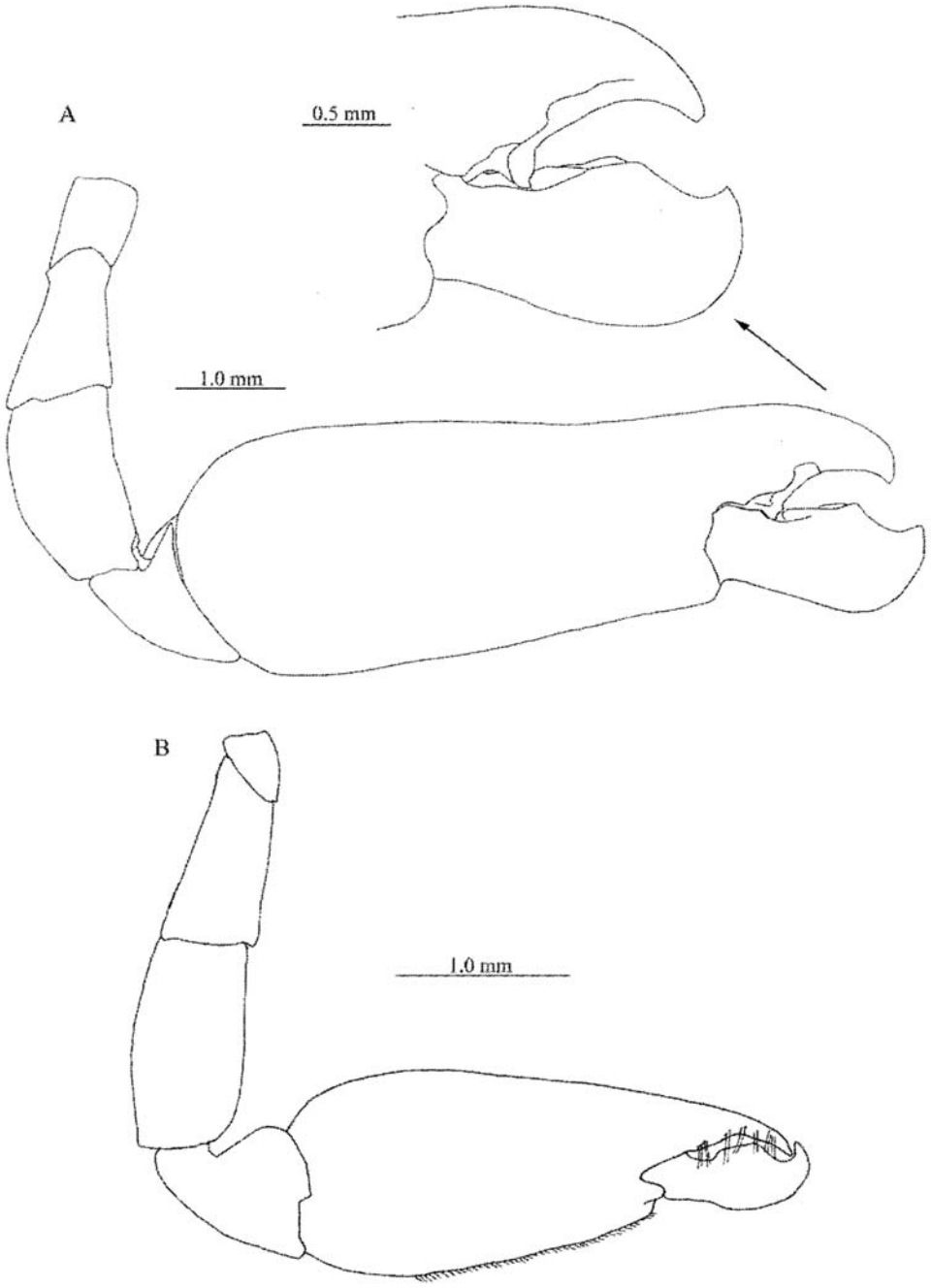

Fig.28- *Periclimenaeus crosnieri* sp.nov., ♀ , holotype, MNRJ 17914 (carapace length 5.3mm). (A) left pereopod 2, lateral; (B) right pereopod 2, lateral.

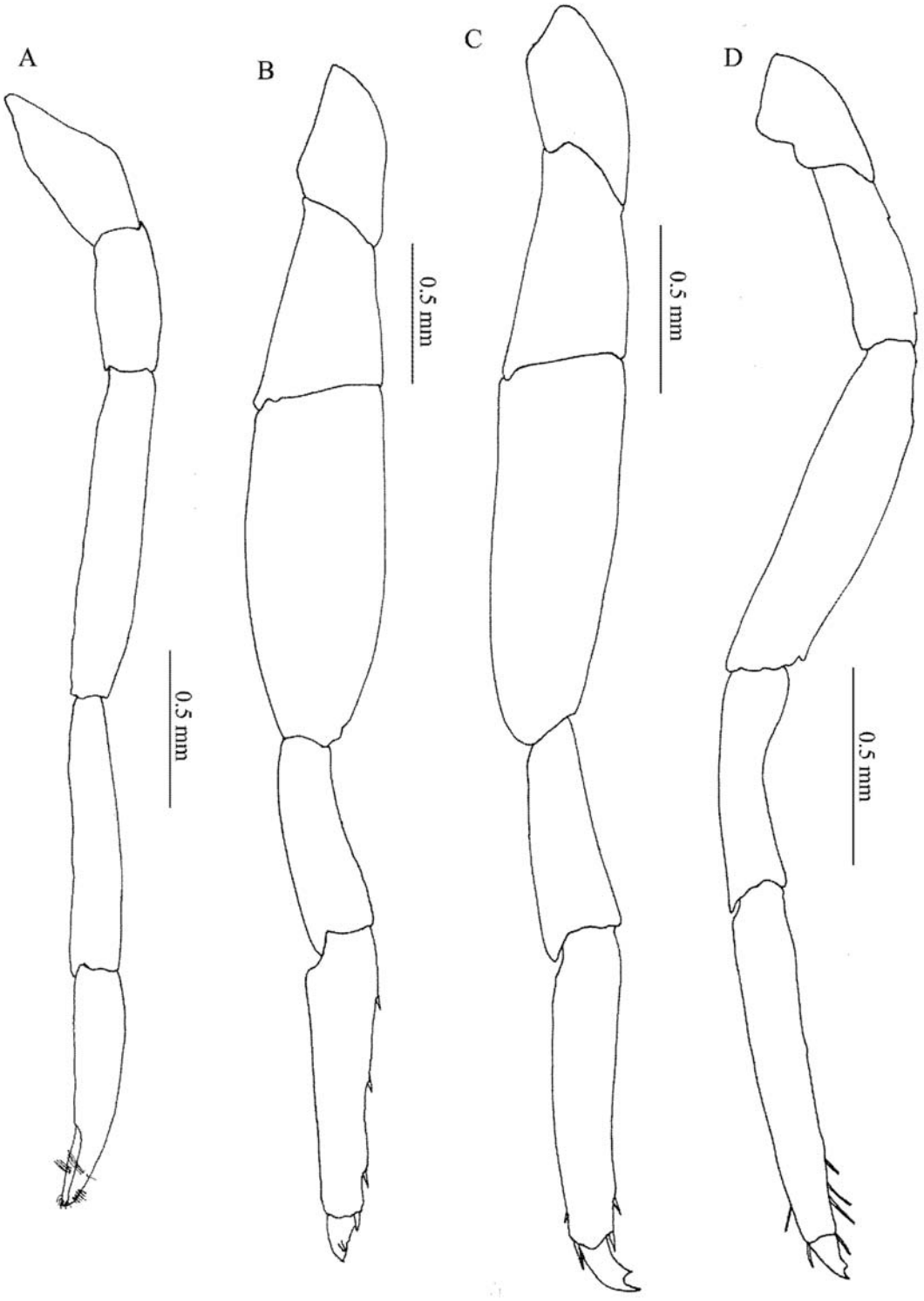

Fig.29- *Periclimenaeus crosnieri* sp.nov., ♀ , holotype, MNRJ 17914 (carapace length 5.3mm). (A) right pereopod 1, lateral; (B) right pereopod 3, lateral; (C) right pereopod 4, lateral; (D) right pereopod 5, lateral.

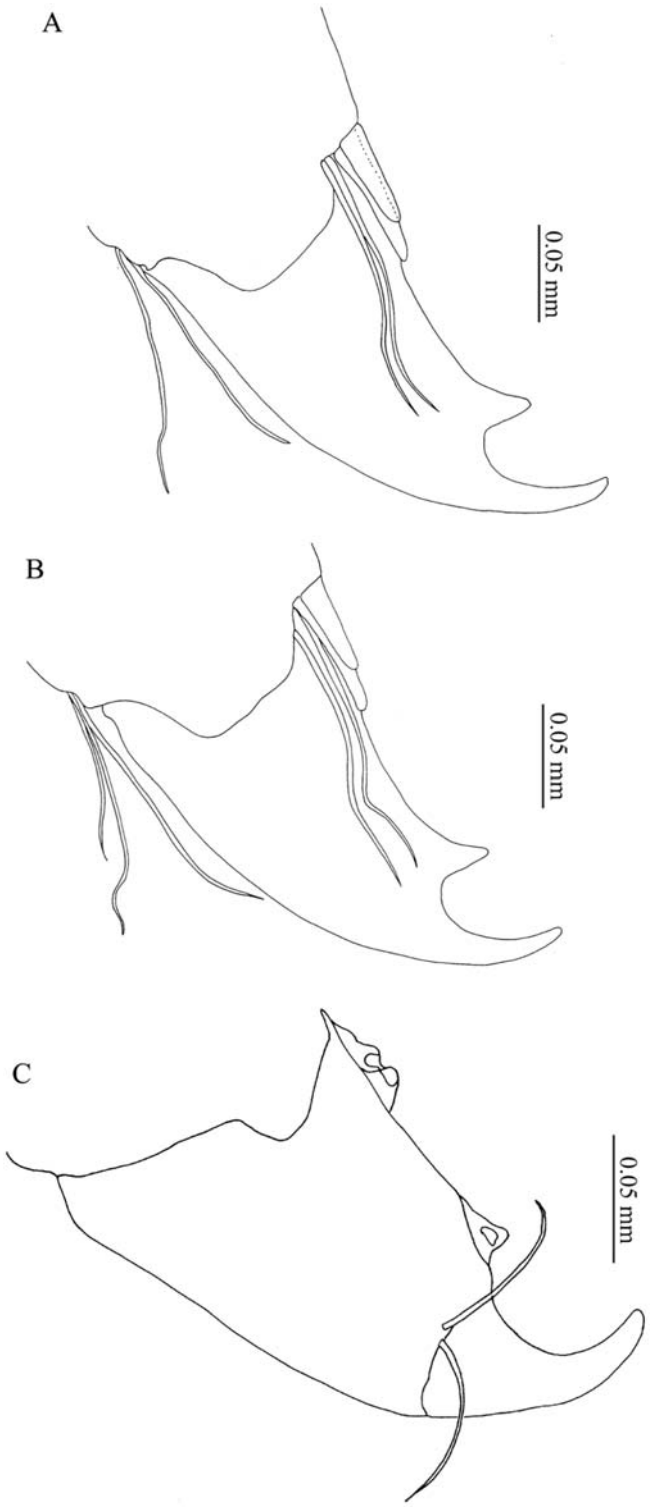

Fig.30- *Periclimenaeus crosnieri* sp.nov., ♀ , holotype, MNRJ 17914 (carapace length 5.3mm). (A) Pereopod 3 dactyl lateral; (B) pereopod 4 dactyl lateral; (C) pereopod 5 dactyl lateral.

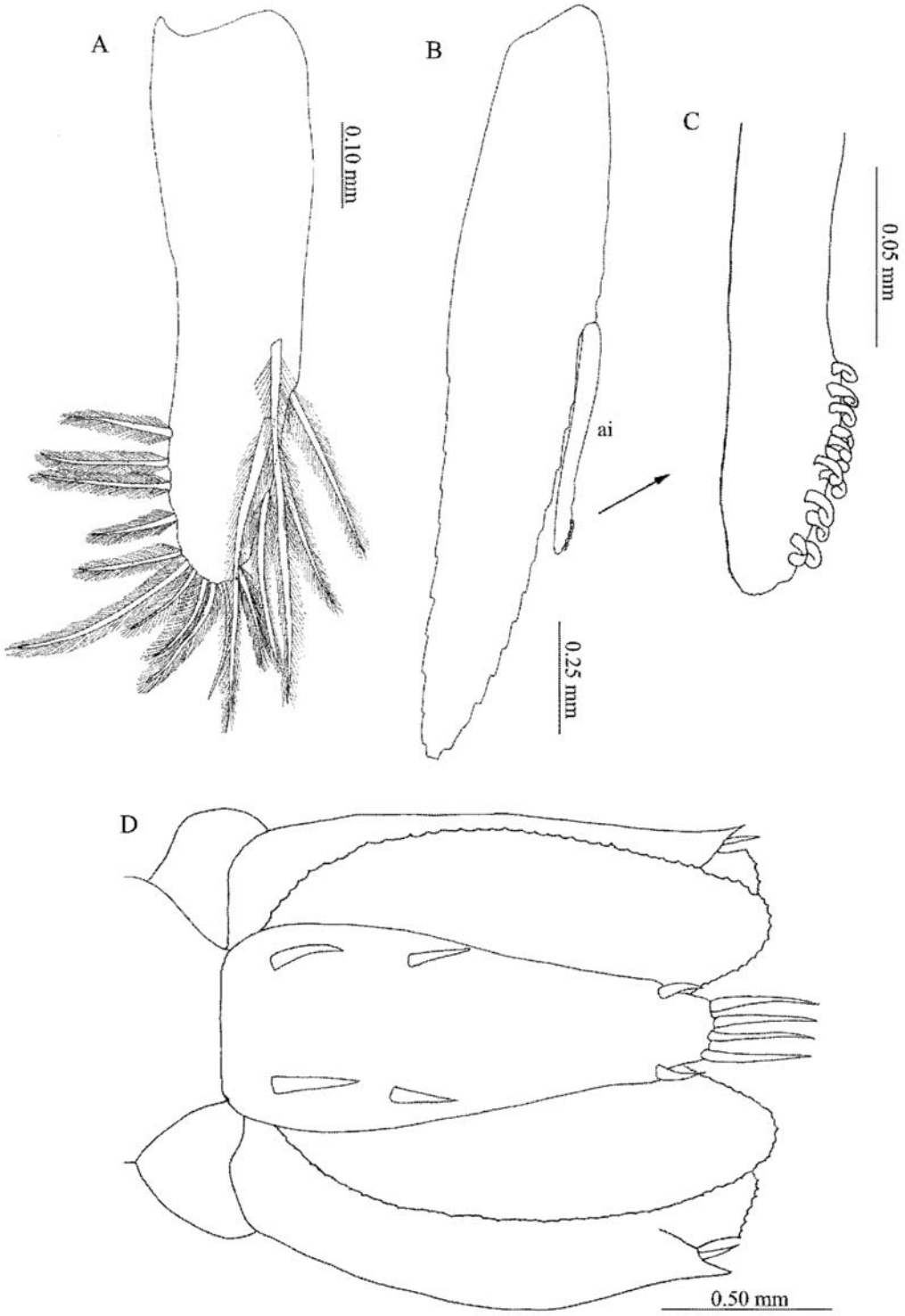

Fig.31- *Periclimenaeus crosnieri* sp.nov., ♀ , holotype, MNRJ 17914 (carapace length 5.3 mm). (A) endopod of left pleopod 1, lateral; (B) exopod and appendix interna of left pleopod 2 (ai=apendix interna); (C) appendix interna of left pleopod 2, lateral; (D) telson and uropods, dorsal.

Processa brasiliensis Christoffersen, 1979
(Figs.32-35)

Processa brasiliensis CHRISTOFFERSEN, 1979:364, figs.34, 35; NÖEL, 1986:261-301.

Material examined – Rocas Atoll, Cemitério Island margin, 5 ovigerous ♀ (4.0 to 6.5mm), 1♀ (4.0mm), 1♂ (4.0mm), MNRJ 19021; Cemitério Island margin, 1♀ (4.0mm), MNRJ 19027; pool, 1♀ (2.0mm), 1♂ (2.0mm), MNRJ 19042; pool, 1 ovigerous ♀ (5.0mm), MNRJ 19022; pool, 9 ovigerous ♀ (4.5 to 7.0mm), 4♀ (3.5 to 4.0mm), MNRJ 19025; central lagoon, close to Farol Island, 1♂ (3.0mm), 1♀ (3.0mm), MNRJ 19028; Barretinha channel, 2♂ (3.0, 3.5 mm), MNRJ 19024; northwestern Rocas atoll, 1♂ (3.0mm), MNRJ 19029.

Diagnosis – Carapace with rostrum short; antennal spine present. Stylocerite with teeth on anterior inner margin. Somites 1-5 without pair of spines on sternum. Right pereopod 2 merus with ten to 14 articles and carpus with 23-33 articles; left pereopod 2 merus with five articles, and carpus with 13-19 articles. Pleura of fifth abdominal somite lacking distinct posterolateral tooth. Lobe on abdominal somite 6, above articulation with uropod, unarmed (modified from CHRISTOFFERSEN, 1979).

Description – Eye large, reaching proximal third of scaphocerite. Carapace with rostrum not overreaching distal margin of cornea, tip bifid, with some setae, lower tooth longer than upper, lower margin convex and with numerous setae; with antennal spine (Fig.32A). Stylocerite rounded anteriorly, without acute tooth on inner margin, outer margin unarmed (Fig.32B). Scaphocerite extending beyond antennular peduncle, with distal spine on outer margin, overreaching scaphocerite, distal end truncate (Fig.32C). Mandible with molar process bearing strong teeth and numerous tubercles distally (Fig.32D). Maxilla 1 with one endite with pappose and six cuspidate serrulate seta on inner margin; palp hook like (Fig.32E). Maxilla 2, with broad scaphognathite, with densely plumose setae on all margins; endopod one-fifth of scaphognathite length; endite rounded, with several simple setae on inner margin (Fig.32F). Maxilliped 1 with elongate unarmed epipod; broad exopodal lobe, with densely plumose setae on outer margin; slender and elongate exopod, with several simple setae distally; endopod is almost half of exopod length, with simple setae on outer margin; endite bilobed, distal lobe straight, with scattered plumose setae on inner margin, basal lobe with triangular shape, unarmed (Fig.32G). Maxilliped 2 with ischio-merus short; carpus short, triangular; propodus elongate; dactyl short with denticulate and cuspidate serrulate seta on inner margin (Fig.32H). Maxilliped 3 with ischio-merus elongate; carpus short with densely plumose setae on inner and outer margins; propod-dactyl with two cuspidate setae on outer margin and densely plumose setae on inner and outer margins; exopod short, with dense plumose setae on distal margin (Fig.32I). Right pereopod 1 chelate; propodus little more than twice dactyl length; all articles with simple setae (Fig.33A). Left pereopod 1 with simple dactyl, almost one-third of propodus length; all articles with simple setae (Fig.33B). Right pereopod 2 longer than left, ischium with two articles, merus with 14 articles and carpus with 31 articles, dactyl half propodus length (Fig.34A). Left pereopod 2 with ischium entire; merus with five articles and carpus with 13 articles, dactyl almost half propodus length (Fig.34B). Pereopod 3, merus with four and ischium with two cuspidate setae on inner margins; carpus unarmed; propodus three times longer than dactyl, with tuft of setae distally; slender dactyl with setae distally (Fig.34C). Pereopod 4, merus with three, and ischium with two cuspidate setae on inner margins; carpus unarmed; propodus two times longer than dactyl, with tuft of setae distally; slender dactyl with setae on distal tip (Fig.34D). Pereopod 5 with merus, ischium and carpus unarmed; propodus with tuft of setae distally; slender dactyl with distal setae (Fig.34E). Abdomen, somites 1-4 with pleura rounded, somites 5-6 with pleura sub-quadrate, somite 5 without conspicuous posterolateral tooth (Fig.35E). Male pleopod 1, endopod with rounded point, with slender setae on posterior and distal margins (Fig.35A). Male pleopod 2, appendix masculina extending to extremity of endopod, with six cuspidate setae on inner surface and three distal acute simple setae (Fig.35B). Female pleopod 1, endopod leaf shaped, with slender setae on anterior and posterior margins (Fig.35C). Female pleopod 2, endopod with slender appendix interna, with simple setae distally (Fig.35D). Exopod of uropod without diaresis; lateral margin ending in sharp triangular projection, with strong spine (Fig.35F). Telson with three pairs of dorsolateral cuspidate setae, distal one smaller than other; three pairs of distal cuspidate setae, median pair stronger (Fig.35F).

Distribution – Brazil: Rocas Atoll and Pernambuco to south of Bahia.

Remarks – The genus *Processa* includes 45 species, of which 20 occur in the Indo-West Pacific and 25 occur in the Atlantic Ocean. On the Brazilian coast, six species have been previously recorded: *Processa bermudensis* (Rankin, 1900), *P. brasiliensis*, *P. fimbriata* Manning & Chace, 1971, *P. guyanae* Holthuis, 1959, *P. hemphilli* Manning & Chace, 1971, and *Processa profunda* Manning & Chace, 1971 (Christoffersen, 1998).

Of the 25 Atlantic species, ten have the pleura of abdominal somite 5 with posterolateral tooth, in contrast to *P. brasiliensis* which has the pleura of abdominal somite 5 rounded, lacking posterolateral tooth. Of the remaining 15 Atlantic species, *Processa bermudensis* (Rankin, 1900) and *P. vicina* Manning & Chace, 1971, do not have an antennal spine, while *P. brasiliensis* has a distinct antennal spine. *Processa parva* Holthuis, 1951, *P. hemphilli* Manning & Chace, 1971 and *P. pippinae* Wicksten & Méndez, 1985 have the pereopod 2 symmetrical, distinct from the other 11 species, including *P. brasiliensis*, which have the pereopod 2 asymmetrical. *Processa elegantula* Nouvel & Holthuis, 1957 and *P. wheeleri* Lebour, 1941 have the pereopod 2 sligthly asymmetrical, while *P. brasiliensis* has the peropod 2 very asymmetrical. *Processa profunda* Manning & Chace, 1971 and *P. mediterranea* (Parisi, 1915) have the lobe on abdominal somite 6 above the uropod articulation produced in a posterior spine, distinct from *P. brasiliensis* that has the lobe on abdominal somite 6 above the uropod articulation without posterior tooth. *Processa canaliculata* Leach, 1815 has the stylocerite with strong lateral tooth, while in *P. brasiliensis* this tooth is absent. *Processa famelica* Manning & Hart, 1991 has the rostrum extending beyond the eyes, while *P. brasilensis* has the rostrum shorter than eyes. *Processa vossi* Manning, 1991 has the right pereopod 2 with 18-19 articles on the merus, and 27-31 articles on carpus, and the telson with two pairs of dorsolateral cuspidate setae, while *P. brasiliensis* has the right pereopod 2 with ten to 14 articles on the merus, and 23-33 articles on the carpus, and the telson with three pairs of dorsolateral cuspidate setae. *Processa guyanae* Holthuis, 1959 has the carpus of the right second pereopod with more than 40 articles, while *P. brasiliensis* has the carpus with 26-33 articles.

The most closely related species to *P. brasiliensis* is *P. borboronica* Holthuis, 1952. *Processa borboronica* has the antennal spine short; the stylocerite with lateral angle of anterior margin produced in a minute tooth; and appendix masculina of second pleopod reaching only two-thirds to three-fourths of the endopod length, distinct from *P. brasiliensis* which has a long antennal spine, a stylocerite with lateral angle of anterior margin rounded; and appendix masculina reaching the tip of endopod. Other distinctions between these two species are listed by Christoffersen (1979).

The specimens examined agree with Christoffersen´s (1979) description, in all diagnostic characters examined. However, the number of articles in the merus and the carpus of second right and left pereopods presents variations. The articles of all specimens were counted and it was observed that four of the five examined males present a lower number of articles (right pereopod 2 merus 7-9, carpus 19-21; left pereopod 2 merus 5, carpus 9-12) than Christoffersen´s (1979) specimens. Non ovigerous females and ovigerous females present a high number of articles and are inside the range described by Christoffersen (1979). Four specimens present a number of articles larger than the observed by Christoffersen (1979) in right pereopod 2 merus (17-18).

Processa fimbriata Manning & Chace, 1971
(Figs.36-39)

Processa canaliculata – Rathbun, 1902:14 (not Leach, 1815).

Processa fimbriata Manning & Chace, 1971:19, figs.8-10; Chace, 1972:243.

Material examined – Rocas Atoll, Barretão channel, 1♀ (5mm), MNRJ 19023.

Diagnosis – Carapace with rostrum short; antennal spine present. Stylocerite with acute teeth on anterior outer margin. Somites 1-5 with pair of spines on sternites. Right pereopod 2 with 13-16 articles on merus, and 31-40 articles on carpus; left pereopod 2 with four to six articles on merus, and 15-18 articles on carpus. Pleura of fifth abdominal somite with distinct posterolateral tooth. Lobe on abdominal somite 6, above articulation with uropod with posterior tooth (modified from Manning & Chace, 1971).

Description – Eye large, reaching proximal half of scaphocerite. Carapace with rostrum not overreaching distal margin of cornea, bifid tip, lower

tooth longer than upper, lower margin slightly convex, with numerous setae; with antennal spine (Fig.36A). Stylocerite truncated anteriorly, with acute teeth on outer margin, inner margin unarmed (Fig.36B). Scaphocerite extending beyond antennular peduncle, with distal spine on outer margin, that does not overreach scaphocerite, distal end truncate (Fig.36C). Mandible with molar process bearing a tooth with margins covered by cuspidate setae and many strong teeth distally (Fig.36D). Maxilla 1 with one endite, with simple and long cuspidate serrulate seta on inner margin; palp hook like (Fig.36E). Maxilla 2, broad scaphognathite with densely plumose setae on all margins; endopod one-fourth of scaphognathite length; endite with papposerrate seta on inner margin (Fig.36F). Maxilliped 1 with elongate unarmed epipod; broad exopodal lobe with densely plumose setae on all margins; slender elongate exopod, with densely plumose setae on outer margin; endopod one-third of exopod length; endite rounded, with densely plumose setae on inner margin (Fig.36G). Maxilliped 2 with ischio-merus short; carpus short, triangular; propodus elongate; dactyl short with serrulate setae on inner margin (Fig.36H). Maxilliped 3, ischio-merus elongate with simple setae on inner margin; carpus with tufts of serrulate setae on outer surface; propodus and dactylus with tufts of densely plumose setae on inner margin, and 6 cuspidate setae on outer margin (Fig.36I). Right pereopod 1 chelate; propodus about slightly more than twice dactyl length; all articles with simple setae (Fig.37A). Left pereopod 1 with simple dactyl slightly less than one-third of propodus length, all articles with simple setae (Fig.37B). Right pereopod 2 longer than left, ischium with two articles; merus with 13 articles and carpus with 31 articles; dactyl half propodus length (Fig.37C). Left pereopod 2 with unsegmented ischium; merus with five articles and carpus with 13 articles; dactyl about one-third propodus length (Fig.37D). Pereopod 3, merus and ischium with two cuspidate setae on inner margin; carpus with pairs of setae along inner and outer margins; propodus three times longer than dactyl, with tuft of setae distally; slender dactyl with setae distally (Fig.38A). Pereopod 4 merus with three, and ischium with two cuspidate setae on inner margin; carpus slender, with simple setae on inner and outer margins; propodus four times longer than dactyl, with tufts of setae distally; dactyl with setae distally (Fig.38B). Pereopod 5 merus, ischium and carpus unarmed; propodus with simple setae on inner and outer margins; female with four cuspidate setae on inner margin; slender dactyl without distal setae (Fig.38C). Abdomen, somites 1-4 with pleura rounded, somites 5-6 with pleura sub-quadrate, somite 5 with conspicuous posterolateral tooth (Fig.39D). Female pleopod 1, endopod leaf shaped, with simple setae on posterior surface (Fig.39A). Pleopod 2, endopod with appendix interna slender, with numerous hook setae distally (Fig.39B, C). Exopod of uropod with complete diaresis; lateral margin ending in sharp triangular projection, with strong spine (Fig.39E). Telson with two pairs of dorsolateral cuspidate setae; two pairs of distal cuspidate setae, inner pair stronger (Fig.39E).

Distribution – Western Atlantic: North Carolina, southern Florida, Bahamas, Puerto Rico, Brazil: Espírito Santo, Rio de Janeiro, and Rocas Atoll.

Remarks – Of the 26 Atlantic species of *Processa*, 16 have the pleura of abdominal somite 5 rounded, lacking posterolateral tooth, distinct from *P. fimbriata* which has the pleura of abdominal somite 5 with distinct posterolateral tooth. Of the ten remainig species, three have the stylocerite unarmed, whereas *P. fimbriata* has the stylocerite armed with a tooth on anterior margin. *Processa macrodactyla* Holthuis, 1952 has the carpus of the left pereopod 2 unsegmented while *P. fimbriata* has the carpus of left pereopod 2 divided in at least five articles. *Processa macrophthalma* Nouvel & Holthuis, 1957 has the lobe on abdominal somite 6 above uropod articulation unarmed, while the remaining species, including *P. fimbriata*, have the lobe on abdominal somite 6 produced in a posterior tooth. *Processa pontica* (Sowinsky, 1882) has the stylocerite with row of spinules on the anterior margin and the pleura of abdominal somite 5 with a spinule above posterolateral tooth, distinct from *P. fimbriata* where these two structures are absent. *Processa intermedia* Holthuis, 1951 and *Processa packeri* Manning & Chace, 1990 have the abdomen without sternal spines, while *P. fimbriata* has spines on the sternum of the anterior five abdominal somites. *Processa riveroi* Manning & Chace, 1971 has the stylocerite with a spine on outer and inner angles, distinct from *P. fimbriata* that has the stylocerite armed only on the outer angle.

The female examined agrees with Manning & Chace (1971) description. However, the number of articles in carpus of left pereopod 2 presents a variation. In Manning & Chace´s (1971) description, the range of articles in carpus of left pereopod 2 was 15-18, and the female examined has 19 articles.

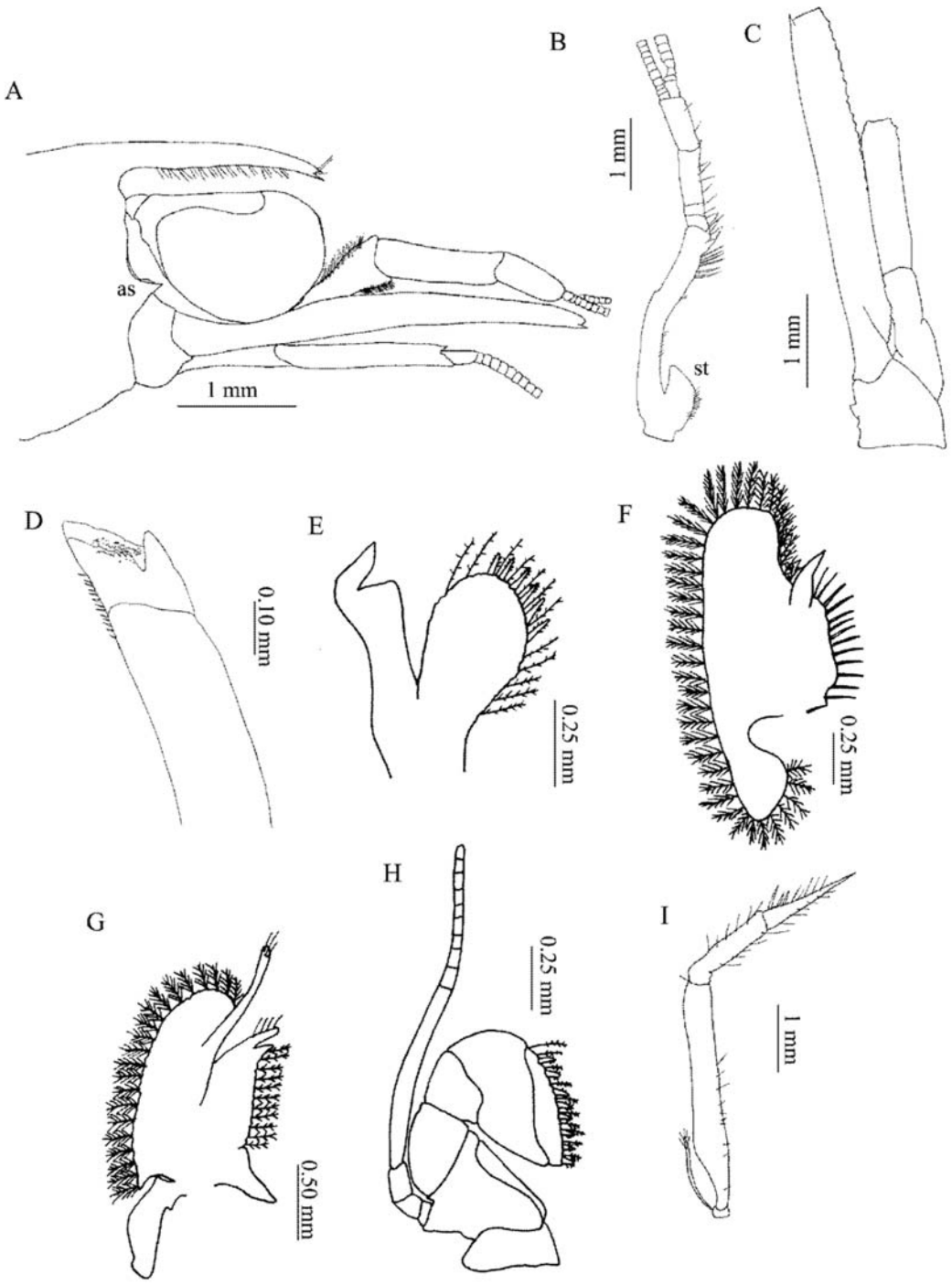

Fig.32- *Processa brasiliensis* Christoffersen, 1979, ♂, MNRJ 19024 (carapace length 3.0mm). (A) anterior part of carapace and cephalic appendages (as=antennal spine); (B) right antennula, dorsal (st=stylocerite); (C) right scaphocerite, dorsal; (D) left mandible, dorsal (mp=molar process); (E) left maxilla 1, dorsal (end=endite; p=palp); (F) left maxilla 2, dorsal (end=endite; enp=endopod; sc=scaphognathite); (G) left maxilliped 1, dorsal (el=exopodal lobe; end=endite; enp=endopod; ep=epipod; exp=exopod); (H) left maxilliped 2, dorsal (exp=exopod); (I) left maxilliped 3, dorsal (exp=exopod).

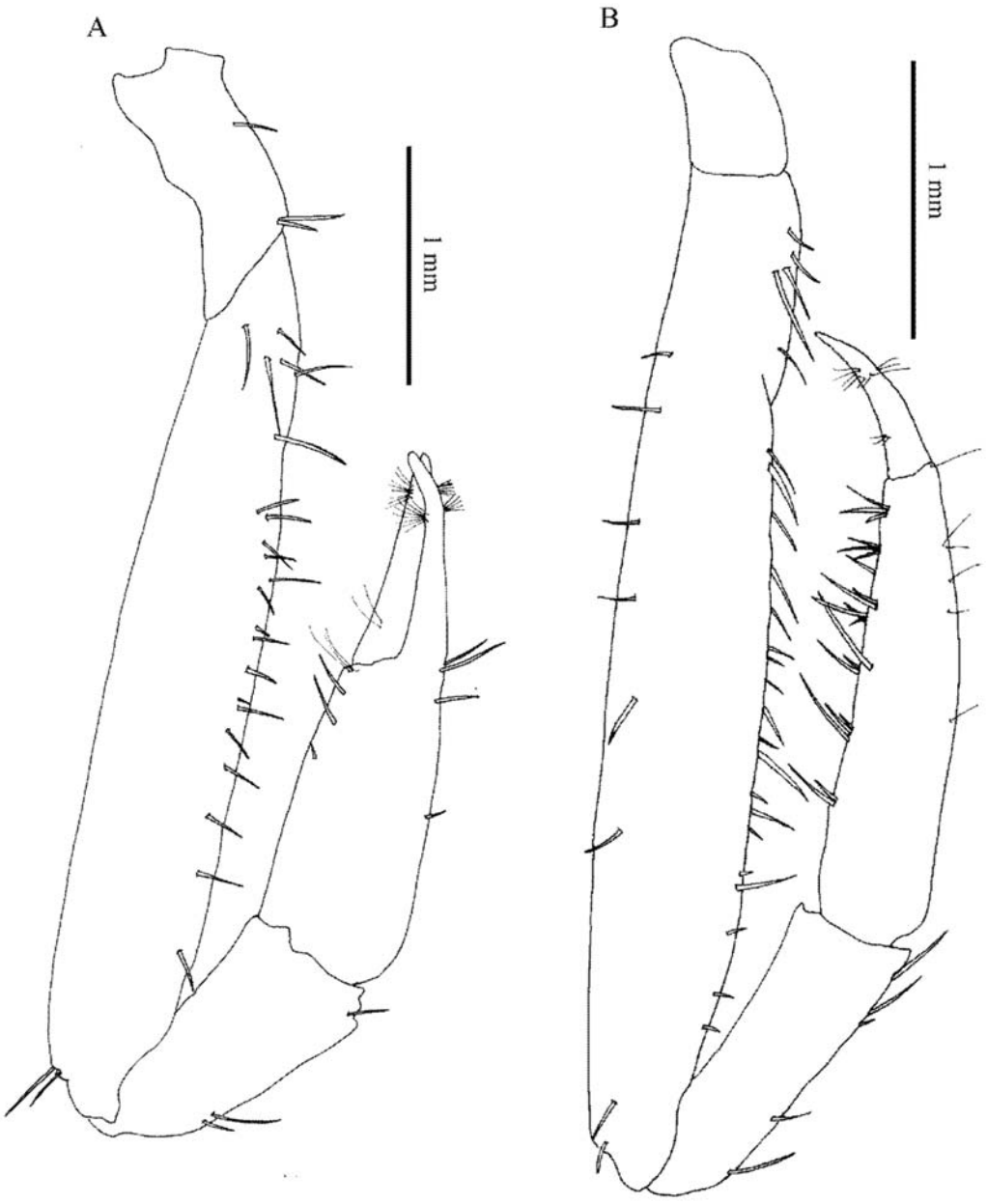

Fig.33- *Processa brasiliensis* Christoffersen, 1979, ♂ , MNRJ 19024 (carapace length 3.0mm). (A) right pereopod 1, lateral; (B) left pereopod 1, lateral.

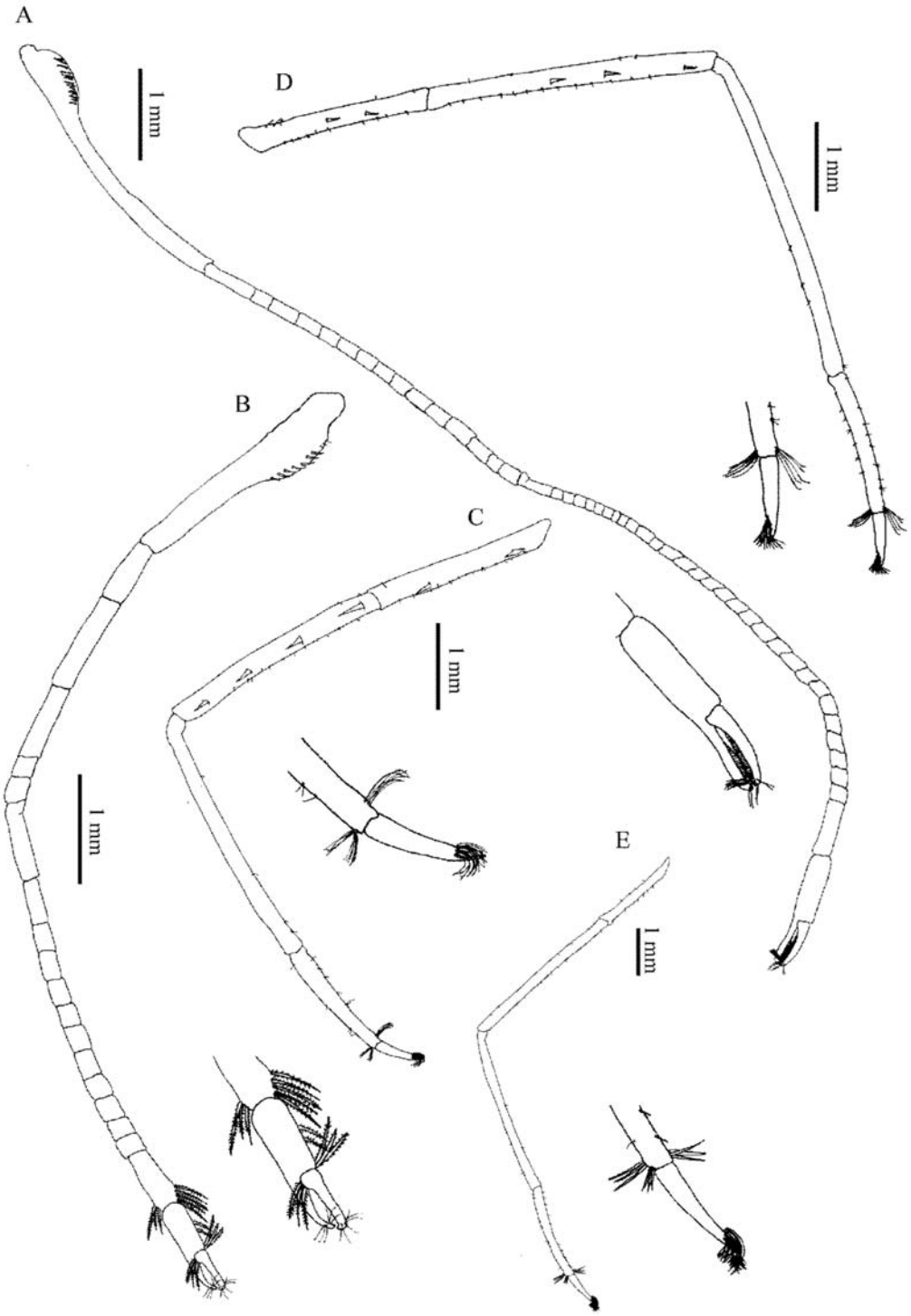

Fig.34- *Processa brasiliensis* Christoffersen, 1979, ♂, MNRJ 19024 (carapace length 3.0mm). (A) right pereopod 2, lateral; (B) left pereopod 2, lateral; (C) right pereopod 3, lateral; (D) right pereopod 4, lateral; (E) right pereopod 5, lateral.

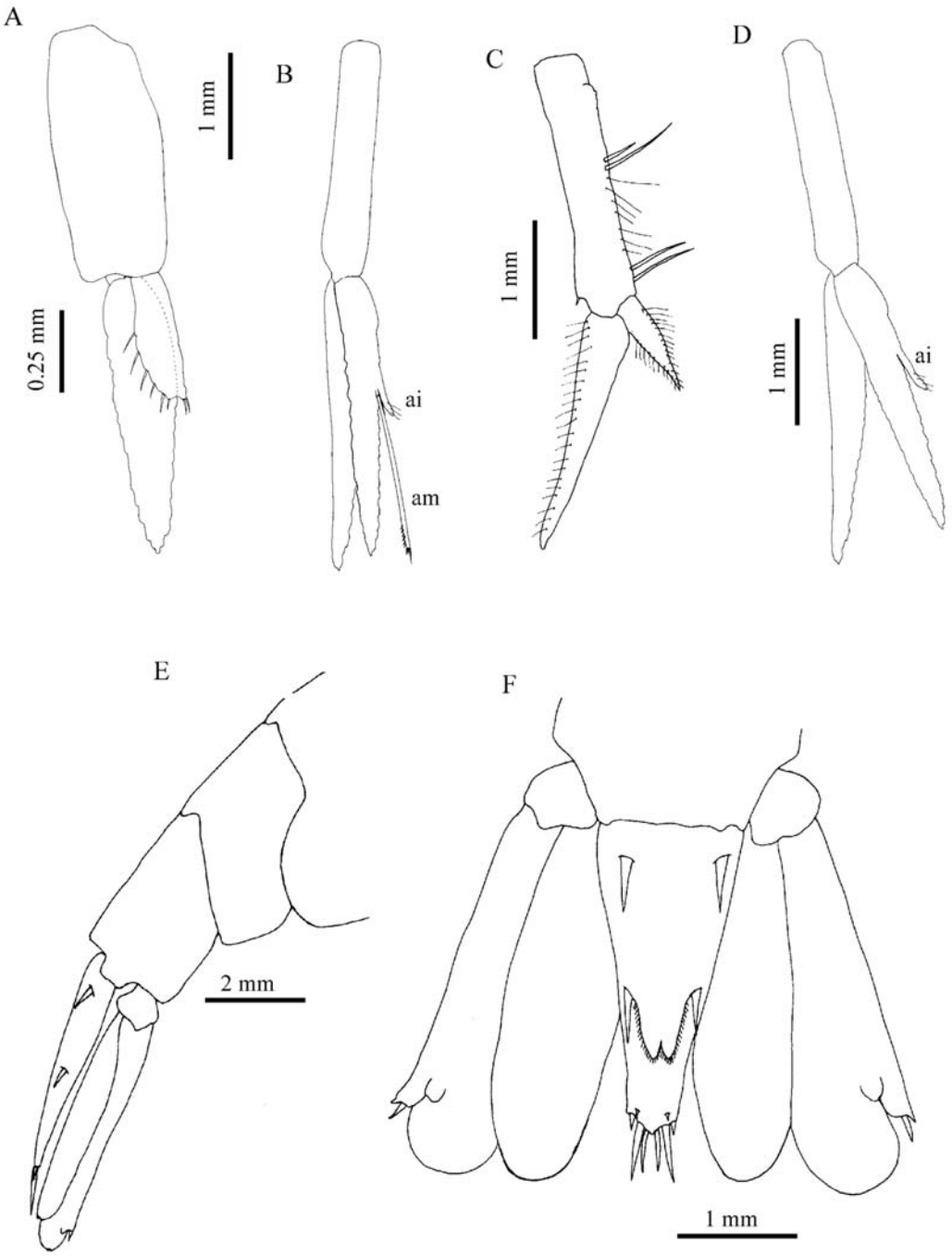

Fig.35- *Processa brasiliensis* Christoffersen, 1979, ♂, MNRJ 19024 (carapace length 3.0mm). (A) left pleopod 1, lateral; (B) left pleopod 2, lateral (ai=appendix interna; am=appendix masculina). *Processa brasiliensis*, ♀, MNRJ 19027 (carapace length 4.0mm). (C) left pleopod 1, lateral; (D) left pleopod 2, lateral (ai=appendix interna). *Processa brasiliensis*, ♂, MNRJ 19024 (carapace length 3.0mm). (E) posterior part of abdomen, telson and uropods, lateral; (F) telson and uropods, dorsal.

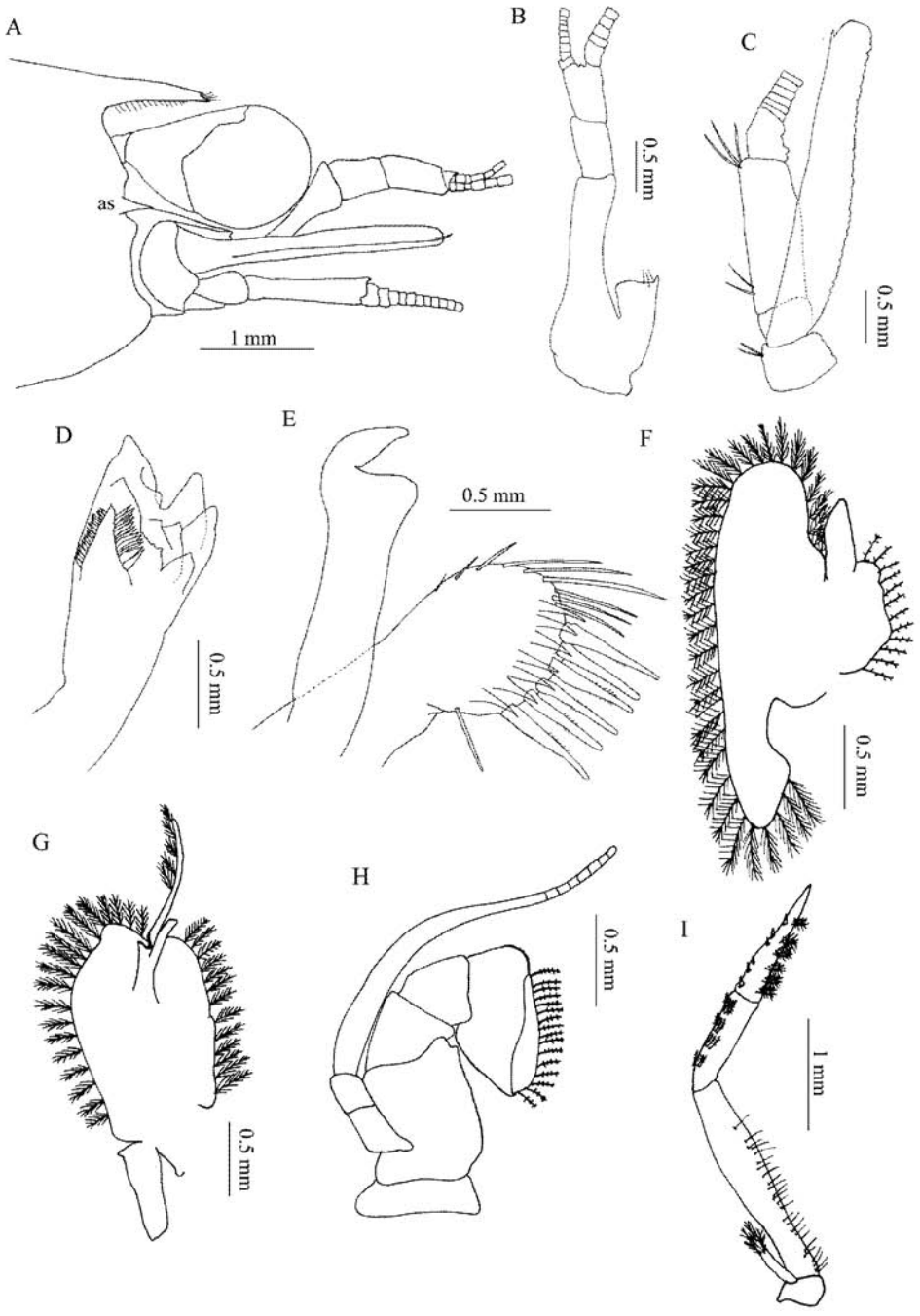

Fig.36- *Processa fimbriata* Manning & Chace, 1971, ♀ , MNRJ 19023 (carapace length 5mm). (A) anterior part of carapace and cephalic appendages (as=antennal spine); (B) right antennula, dorsal (st=stylocerite); (C) right scaphocerite, dorsal; (D) left mandible, dorsal (mp=molar process); (E) left maxilla 1, dorsal (end=endite; p=palp); (F) left maxilla 2, dorsal (end=endite; enp=endopod; sc=scaphognathite); (G) left maxilliped 1, dorsal (el=exopodal lobe; end=endite; enp=endopod; ep=epipod; exp=exopod); (H) left maxilliped 2, dorsal (exp=exopod); (I) left maxilliped 3, dorsal (exp=exopod).

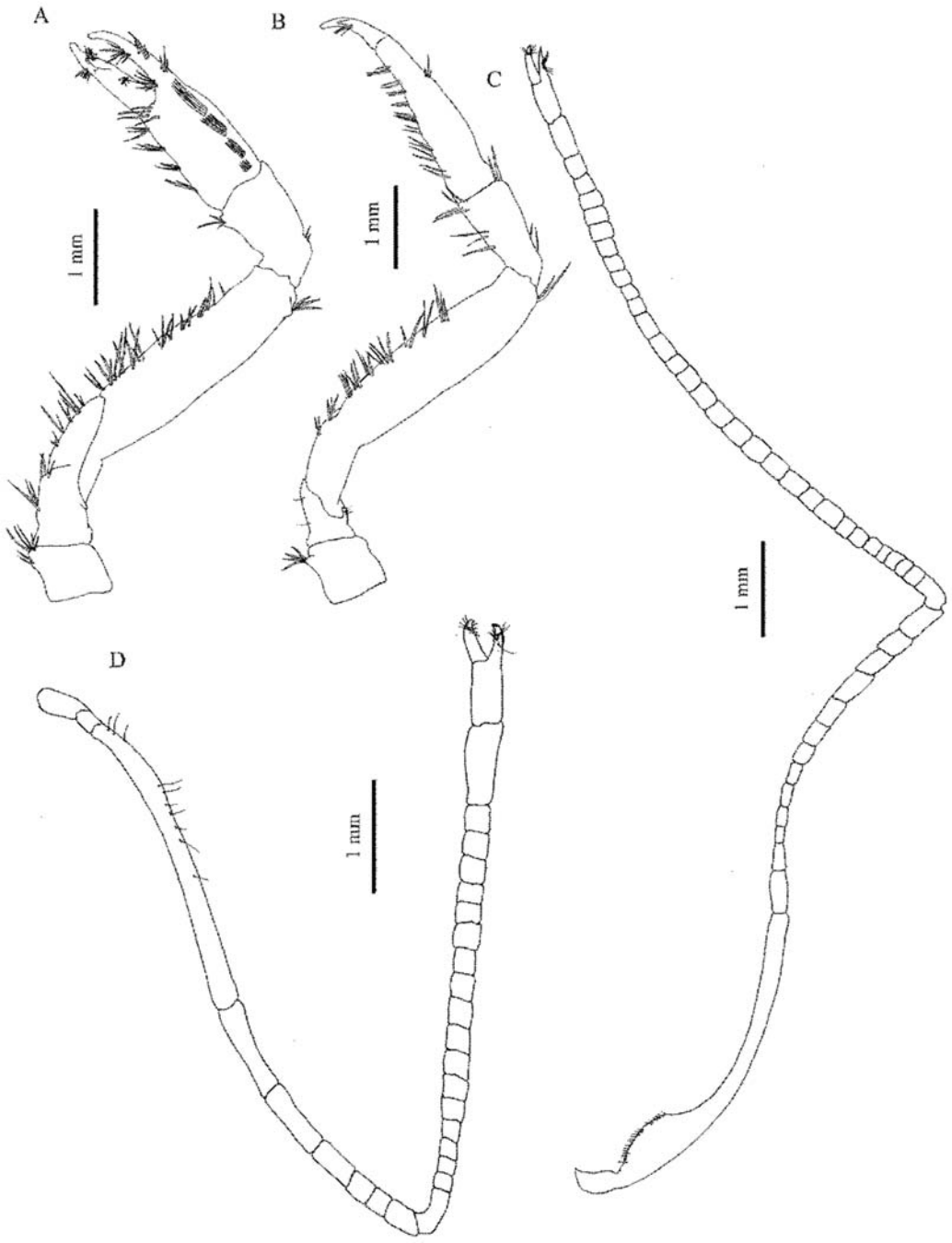

Fig.37- *Processa fimbriata* Manning & Chace, 1971, ♀ , MNRJ 19023 (carapace length 5mm). (A) right pereopod 1, lateral; (B) left pereopod 1,lateral; (C) right pereopod 2, lateral; (D) left pereopod 2, lateral.

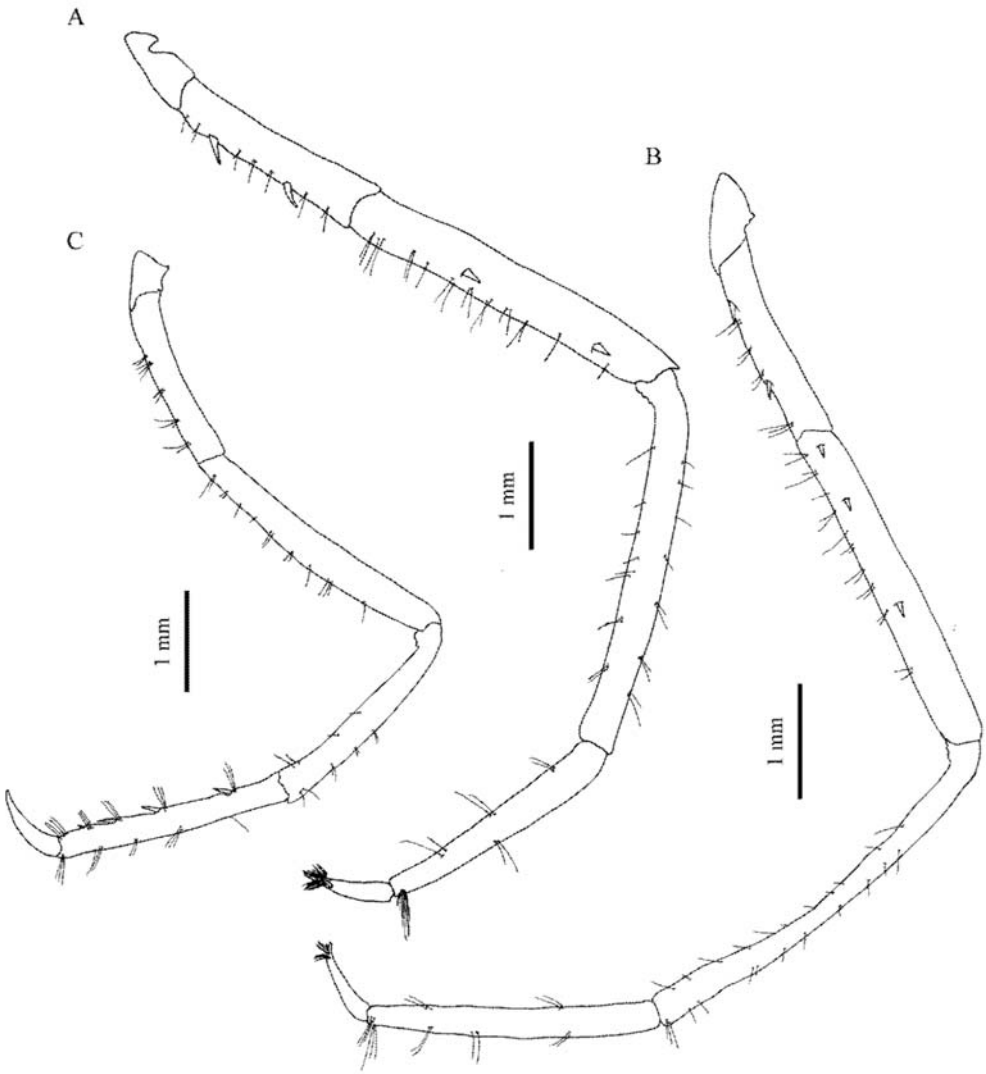

Fig.38- *Processa fimbriata* Manning & Chace, 1971, ♀ , MNRJ 19023 (carapace length 5mm). (A) right pereopod 3, lateral; (B) right pereopod 4, lateral; (C) right pereopod 5, lateral.

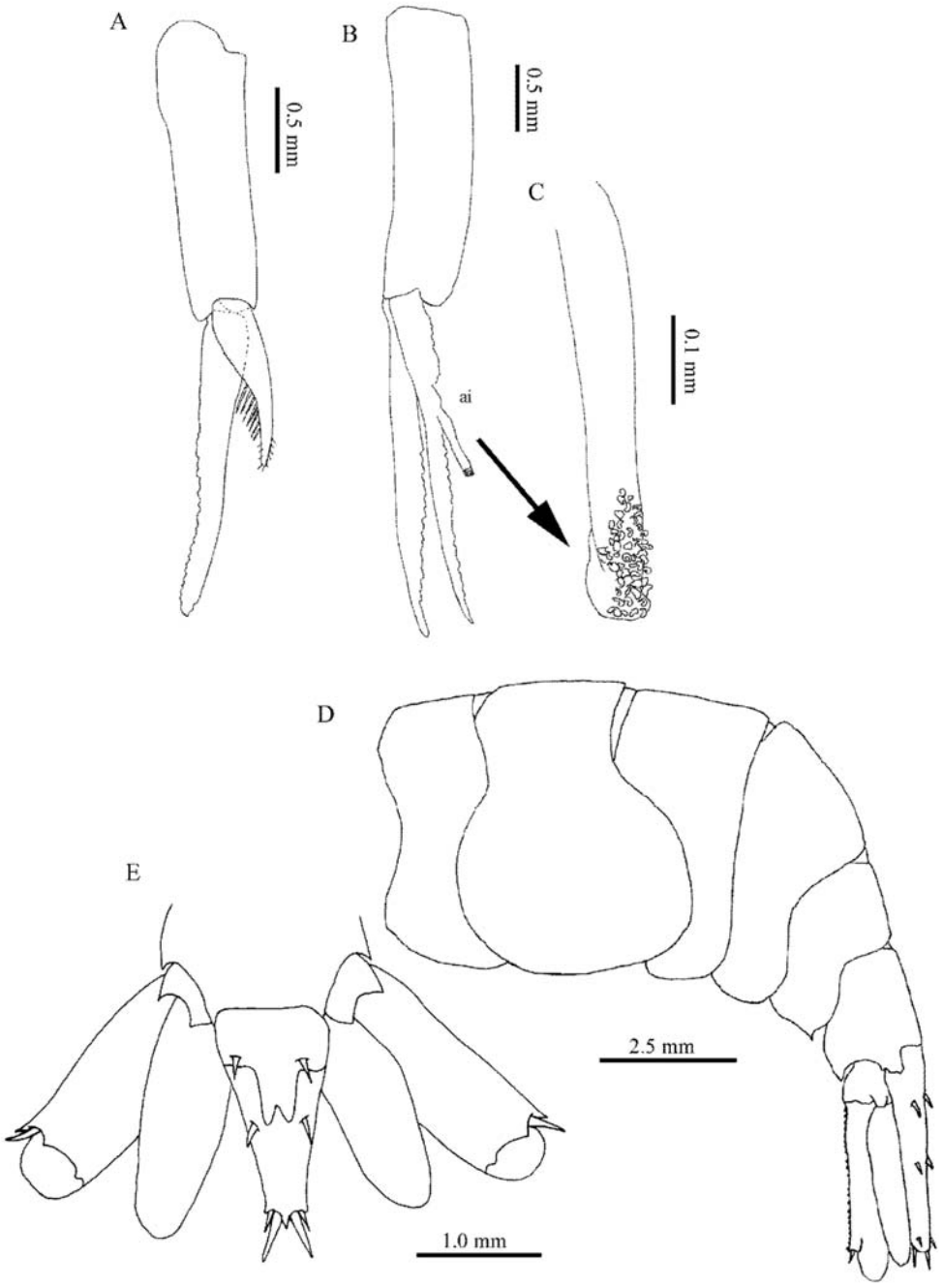

Fig.39- *Processa fimbriata* Manning & Chace, 1971, ♀ , MNRJ 19023 (carapace length 5mm). (A) left pleopod 1, lateral; (B) left pleopod 2, lateral (ai=appendix interna); (C) appendix interna of left pleopod 2, lateral; (D) abdomen, telson and uropods, lateral; (E) telson and uropods, dorsal.

Rhynchocinetidae Ortmann, 1890

Cinetorhynchus Holthuis, 1995

Cinetorrhynchus HOLTHUIS, 1995:145; OKUNO, 1997:31.

Diagnosis – Articulation between carapace and rostrum sometimes incomplete. Three dorsal teeth on carapace behind rostrum base. Postorbital spine absent. Lower orbital angle fused with antennal spine. Posterior margin of abdominal somite 5, sometimes also of somite 4 with distinct spine above the base of pleuron (from HOLTHUIS, 1995).

Cinetorhynchus rigens (Gordon, 1936)
(Figs.40-46)

Rhynchocinetes rigens GORDON, 1936:76; MANNING, 1961b:1.

Cinetorhynchus rigens – HOLTHUIS, 1955:146; OKUNO, 1997:31.

Material examined – Rocas Atoll, pool, 1♂ (4.5mm), MNRJ 19041; pool, 1♀ (3.0mm), MNRJ 19026.

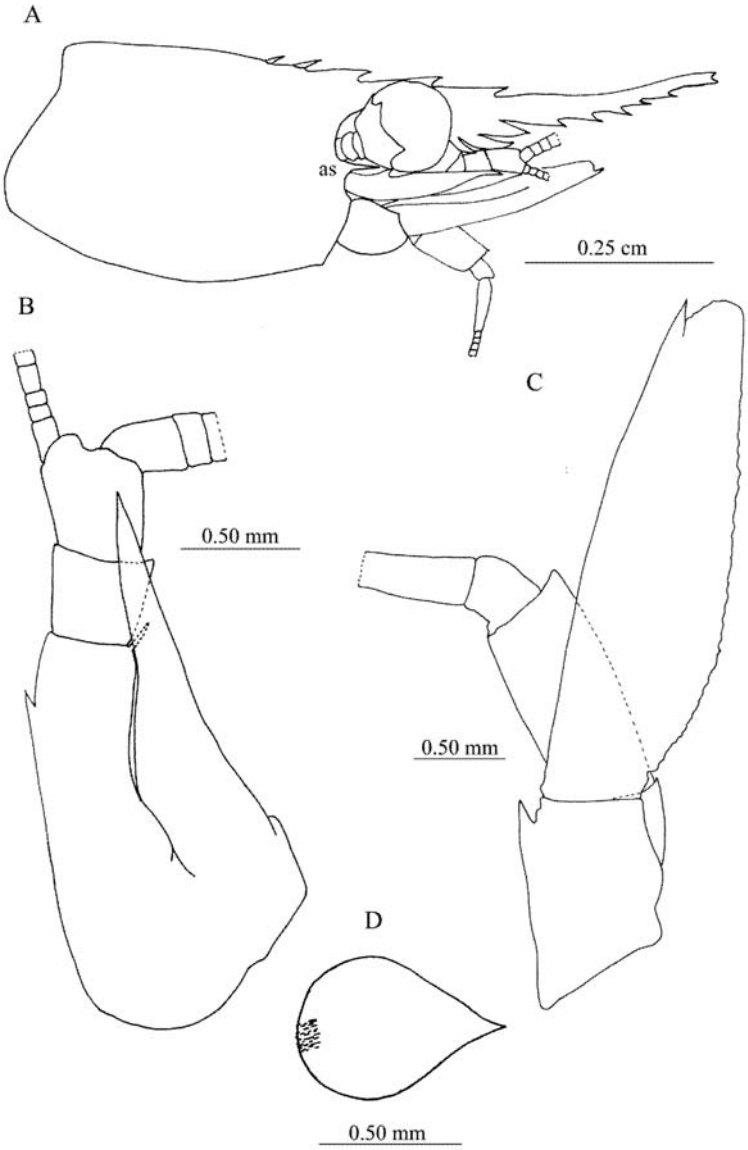

Fig.40- *Cinetorhynchus rigens* (Gordon, 1936), ♂, MNRJ 19041 (carapace length 4.5mm). (A) carapace and cephalic appendages, lateral (as-antennal spine); (B) right antennula, dorsal; (C) right antenna, dorsal; (D) epistome, ventral.

Diagnosis – Carapace with rostrum overreaching antennal scale, ventral margin with eight teeth, dorsal margin with five teeth, last two teeth articulated with carapace, apex bifid; antennal spine present; branchiostegal spine absent. Abdomen with pleura unarmed. Male pleopod 1 with rounded endopod, with simple setae on anterior margin and distal anterior lobe with hook setae on apex. Male pleopod 2 with appendix interna with three strong acute cuspidate setae on apex; appendix interna twice as long as appendix masculina, with numerous hook setae on apex.

Description – Carapace with rostrum 1.3 times carapace length, overreaching scaphocerite, ventral margin convex, with eight teeth, first three very strong; dorsal margin with five teeth, two postorbital teeth articulated with carapace, apex bifid; carapace dorsal margin not carinate; with acute antennal spine; without branchiostegal, supraorbital and pterygostomian spines; without cervical groove and suprabranchial carina. Eyes with large globular cornea, about one-third of carapace length, well pigmented, without ocellus, stalk short, about half of corneal diameter (Fig.40A). Stylocerite strongly developed, overreaching middle of third antennular article; distolateral tooth of basal article reduced, not reaching half of second antennular article, with small acute ventromedial tooth, without statocyst (Fig.40B). Scaphocerite tapering distally, with distal tooth reaching end of scale; basicerite with small acute lateral tooth (Fig.40C). Epistome rounded, with anterior acute point (Fig.40D). Mandible, incisor process with 5 acute, strong teeth and 12 denticles below; molar process complex, formed by alternating series of grooves and ridges and one strong multicuspidate tooth at upper angle (Fig.41A); palp 3-articulated, with scattered plumose setae on outer margin of second and third articles, anterior margin and inner surface of third article with short serrulate setae (Fig. 41B). Maxilla 1 with two endites, distal endite with denticulate cuspidate setae on inner margin, and series of long plumose setae behind; basal endite rounded, with simple setae on lateral margins, stout and serrulate setae on inner margin; palp rounded, with one slender pappose seta (Fig.42A, B). Maxilla 2 with two endites, distal endite bilobed, with serrulate setae on all margins, basal endite with long plumose setae on all margins; endopod, shorter than distal endite, unarmed; scaphognathite with long plumose setae on all margins (Fig.42C). Maxilliped 1 with two endites with simple setae on inner margin; endopod three segmented, twice longer than distal endite, with long plumose setae on inner margin; exopod twice longer than endopod, with long plumose setae on all margins; exopodal lobe with long plumose setae on outer margin; epipod large, deeply bilobed, distal lobe rounded, elongate; basal lobe short, triangular (Fig.42D). Maxilliped 2, 6-articulated, ischium and merus fused; endopod, basis with long plumose setae on inner margin; ischio-merus subquadrate, unarmed; carpus short triangular, unarmed; propodus rounded, unarmed; dactyl with cuspidate serrulate seta on inner margin; broad epipod without podobranch; exopod elongate, with long plumose setae on all margins (Fig.42E). Maxilliped 3 with elongate exopod, with long plumose setae on all margins; ischium and merus fused, with cuspidate setae and strong tooth on distal outer margin; carpus curved with denticulate cuspidate seta distally; propodus and dactyl fused, slender, elongate, inner margin one simple seta basally, nine long denticulate cuspidate setae medio-distally, and five dark horny cuspidate setae distally (Fig.42F). Maxilliped 3 and pereopods 1 to 5 coxa with posterior margin notched (Fig.45A). Maxilliped 3 and pereopods 1 to 4 with one epipod each; epipods rounded at base tapering posteriorly, with acute simple setae; point of attachment on coxa between rounded base and posterior elongate area (Fig.45A). Pereopods 1 to 5 without exopods and with only pleurobranchs. Pereopod 1 stronger and more robust than longer pereopod 2. Pereopods 1 and 2 chelate; dactyl and propodus tips with tufts of serrulate setae. Pereopod 1, propodus with denticulo-papposerrate seta on inner margin; fixed finger with two strong cuspidate setae, the posterior seta with concavity for receiving dactyl teeth; dactyl tip formed by four strong cuspidate setae (Fig.43A). Pereopod 2, propodus fixed finger with two strong cuspidate setae oppose to five strong dactyl cuspidate setae (Fig.43B). Pereopod 3 to 5 slender, elongate; ischium with one ventral and medial cuspidate seta; carpus with medial cuspidate seta and strong tooth on distal angle of inner margin; dactyl with four strong cuspidate setae on ventral margin, and tufts of long plumose setae on outer dorsal margin. Pereopod 3 longer than pereopod 4, merus with three ventral cuspidate setae, two distal cuspidate setae; propodus with 11 ventral cuspidate setae (Fig.44A). Pereopod 4 longer than pereopod 5; merus with one ventral cuspidate setae, three medial and two distal cuspidate setae; propodus with 12 ventral cuspidate setae, third to ninth cuspidate setae denticulate, articulated

(Fig.44B). Pereopod 5, merus with two medial cuspidate setae; propodus with nine ventral cuspidate setae (Fig.44C). Fifth thoracic sternite with pair of slender membranous submedian teeth; other thoracic sternites unarmed. Abdomen without dorsally carinate tergites; pleura unarmed (Fig.45B); pleopods 2 to 5 with appendix interna well developed. Pleopod 1 with modified endopod in male, rounded, with strong ten simple setae on medial margin, and medial lobe on anterior margin with hook setae distally (Fig.46A). Pleopod 2 with appendix masculina short and slender, with three stout acute setae on apex (Fig.46B); appendix interna, twice longer than appendix masculina (excluding spines length), distally rounded with several hook setae (Fig.46C). Exopod of uropod without diaresis, with strong distal spine on outer margin (Fig.46D). Telson not dorsally sulcate, with three pairs of dorsal cuspidate setae at about 0.45, 0.55 and 0.7 of telson length, posterior margin with acute median process, with three pairs of posterior marginal cuspidate setae, lateral cuspidate setae similar to dorsal cuspidate setae, intermediate cuspidate setae well developed, about 0.12 of telson length, submedian cuspidate setae shorter, about 0.6 of intermediate cuspidate setae length.

Distribution – Eastern Atlantic Ocean: Madeira and Azores Islands; Western Atlantic Ocean: Florida, Bahamas, Bermuda, and Brazil (Pernambuco, Fernando de Noronha and Rocas Atoll).

Remarks – This species is widely distributed in Atlantic Ocean and is the single species of the genus that occurs in the Brazilian region.

The sampled specimens are juveniles, with carapace length of 3.0 and 4.5mm; *Cinetorhynchus rigens* can reach 17mm in carapace length. The specimens examined present the stylocerite, scaphocerite, mandible and mandibular palp similar to the figured by GORDON (1936) for the adults. However, GORDON (1936) described an articulated rostrum, striae and ornamentations on carapace and abdomen and a strong lateral tooth on abdominal somites 4 and 5, distinct from the material examined which has rostrum not articulated, glabrous carapace and abdomen, and abdominal somites 4 and 5 without lateral tooth, all characters that are from the juvrnile stages.

MANNING (1961b) also noted some differences between juvenile and adult forms of *C. rigens*: the rostral articulation is not visible in specimens with less than 6mm of carapace length; the color pattern and ornamentation is noted only in specimens with more than 6mm of carapace length; and the lateral spines of abdominal somites 4 and 5 are not visible in the smallest specimens. Furthermore, in specimens with 3.4mm of carapace length, MANNING (1961b) observed two articulated teeth behind rostrum base, also observed in the material examined.

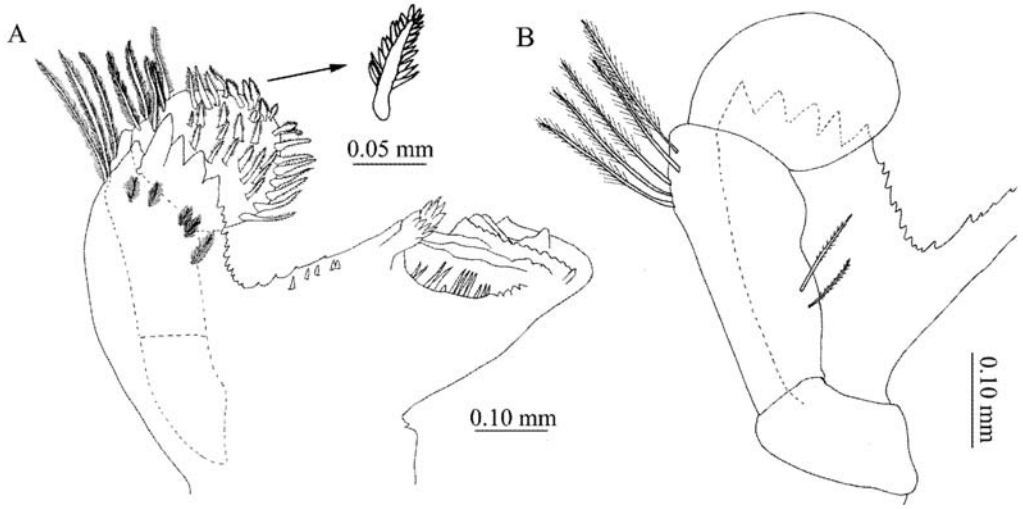

Fig.41- *Cinetorhynchus rigens* (Gordon, 1936), ♂, MNRJ 19041 (carapace length 4.5mm). (A) left mandible, dorsal (ip=incisor process; mp=molar process); (B) right mandular palp, ventral (p=palp).

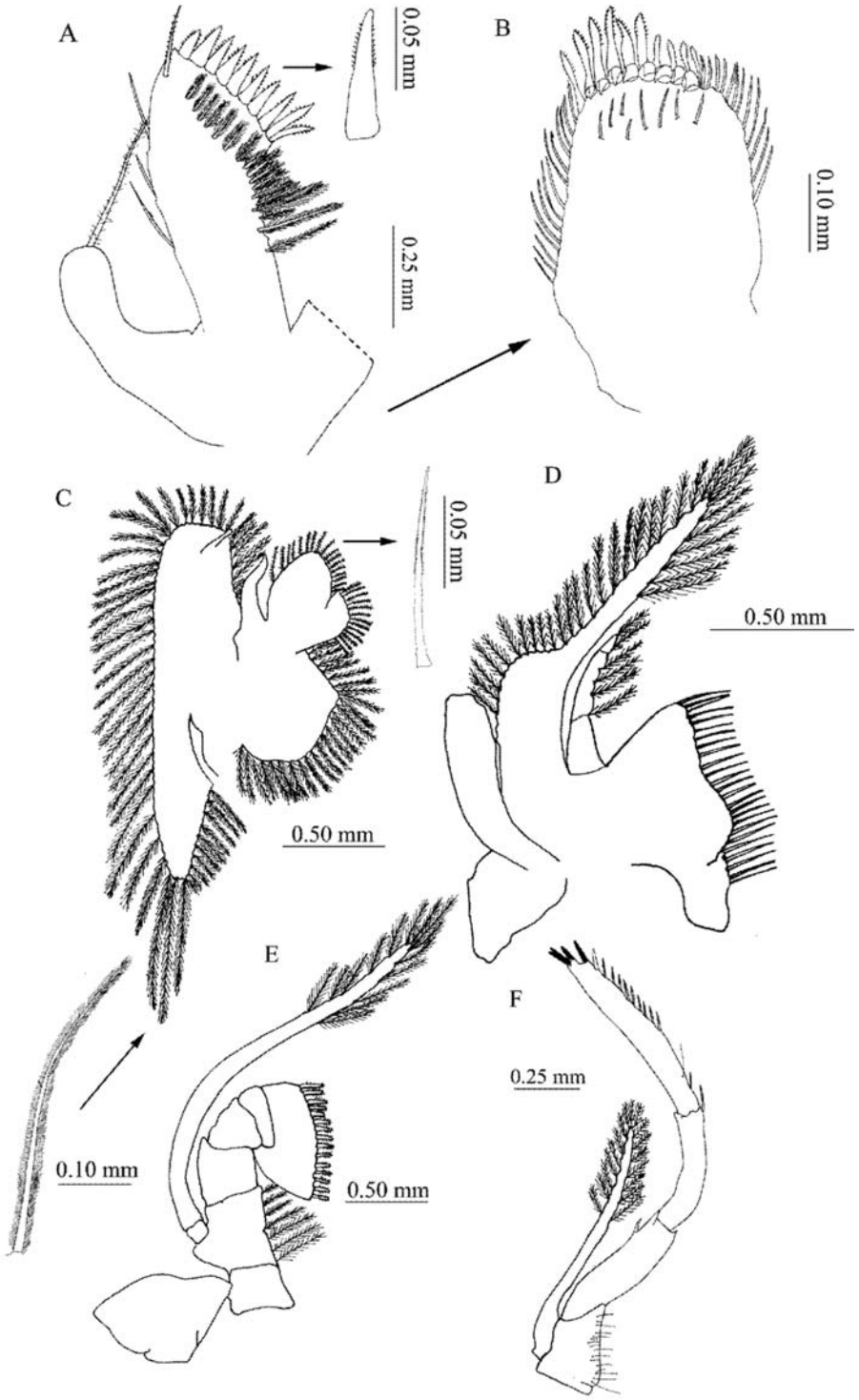

Fig.42- *Cinetorhynchus rigens* (Gordon, 1936), ♂, MNRJ 19041 (carapace length 4.5mm). (A) left maxilla 1, palp and distal endite, dorsal (end=endite; p=palp); (B) rigth maxilla 1, basal endite, dorsal (end=endite); (C) left maxilla 2, dorsal (end=endite; enp=endopod; sc=scaphognathite); (D) left maxilliped 1, dorsal (end=endite; el=exopodal lobe; enp=endopod; ep=epipod); (E) left maxilliped 2, dorsal (ep=epipod; exp=exopod); (F) left maxilliped 3, dorsal (exp=exopod).

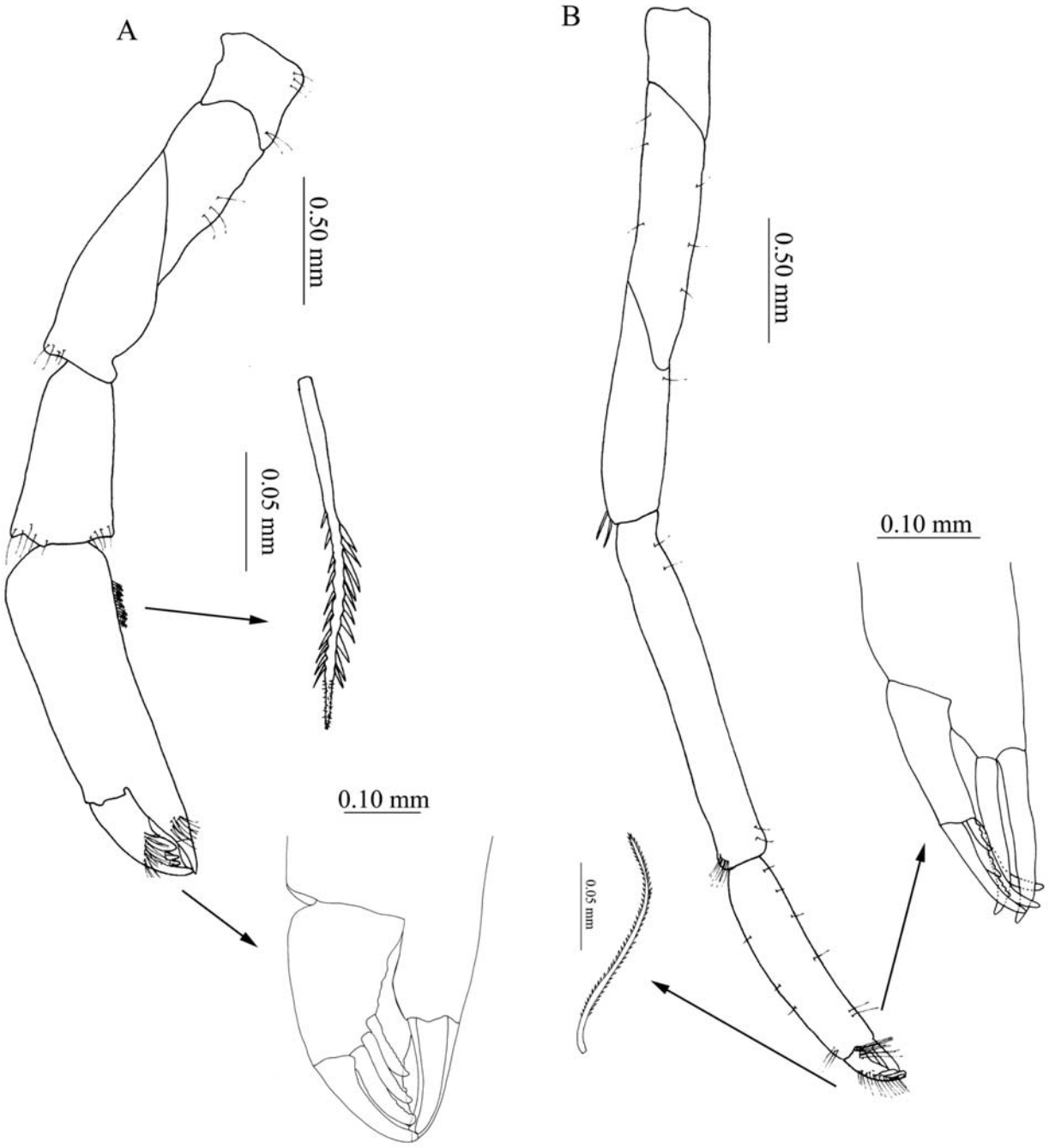

Fig.43- *Cinetorhynchus rigens* (Gordon, 1936), ♂ , MNRJ 19041 (carapace length 4.5mm). (A) right pereopod 1, lateral; (B) right pereopod 2, lateral.

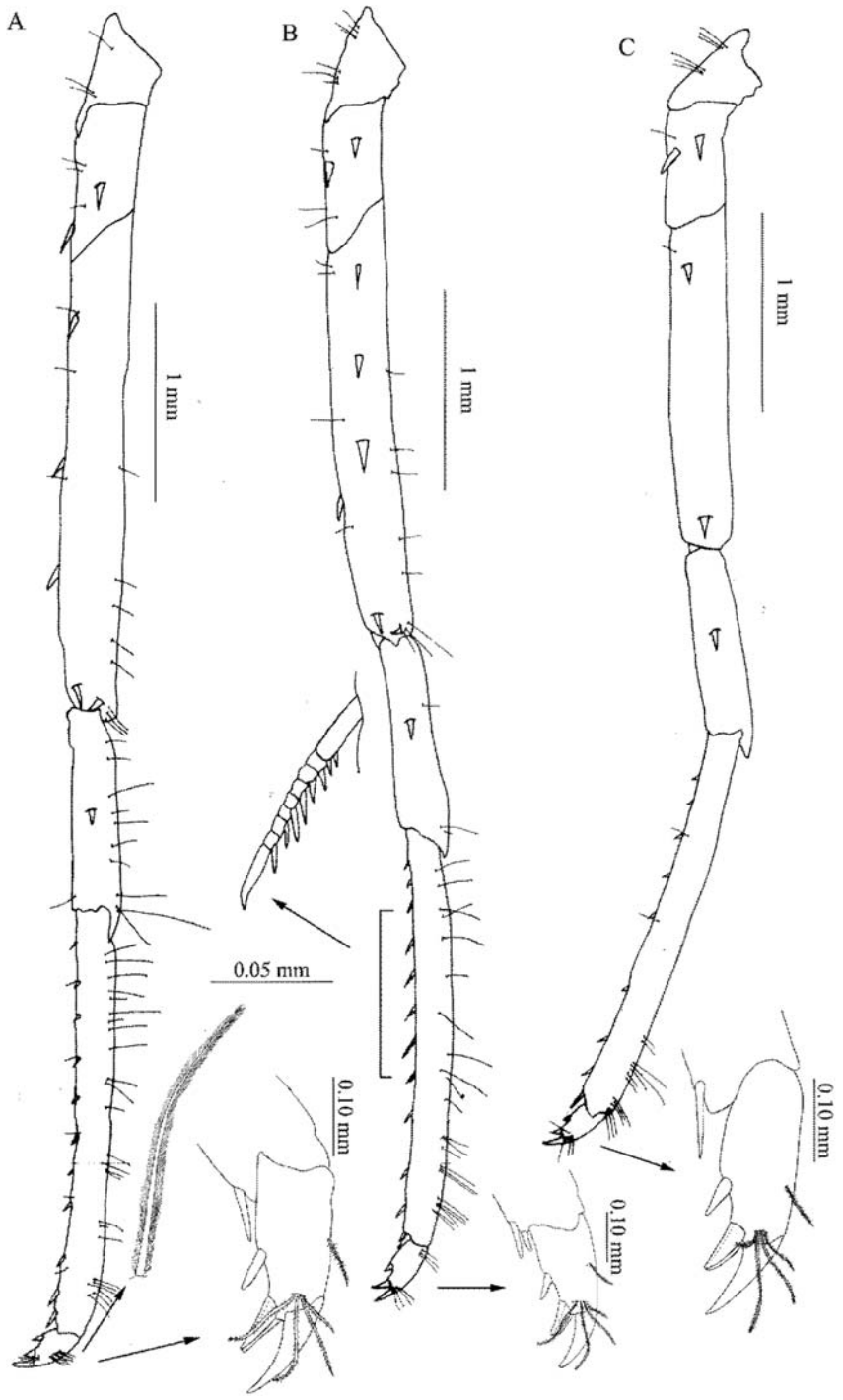

Fig.44- *Cinetorhynchus rigens* (Gordon, 1936), ♂, MNRJ 19041 (carapace length 4.5mm). (A) left pereopod 3, lateral; (B) left pereopod 4, lateral; (C) left pereopod 5, lateral.

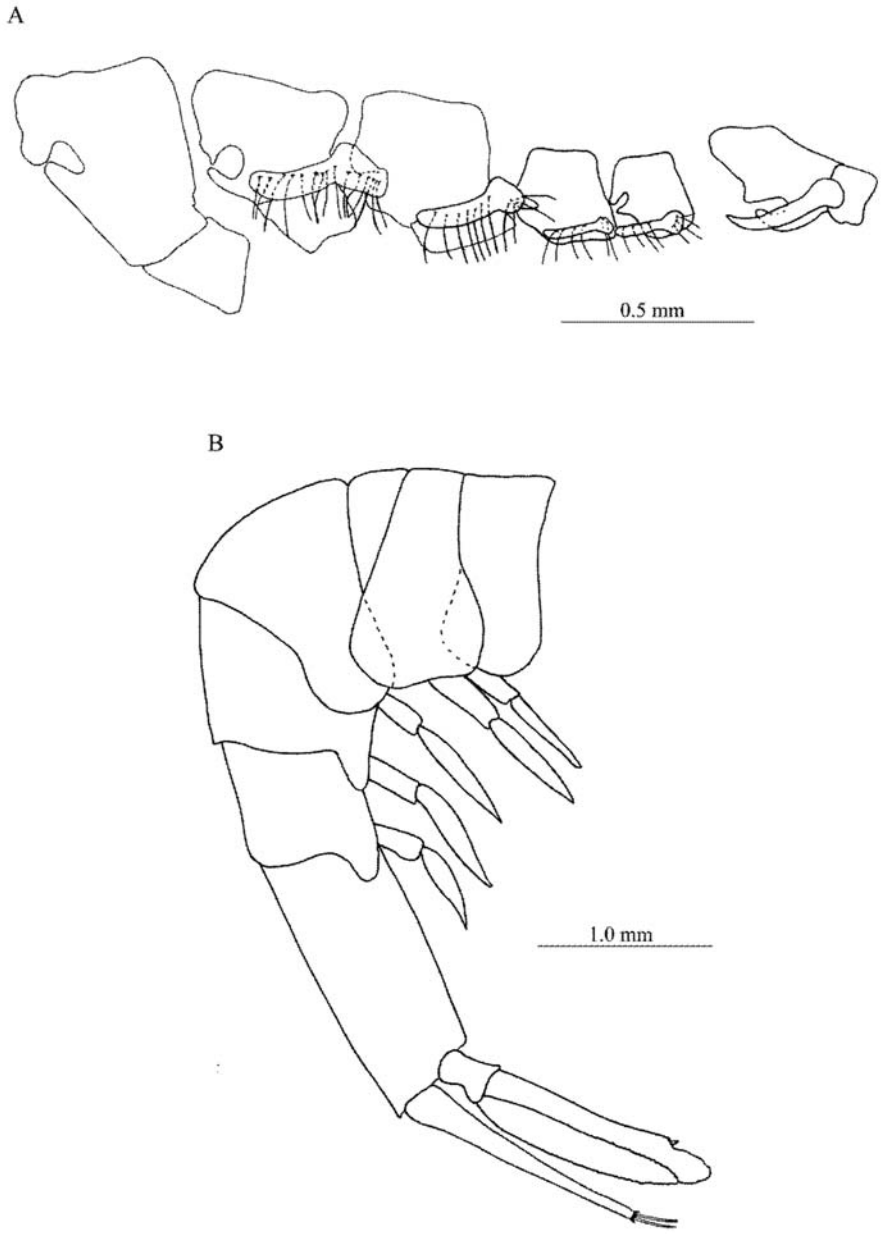

Fig.45- *Cinetorhynchus rigens* (Gordon, 1936), ♂, MNRJ 19041 (carapace length 4.5mm). (A) coxa (with epipods) and basis of maxilliped 3 to pereopod 5, lateral. *Cinetorhynchus rigens* (Gordon, 1936), ♀, MNRJ 19026 (carapace length 3.0mm). (B) abdomen, lateral.

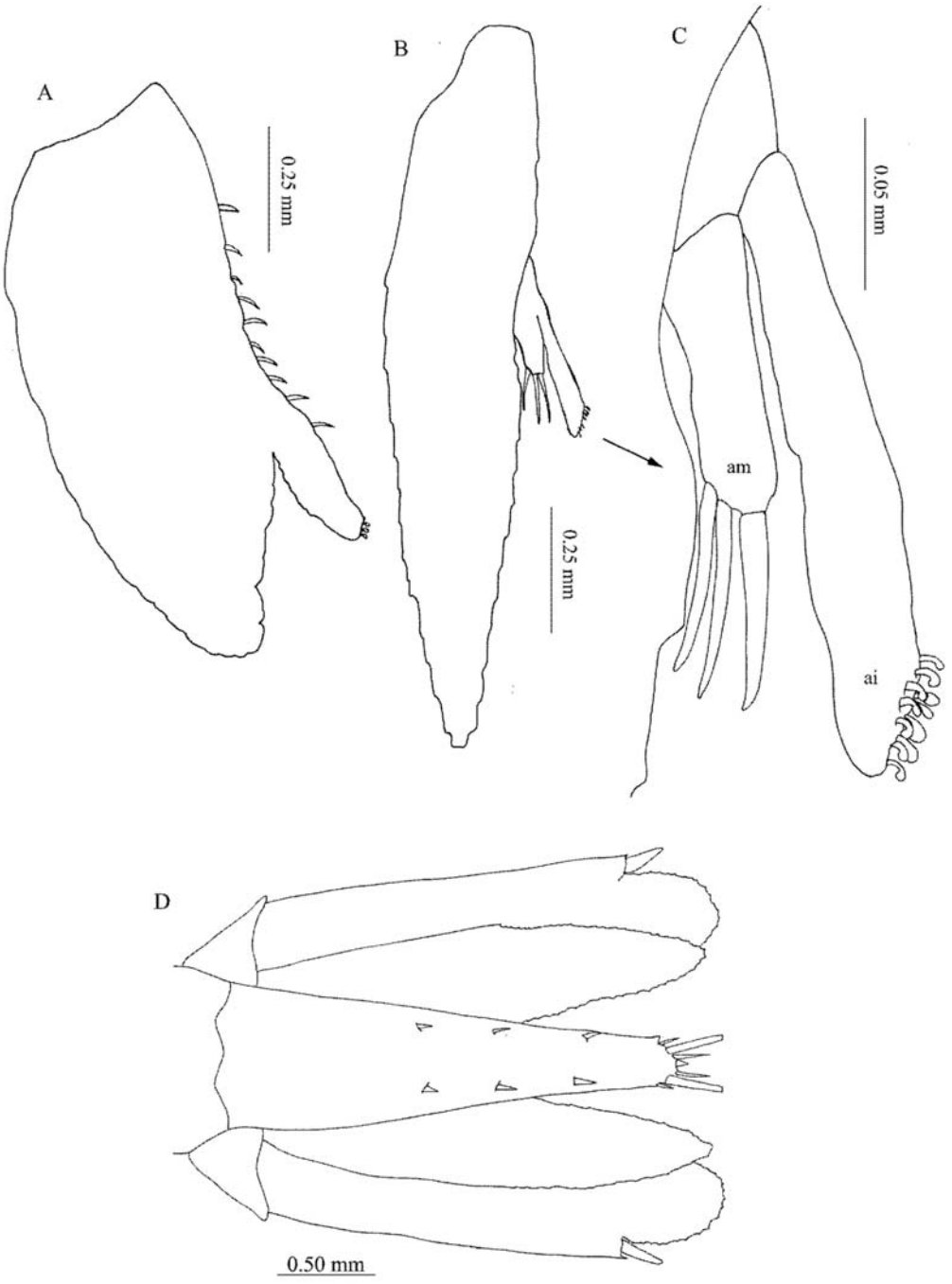

Fig.46- *Cinetorhynchus rigens* (Gordon, 1936), ♂, MNRJ 19041 (carapace length 4.5mm). (A) endopod of left pleopod 1, lateral; (B) endopod of left pleopod 2, lateral; (C) left appendix interna and masculina of pleopod 2, lateral (ai=appendix interna; am=appendix masculina); (D) telson and uropods, dorsal.

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