

The Brazilian species of the family Aristeidae Wood-Mason (Crustacea: Decapoda)

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The Brazilian Aristeidae are reviewed and shown to be represented by the following species: *Aristaeomorpha foliacea* (Risso, 1827); *Hepomadus tener* Smith, 1884; *Plesiopenaeus edwardsianus* (Johnson, 1867); *Benthesicymus bartletti* Smith, 1882; *Gennadas brevirostris* Bouvier, 1905; and *Bentheogennema intermedia* (Bate, 1888). Of these, *A. foliacea*, *H. tener*, *B. bartletti* and *G. brevirostris* are new records for Brazil. All of the species are widely distributed in the Atlantic and Indo-West Pacific oceans. *Gennadas brevirostris* is restricted to the Atlantic and *Hepomadus tener* occurs in the Western Atlantic and Indo-West Pacific oceans. *Bentheogennema intermedia* is the only species recorded for the Eastern Pacific. The latitudinal distribution among them ranges between 50°N and 40°S.

KEYWORDS: Aristeidae, distribution, Brazil.

Introduction

The family Aristeidae is poorly represented in Brazil and the following institutions do not have any specimens in their crustacean reference collections: Universidade Federal da Paraíba; Departamento de Oceanografia, Universidade Federal de Pernambuco; Museu Nacional, Universidade Federal do Rio de Janeiro; Museu de Zoologia and Universidade de São Paulo. This is due to the lack of deep water (over 600 m) research in Brazil.

Only two Aristeidae species are cited from Brazil in the literature. *Plesiopenaeus edwardsianus* (Johnson, 1867) from Amapá (Bullis and Thompson, 1959) and *Bentheogennema intermedia* (Bate, 1888) from Pernambuco (Bate, 1888; Burkenroad, 1936; Coelho and Ramos, 1972; Ramos-Porto *et al.*, 1989). *Plesiopenaeus edwardsianus* is recorded from Uruguay at 35°44'S 52°05'W (Itusarry, 1984). Three species from Argentina, collected by the *Challenger* Expedition (1873–1876), are noted by Bate (1888), Crosnier and Forest (1973), Pérez Farfante (1987): *Plesiopenaeus armatus* (Bate, 1881) and *Benthesicymus brasiliensis* Bate, 1881 at 35°39'S 50°47'W and *Pseudaristeus speciosus* (Bate, 1881) at 36°44'S 46°16'W.

Materials and methods

The Aristeidae of the following collections were examined during this study: Laboratório de Crustáceos Decápodes, Fundação Universidade do Rio Grande (FURG); Instituto Nacional de Pesca, Uruguay (INAPE); Instituto Nacional de

Investigación y Desarrollo Pesquero, Argentina (INIDEP) and The Natural History Museum, London (NHM).

The length of the carapace is measured in millimetres (orbital angle to postero-dorsal margin of carapace) and the number and sex of individuals are indicated. The names of the countries are written in English; otherwise, all geographic features, localities and provinces are in the original idiom. The synonym lists only the main papers relating to each species. Abbreviations used: male = ♂; female = ♀; station = st.

Results

Aristaeomorpha foliacea (Risso, 1827) (Figures 1A,2)

Penaeus foliaceus Risso, 1827: 69.

Aristeus rostridentatus Bate, 1881: 189; 1888: 317.

Aristaeomorpha foliacea: Burkenroad, 1936: 85; Crosnier, 1978: 23; 1985: 842; 1989: 42.

Aristeomorpha foliacea: Crosnier and Forest, 1973: 287; Crosnier, 1976: 227.

Material examined. Colombia: La Guajira. Off Cabo de la Vela, Oregon, st. 5688, 490 m, 1 ♀, 59.0 mm, 1 ♂, 35.8 mm, (NHM 1977.532). Brazil: Paraná, (25°24'S 44°54'W), W. Herwig, st. 83, 500 m, 1 ♀, 29.0 mm, (FURG-1607). Santa Catarina, (28°14'S 47°46'W), W. Herwig, st. 137, 1200 m, 1 ♀, 55.5 mm, (INIDEP). Rio Grande do Sul, (31°11'S 49°35'W), Atlântico Sul, st. 37, 510 m, 11 ♂, 26.7–34.6 mm, 28 ♀, 21.0–45.7 mm, (FURG-0742).

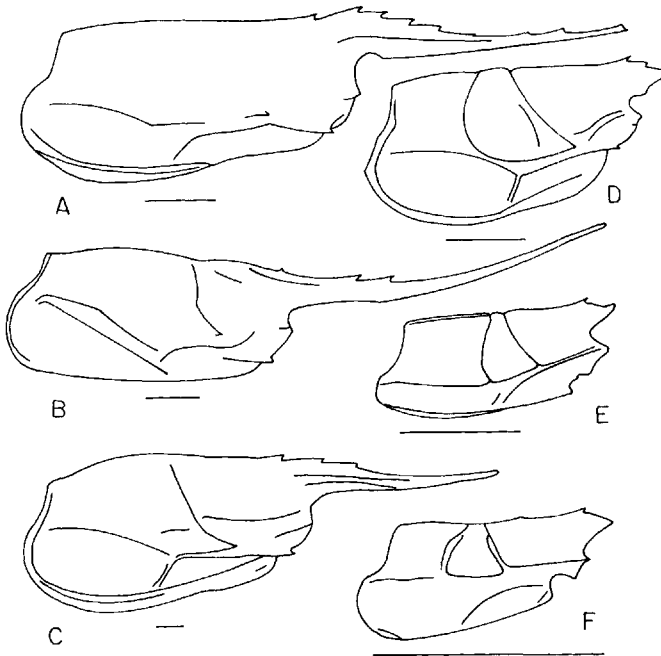


FIG. 1. Carapace of Brazilian Aristeidae shrimps: (A) *Aristaeomorpha foliacea*, FURG-0742; (B) *Ilepomachus tener*, FURG-1602; (C) *Plestopenaeus edwardsianus*, FURG-1601; (D) *Benthescymus bartletti*, FURG-1605; (E) *Bentheogennema intermedia*, NHM-1888.22; (F) *Gennadas brevirostris*, FURG-1745. Scale: 1 cm.

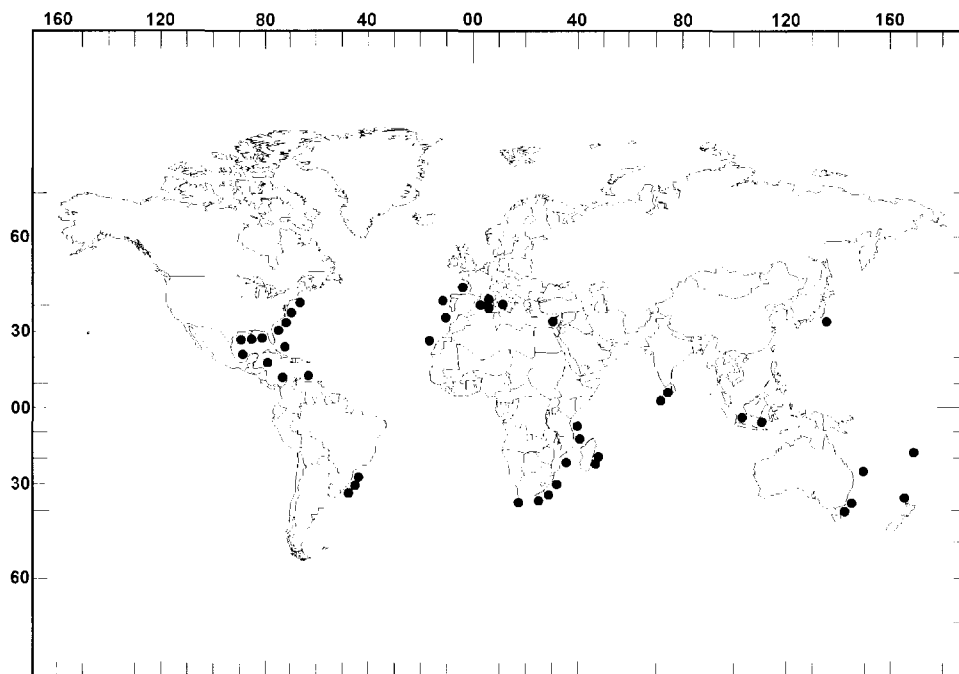


FIG. 2. Geographical distribution of *Aristaemorpha foliacea* (Risso, 1827).

Type-locality. Mediterranean Sea, off Nice, France.

Distribution. Western Atlantic (northern limit: south Massachusetts, USA; southern limit: Rio Grande do Sul, 31°11'S 49°35'W, Brazil): United States (Massachusetts, Philadelphia, Virginia, North and South Carolina, Georgia, Florida, Mississippi, Louisiana, Texas), Mexico, Bahama, Caribbean Sea, Colombia, Venezuela, Brazil (Paraná, Santa Catarina, Rio Grande do Sul). Eastern Atlantic (northern limit: Bay of Biscay, France; southern limit: Rio de Oro, Sahara): France (Bay of Biscay), Spain, Portugal, Morocco, Sahara (Rio de Oro), Mediterranean Sea (Spain, France, Italy, north coast of Africa, Algeria, Israel). Indo-West Pacific (northern limit: Yokohama, 35°N, Japan; southern limit: Victoria, 37°45'S, Australia): South Africa (Kosy Bay, Richards Bay, Durban, East London, Port Elizabeth), Mozambique (Monte Belo, Cabo Correntes), Madagascar, Tanzania (Zanzibar), Maldive Is., Sri Lanka, Indonesia (Ceram Sea, Sumatra), Japan (Yokohama, Owase, Kumononada, Sidouka), Australia (New South Wales, Victoria), New Caledonia, New Zealand (North Auckland), Fiji Is.

Ecological notes. The occurrence of this species along the Brazilian coast (Paraná, Santa Catarina and Rio Grande do Sul) has not been previously reported. The species occurs at depths between 60 and 1300 m, on sand and mud bottoms.

***Hepomadus tener* Smith, 1884.**

(Figures 1B,3)

Hepomadus tener Smith, 1884: 409; Burkenroad, 1936: 86; Crosnier, 1978: 47; 1985: 860.

Material examined. Venezuela: Venezuela Basin, (13°48'N 67°37'W), 5056 m, damaged specimen, 29.0 mm, (NHM 1984.43); (13°51'N 67°52'W), 5046 m, 1 ♀,

29.3 mm, (NHM 1984.44); (14°16'N 67°06'W), 5059 m, 1 ♀, 23.5 mm, (NHM 1984.45). Brazil: Rio de Janeiro. (22°41'S 40°08'W), W. Herwig, st. 103, 1200 m, 1 ♀, 44.0 mm, (INIDEP-1264); (22°41'S 40°08'W), W. Herwig, st. 103, 1200 m, 1 ♀, 44.0 mm, (FURG-1603). Paraná, (25°13'S 44°33'W), W. Herwig, st. 85, 1200 m, 1 ♂, 36.5 mm, 1 ♀, 45.7 mm, (FURG-1602). Santa Catarina, (27°45'S 46°33'W), W. Herwig, st. 120, 1200 m, 1 ♂, 42.5 mm, 1 ♀, 48.2 mm, (INIDEP-695).

Type-locality. Off Chesapeake Bay, 37°12'N 69°30'W, USA.

Distribution. Western Atlantic (northern limit: off Atlantic City, New Jersey, USA; southern limit: Santa Catarina, 27°45'S 46°33'W, Brazil): United States (New Jersey, Virginia, North Carolina, Florida, Alabama, Louisiana, Texas), Mexico (Tamaulipas, Veracruz, Yucatan), Bahama (Turks Is.), Haiti (Gulf of Gonave), Tobago (Charlotteville), west Caribbean (Cayos Hobbies), Panama (off Punta Manzanillo), Colombia (off San Bernardo, Puerto Colombia, La Guajira), Venezuela, Brazil (Rio de Janeiro, Paraná, Santa Catarina). Indo-West Pacific (northern limit: Bay of Bengal; southern limit: Madagascar): Bay of Bengal, Chagos Is., Reunion Is., Madagascar.

Ecological notes. The species is a new record for Brazil and occurs at depths between 933 and 5413 m.

***Plesiopeneus edwardsianus* (Johnson, 1867)**

(Figures 1C,4)

Penaeus Edwardsianus Johnson, 1867: 897.

Aristeus coralinus Batc, 1888: 32.

Plesiopeneus edwardsianus: Burkenroad, 1936: 94; Crosnier and Forest, 1969: 550; Crosnier, 1978: 88.

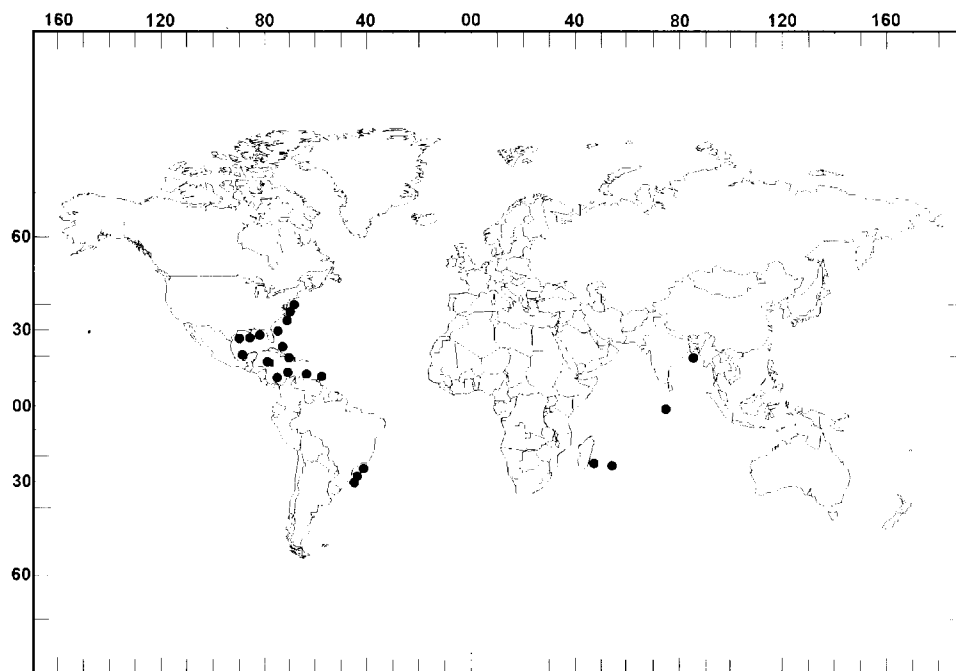


FIG. 3. Geographical distribution of *Hepomadus tener* Smith, 1884.

Material examined. United States: Alabama. Off Mobile Bay, (29°10'N 87°57'W), 650–730 m, 1 ♂, 40.6 mm, 3 ♀, 64.6–84.1 mm, (NHM 1977.533). Brazil: Santa Catarina (26°43'S 46°07'W), W. Herwig, st. 117, 800 m, 1 ♀, 74.3 mm, (INIDEP); (26°43'S 46°07'W), W. Herwig, st. 117, 800 m, 2 ♀, 68.6–75.2 mm, (FURG-1601). Uruguay. (35°14'S 52°06'W), B/P Lerez, st. 8205-11, 700 m, (INAPE).

Type-locality. Madeira.

Distribution. Western Atlantic (northern limit: off Newfoundland, 43°30'N, Canada; southern limit: 35°34'S 52°32'W, Uruguay): Canada (Newfoundland, Grand Bank, 43°30'N), United States (Florida, Alabama), Antilles, Venezuela (Aruba), Guyana, Surinam (7°44'N 54°40'W), French Guiana, Brazil (Santa Catarina), Uruguay (35°34'S 52°32'W). Eastern Atlantic (northern limit: south of Portugal; southern limit: South Africa): Portugal, Morocco (Casablanca), Gulf of Guinea, Gabon, Congo-Brazzaville, South Africa. Indo-West Pacific (northern limit: Bay of Bengal; southern limit: 34°00'S 151°43'E, Australia): South Africa (Cape Point, Natal), Mozambique, Madagascar, Tanzania (Zanzibar), Somalia, Arabian Sea (Malabar coast, Gulf of Manaar), Bay of Bengal, Andaman Is.), Indonesia, Japan, Australia (New South Wales).

Ecological notes. The species has been reported from 200 and 1850 m, but occurs frequently at depths between 400 and 900 m.

***Benthescymus bartletti* Smith, 1882**

(Figures 1D,5)

Benthescymus Bartletti Smith, 1882.

Benthescymus bartletti: Burkenroad, 1936: 47; Crosnier and Forest, 1969: 548; 1973: 275.

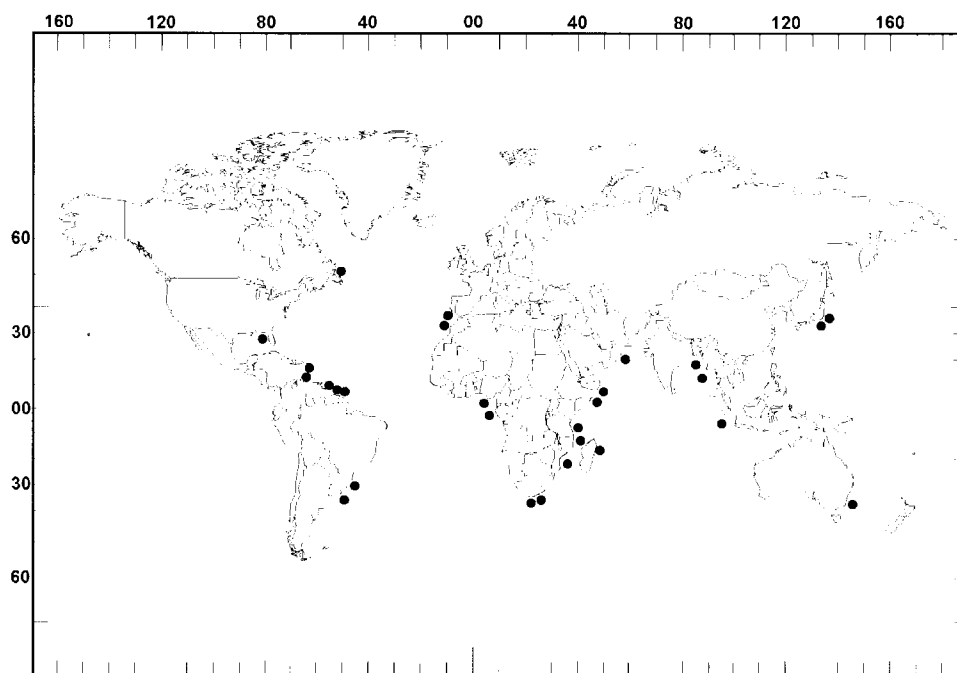


FIG. 4. Geographical distribution of *Plesiopenaeus edwardsianus* (Johnson, 1867).

Material examined. Colombia: San Bernardo I., Oregon, st. 11240, 1.27 m, 2 ♂, 18.0 mm, 1 ♀, damaged specimen; (NHM 1977.535). Brazil: Rio de Janeiro, (22°41'S 40°08'W), W. Herwig, st. 103, 1200 m, 1 ♂, 33.0 mm, 1 ♀, 30.4 mm, (INIDEP-690); (22°41'S 40°08'W), W. Herwig, st. 103, 1200 m, 1 ♂, 33.0 mm, 2 ♀, 31.4–34.2 mm, (FURG-1604). Santa Catarina, (26°47'S 45°57'W), W. Herwig, st. 118, 1200 m, 1 ♀, 29.6 mm, (FURG-1605); (28°34'S 46°33'W), W. Herwig, st. 120, 1200 m, 1 ♀, 25.7 mm, (INIDEP-1066); (28°34'S 46°33'W), W. Herwig, st. 120, 1200 m, 1 ♂, 26.4 mm, (FURG-1606).

Type-locality. East coast of United States, 39°45'N 70°55'W.

Distribution. Western Atlantic (northern limit: Canada, 45°53'N 65°35'W; southern limit: Santa Catarina, 28°34'S 46°33'W, Brazil): Canada, United States (Virginia), Bahama, Belize (16°58'N 87°53'W), West Caribbean (Rosalind Bank, 6°35'N 80°04'W; Cayo Hobbies, 16°26'N 83°31'W), Honduras (Punta Patuca, 16°26'N 84°24'W), Panama (Gulf los Mosquitos, 9°05'N 81°18'W; Mulatas Is., 9°00'N 77°25'W), Colombia (Punta Caribana, Gulf of Darien, 8°56'N 76°53'W, San Bernardo Is., 9°58'N 76°29'W), Venezuela (La Orchilla I., 11°47'N 66°6'W), Tobago (Man o'War Bay, 11°30'N 60°14'W; Charlotteville, 11°37'N 60°59'W), Guyana (Georgetown, 8°14'N 57°38'W), Surinam, French Guiana (Fleuve Tracoubo, 7°31'N 53°11'W), Brazil (Rio de Janeiro, 22°41'S 40°08'W; Santa Catarina, 28°34'S 46°33'W). Eastern Atlantic (northern limit: Açores I.; southern limit: Congo, 5°10'S): Açores Is., Morocco, Canary Is., Cape Verde Is., Mauritania, Gabon, Congo. Indo-West Pacific (northern limit: North-Pacific, 37°49'N 166°47'W; southern limit: Philippines): Bay of Bengal, Philippines, North-Pacific (37°49'N 166°47'W).

Ecological notes. The occurrence of this shrimp on the coast of Rio de Janeiro and Santa Catarina are the first records for Brazil. The species occurs at depths

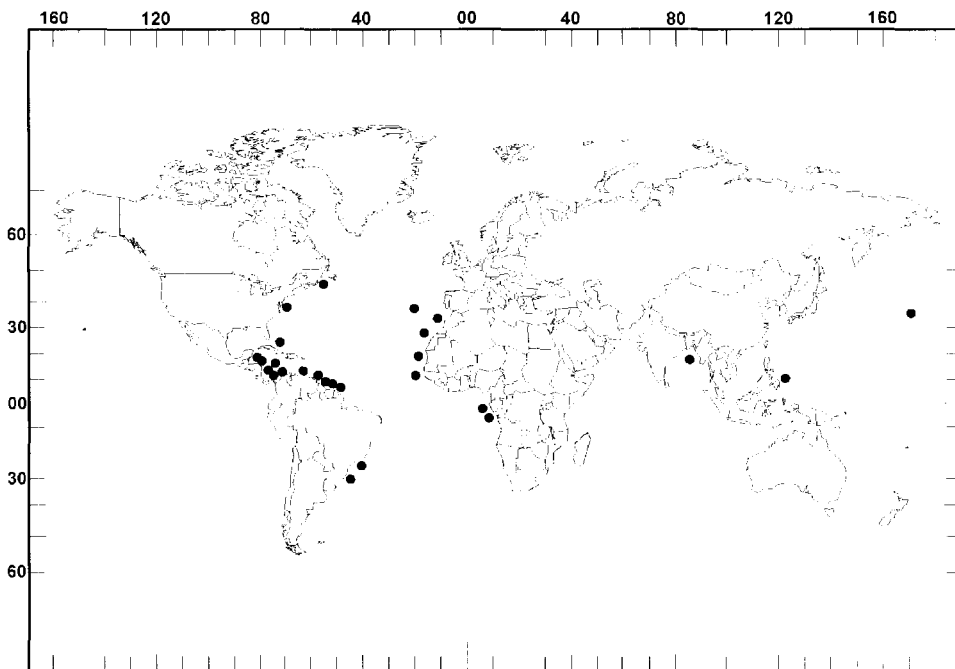


FIG. 5. Geographical distribution of *Benthescymus bartletti* Smith, 1882.

between 609 and 5777 m, but its preferential range of depth is between 600 and 1800 m.

***Bentheogennema intermedia* (Bate, 1888)**

(Figures 1E,6)

Gennadas intermedius Bate, 1888: 343; Kemp, 1909: 723.

Bentheogennema intermedia: Burkenroad, 1936: 56; Crosnier and Forest, 1973: 278; Crosnier, 1978: 30; 1985: 858.

Material examined. Brazil: Pernambuco. (8°37'S 34°28'W), Challenger, st. 120, 1229 m, 1 ♀, 14.9 mm, (NHM 1888.22).

Type-locality. Off Sierra Leone, 1°47'N 24°26'W, Africa.

Distribution. Western Atlantic (northern limit: Bermudas; southern limit: Pernambuco, 8°37'S 34°28'W, Brazil): Bermudas, United States (Florida), Bahamas, Gulf of Mexico, Brazil (Pernambuco). Eastern Atlantic (northern limit: 50°N; southern limit: Cape Town, South Africa): Spain (Atlantic coast), Portugal, Açores Is., Madeira Is., Morocco, Canary Is., Sierra Leone, Gabon, Congo, Zaire, South Africa. Indo-West Pacific (northern limit: Japan; southern limit: East London, South Africa): South Africa (East London, Natal, Durban), Mozambique, Madagascar (Nosy Be), Tanzania (Zanzibar), Maldive Is., Arabian Sea, Japan, Hawaii. Eastern Pacific: Mexico (Baja California).

Ecological notes. The species occurs at depths between 900 and 4360 m.

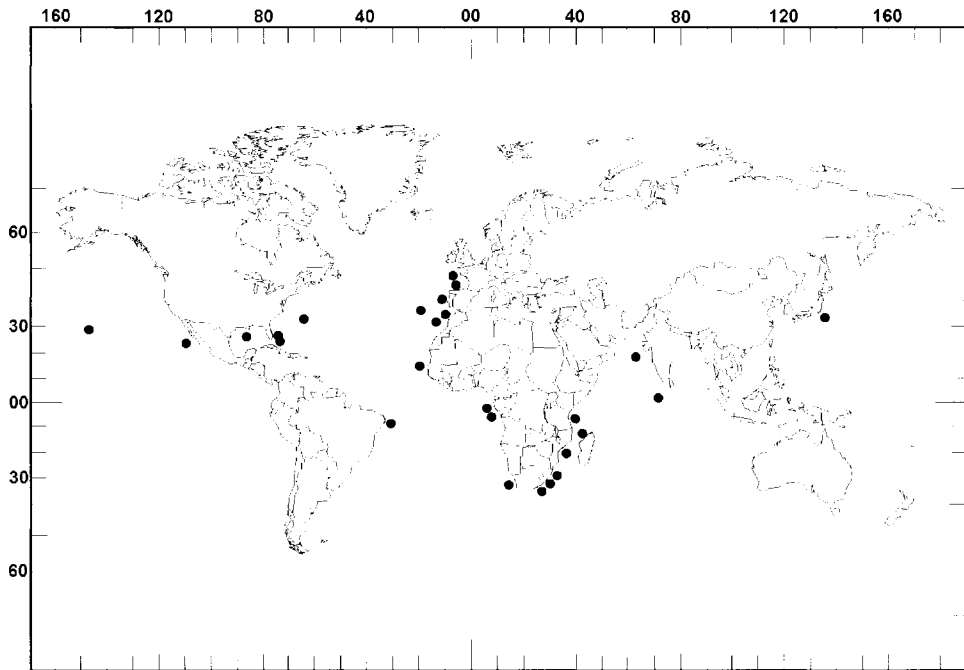


FIG. 6. Geographical distribution of *Bentheogennema intermedia* (Bate, 1888).

Gennadas brevirostris Bouvier, 1905
(Figures 1F,7)

Gennadas brevirostris Bouvier, 1905: 748; Burkenroad, 1936: 65; Crosnier and Forest, 1969: 549; 1973: 283.

Material examined. Europe: Portugal (40°49'N 11°18'W), W. Herwig, st. 3/III, 1 ♂, 9.4 mm, 1 ♀, 9.4 mm, (FURG-1765). Africa: Sahara (20°38'N 22°32'W), Discovery, st. 7060, 1000 m, 2 ♀, 7.1–7.4 mm, (NHM 1971.98); (20°38'N 22°32'W), Discovery, st. 7060, 1000 m, 1 ♂, 7.7 mm, (NHM 1971.99); Mauritania (20°06'N 21°40'W), W. Herwig, st. 10/III, 1 ♂, 9.4 mm, 1 ♀, 8.8 mm, (FURG-1760); (16°27'N 06°55'W), W. Herwig, st. 1/III, 2340 m, 1 ♂, 6.1 mm, 1 ♀, 10.6 mm, (INIDEP); (16°11'N 22°24'W), W. Herwig, st. 11/II, 1955 m, 1 ♂, 8.5 mm, 1 ♀, 5.0 mm, (INIDEP-991); Guinea Bissau (12°27'N 6°55'W), W. Herwig, st. 1/III, 2340 m, 1 ♂, 10.8 mm, 2 ♀, 10.6–12.8 mm, (FURG-1749); (12°07'N 23°07'W), W. Herwig, st. 12/2, 1944 m, 2 ♂, 7.4–8.9 mm, (FURG-1756). Brazil: Penedos de São Pedro e São Paulo, (0°20'N 25°20'W), W. Herwig, st. 15/I, 1955 m, 1 ♀, 7.3 mm, (INIDEP); (6°06'S 27°00'W), W. Herwig, st. 18/III, 2042 m, 1 ♂, 11.9 mm, (FURG-1745). Alagoas, (9°43'S 27°07'W), W. Herwig, st. 19/1, 1930 m, 1 ♀, 8.6 mm, (INIDEP-1027); (10°00'S 27°12'W), W. Herwig, st. 19/IV, 2338 m, 2 ♂, 8.6–9.8 mm, 5 ♀, 9.1–10.7 mm, (FURG-1767); (10°00'S 27°12'W), W. Herwig, st. 19/IV, 2338 m, 1 ♂, 12.1 mm, (FURG-1748). Espírito Santo, (21°04'S 30°12'W), W. Herwig, st. 22/II, 2040 m, 1 ♂, 7.9 mm, 1 ♀, 8.8 mm, (INIDEP). Paraná, (25°24'S 44°54'W), W. Herwig, st. 83, 500 m, 1 ♀, 8.3 mm, (INIDEP). Santa Catarina, (26°43'S 45°57'W), W. Herwig, st. 117, 800 m, 3 ♀, 10.2–12.5 mm, (FURG-1750); (26°43'S 45°57'W), W. Herwig, st. 117, 800 m, 1 ♂, 10.7 mm, 2 ♀, 9.4–9.9 mm, (INIDEP 1025); (27°50'S 39°46'W), W. Herwig, st. 25/III, 2200 m, 1 ♂, 10.4 mm, (INIDEP). Rio Grande do Sul, (29°58'S 42°27'W), W. Herwig, st. 26/II, 1945 m, 2 ♀, 7.7–8.7 mm, (FURG-1751); (29°58'S 42°27'W), W. Herwig, st. 26/II, 1945 m, 2 ♀, 8.1–8.2 mm, (INIDEP-1329); (30°01'S 42°30'W), W. Herwig, st. 26/III, 2042 m, 2 ♂, 7.8–8.0 mm, (FURG-1746); (32°11'S 45°08'W), W. Herwig, st. 27/III, 2230 m, 1 ♀, 8.8 mm, (FURG-1747). Uruguay: (35°16'S 49°26'W), W. Herwig, st. 29/III, 2333 m, 1 ♀, 9.0 mm, (INIDEP).

Type-locality. Saint Lucia, Lesser Antilles.

Distribution. Western Atlantic (northern limit: Cape Farewell, Greenland; southern limit: Uruguay, 35°16'S 49°26'W): Greenland (Cape Farewell), Lesser Antilles (Saint Lucia); Brazil (Penedos de São Pedro e São Paulo, Alagoas, Espírito Santo, Paraná, Santa Catarina, Rio Grande do Sul), Uruguay. Eastern Atlantic (northern limit: Bay of Biscay; southern limit: 31°21'S 9°45'E South Africa): France (Bay of Biscay), Spain (Bay of Biscay, Cadiz Bay), Morocco, Sierra Leone (8°58'N, 16°27'W), Gulf of Guinea, Congo, Gabon, Angola, South Africa (off Cape Town).

Ecological notes. The occurrence of this species along the coasts of Brazil has not been previously reported and it occurs at depths between 130 and 3500 m.

Conclusions

The family Aristeidae is represented by six species in Brazil (*Aristaeomorpha foliacea*; *Hepomadus tener*; *Plesiopenaeus edwardsianus*; *Benthesicymus bartletti*; *Gennadas brevirostris* and *Bentheogennema intermedia*). The South America Atlantic coast species list is comprised of the Brazilian species and three species from Argentina (*Plesiopenaeus armatus*; *Benthesicymus brasiliensis*; *Pseudaristeus*

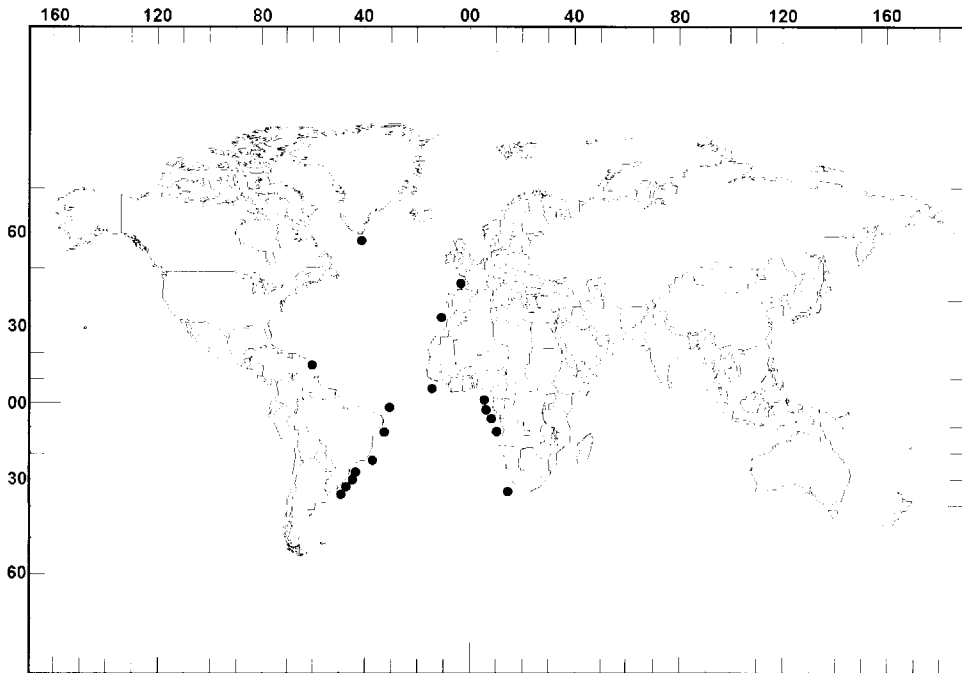


FIG. 7. Geographical distribution of *Gennadas brevirostris* Bouvier, 1905.

speciosus). Further investigation in deep water will probably change and complete the list and the geographic distributions of the species.

The analysis of the Brazilian records showed that all species are widely distributed in the Atlantic and Indo-West Pacific oceans and the distribution pattern is similar among them. *Hepomadus tener* occurs in the Western Atlantic and Indo-West Pacific but *Gennadas brevirostris* is restricted to the Atlantic. *Bentheogennema intermedia* is the only species recorded in the Eastern Pacific. The latitudinal distribution ranges between 50°N and 40°S. Only *Gennadas brevirostris* occurs out of this range, collected off Cape Farewell, Greenland.

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