



FIRST RECORD OF *EURYTHENES OBESUS* (CHEVREUX, 1905)  
(AMPHIPODA, LYSIANASSOIDEA, EURYTHENEIDAE)  
IN BRAZILIAN WATERS <sup>1</sup>

(With 2 figures)

ANDRÉ R. SENNA <sup>2,3</sup>  
CRISTIANA S. SEREJO <sup>2</sup>

**ABSTRACT:** Currently, 14 lysianassoid species are known from the Brazilian waters. Material collected from the Campos Basin, off Rio de Janeiro State, Brazil, during the “Campos Basin Deep-Sea Environmental Project” coordinated by CENPES/PETROBRAS were analyzed. The samples were collected using a semi-balloon door trawl at 1300 and 1608 m depth, aboard of the N/R Astro Garoupa. *Eurythenes obesus* (Amphipoda: Lysianassoidea: Eurytheneidae) was found in these samples and is herein redescribed. The species is widely distributed around the world, but there are no previous records of this species from Brazilian waters.

**Key words:** Amphipoda. *Eurythenes obesus*. Campos Basin. Deep-sea. Brazil.

**RESUMO:** Primeiro registro de *Eurythenes obesus* (Chevreux, 1905) (Amphipoda, Lysianassoidea, Eurytheneidae) para as águas brasileiras.

Atualmente são conhecidas 14 espécies de lysianassoides para as águas brasileiras. Foi analisado material coletado na Bacia de Campos, ao largo do Estado do Rio de Janeiro, Brasil, como resultado do projeto “Caracterização Ambiental de Águas Profundas da Bacia de Campos” coordenado pelo CENPES/PETROBRAS. As amostras foram coletadas por arrasto usando uma rede de porta do tipo Semi-Balloon a 1300 e 1608m de profundidade, abordo do N/R Astro Garoupa. *Eurythenes obesus* (Amphipoda: Lysianassoidea: Eurytheneidae) foi encontrada nessas amostras e é aqui redescreta. Muito embora essa espécie tenha distribuição mundial, não há registros anteriores para as águas brasileiras.

**Palavras-chave:** Amphipoda. *Eurythenes obesus*. Bacia de Campos. Mar profundo. Brasil.

## INTRODUCTION

This study is part of the “Campos Basin Deep-Sea Environmental Project” which has the purpose to make an environmental characterization of the Campos Basin deep-sea area, between 700 and 2,000m depth, off north of Rio de Janeiro State. The knowledge of Crustacea, as well as other benthos groups of this area, is important for monitoring programs implemented by the Brazilian oil company - PETROBRAS. The Campos Basin is about 100,000m<sup>2</sup> in area and is the largest petroleum reserve in Brazilian waters. About 65% of the exploratory camps of PETROBRAS are offshore, above 400m depth ([www2.petrobras.com.br/Petrobras/portugues/plataforma/pla\\_bacia\\_campos.htm](http://www2.petrobras.com.br/Petrobras/portugues/plataforma/pla_bacia_campos.htm)).

The superfamily Lysianassoidea is very abundant and diverse in shallow and deep-sea water (BOUSFIELD,

1982), but there are few records of this group from the Brazilian coast. Currently, only 14 lysianassoid species are known from Brazilian waters (WAKABARA & SEREJO, 1998; SEREJO & WAKABARA, 2003; FREIRE & SEREJO, 2004; SEREJO *et al.*, 2007a, b; SENNA & SEREJO, 2007, 2008). Recently, the group was studied based on the material of REVIZEE Benthos Program which results in five new species (SENNA, 2006). Information on distribution of these species will be given here.

The family Eurytheneidae Stoddart & Lowry, 2004 contains only the genus *Eurythenes* Smith, 1882, including three species: *Eurythenes gryllus* (Lichtenstein *in* Mandt, 1822), *E. obesus* (Chevreux, 1905), and *E. thurstoni* Stoddart & Lowry, 2004. *Eurythenes gryllus* and *E. obesus* are cosmopolitan, scavengers or carnivorous, and usually they are bathy- to abyssopelagic (BOUSFIELD, 1982; BARNARD & KARAMAN, 1991). *Eurythenes thurstoni* is recorded from

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<sup>2</sup> Museu Nacional/UFRJ, Departamento de Invertebrados. Quinta da Boa Vista, São Cristóvão, 20940-040, Rio de Janeiro, RJ, Brasil.

<sup>3</sup> E-mail: ar.senna@hotmail.com.

SE Indian Ocean, Gulf of Mexico, and Caribbean Sea and is an epibenthic scavenger or perhaps a midwater predator or scavenger (STODDART & LOWRY, 2004). These species are thought to be epibenthic scavengers since they have been captured in baited traps. However, knowledge about the life habits of *E. obesus* is still scarce when compared to the other two species. This species has frequently been taken in mid-water trawls which suggests it is a pelagic predator (STODDART & LOWRY, 2004).

In this paper, *E. obesus* is recorded for the first time from off the Brazilian coast, extending its distribution to these waters.

### MATERIAL AND METHODS

The studied area comprises the north and south regions of the Campos Basin, off Rio de Janeiro State (21°48'S-22°48'S), between the isobaths of 700m and 2000m.

The collections were made with a Semi-Balloon door trawl, with 5m<sup>2</sup> of opening, aboard of the N/R "Astro Garoupa", in two campaigns. The first campaign was in February 2003 and the second campaign was in August 2003. The trawls were made over 1.5 hours and 1.8 knot speed, approximately. The samples were preserved in ethanol 70%.

Specimens were dissected under a stereoscope microscope and the drawings were made with a camera lucida. All the material is deposited in the Crustacean Collection – Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ).

Photograph of figure 1 was taken with a Digital Camera Nikon Coolpix 5400, 5.1 Mega Pixels, at the Sector of Carcinology, MNRJ.

The nomenclature of the setal-teeth of the maxilla 1 outer plate is based on LOWRY & STODDART (1992; 1993).

Abbreviations: Hd: Head; Mx1: Maxilla 1; Mx2: Maxilla 2; Gn1: Gnathopod 1; P7: Pereopod 7; Ep3: Epimeral plate 3; U3: Uropod 3; ST: *Setal-teeth*.

### TAXONOMY

Order Amphipoda Latreille, 1816

Superfamily Lysianossoidea Dana, 1849

Family Eurytheneidae Stoddart & Lowry, 2004

Genus *Eurythenes* Smith, 1882

Diagnosis – Head exposed, much deeper than long, not extending much below insertion of antenna 2,

without cheek notch. Antennae with calceoli present in male, absent in female. Antenna 1 with well developed two-field calynophore in both sexes. Mouthpart bundle subquadrate. Epistome and upper lip separate. Right mandible without *lacinia mobilis*. Mandibular incisor present, smooth, and convex. Accessory setal row without distal tuft of setae. Molar with a small triturative surface. Maxilla 1 inner plate with more than two apical pappose setae; outer plate narrow with setal-teeth (ST) large, in 8/3 crown arrangement; ST6 and ST7 slender, ST7 slightly displaced from ST6. Inner plate of maxilla 2 much shorter than outer plate. Maxilliped palp 4-articulate, article 4 well developed. Gnathopod 1 subchelate or parachelate, coxa vestigial, carpus short, propodus large, palm straight to convex. Coxa 2 shorter than coxa 3. Coxa 4 large with well developed posterodistal lobe. Coxa 5 with anterior and posterior lobes subequal. Uropod 2, inner ramus without constriction. Uropod 3 biramous. Telson deeply cleft (modified from STODDART & LOWRY, 2004).

*Eurythenes obesus* (Chevreux, 1905) (Figs.1-2)

*Katius obesus* CHEVREUX, 1905:1; 1935:63; K.H.BARNARD, 1932:56.

*Eurythenes obesus* - SCHELLENBERG, 1955:183, 192; SHOEMAKER, 1956:178. J.L.BARNARD, 1958:92; 1961:38; HURLEY, 1963:59; BRUSCA, 1967:384; BELLAN-SANTINI & LEDOYER, 1974:681; LOWRY & BULLOCK, 1976:89; ORTIZ, 1979:19; BARNARD & KARAMAN, 1991:486; THURSTON & BETT, 1995:201; STODDART & LOWRY, 2004:445 (with complete synonymy).

Type-locality – NE of Cabo Verde Islands, eastern North Atlantic Ocean, 20°1.8'N 21°19.8'W - 20°1.3'N 21°20.0'W, 995-1,500m over bottom depth 3,800-3,850m.

Material examined – BRAZIL, OFF RIO DE JANEIRO STATE, Campos Basin Deep-Sea Environmental Project, N.R Astro Garoupa col.; 1♂, 42.0mm, 22°15,209'S-39°47,690'W, 1,608m depth, February 12, 2003, MNRJ 19271; 1♂, 78.6mm, 22°15,49'S-39°47,450'W, 1,300m depth, August 22, 2003, MNRJ 19451.

Diagnosis – Anterodorsal margin of head smooth. Gnathopod 1 parachelate, basis length 2 to 2.5 times its breadth, propodus slightly tapering distally. Pereopods 3-7, dactyli long. Pereopod 7, basis with posteroventral margin rounded, and length of anterior margin subequal to breadth.

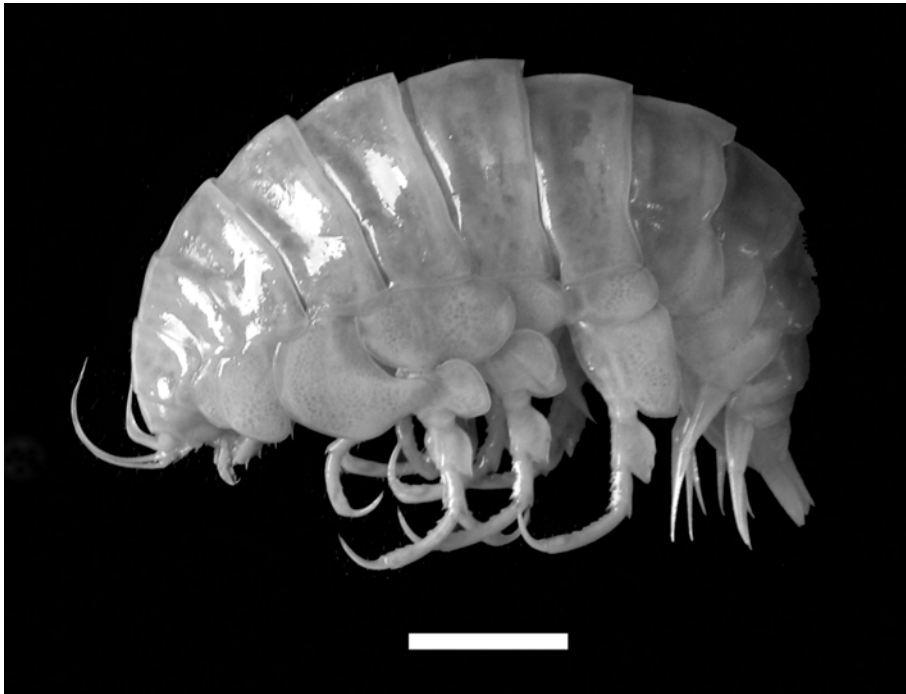


Fig.1- *Eurythenes obesus*, ♂, 78.6mm, 22°15,49'S – 39°47,450'W, 1300m depth, MNRJ 19451. Scale bar = 10mm.

Epimeral plate 3, posteroventral corner subquadrate. Urosomite 1 not dorsodistally produced over urosomite 2. Uropod 3 peduncle, medial face with or without robust setae (modified from STODDART & LOWRY, 2004).

Description – ♂, 78.6mm. Head deeper than long, anterodorsal margin smooth; lateral cephalic lobe small, subacute; rostrum absent; eyes little apparent. Antenna 1 short. Antenna 2, 2 times antenna 1.

Mouthpart bundle subquadrate. Epistome and upper lip separate. Mandible, accessory setal row with nine blunt robust setae, molar large, setose, with a distal triturating surface. Maxilla 1, inner plate small; outer plate with 11 setal-teeth in 8/3 crown arrangement; ST1 to ST7 large and slender, ST1 and ST2 non-cuspidate, ST3 and ST4 3-cuspidate, ST5 5-cuspidate, ST6 4-cuspidate, ST7 slightly displaced from ST6; STA to STD large and broad, STA 1-cuspidate, STB 3-cuspidate, STC 5-cuspidate, and STD 7-cuspidate; palp large, 2-articulate. Maxilla 2, inner plate broad, length 0.75 times outer plate, inner margin slightly concave.

Pereonites 1-2 dorsally smooth; pereonites 3-7 with dorsal sharp ridge. Gnathopod 1 parachelate; coxa small; basis slender, length 2.5 times breadth,

anterior margin smooth, with a row of small slender setae, posterior margin with a tuft of slender setae distally; ischium short, length 1.3 times breadth, posterior margin setose; merus, length 1.3 times breadth, posterior margin setose; carpus subtriangular, with a tuft of slender setae anterodistally, length 1.1 times breadth; propodus large, length 2.25 times breadth, subrectangular, slightly tapering distally, anterior margin with tufts of slender setae, posterior margin setose, palm transverse, palmar corner with one medial and one lateral stout seta; dactylus simple, smooth, longer than palm, outer margin with one single slender seta. Gnathopod 2, coxa small, longer than coxa 1, ischium, carpus and propodus long, palm transverse; dactylus shorter than palm. Pereopods 3-7, dactyli long. Pereopod 4, coxa with large posteroventral lobe. Pereopod 7, basis expanded posteriorly, posterodistal lobe well-developed, posterior margin minutely serrate, posteroventral corner subquadrate, posteroventral margin straight, length of anterior margin subequal to breadth; merus expanded posteriorly, anterior margin with four tufts of setae; carpus, anterior margin with four tufts of setae; propodus, anterior margin with six tufts of slender setae.

Pleonites 1-3 with dorsal sharp ridge. Pleonite 3 with anterodorsal notch. Epimeral plate 3, ventral margin minutely setose; posteroventral corner subquadrate. Uropods 1-2, rami subequal in length. Uropod 3, peduncle short, length 1.5 times breadth, without dorsolateral flange, medial face without robust setae; rami, dorsal margin setose, inner ramus 0.9 times outer ramus; outer ramus 2-articulate, article 2 short. Telson longer than broad, deeply cleft, tapering distally.

Distribution – *Eurythenes obesus* is a cosmopolitan species, recorded from North and South Atlantic, Indian Ocean, North Pacific, Australia, and Brazil, off Rio de Janeiro State.

Remarks – The material examined has the diagnostic characters for the species: anterodorsal margin of head smooth, propodus of gnathopod 1 slightly tapering distally, dactyli of pereopods 3-7 long, basis of pereopod 7 with length of anterior margin subequal to breadth, and urosomite 1 not dorsodistally produced over urosomite 2 (Fig.2).

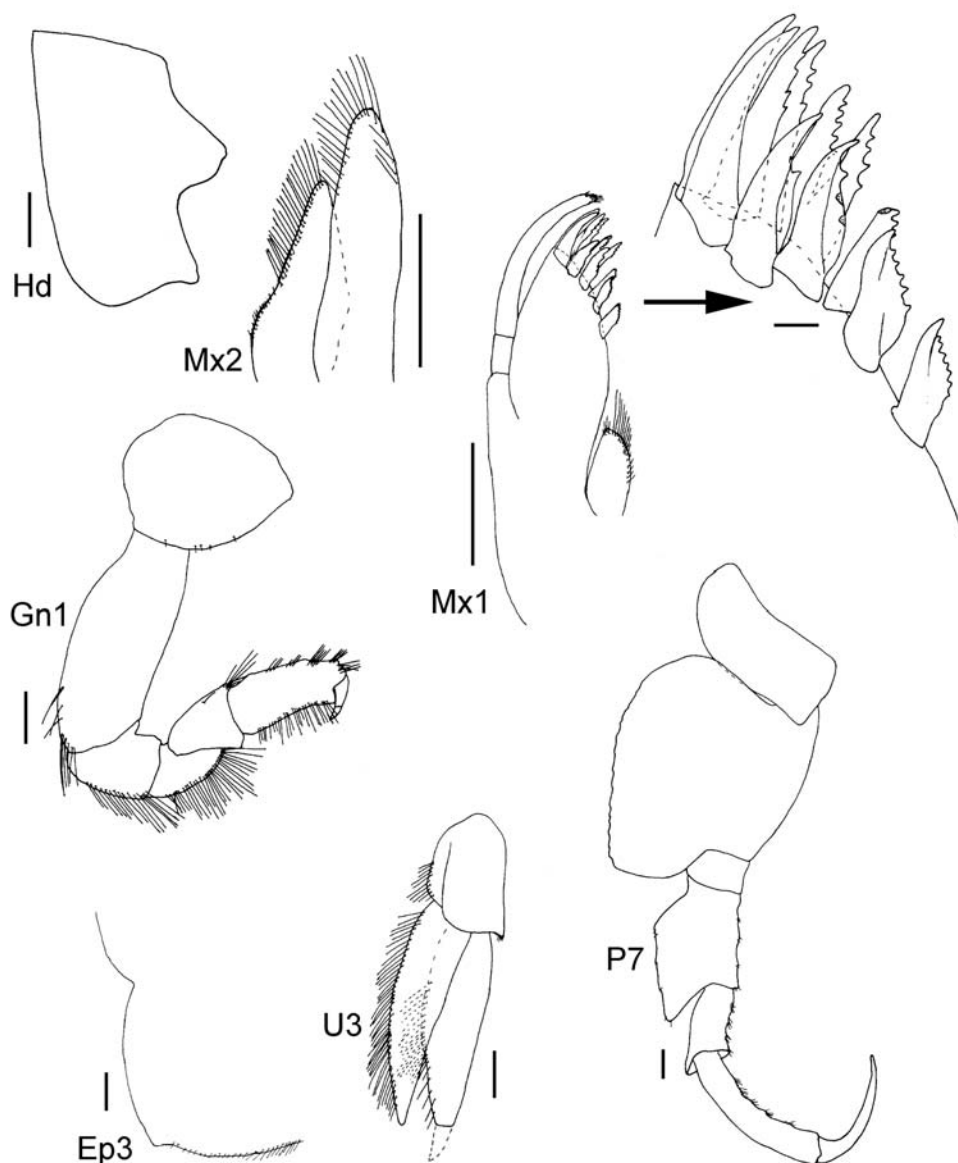


Fig.2- *Eurythenes obesus*, ♂, 78.6mm, 22°15,49'S – 39°47,450'W, 1300m depth, MNRJ 19451. Scale bars = 1mm.

However, some differences were noticed when compared with the material described by STODDART & LOWRY (2004) from Cabo Verde and designate as the neotype for *E. obesus*.

The pattern of cuspidation on the setal-teeth of the outer plate of maxilla 1 in the Brazilian specimens is not the same as the neotype material. The number of cusps on each setal-tooth in the Brazilian material is lesser, with ST1 and ST2 non-cuspidate (*versus* ST1 and ST2 3-4 cuspidate); ST3 and ST4 3-cuspidate (*versus* ST3 and ST4 4-cuspidate); STA 1-cuspidate (*versus* STA 2-cuspidate); STB 3-cuspidate (*versus* STB 5-cuspidate); STC 5-cuspidate (*versus* STC 7-cuspidate); and STD 7-cuspidate (*versus* STD 8-cuspidate). This variation has been noticed in other lysianassoid species, such as *E. gryllus* (STODDART & LOWRY, 2004). The Milne-Edwards' specimen and the Lilljeborg's specimen described by STODDART & LOWRY (2004) have different patterns of cuspidation on the maxilla 1 setal-teeth.

The number of setae in the accessory setal row of the mandible differs between the Brazilian and the neotype material: nine blunt robust setae (*versus* 10 acute robust setae).

The length of the posteroventral lobe on basis of pereopod 7 also varies. The material described by STODDART & LOWRY (2004) has the posteroventral lobe

developed about one third the length of the merus, whereas the same lobe on the Brazilian material does not surpass the ischium-merus articulation.

Another character which differs in the Brazilian material is the naked medial surface of the uropod 3 peduncle. The Cabo Verde material has the uropod 3 peduncle bearing four apical and three medial robust setae on the medial surface, and the diagnosis has been modified in this aspect.

The described specimen is notable in having 78.6mm length. The larger specimen of *E. obesus* recorded until now is a female with 80 mm length, from Australia (STODDART & LOWRY, 2004).

## DISCUSSION

The family Eurythenidae, represented by *E. gryllus*, was first recorded recently in Brazil (SEREJO *et al.*, 2007b). Species of this family are typically large (2-25cm), and can be collected with deep-sea dredges or baited traps.

Knowledge of the faunistic composition of the superfamily Lysianassoidea in the Brazilian deep-sea is still scarce. With this record, the number of known species from Brazil is raised to 15 species, eight from deep-sea and seven from shallow waters (Tab.1).

TABLE 1. Lysianassoids known from Brazil.

SPECIES	BRAZILIAN DISTRIBUTION	WORLD DISTRIBUTION	DEPTH	REFERENCE FOR BRAZIL
Family Amaryllididae				
<i>Amaryllis atlantica</i> Senna & Serejo, 2008	BA, ES	Brazil	40-65m	SENNA & SEREJO, 2008
Family Aristiidae				
<i>Perrierella audouiniana</i> (Bate, 1857)	SP	Atlantic; Mediterranean; Brazil	Shallow water	VALÉRIO-BERARDO, 1992
Family Eurythenidae				
<i>Eurythenes gryllus</i> (Lichtenstein, 1822)	BA, ES	Cosmopolitan	1089-1730m	SEREJO <i>et al.</i> , 2007b
<i>E. obesus</i> (Chevreux, 1905)	RJ	Cosmopolitan	1300-1608m	Present study
Family Lysianassidae				
<i>Bonassa brasiliensis</i> Senna & Serejo, 2008	BA	Brazil	50m	SENNA & SEREJO, 2008
<i>Lysianassa brasiliensis</i> (Dana, 1853)	RJ	Brazil	Shallow water	DANA, 1853; BATE, 1862
<i>Lysianassa danai</i> Senna & Serejo, 2008				
<i>Lysianopsis concavus</i> Senna, 2007	BA, ES	Brazil	20-108m	SENNA, 2007; SENNA & SEREJO, 2008
<i>Schoemakerella nasuta</i> (Dana, 1853)	RJ	Brazil	Shallow water	DANA, 1853; STEBBING, 1906
Family Trischizostomidae				
<i>Trischizostoma costai</i> Freire & Serejo, 2004	ES	Brazil	1364m	FREIRE & SEREJO, 2004
<i>T. denticulatum</i> Ledoyer, 1978	ES	Southwest Indian, off Madagascar; Brazil	910-1642m	FREIRE & SEREJO, 2004
<i>T. longirostrum</i> Chevreux, 1919	BA, ES	N. Atlantic; Brazil	1002-2076m	FREIRE & SEREJO, 2004
<i>T. raschi</i> Boeck, 1861	BA, ES	N. Atlantic; Mediterranean; Brazil	922-1026m	FREIRE & SEREJO, 2004
<i>T. richeri</i> Lowry & Stoddart, 1994	BA	Southwestern Pacific; Brazil	599m	FREIRE & SEREJO, 2004
Family Uristidae				
<i>Stephonyx uncinatus</i> Senna & Serejo, 2007	BA	Brazil	687-739	SENNA & SEREJO, 2007

States: (BA) Bahia; (ES) Espírito Santo; (RJ) Rio de Janeiro; (SP) São Paulo.

Five new species were recorded by SENNA (2006), two of them described by Senna (2007) and Senna & Serejo (in press). The other three species, two of the family Lysianassidae and one Amaryllididae are being prepared to be published, that will be one more contribution to knowledge of the lysianassoid Brazilian fauna.

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#### REFERENCES

- BARNARD, J.L., 1958. Index to the families, genera, and species of the gammaridean Amphipoda (Crustacea). **Allan Hancock Foundation Publications, Occasional Paper, 19**:1-145.
- BARNARD, J.L., 1961. Gammaridean Amphipoda from depth of 400 to 6000 meters. **Galathea Report, 5**:23-128.
- BARNARD, J.L. & KARAMAN, G.S., 1991. The families and genera of marine gammaridean Amphipoda (except marine gammaroids). **Records of the Australian Museum, Supplement, 13**(2):419-866.
- BARNARD, K.H., 1932. Amphipoda. **Discovery Reports, 5**:1-326.
- BATE, C.S., 1862. Catalogue of the specimens of amphipodous Crustacea in the collection of the British Museum, London, **British Museum of Natural History**. 399p.
- BELLAN-SANTINI, D. & LEDOYER, M., 1974. Gammariens (Crustacea-Amphipoda) des îles Kerguelen et Crozet. **Tethys, 5**(4):635-708.
- BOUSFIELD, E. L., 1982. Malacostraca. In: PARKER, S.P. (Ed.) **Synopsis and Classification of Living Organisms**, New York: McGraw-Hill Book Company. p.232-293.
- BRUSCA, G.J., 1967. The ecology of pelagic Amphipoda. I. Species account, vertical zonation and migration of Amphipoda from the waters off Southern California. **Pacific Science, 21**(3):382-393.
- CHEVREUX, E., 1905. Description d'un amphipode (*Katius obesus*, nov. gen. et sp.), suivie d'une liste des amphipodes de la tribu des Gammarina remanés par le filet à grande ouverture pendant la dernière campagne de la *Princesse-Alice* en 1904. **Bulletin du Musée océanographique de Monaco, 35**:1-7.
- CHEVREUX, E., 1935. Amphipodes provenant des campagnes du Prince Albert I<sup>er</sup> de Monaco. **Résultats des Campagnes scientifiques accomplies sur son Yacht par Albert I<sup>er</sup> Prince Souverain de Monaco, 90**:1-214.
- DANA, J.D., 1853. Crustacea. Part II. **United States Exploring Expedition, 14**:689-1618, atlas of 96pls.
- FREIRE, P. & SEREJO, C.S., 2004. The genus *Trischizostoma* (Crustacea: Amphipoda: Trischizostomidae) from the Southwest Atlantic, collected by the Revizee Program. **Zootaxa, 645**:1-15.
- HURLEY, D.E., 1963. Amphipoda of the family Lysianassidae from the west coast of North and Central America. **Allan Hancock Foundation Publications, Occasional Paper, 25**:1-160.
- LOWRY, J. K. & BULLOCK, S., 1976. Catalogue of the marine gammaridean Amphipoda of the Southern Ocean. **Royal Society of New Zealand Bulletin, 16**:1-187.
- LOWRY, J. K. & STODDART, H. E., 1992. A revision of the genus *Ichnopus* (Crustacea: Amphipoda: Lysianassoidea: Uristidae). **Records of the Australian Museum, 44**(2):185-224.
- LOWRY, J. K. & STODDART, H. E., 1993. Crustacea Amphipoda: lysianassoids from Philippine and Indonesian waters. In: CROSNIER, A. (Ed.) **Resultats des Campagnes MUSORSTOM Volume 10**. Paris: Mémoires du Muséum d'Histoire Naturelle, Série A, Zoology, **156**:55-109.
- ORTIZ, M., 1979. Lista de especies y bibliografía de los anfípodos (Crustacea: Amphipoda) del Mediterráneo Americano. **Ciencias (La Habana) ser. 8, Investigaciones Marinas, 43**:1-40.
- SCHELLENBERG, A., 1955. Amphipoda. **Reports of the Swedish Deep-Sea Expedition, ser. 2, Zoology, 14**:181-195.
- SENN, A.R., 2006. Taxonomia e distribuição da superfamília Lysianassoidea (Crustacea: Amphipoda) na costa central do Brasil (11° a 22°S). MSc Thesis, Museu Nacional, Universidade Federal do Rio de Janeiro, 109p.
- SENN, A.R., 2007. *Lysianopsis concavus* sp.nov. In: LAVRADO, H.P. & VIANA, M.S. (Eds.) **Atlas de invertebrados marinhos da região central da Zona Econômica Exclusiva brasileira**. Rio de Janeiro: Museu Nacional, Série Livros, n.25, p.182.
- SENN, A.R. & SEREJO, C.S., 2007. A new deep-sea species of *Stephonys* (Lysianassoidea) from off the central coast of Brazil. **Nauplius, 15**(1):7-14.

- SENNA, A.R. & SEREJO, C.S., 2008. Amaryllidae and Lysianassidae (Amphipoda: Lysianassoidea) from off the central coast of Brazil (11°S-22°S), with descriptions of three new species. **Zootaxa**, **1718**:45-68.
- SEREJO, C.S. & WAKABARA, Y., 2003. The genus *Valettropsis* (Gammaridea: Lysianassidae) from the Southwestern Atlantic, collected by the R/V Marion Dufresne. **Zoosystema**, **25**(2):187-196.
- SEREJO, C.S.; CARDOSO, I.A.; TAVARES, C.R.; ABREU JR., C.R.; AMÂNCIO, I.C. & SENNA, A.R., 2007a. Filo Arthropoda. Subfilo Crustacea. In: LAVRADO, H.P. & VIANA, M.S. (Eds.) **Atlas de invertebrados marinhos da região central da Zona Econômica Exclusiva brasileira**. Rio de Janeiro: Museu Nacional, Série Livros, n. 25. p. 165-214.
- SEREJO, C.S.; YOUNG, P.S.; CARDOSO, I.C.; TAVARES, C.; RODRIGUES, C. & ALMEIDA, T.C., 2007b. Abundância, diversidade e zonação dos crustáceos no talude da costa central do Brasil (11°-22°S) coletado pelo Programa REVIZEE/Score Central: prospecção pesqueira. In: COSTA, P.A.S.; OLAVO, G. & MARTINS, A.S. (Eds.) **Biodiversidade da fauna marinha profunda na costa central brasileira**. Rio de Janeiro: Museu Nacional, Série Livros, n. 24. p. 133-162.
- SHOEMAKER, C.R., 1956. Notes on the amphipods *Eurythenes gryllus* (Lichtenstein) and *Katius obesus* Chevreux. **Proceedings of the Biological Society of Washington**, **69**:177-178.
- STEBBING, T.R.R., 1906. Amphipoda I. Gammaridea. **Das Tierreich**, **21**:806p.
- STODDART, H.E. & LOWRY, J.K., 2004. The deep-sea lysianassoid genus *Eurythenes* (Crustacea, Amphipoda, Eurythenoidea n. fam.). **Zoosystema**, **26**(3):425-468.
- THURSTON, M.H. & BETT, B.J., 1995. Hatchling size and aspects of biology in the deep-sea amphipod genus *Eurythenes* (Crustacea: Amphipoda). **Internationale Revue der Gesamten Hydrobiologie**, **80**(2):201-216.
- VALÉRIO-BERARDO, M. T., 1992. Composição e distribuição da fauna de Amphipoda de fundos não consolidados da região de Ubatuba (SP, Brasil). PhD Thesis, Instituto Oceanográfico, Universidade de São Paulo, 82p.
- WAKABARA, Y. & SEREJO, C.S., 1998. Malacostraca – Peracarida. Amphipoda. Gammaridea and Caprellidea. In: YOUNG, P.S. (Ed.) **Catalogue of Crustacea of Brazil**. Rio de Janeiro: Museu Nacional, Série Livros, n.6. p.561-594.
- <[www2.petrobras.com.br/Petrobras/portugues/plataforma/pla\\_bacia\\_campos.htm](http://www2.petrobras.com.br/Petrobras/portugues/plataforma/pla_bacia_campos.htm)>. Access on: April 2006.