Taxonomy and ecology of *Cornucoquimba ramosae* sp. nov. (Ostracoda, Crustacea) on the Brazilian Equatorial shelf

J. C. COIMBRA & D. A. DO CARMO

1CECLIMAR – Universidade Federal do Rio Grande do Sul. Caixa Postal 11, CEP 95625-000. Imbé, RS, Brazil (e-mail: coimbra@if.ufrgs.br).
2Instituto de Geociências. Universidade de Brasília. CEP 70910-900. Brasília, DF, Brazil (e-mail: derme@unb.br).

ABSTRACT – Three species of *Cornucoquimba* Ohmert, 1968 are known from the Brazilian shelf: *C. decorata*, and *C. nana* in the north and northeast, and *C. conulata* in the south. An analysis of 339 samples collected between the international boundary at the Oiapoque river (Amapá State) and Cape São Roque (Rio Grande do Norte State), a distance of almost 1400 km, has discovered a new species of this genus, *C. ramosae* sp. nov. It is restricted to the equatorial shelf and prefers biotitretal sand, from 15 to 67 m water depth. *J. Micropalaeontol.* 21(1): 23–27, May 2002.

INTRODUCTION

Three genera have been attributed to the subfamily Coquimbinae Ohmert, 1968: *Coquimba*, *Nanocoquimba* and *Cornucoquimba*, all described by Ohmert (1968). In Brazil, a preliminary study by Dias-Brito et al. (1988), which focused on the ecology of Recent ostracods and foraminifers from Sepetiba Bay (Rio de Janeiro State), mentioned the occurrence of *Coquimba* from marine biofacies. Later, taxonomic and zoogeographical studies on Recent occurrences of the Coquimbinae on the Brazilian continental margin were pioneered by Ramos (1994, 1996), who described several new species.

Three species of *Cornucoquimba* were described by Ramos (1996) and these include *C. decorata*, *C. nana* and *C. conulata*. *Cornucoquimba decorata* occurs from the northern coast of Amapá State (04°39’N/50°53’W) to the southern coast of Espírito Santo State (22°46’S/40°59.6’W), ranging in depth from 15 to 132 m and mainly associated with carbonate sand. The geographical distribution of *C. nana* is more restricted and the species is less abundant. It occurs from the southern coast of Maranhão State (02°17’S/42°07’W) to the northern coast of Espírito Santo (20°39’S/38°07’W), ranging in depth from 13 to 79 m and associated with carbonate sediment. Finally, *C. conulata* occurs from the southern coast of Espírito Santo (19°59.4’S/40°49.8’W) to the coast of Rio Grande do Sul State (31°14’S/49°31’W), ranging from 18 to 158 m in water depth and associated with terrigenous sediment. This last species clearly has different ecological requirements, as a result of its occurrence in the temperate water zone under influence of the Falklands Current.

Brazilian continental margin

The Brazilian continental margin is of passive type and is divided into three regions: Northern, known as the Equatorial margin, Cape Orange (4°N to 51°W) to Cape São Roque (Rio Grande do Norte State), Eastern (3° to 24°S) and a southern (24°S to the international limit of Uruguay).

The material described here comes from the Brazilian Equatorial margin, which included the states of Amapá, Pará, Maranhão, Piauí, Ceará and Rio Grande do Norte (Fig. 1). For details on the sedimentology of the Equatorial margin it is necessary to consult Coimbra et al. (1999) and Martins & Coutinho (1981).

Three major oceanographic currents strongly influence the Brazilian continental shelf. These are the Guyanas Current, Brazil Current and Falklands Current. The Guyanas and Brazil Currents are branches of the South Equatorial Current. The Guyanas Current flows northwards in the Equatorial margin while the Brazil Current flows southwards in the eastern and southern regions. In contrast to the tropical waters transported by the Guyanas and Brazil currents, the influence of the Falklands Current is restricted to the southern region. It is characterized by the movement of sub-Antarctic waters towards the southern Brazilian shelf margin (E. Boltovskoy, 1959; D. Boltovskoy, 1981; Do Carmo & Sanguinetti, 1999).

Material

After the analysis of 339 samples collected during oceanographic cruises on the Equatorial margin, REMAC (legs 4, 5, 5A and 6) and GEOMAR (legs I, II and III), *Cornucoquimba ramosae* sp. nov. was only found in 12 samples, 11 from REMAC (legs 5 and 6) and one from GEOMAR (leg 1) (Table 1). The REMAC and GEOMAR projects were undertaken in the 1970s and 1980s by the Brazilian government for geological and oceanographical reconnaissance of the continental margin. These samples were collected using a Van Veen grab.

TAXONOMY

The type material is held in the collections of the 'Museu de Paleontologia', Universidade Federal do Rio Grande do Sul, Section of Ostracoda, to which the prefix MP-O of the type material refers. Supra-generic systematics follow Ohmert (1968) and Ramos (1994, 1996).

Suborder Podocopina Sars, 1866
Superfamily Cytheracea Baird, 1850
Family Hemicytheridae Puri, 1953
Subfamily Coquimbinae Ohmert, 1968
Genus *Cornucoquimba* Ohmert, 1968

*Cornucoquimba ramosae* sp. nov.

(Pl. 1, figs 1–6)

1992 *Cletocythereis* sp. Coimbra, Ramos & Sanguinetti: 100, pl. 2, fig. 13.
1999 *Cornucoquimba* sp. Coimbra et al.: 371, pl. 2, fig. 12.
Derivation of name. In honour of Dr Maria Inês Feijó Ramos, the first ostracodologist to study the zoogeography of the Subfamily Coquimbinae on the Brazilian continental margin.

Diagnosis. Surface strongly reticulate, as an irregular sponge-like net pattern, with conspicuous ribs. The ventro-lateral rib is linked to the dorsal one through the posterior subvertical rib. Seven central muscle scars present, three frontal (the median subdivided) and four adductor scars (the upper median subdivided). Two dorsal scars usually present near to the central ones.

Holotype. Female, MP-O-1707, right valve, length 0.671 mm, height 0.335 mm.

Paratypes. Female, MP-O-1708, carapace, length 0.667 mm, width 0.280 mm. Male, MP-O-1709, right valve, length 0.678 mm, height 0.306 mm. Male, MP-O-1710, carapace, length 0.669 mm, width 0.235 mm.

Material. 46 valves and 38 carapaces of adult and juvenile instars.

Type locality and horizon. REMAC, leg 6, sample 3683 (02°28’/42°22’W, 20 m, biodetritic sand). Recent.

Description. Carapace sub-rectangular in lateral view. Right valve higher at the anterior cardinal angle. Dorsal margin straight and sloping backward; ventral margin concave in the oral region. Anterior margin well-rounded and denticate; posterior margin with a postero-ventral denticate caudal process. Eye tubercle fairly prominent. Surface strongly reticulate, forming a irregular sponge-like net. Dorsal rib sinuous and extending from the central dorsal area, subparallel to the dorsal

Fig. 1. Sediment distribution in the Brazilian Equatorial margin (adapted from Kowsmann & Costa, 1979).
**Cornucoquimba ramosae** sp. nov. (Ostracoda) from Brazil

<table>
<thead>
<tr>
<th>Project</th>
<th>Sample</th>
<th>Coordinates</th>
<th>Depth (m)</th>
<th>Sedimentology</th>
<th>Carapaces</th>
<th>Valves</th>
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<td>46</td>
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</table>

R. REMAC; G. GEOMAR

**Table 1.** Occurrences of *Cornucoquimba ramosae* sp. nov.

The occurrence of *C. ramosae* sp. nov. is restricted to the Brazilian Equatorial shelf from the southern coast of Maranhão State (02°04'S/42°43'W) to near Cape São Roque on the coast of Rio Grande do Norte State (05°29'S/35°10'W). After consideration of the material studied by Ramos (1994, 1996) it was possible to conclude that this species does not occur in the southern region of the Brazilian continental shelf; it is a tropical water species.

As indicated by Coimbra et al. (1999), this species, together with 15 other ostracod species present in the Equatorial continental shelf, is restricted to the southeast of the mouth of the River Amazon and River Pará, suggesting that the discharge of these rivers might represent a barrier to its northward distribution. However, in contrast to the conclusion of those authors, this study shows a more restricted depth distribution for *C. ramosae* sp. nov., ranging from 15 to 67 m with an allochthonous occurrence at 113 m. At this depth, the carapaces are eroded and covered with iron oxide indicating that they are relict specimens. This observation corroborates previous sedimentological studies carried out by several authors (Kowsmann & Costa, 1979; Martins & Coutinho, 1981).

Finally, the present authors are not certain that the three species of *Cornucoquimba* previously described by Ramos (1996) are autochthonous throughout their large depth range (15 to 158 m). As Ramos (1996) did not present data for the separation of autochthonous and allochthonous occurrences, the bathymetrical limits of *C. decorata*, *C. nana* and *C. conulata* could be due, in part, to reworked material. According to the ecological and palaeoecological data presented by Ohmert (1968), Yajima (1978), Ikeya & Hanai (1982), Hu (1986), Hu & Tao (1986), Paik & Lee (1988), Coimbra et al. (1992, 1999), and this paper, the genus *Cornucoquimba* is most common at depths of less than 70 m and on sandy substrates. It is a stenohaline genus and since its origin in the Pliocene, is represented by more species in tropical than in temperate seas.

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Explanation of Plate 1

Figs 1–6. *Cornucoquina ramosae* sp. nov.: 1–3, holotype MP-O-1707, female, RV lateral view, (1) external view, (2) internal view, (3) detail of muscle scars; 4–6, paratypes (4) MP-O-1709, male, RV external view, (5) MP-O-1708, female carapace, dorsal view, (6) MP-O-1710, male carapace, dorsal view.
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