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NEW RECORDS OF THE FAMILY MAJIDAE (CRUSTACEA, BRACHYURA) TO THE ROCAS ATOLL, BRAZIL [1]

(With 11 figures)

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ABSTRACT: Eight species of Majidae were sampled in the Rocas Attol: *Chorinus heros*, *Macrocoeloma concavum*, *Microphrys bicornutus*, *Mithraculus forceps*, *Mithrax verrucosus*, *Nemausa acuticornis*, *Pitho lherminieri* and *Podochela brasiliensis*. Of these species, *C. heros, M. concavum, P. lherminieri,* and *P. brasiliensis* are new records for the Rocas Attol. *Podochela brasiliensis* is the only Brazilian endemic species of Majidae found in Rocas Atoll, and *M. verrucosus,* in Brazil, is only recorded in the oceanic islands of Fernando de Noronha and Rocas Atoll. Two other species, *Aepinus septemspinosus* and *Mithrax hemphilli,* that were previously known to the region were not found during this study.

Key words: Crustacea. Brachyura. Majidae. Rocas Atoll.

RESUMO: Novos registros da família Majidae (Crustacea, Brachyura) para o Atol das Rocas, Brasil.

Foram coletadas oito espécies de Majidae no Atol das Rocas: *Chorinus heros*, *Macrocoeloma concavum*, *Microphrys bicornutus*, *Mithraculus forceps*, *Mithrax verrucosus*, *Nemausa acuticornis*, *Pitho lherminieri* e *Podochela brasiliensis*. Destas, *C. heros, M. concavum, P. lherminieri* e *P. brasiliensis* são registradas pela primeira vez para o Atol das Rocas. *Podochela brasiliensis* é a única espécie endêmica do Brasil de Majidae encontrada no Atol das Rocas, e *M. verrucosus,* no Brasil, ocorre apenas nas ilhas oceânicas de Atol das Rocas e Fernando de Noronha. Outras duas espécies, *Aepinus septemspinosus* e *Mithrax hemphilli*, que já eram previamente conhecidas para a região, não foram encontradas durante este estudo.

Palavras-chave: Crustacea. Brachyura. Majidae. Atol das Rocas.

INTRODUCTION

Spider crabs (family Majidae) are a widespread marine family. Although most diverse in the Pacific, they can be found world-wide except near Antarctica. Most species live from intertidal areas to the continental shelf except for a few species that live at depths of 200m or more. Peculiar to the family Majidae among brachyuran crabs is decorating (also called masking), the deliberate attachment of pieces of debris or sessile marine organisms to the hooked setae of the exoskeleton, but this behavior can be absent in large crabs or those that live at great depths, on sand or in narrow crevices (WICKSTEN, 1993).

Only six species of Majidae have been recorded to Rocas Atoll: *Aepinus septemspinosus* (A.Milne-Edwards, 1879), *Microphrys bicornutus* (Latreille, 1825), *Mithraculus forceps* (A.Milne-Edwards, 1875), *Mithrax hemphilli* Rathbun, 1892, *Mithrax verrucosus* H.Milne Edwards, 1832, and *Nemausa acuticornis* (Stimpson, 1871) (COELHO, 1969, 1971; COELHO & RAMOS, 1972). This work intends to identify and briefly describe the species of this family found in Rocas Atoll, during a sampling program between October 2000 and November 2001.

The length of carapace (cl) was measured on the median line, from the anterior to posterior margin, including rostrum. The width of carapace (cw) was measured at the widest part. The studied specimens are deposited at the Crustacea collection of the Museu Nacional, Rio de Janeiro (MNRJ). Abbreviations: (AAA) A.A.Aguiar; (CRT) C.R.Tavares; (CSS) C.S.Serejo; (DM) D.Moraes; (FBP) F.B.Pitombo; (GN) G.Nunan; (MCR) M.C.Rayol; (NM) N.Magalhães; (PCP) P.C.Paiva; (PSY) P.S.Young; (RB) R.Barroso; (SNB) S.N.Brandão.

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[3] *In memoriam*.

SYSTEMATIC SECTION

Family Majidae Samouelle, 1819
Genus *Chorinus* Latreille, 1823
Chorinus heros (Herbst, 1790)
(Fig.1)

Cancer heros Herbst, 1790:pl.42, fig.1.

Chorinus heros – Rathbun, 1925:305, fig.101, pl.107, pl.246, figs.3-5; Abele & Kim, 1986:44, 549, fig.b; Melo, 1996:254.

Material examined – Rocas Atoll, no detailed locality, GN and DM coll. 22/Nov/1982, 1♀ , cl: 48.5mm, cw: 26.8mm, MNRJ 4673; 3°51,680'S - 33°49,601'W, 19m, PSY, PCP and AAA coll. 16/Oct/2000, 6♂ , cl: 2.6-4.0mm, cw: 1.6-2.3mm, MNRJ 17484.

Description – Two long rostral horns, with simple and curved setae, and with lateral margin denticulated (Fig.1a). Carapace oval, anterior third deflexed with some short truncate or long spines; one large preorbital spine curved and directed forward, and two smaller spines posterior to preorbital; one hepatic spine posterior to orbital, and one gastric spine posterior to hepatic; posterior two thirds smooth (Fig.1a); cervical and cardiac grooves present, but not well defined. Antennae 2 thin and long, basal article with a spine on distal margin and a truncate spine on lateral proximal margin (Fig.1b). Third maxilliped with simple setae on lateral margin of its articles (Fig.1c). One truncate spine on anterolateral angle of bucal cavity, and one between lateral proximal margin of antennae 2 and anterolateral angle of bucal cavity. Chelipeds with some setae, without hiatus between fingers (Fig.1d). Pereopods 2-5 setose.

Habitat – Found between seaweed and sponges.

Distribution – East coast of the USA, Gulf of Mexico, Antilles, Venezuela, and Brazil - from Ceará to Bahia (Melo, 1996); Rocas Atoll (new occurrence).

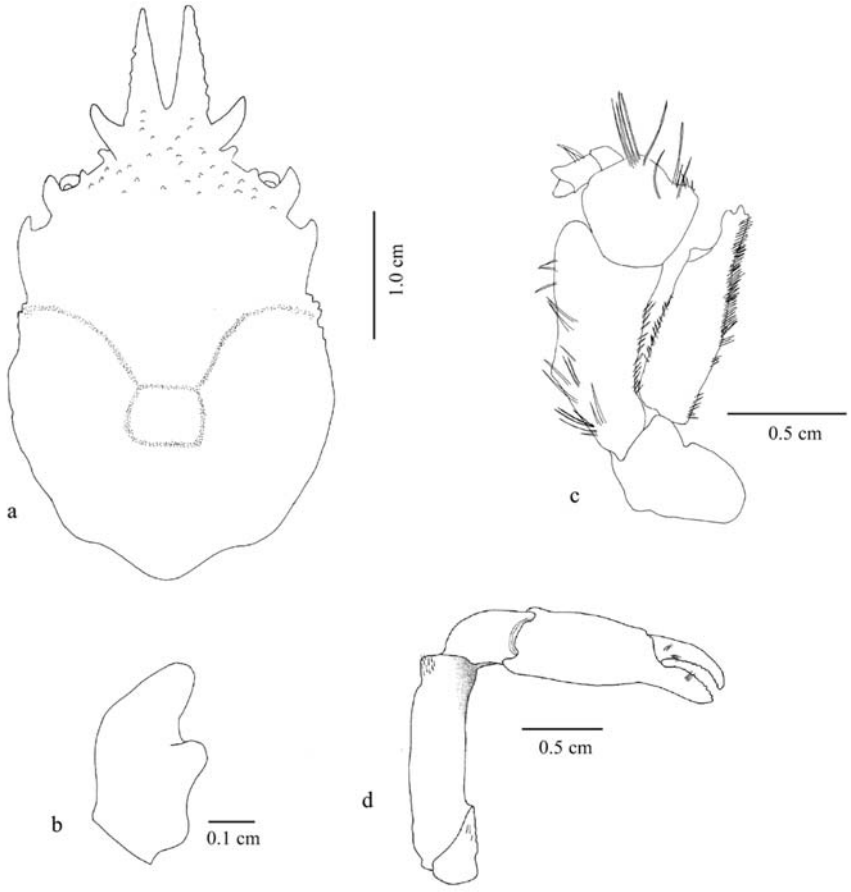

Fig.1- *Chorinus heros* (Herbst, 1790). MNRJ 4673, ♀ , cl: 48.5mm, cw: 26.8mm. a) Carapace, dorsal view; b) Left antenna 2, basal article; c) Left maxilliped 3, ventral view; d) Left cheliped, dorsal view.

Genus *Macrocoeloma* Miers, 1879
Macrocoeloma concavum Miers, 1886
(Fig.2)

Macrocoeloma concava MIERS, 1886:79, pl.10, figs.2-2b.

Macrocoeloma concavum – RATHBUN, 1925:487, pl.170, fig.3, pl.171, fig.3; COELHO & RAMOS, 1972:218; MELO, 1996:216.

Material examined – Rocas Atoll, no detailed locality, PSY, PCP and AAA coll. 16/Oct/2000, 1♀ (juvenile), cl: 9.1mm, cw: 7.6mm, MNRJ 17481; PSY, PCP and AAA coll. 23/Oct/2000, 1♂, cl: 2.3mm, cw: 2.2mm, MNRJ 17483; FBP and RB coll. 03/Jan/2001, 1♂, cl: 2.6mm, cw: 1.9mm, MNRJ 17482; 3°51,680'S, 33°49,604'W, 9m.

Description – Two long, acute rostral spines, divergent and curved upward (Fig.2a). Carapace, hepatic region concave; lateral angle with one spine; intestinal and cardiac regions with one spine each, three truncate spines on gastric, one on urogastric, and one on branchial regions (Fig.2a); lateral margin of the body with some small, truncate spines to pterigostomial region. Body and legs covered by short setae, and some long and curved setae (Fig.2a). Tubular orbits with a preorbital spine directed forward and a postorbital spine directed laterally (Fig.2a). Basal article of antennae 2 with an anterior spine (Fig.2b). Inner lateral margin of ischium of third maxilliped setose, with some small spines (Fig.2c). Chelipeds covered with very small spines; a proximal truncate spine on palm; fingers 1/2 of length of propodus; palm with approximately the same size of merus; merus with one distal spine and two truncate spines, one distal and one proximal (Fig.2d).

Habitat – Found between seaweed, calcareous algae, and sponges.

Distribution – Antilles and Brazil - from Maranhão to Bahia, Fernando de Noronha (MELO, 1996); Rocas Atoll (new occurrence).

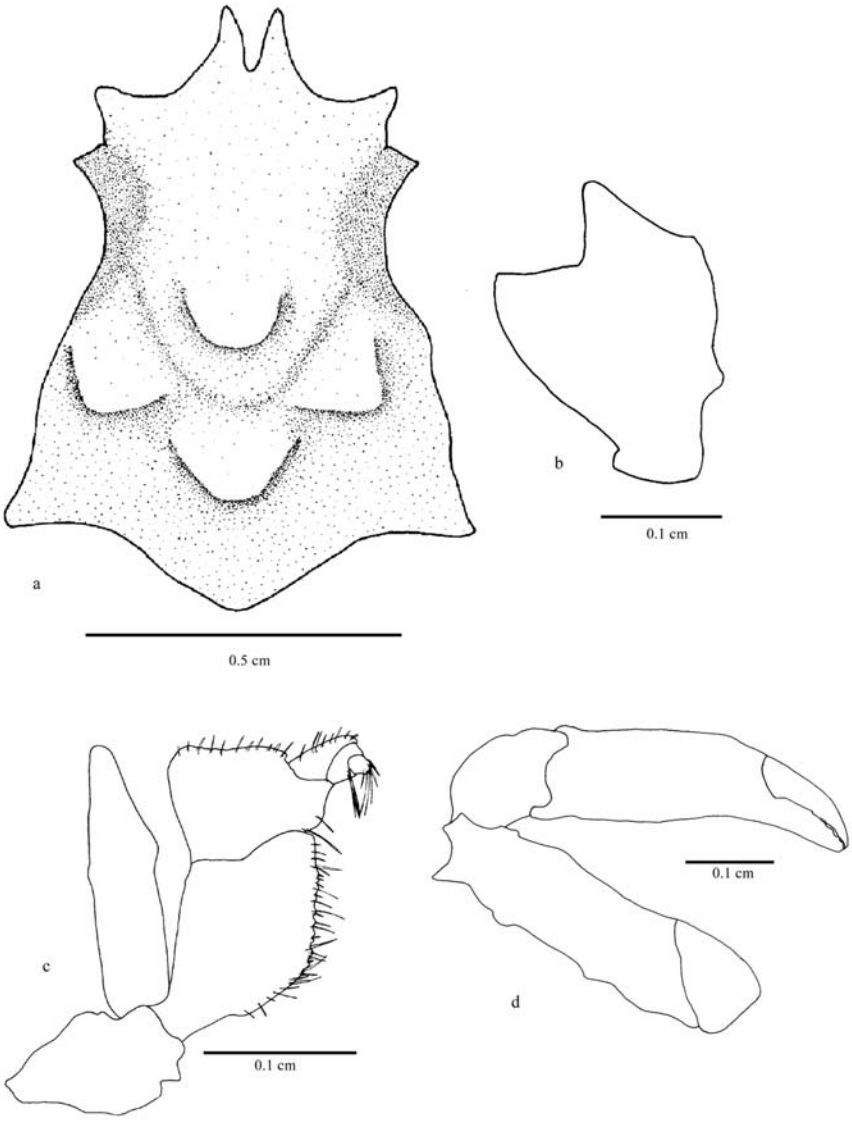

Fig.2- *Macrocoeloma concavum* Miers, 1886. MNRJ 17481, juvenile ♀, cl: 9.1mm, cw: 7.6mm. a) Carapace, dorsal view; b) Rigth antenna 2, basal article; c) Rigth maxilliped 3, ventral view; d) Left cheliped, dorsal view.

Genus *Microphrys* H.Milne Edwards, 1851
Microphrys bicornutus (Latreille, 1825)
(Fig.3)

Pisa bicornuta Latreille, 1825:141.

Microphrys bicornutus – Rathbun, 1925:489, pl.175; Coelho, 1969:237; Coelho, 1971:141; Coelho & Ramos, 1972:216; Williams, 1984:330, fig.266; Abele & Kim, 1986:46, 521, figs.d-e; Melo, 1996:224.

Material examined – Rocas Atoll, Pools, PSY, PCP and AAA coll. 05/Oct/2000, 1♀ , cl: 15.2mm, cw: 12.9mm; 2♂ , cl:15.4-19.2mm, cw: 11.9-16.4mm, MNRJ 16655; PSY, PCP and AAA coll. 07/Oct/2000, 1♀ (juvenile), cl: 5.4mm, cw: 4.0mm; 1♂ , cl: 2.3mm, cw: 2.1mm, MNRJ 17516; PSY, PCP and AAA coll. 10/Oct/2000, 1♀ (juvenile), cl: 5.9mm, cw: 4.8mm; 2♂ , cl: 3.2-4.9mm, cw: 3.0-3.7mm, MNRJ 17511; PSY, PCP and AAA coll. 14/Oct/2000, 5♂ , cl: 5.9-12.8mm, cw: 4.1-10.8mm, MNRJ 17513; PSY, PCP and AAA coll. 17/Oct/2000, 2♀ (ovigerous), cl: 14.9-18.8mm, cw: 12.7-16.4mm; 1♂ , cl: 17.5mm, cw: 15.1mm, MNRJ 16659; PSY, PCP and AAA coll. 18/Oct/2000, 1♀ (ovigerous), cl: 9.1mm, cw: 6.9mm; 1♀ , cl: 6.7mm, cw: 5.2mm; 1♂ , cl: 5.6mm, cw: 4.2mm, MNRJ 16658; PSY, PCP and AAA coll. 25/Oct/2000, 2♂ , cl: 19.4-23.5mm, cw: 16.1-20.1mm; 3♀ (ovigerous), cl: 11.5-16.6mm, cw: 10.2-14.9mm, MNRJ 16650; PSY, PCP and AAA coll. 27/Oct/2000, 1♂ , cl: 8.7mm, cw: 7.0mm, MNRJ 16660; PSY, PCP and AAA coll. 20/Oct/2000, 1♀ (ovigerous), cl: 9.3mm, cw: 7.6mm; 4♂ , cl: 5.6-8.7mm, cw: 3.5-7.4mm, MNRJ 17510; PSY, PCP and AAA coll. Oct/2000, 1♂ , cl: 12.5mm, cw: 9.5mm, MNRJ 17154; FBP and RB coll. 21/Dec/2000, 2♂ , cl: 2.5-4.4mm, cw: 2.0-4.1mm, MNRJ 17518; FBP and RB coll. 24/Dec/2000, 1♂ , cl: 4.8mm, cw: 3.8mm, MNRJ 17517; FBP and RB coll. 28/Dec/2000, 1♀ , cl: 9.3mm, cw: 7.8mm, MNRJ 17509; FBP and RB coll. 30/Dec/2000, 1♀ , cl: 7.5mm, cw: 5.8mm, MNRJ 17153; FBP and RB coll. 02/Jan/2001, 2♀ (ovigerous), cl: 8.4-15.4mm, cw: 7.0-14.4mm; 1♂ , cl: 8.5mm, cw: 6.1mm, MNRJ 17157; SNB, CRT and NM coll. 01/Jul/2001, 1♂ , cl: 19.8mm, cw: 17.1mm, MNRJ 17508; SNB, CRT and NM coll. 02/Jul/2001, 1♀ (juvenile), cl: 5.4mm, cw: 4.1mm, MNRJ 16663; SNB, CRT and NM coll. 03/Jul/2001, 1♂ , cl: 24.2mm, cw: 20.7mm, MNRJ 16665; SNB, CRT and NM coll. 04/Jul/2001, 1♀ (ovigerous), cl: 12.2mm, cw: 10.5mm, MNRJ 16661; SNB, CRT and NM coll. 12/Jul/2001, 2♂ , cl: 12.4-18.4mm, cw: 9.8-15.5mm; 1♀ (ovigerous), cl: 10.1mm, cw: 8.2mm, MNRJ 16664; CSS and MCR coll. 18/Oct/2001, 1♀ (juvenile), cl: 3.5mm, cw: 6.6mm, MNRJ 16662; CSS and MCR coll. 20/Oct/2001, 1♀ (ovigerous), cl: 11.8mm, cw: 9.9mm, MNRJ 16653; CSS and MCR coll. 22/Oct/2001, 2♂ , cl: 11.1-12.5mm, cw: 9.1-10.7mm, MNRJ 16652; CSS and MCR coll. Oct/2001, 1♂ , cl: 18.5mm, cw: 15.6mm, MNRJ 17514; Inner Laguna, FBP and RB coll. 18/Dec/2000, 1♀ (juvenile), cl: 9.1mm, cw: 7.2mm; 3♂ , cl: 3.6-11.9mm, cw: 2.7-9.9mm, MNRJ 16657; FBP and RB coll. Dec/2000, 1♀ , cl: 13.0mm, cw: 10.9mm, MNRJ 17505; CSS and MCR coll. 07/Nov/2001, 3♀ (juveniles), cl: 6.3-9.6mm, cw: 4.3-7.4mm, MNRJ 16656; 3°51,751'S, 38°48,066'W, PSY, PCP and AAA coll. 05/Oct/2000, 10♀ (juveniles), cl: 5.3-15.0mm, cw: 3.6-13.0mm; 4♂ , cl: 7.4-9.8mm, cw: 1.3-7.4mm, MNRJ 16654; no detailed locality, PSY, PCP and AAA coll. 05/Oct/2000, 3♂ , cl: 2.7-4.2mm, cw: 1.7-3.0mm, MNRJ 17507; PSY, PCP and AAA coll. 16/Oct/2000, 1♀ (juvenile), cl: 9.2mm, cw: 7.6mm, MNRJ 17158; PSY, PCP and AAA coll. 23/Oct/2000, 1♂ , cl: 5.7mm, cw: 4.1mm, MNRJ 17506; PSY, PCP and AAA coll. Oct/2000, 3♂ , cl: 8.1-17.1mm, cw: 5.6-15.1mm; 1♀ (juvenile), cl: 13.0mm, cw: 10.3mm; 1♀ (ovigerous), cl: 14.2mm, cw: 11.9mm; 2♀ , cl: 13.2-14.3mm, cw: 10.6-12.0mm, MNRJ 16651; PSY, PCP and AAA coll. Oct/2000, 1♀ (juvenile), cl: 4.7mm, cw: 3.4mm, MNRJ 17515; SNB, CRT and NM coll. Jul/2000, 1♀ (ovigerous), cl: 17.1mm, cw: 15.0mm; 1♂ , cl: 18.3mm, cw: 15.8mm, MNRJ 17512.

Description – Two long and setose rostral spines, divergent at base, extremities curving inward (Fig.3a). Carapace sub triangular, longer than wide, with some setae and small truncate spines; with a spine at the lateral angle, and a small one behind that spine; cervical and cardiac grooves well defined; hepatic region depressed; cardiac region elevated, with 4-5 truncate spines; one truncate spine on each side of cardiac groove; intestinal region with four truncate spines, distributed as an arc. Orbits composed of basal article of antennae 2, with one ventral spine, one dorsal spine, and one spine between ventral and dorsal ones. Basal article of antennae 2 with a spine and a small one on the base of that spine (Fig.3b). Third maxilliped, ischium with some small spines and with inner margin setose; anterior margin of merus with a truncate setose spine (Fig.3c). Chelipeds with dark and irregular spots; fingers either without hiatus, with the

cutting edge serrate, or with a hiatus, with anterior extremity of cutting edges serrate and with a proximal truncate spine on fixed finger (Fig.3d,e); carpus either smooth or with a truncate spine on outer surface; merus smooth or with a row of three spines on anterior surface. Pereopods 2-5 setose; propodus and carpus unarmed, merus with a row of until four spines on anterior surface.

Remarks – *Microphrys bicornutus* was described as having a row of three or four spines on the merus of chelipeds (RATHBUN, 1925), but the examined specimens have a row varying from 0 to 3 spines, except for one male (MNRJ 16650) that has four spines. MELO (1996), RATHBUN (1925), and WILLIAMS (1984) also observed specimens of *M. bicornutus* with a hiatus between the fingers, which was variable in Rocas specimens.

Habitat – Most samples of *Microphrys bicornutus* were found between seaweeds and calcareous algae, all from shallow waters, and most specimens were covered by algae and sponges.

Distribution – East of USA, Gulf of Mexico, Antilles, Central America, north of South America, Brazil - from Maranhão to Rio Grande do Sul, Fernando de Noronha and Rocas Atoll (COELHO, 1969, 1971; COELHO & RAMOS, 1972; MELO, 1996).

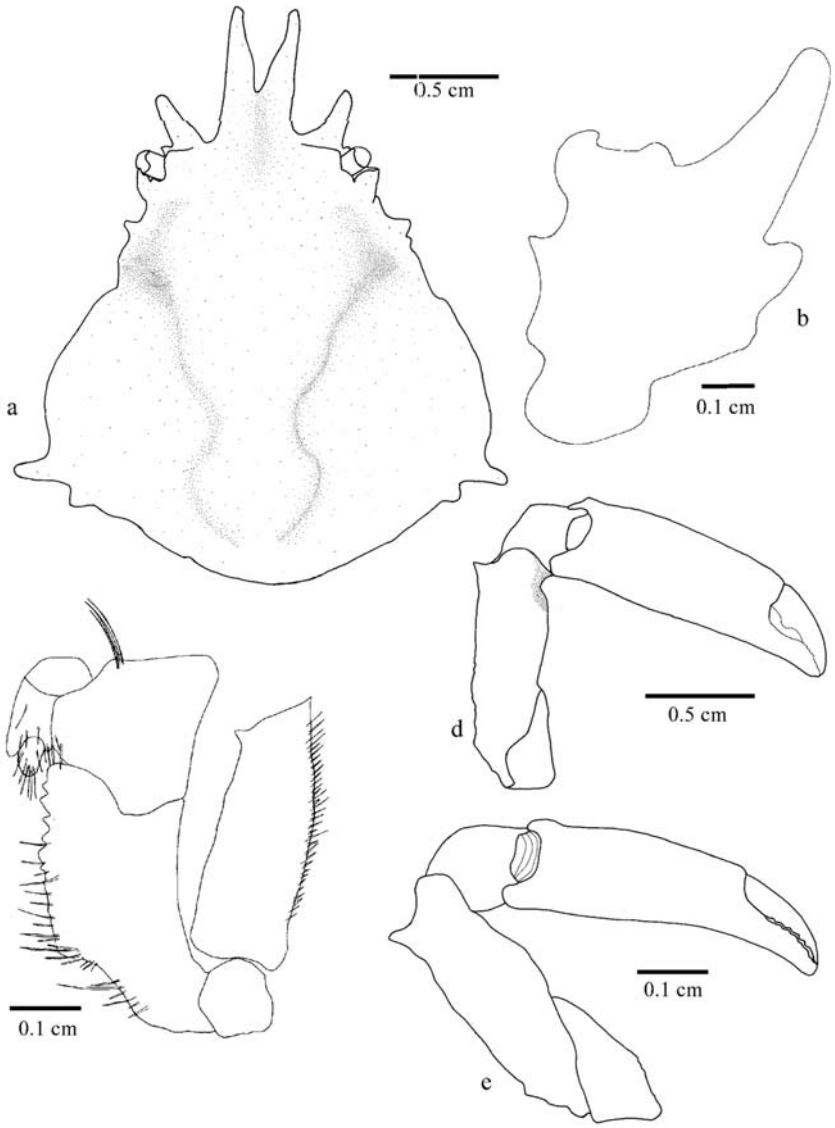

Fig.3- *Microphrys bicornutus* (Latreille, 1825). MNRJ 16655, ♂, cl: 19.2mm, cw: 16.4mm. a) Carapace, dorsal view; b) Left antenna 2, basal article; c) Left maxilliped 3, ventral view; d) Left cheliped, dorsal view. MNRJ 17153, ♀, cl: 7.5mm, cw: 5.8mm. e) Left cheliped, dorsal view.

Genus *Mithraculus* White, 1847
Mithraculus forceps (A.Milne-Edwards, 1875)
(Fig.4)

Mithrax (*Mithraculus*) *forceps* A.MILNE-EDWARDS, 1875:109, pl.23, fig.1; RATHBUN, 1925:431, pl.156.

Mithraculus forceps – COELHO & RAMOS, 1972:216; WILLIAMS, 1984, figs.272, 275f; ABELE & KIM, 1986:47, 529, figs.c-d; MELO, 1996:229.

Material examined – Rocas Atoll, Pools, PSY, PCP and AAA coll. 13/Oct/2000, 2♂, cl: 13.0-16.8mm, cw: 14.5-18.8mm, MNRJ 15620; PSY, PCP and AAA coll. 20/Oct/2000, 1♀ (juvenile), cl: 12.7mm, cw: 8.4mm, MNRJ 17492; PSY, PCP and AAA coll. 25/Oct/2000, 1♂, cl: 6.8mm, cw: 7.3mm, MNRJ 15617; PSY, PCP and AAA coll. 26/Oct/2000, 22♂, cl: 5.8-16.8 mm, cw: 6.3-20.2mm; 9♀ (ovigerous), cl: 8.9-12.7mm, cw: 9.5-14.9mm; 3♀, cl: 9.2-11.0mm, cw: 10.7-13.1mm, MNRJ 15613;

PSY, PCP and AAA coll. 27/Oct/2000, 5♂, cl: 4.9-8.6 mm, cw: 4.8-9.5mm, 1♀ (ovigerous), cl: 10.3mm, cw: 11.9mm, MNRJ 15612; PSY, PCP and AAA coll. 27/Oct/2000, 1♀ (juvenile), cl: 4.4mm, cw: 4.4mm; 3♂, cl: 2.8-4.3mm, cw: 2.7-4.4mm, MNRJ 17494; PSY, PCP and AAA coll. 28/Oct/2000, 2♂, cl: 8.2-13.5mm, cw: 8.5-15.3mm, MNRJ 15616; FBP and RB coll. 22/Dec/2000, 2m, cl: 3.2-3.7mm, cw: 3.0-3.5mm, MNRJ 17488; FBP and RB coll. 28/Dec/2000, 1♂, cl: 18.4mm, cw: 21.8mm, MNRJ 15611; FBP and RB coll. 30/Dec/2000, 1♂, cl: 7.8mm, cw: 8.1mm, MNRJ 16786; FBP and RB coll. 02/Jan/2001, 2♀, cl: 12.1-12.2mm, cw: 12.5-13.1mm; 2♀ (ovigerous), cl: 11.2-12.2mm, cw: 12.4-13.6mm; 6♂, cl: 3.6-14.2mm, cw: 3.4-15.5mm, MNRJ 16787; FBP and RB coll. Dec/2000, 6♂, cl: 1.6-3.2mm, cw: 1.3-2.9mm, MNRJ 17495; CSS and MCR coll. 22/Oct/2001, 1♂, cl: 9.1mm, cw: 10.1mm, MNRJ 16190; Inner Laguna, PSY, PCP and AAA coll. 14/Oct/2000, 1♀ (juvenile), cl: 12.0mm, cw: 12.9mm, MNRJ 15619; PSY, PCP and AAA coll. 15/Oct/2000, 5♂, cl: 3.2-10.6mm, cw: 3.0-12.3mm; 2♀ (ovigerous), cl: 7.9-8.2mm, cw: 8.8-9.3mm; 2♀, cl: 8.3-9.5mm, cw: 9.1-10.7mm, MNRJ 15615; FBP and RB coll. 18/Dec/2000, 4♀ (ovigerous), cl: 7.7-10.7mm, cw: 7.8-11.6mm; 3♂, cl: 7.2-12.3mm, cw: 7.9-13.6mm, MNRJ 15614; CSS and MCR coll. 07/Nov/2001, 1♂, cl: 5.1mm, cw: 5.3mm, MNRJ 17151; No detailed locality, PSY, PCP and AAA coll. 11/Oct/2000, 1♂, cl: 7.7mm, cw: 7.3mm, MNRJ 15618; PSY, PCP and AAA coll. 16/Oct/2000, 3♂, cl: 3.4-4.1mm, cw: 3.0-3.7mm, MNRJ 17493; PSY, PCP and AAA coll. Oct/2000, 5♂, cl: 1.5-3.2mm, cw: 1.7-2.9mm, MNRJ 17490; FBP and RB coll. Dec/2000, 5♂, cl: 5.0-18.1mm, cw: 4.9-9.0mm, MNRJ 17491.

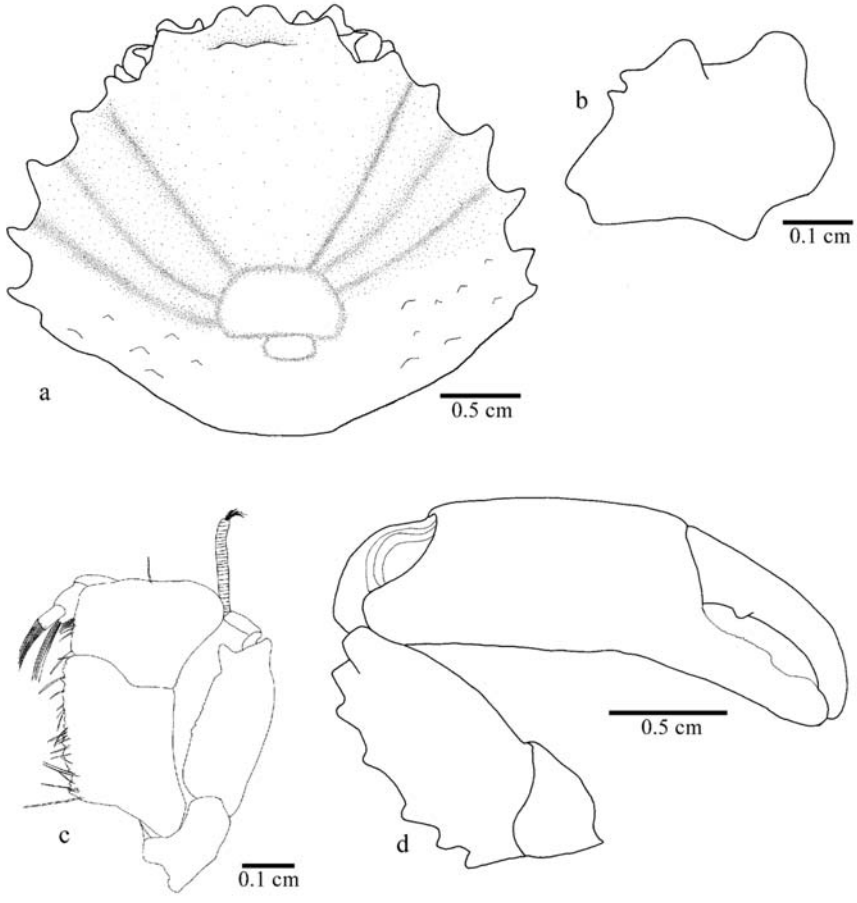

Fig.4- *Mithraculus forceps* (A.Milne-Edwards, 1875). MNRJ 15611, ♂, cl: 7.8mm, cw: 8.1mm. a) Carapace, dorsal view; b) Left antenna 2, basal article; c) Left maxilliped 3, ventral view; d) Left cheliped, dorsal view.

Description – Rostrum bifid, truncate, separated near the base (Fig.4a). One pair of small truncate spines posterior to rostrum, and another pair posterior to first pair, in line with inner dorsal orbital spine. Carapace, anterolateral margin with four spines directed forward; one groove between the first and the second anterolateral spine, another one between the second and the third antero lateral spine, and another one between the third and the fourth anterolateral spines; hepatic, gastric and cardiac regions with truncate spines. Orbits composed by the basal article of antennae 2, two ventral, and three dorsal spines. Basal article of antennae 2 with 2-3 spines, enlarged (Fig.4b). Third maxilliped, margin of ischium armed with some small spines (Fig.4c). Chelipeds of same size; a large hiatus between fingers; dactyl with a posterior spine or with a row of small spines; fixed finger with a row of small spines on posterior part; carpus with 1-2 inner lateral spine, sometimes with small spines on the superior part; merus with 1-2 spines on inner

surface, 5-6 spines on outer surface and 2-3 small truncate spines on upper surface (Fig.4d). Pereopods 2-5 setose, with some small spines.

Habitat – Sampled from calcareous bottoms, but one sample was collected between seaweeds, all of them from shallow waters.

Distribution – From North Carolina to south Florida (USA), Antilles, Venezuela, and Brazil - Maranhão to São Paulo, Rocas Atoll and Fernando de Noronha (Coelho, 1969, 1971; Coelho & Ramos, 1972; Melo, 1996).

Genus *Mithrax* Desmarest, 1823
Mithrax verrucosus H. Milne Edwards, 1832
(Figs.5-8)

Mithrax verrucosus H.Milne Edwards, 1832: no pagination, pl.4; Rathbun, 1925:400, pl.144; Coelho & Ramos, 1972:215; Williams, 1984:336, figs. 271, 275c; Abele & Kim, 1986:47, 525, figs.c-d; Melo, 1996:239.

Material examined – Rocas Atoll, Pools, PSY, PCP and AAA coll. 13/Oct/2000, 2♂, cl: 7.7-9.8mm, cw: 6.9-10.8mm, MNRJ 15600; PSY, PCP and AAA coll. 17/Oct/2000, 1♀, cl: 23.1mm, cw: 26.9mm, MNRJ 15605; PSY, PCP and AAA coll. 25/Oct/2000, 2♂, cl: 9.7-14.5mm, cw: 10.0-16.7mm, MNRJ 15608; PSY, PCP and AAA coll. 26/Oct/2000, 5♂, cl: 5.3-19.9mm, cw: 4.7-22.6mm, 3♀, cl: 16.0-21.4mm, cw: 18.7-26.3mm, MNRJ 15601; PSY, PCP and AAA coll. 27/Oct/2000, 2♂, cl: 6.5-6.6mm, cw: 5.9-6.2mm, 1♀, cl: 13.5mm, cw: 15.1mm, MNRJ 15607; PSY, PCP and AAA coll. 28/Oct/2000, 1♂, cl: 7.2mm, cw: 7.0mm, MNRJ 15602; PSY, PCP and AAA coll. 24-28/Oct/2000, 3♂, cl: 30.2-46.3mm, cw: 57.6-58.1mm, 1♀, cl: 30.2mm, cw: 38.0mm, MNRJ 16341; FBP and RB coll. 28/Dec/2000, 2♂, cl: 22.3-41.7mm, cw: 26.3-53.3mm, MNRJ 15609; SNB, CRT and NM coll. 03/Jul/2001, 1♀ (juvenile), cl: 16.6mm, cw: 18.5mm, MNRJ 15690; Inner Laguna, PSY, PCP and AAA coll. 14/Oct/2000, 3♂, cl: 11.6-14.3mm, cw: 12.4-15.0mm, MNRJ 15604; PSY, PCP and AAA coll. 15/Oct/2000, 1♂, cl: 17.7mm, cw: 20.6mm, MNRJ 15606.

Description – Rostrum small, bifid, truncate, setose, separated near base (Fig.5a). Carapace covered with some short truncate spines; lateral margin with four pairs of spines, the anterior ones smaller than the posterior; subhepatic region with few spines and some plumose setae. Orbits composed by the basal article of antennae 2, three dorsal and two lateral spines. Antennae 2 with basal article expanded, three lateral spines, middle one largest, truncate or not (Fig.5b, 6c). Outer lateral margin of ischium of third maxilliped with some spines (Fig.5c, 6d). Chelipeds of same size; fingers approximately ½ length of propodus; palm smooth; dactyl with a small truncate spine on inner surface; inner margin of carpus with 2-3 spines, denticulate or not; upper surface of merus

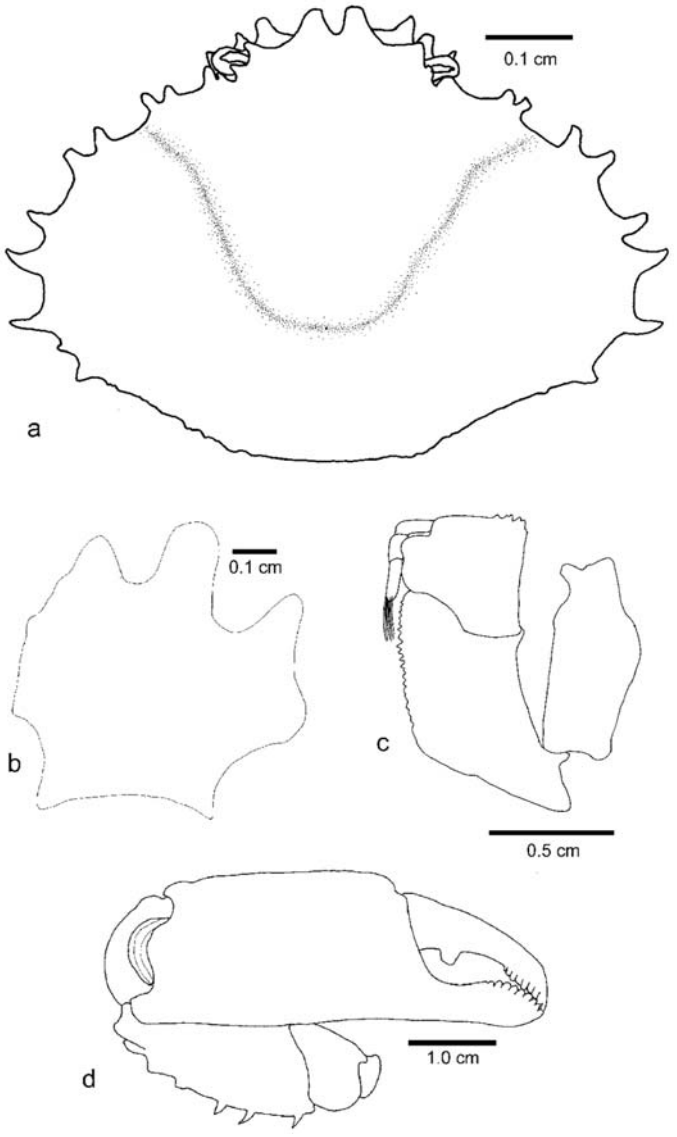

Fig.5- *Mithrax verrucosus* H.Milne Edwards, 1832. MNRJ 16341, ♂, cl: 44.9mm, cw: 58.1mm. a) Carapace, dorsal view; b) Left antenna 2, basal article; c) Left maxilliped 3, ventral view; d) Left cheliped, dorsal view.

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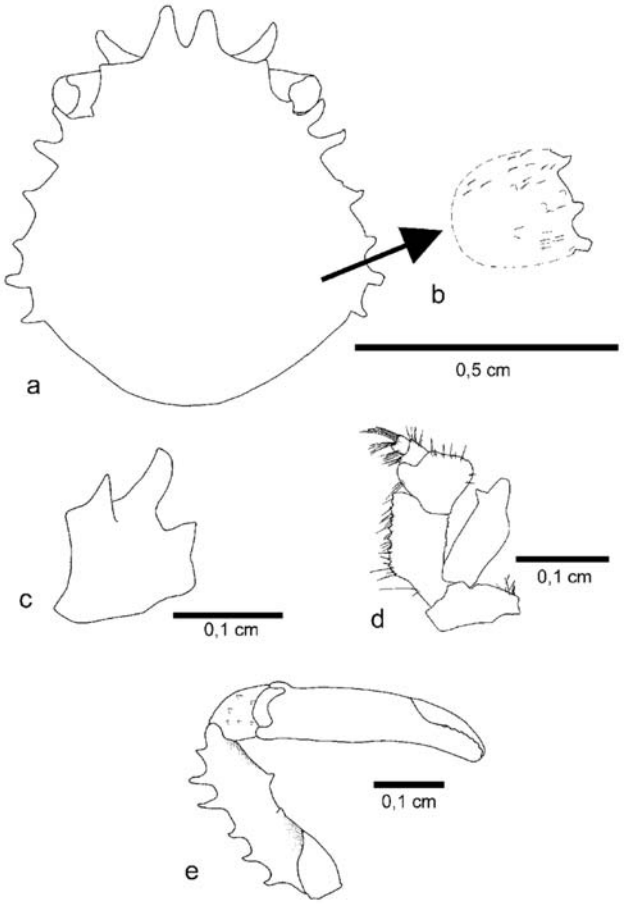

Fig.6- *Mithrax verrucosus* H.Milne Edwards, 1832. MNRJ 15602, juvenile ♂, cl: 7.2mm, cw: 7.0mm. a) Carapace, dorsal view; b) detail of the carapace; c) Left antenna 2, basal article; d) Left maxilliped 3, ventral view; e) Left cheliped, dorsal view.

7

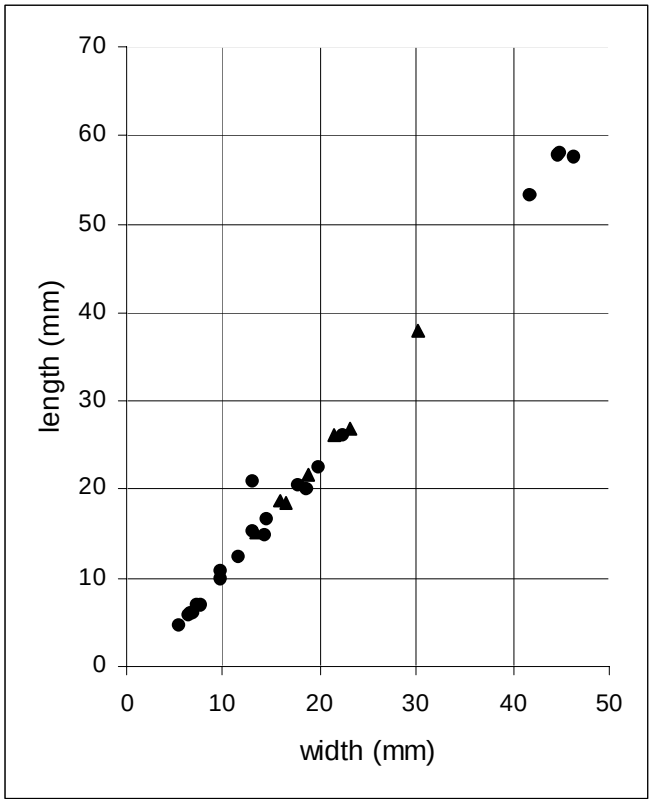

Fig.7- *Mithrax verrucosus* H.Milne Edwards, 1832. Length/width rate; ♂ (●), ♀ (▲).

covered with 5-16 spines (Fig.5d). Pereopods 2-5 with plumose setae and spines.

Remarks – *Mithrax verrucosus* rostral spines are larger in adults than in juveniles. Only juveniles present a small spine on the superior proximal part of palm of chelipeds. The carpus has some small spines only in the smaller specimens (Fig.6e). The carapace is wider than long in adults, and in juveniles with carapace length larger than 10.0mm. Juveniles with carapace length less than 10.0mm have the carapace a little longer than wide, at least in males (Fig.6a, 7). The same pattern appears to occur in females but the specimens examined did not present any specimen less than 13.5mm (Fig.8). Adults present only short, truncate spines on the carapace in adults. Juveniles present the spines not truncate and also have short setae covering the carapace (Fig.6b).

Mithrax verrucosus is the largest majid found in Rocas atoll, reaching 46.3mm of carapace length.

Habitat – Only once *M. verrucosus* was found between seaweed, the others were found in calcareous bottoms, all of them in shallow waters.

Distribution: South Carolina, Florida, Gulf of Mexico, north of South America, Brazil - Fernando de Noronha and Rocas Atoll (Coelho, 1969, 1971; Coelho & Ramos, 1972; Melo, 1996).

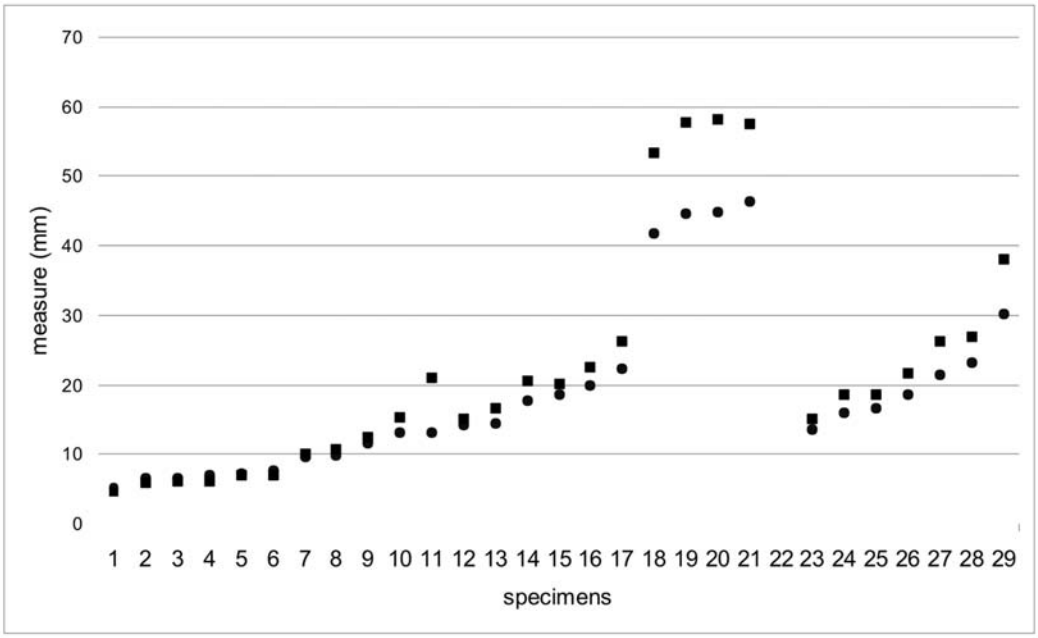

Fig.8- *Mithrax verrucosus* H.Milne Edwards, 1832. Length (●) and width (■) of the specimens; ♂ (1-21), ♀ (23-29).

Genus *Nemausa* Stimpson, 1870
Nemausa acuticornis (Stimpson, 1870)
(Fig.9)

Mithrax acuticornis Stimpson, 1870:116.

Mithrax (*Mithrax*) *acuticornis* – Rathbun, 1925:388, pl.136, figs.1-2, pl.257, fig.1.

Nemausa acuticornis – Melo, 1996:241.

Material examined – Rocas Atoll, Pool, PSY, PCP and AAA coll. 28/Oct/2000, 1♂♂, cl: 8.4mm, cw: 7.2mm, MNRJ 17152.

Description – Two acute rostral spines, distally slightly curved upward, outer margin with 2-3 denticles (Fig.9a). Carapace, lateral margin with one hepatic spine, followed by three smaller ones at same line; subhepatic region with four small spines; gastric and branchial regions covered with some truncate spines; cardiac and intestinal region with four short truncate spines; cervical groove well defined**.** Orbits composed of one wide and serrate preorbital spine, one postorbital spine with external margin serrate directed forward, one spine between the preorbital spine and the postorbital spine measuring ½ length of postorbital spine. One spine between postorbital spine and basal article of antennae 2. Basal article of antennae 2 with three spines, outer and middle spines denticulated on external margin; inner spine smooth, located at base of first movable segment of antennae 2 (Fig.9b). Outer lateral margin of ischium and anterior margin of merus of third maxilliped with some short truncate spines (Fig.9c). Chelipeds, cutting edge of fingers serrate and with a small posterior hiatus; palm with two small truncate spines on proximal region; propodus about twice length of fingers carpus granulate; merus with one row with six dorsal spines, one row with 3-4 ventral external spines and one inner dorsal row with 4-5 spines (Fig.9d). Pereopods 2-5 setose and with some spines.

Remarks – Rathbun (1925) observed *Nemausa acuticornis* with a double hepatic spine, with a small anterior spine on the carapace. Melo (1996) observed that all anterolateral spines have a small anterior spine. The only specimen examined has the spine posterior to the hepatic spine with a small anterior spine; all others are simple.

Habitat – Sampled between seaweed, from a depth of 10m.

Distribution – North Carolina to Florida, Gulf of Mexico, Antilles and Brazil - from Amapá to Rio de Janeiro and Rocas Atoll (Coelho, 1969; Coelho, 1971; Coelho & Ramos, 1972; Melo, 1996).

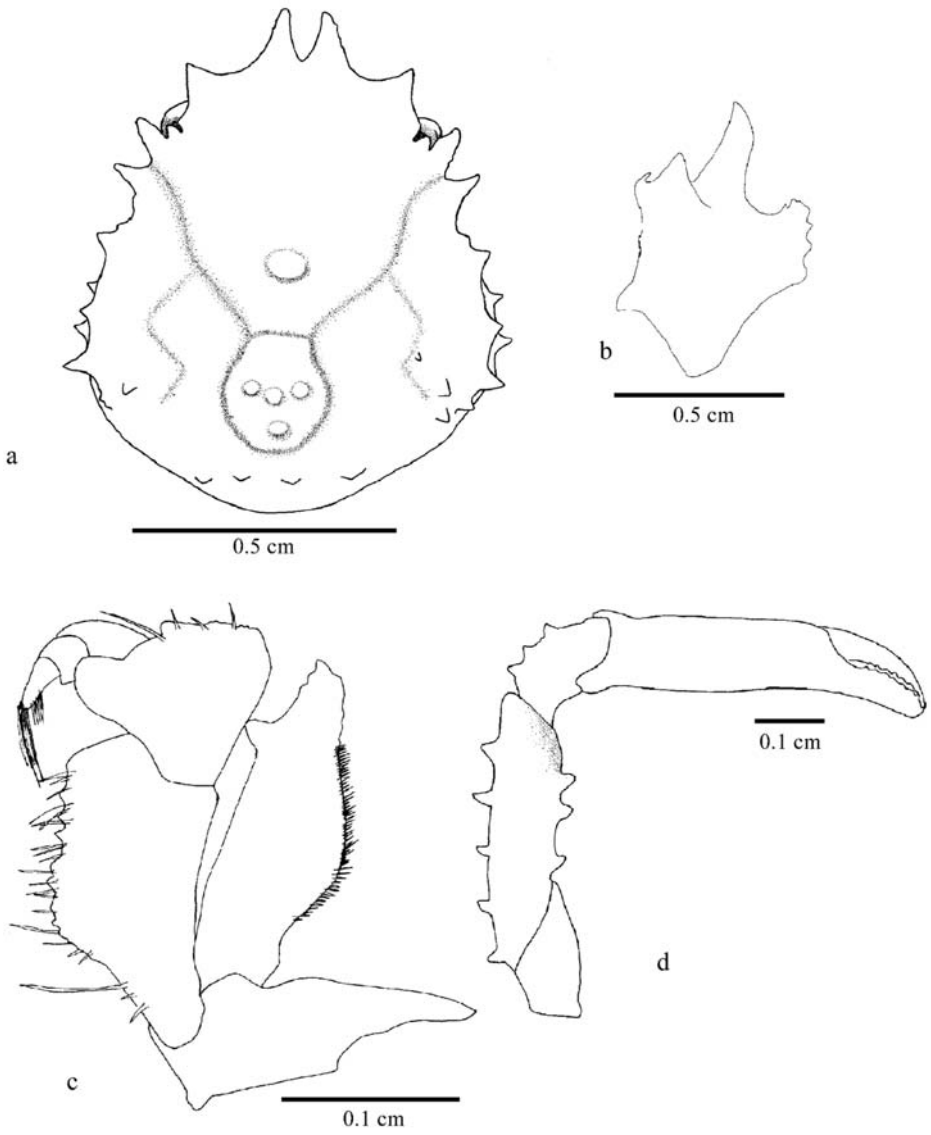

Fig.9- *Nemausa acuticornis* (Stimpson, 1871). MNRJ 17152, ♂, cl: 8.4mm, cw: 7.2mm. a) Carapace, dorsal view; b) Left antenna 2, basal article; c) Left maxilliped 3, ventral view; d) Left cheliped, dorsal view.

Genus *Pitho* Bell, 1835
Pitho lherminieri (Schramm, 1867)
(Fig.10)

Othonia lherminieri Schramm *in* Desbonne & Schramm 1867:20.

Pitho lherminieri – Rathbun, 1925:362, pl.128, figs.1-2, pl.129, figs.1-2, pl.252, fig.2; Coelho & Ramos, 1972:210; Williams, 1984:311, figs. 246, 259a; Abele & Kim, 1986:48, 531, figs.d-e; Melo, 1996:271.

Material examined – Rocas Atoll, no detailed locality, FBP and RB coll. 28/Dec/2000, 1♀ (juvenile), cl: 9.9mm, cw: 8.7mm, MNRJ 17487; SNB, CRT and NM coll. 03/Jul/2001, 1♀ (juvenile), cl: 7.2mm, cw: 5.8mm, MNRJ 17486.

Description – Two rostral spines wide, divergent at base with extremities curving inward and upward; margins setose (Fig.10a). Carapace covered with some curved setae and truncate spines (Fig.10b); anterolateral margin with five spines, two posteriormost strongly reduced in females and

young males (Fig.10a); cervical groove and cardiac region not well defined. Tubular orbits formed by basal article of antennae 2 and with a preorbital and a postorbital spine. Basal article of antennae 2 with one spine between preorbital and postorbital spines (Fig.10c). First movable article of antennae 2 flattened, wider than long. Third maxilliped, inner margin of ischium, proximal outer and inner margins of merus of with spines (Fig.10d). Chelipeds covered with small truncate spines and some simple setae; propodus with two proximal tubercles; fingers without hiatus, cutting edges serrate. Pereopods 2-5 covered with small truncate spines and simple setae; inner margin of dactyl serrate.

Habitat – Found in calcareous bottoms, from intertidal zone up to 10m.

Distribution – North Carolina to west Florida (USA), Gulf of Mexico, Antilles, Brazil - from Pará to São Paulo, Fernando de Noronha (MELO, 1996); Rocas Atoll (new occurrence).

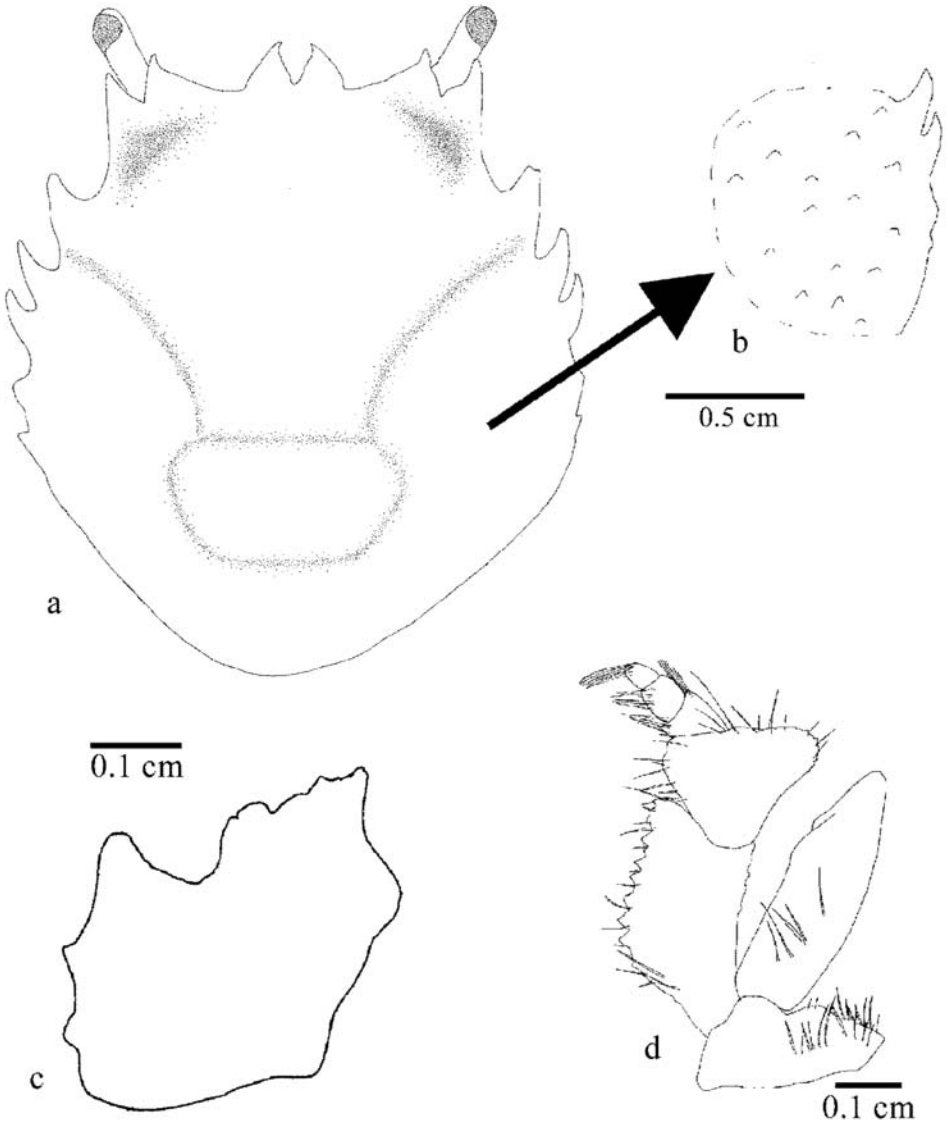

Fig.10- *Pitho lherminieri* (Schramm, 1867). MNRJ 17487, juvenile ♀ , cl: 9.9mm, cw: 8.7mm. a) Carapace, dorsal view; b) Carapace detail; c) Left antenna 2, basal article; d) Left maxilliped 3, ventral view.

Genus *Podochela* Stimpson, 1860
Podochela brasiliensis Coelho, 1972
(Fig.11)

Podochela brasiliensis COELHO, 1972:122, fig.1; MELO, 1996:186.

Material examined – Rocas Atoll, 3°51,680'S, 33°49,604'W, PSY, PCP and AAA coll. 16/Oct/2000, 2♀ (ovigerous), cl: 6.3-6.4mm, cw: 4.1-4.2mm, MNRJ 17485.

Description – Rostrum triangular, not ending in a spine, setose (Fig.11a). Carapace, lateral margin with one spine near gastric region; gastric region elevated, with a small truncate spine and some setae; posterior region, except for cardiac region, depressed. Postorbital short truncate spine inconspicuous. Basal article of antennae 2 slender and long (Fig.11b). Third maxilliped slender with inner lateral margins of ischium and merus and lateral margins of palp setose (Fig.11c). Chelipeds covered with short truncate spines and simple and curved setae; fingers long, about same size as propodus, cutting edges serrate, with a small proximal hiatus; propodus with a row of small truncate spines on upper edge, carpus with a small proximal truncate spine (Fig.11d).

Habitat – Sampled between seaweed and sponges, at 19m depth.

Distribution – Brazil - from Ceará to Sergipe (MELO, 1996); Rocas Atoll (new occurrence).

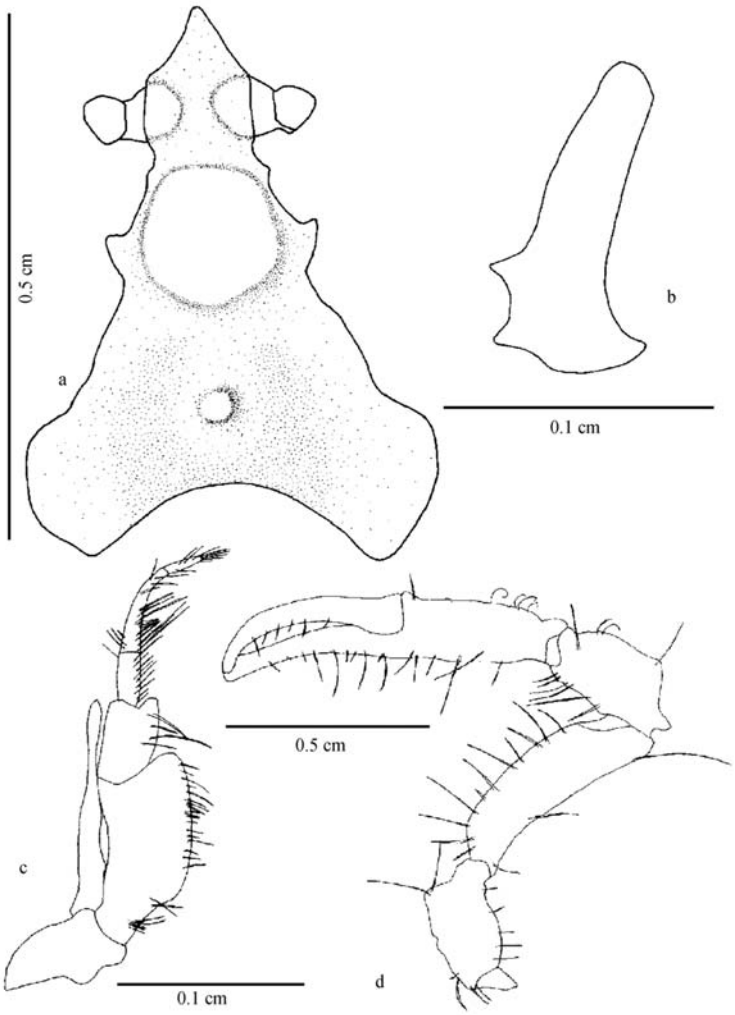

Fig.11- *Podochela brasiliensis* Coelho, 1972. MNRJ 17485, ovigerous ♀ , cl: 6.3mm, cw: 4.1mm. a) Carapace, dorsal view; b) Left antenna 2, basal article; c) Right maxilliped 3, ventral view; d) Right cheliped, dorsal view.

DISCUSSION

Aepinus septemspinosus (A.Milne-Edwards, 1879), *Microphrys bicornutus, Mithraculus forceps, Mithrax hemphilli* Rathbun, 1892, *Mithrax verrucosus,* and *Nemausa acuticornis* were previously recorded to Rocas Atoll (COELHO, 1969, 1971; COELHO & RAMOS, 1972). The new collections contain four species that represent first records for this area: *Chorinus heros*, *Macrocoeloma concavum*, *Pitho lherminieri,* and *Podochela brasiliensis*. *Aepinus septemspinosus* is usually recorded deeper than 10m on hard substrates, a depth range that was poorly sampled during our surveys. *Mithrax hemphilli* is known from the intertidal zone deep to 60m and its record needs confirmation.

Of the eight species collected from Rocas Atoll, *Mithrax verrucosus* occurs only in the Brazilian oceanic islands of Rocas Atoll and Fernando de Noronha. Continental records of this species are found from South Carolina (USA) to Antilles. *Podochela brasiliensis* is the only endemic species from Brazil collected during our surveys. All the other species found in Rocas Atoll occur in the Western Atlantic, including the Brazilian Province (10°-35°S). These species also have their distribution extended to the Guiana Province (5°S-10°N) (LONGHURST, 1998).

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