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Recent Ostracodes Along 7,408km of the Brazilian Coast (33° 45'S to 4°25'N)

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Ostracodes, foraminifera and molluscs of five hundred and eighty six samples from the Continental Shelf along 7,408km of the Brazilian coast (from Lat. 33°45'S to 4°25'N) were studied. The present work deals with the distribution of more than fifty genera of Ostracoda recovered from these samples. This preliminary report shows the different geographical ranges of the genera along the coast and the possible influence of temperature and salinity on their distribution.

SINOPSE

Ostracodes, foraminíferos e moluscos de 586 amostras ao longo de 7408km da plataforma continental brasileira (de Lat. 33°45'S a 4°25'N) foram estudados. O presente trabalho trata da distribuição de mais de cinquenta gêneros de ostracodes registrados para estas amostras. Este trabalho preliminar mostra a diferente distribuição geográfica dos gêneros ao longo da costa e a possível influência da temperatura e salinidade nesta distribuição.

INTRODUCTION

The present paper deals with studies made on samples furnished by the REMAC Project of the Petroleo Brasileiro SA (PETROBRAS Company) from which ostracodes, foraminifera and mollusks were prepared and studied. Here, only the principal data on ostracodes is presented.

Since the ostracodes faunule of the Brazilian shelf are practically unknown, and as this faunule covers a great number of species not yet described, the present study was only at the level of genera. Possibly this study deals with geographically the most extensive collection of samples ever assembled before. The 586 samples were collected along 7,408km of coast from Latitude 33°45' to 4°25'N and between Longitude 34°31'W to 52°57'W.

In spite of being a pioneer work even only at the level of genera, this study could well show at first glance, through its charts, the geographic variation of the faunule and the influence of fresh water currents.

As will be not possible in this paper to reproduce all the charts made for the study, only the more significative ones are presented and discussed.

Geographical distribution of the Ostracodes genera

From observation of Chart, 1 about which concerns the geographical distribution of ostracodes along the Brazilian coast it is seen that it is possible to separate the ostracodes genera in groups according to the range of their distribution. The main groups are:

- Group A - A series of genera present at Chui in the South (Lat. 34°03'S) and which disappears near Mucuri (Lat. 17°59'S) at midpoint to the northeast of the Country between the cities of Vitória and Salvador.
- Group B - Other genera that disappear as we go north.
- Group C - A series of genera that are present from the south to the extreme north of the country. On the Chart, some of the interruptions in the frequency, registered by dashes, may be due to a poor sampling in that area.
- Group D - Other genera did not appear in the South, but started to appear a little further north at Paranagua and especially at Cabo Frio (22°51'S).
- Group E - Another series of genera that appears only in the Northern part of the Country from the River Jaguaribe (Lat. 03°59'S; Long. 37°46'W) as far as near the island of Marajó (01°20'N and 48°00'W).

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One interesting fact that can be observed also is that from the several Miocene ostracodes genera from the Pelotas Basin (34°03'S to 29°20'S), described by Sanguinetti (1974), fifteen are still found in the South (see Chart 1); six (*Paracypris*, *Paracytheridea*, *Semicytherura*, *Pellucistoma*, *Oriolina* and *Henryhowella*) are only found a little more to the North; and three (*Rocleberis*, *Aurila* and *Munseyella*) were not registered as living forms in Brazil, until now.

Physical factors influencing the distribution of the Ostracodes genera

a) Temperature

On study of the distribution of the ostracodes genera on Chart 1 and on transposition of these data to the Map of water surface temperature (Map 1) or to a Map that shows Oceanic water Currents (both of which correspond in the matter of water temperature), it is seen that almost all the groups had lived in temperatures as high as 27° C, but had existed in different lower temperatures. The abovementioned groups A, B and C were living in an environment with temperatures around 11° C. In Group D, six genera lived around 15° C, seven around 17° C and nine genera at Cabo Frio, around 20° C.

In the north of the Country six genera which are exclusive to that area were living in temperatures varying between 25° and 28° C.

b) Fresh-water influence

Study of Charts 2 to 6 shows the influence of fresh-water currents at those places in front of the river-mouths. Chart 2 and 3 are from the South. In Chart 2 the influence of the River Chui and in Chart 3 that of the Lagoa dos Patos are seen. The important fact is that ostracodes were not found in the samples collected in front and a little north of these two fresh-water mouths. Chart 4 shows the area in front of the Rio Doce in the northeast. Directly in front of this river, none of the samples showed ostracodes. Chart 5 and 6 are from the area in front of the Amazon Delta. There, it is seen that in the delta the samples have no ostracodes and the same results were obtained from samples just in front of it and along the coast to the north.

Another important fact is that in most of the samples where ostracodes were not found, forams, mollusks or other groups such as echinodermata,

bryozoan etc were found. This certainly shows that the marine ostracodes are more sensitive to the change in salinity, or rather, to the influence of fresh-water than the immediately above mentioned groups. The total absence of all groups, in other words sterile samples, have been found especially around the island of Marajó. These may have been affected also by the strong currents or possibly by the turbidity of the water. The absence of data regarding these factors did not permit a conclusion on this.

c) Marine current influence

Certainly the temperature of the water in the South is dependent on the Falkland Current and in the North and Northeast on the Brazilian Current. But apparently also the fact that in the South the samples without ostracodes were found in front of and to the north of the mouth of fresh-water currents and in the northeast exactly the reverse, is probably due to the action of these currents too.

d) Bathymetric influence

A study on this factor was not made, but simple observation of the twelve sheets where the 586 samples were plotted apparently between 15 and 150m shows that bathymetry has no influence on the number of ostracodes genera. On the Charts all the samples near the coast with a relatively small number of genera are from areas influenced by fresh-water currents. Concerning the occurrence of the different genera no observation has yet been made.

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Chart 1		Geographical distribution of the Ostracodes genera along Brazilian coast	
Geographical distribution of the Ostracodes genera along Brazilian coast		Geographical distribution	Genera
<p>The numbers after the genera correspond to each genus as is used in the Graphics 2 to 6</p> <p>— presence</p> <p>--- possible presence</p> <p>--- presence of Miocene ostracodes genera between 34°03'S and 29°52'S</p>	<p>SYMBOLS</p> <p>The numbers after the genera correspond to each genus as is used in the Graphics 2 to 6</p> <p>— presence</p> <p>--- possible presence</p> <p>--- presence of Miocene ostracodes genera between 34°03'S and 29°52'S</p>	<p>Arroio Chui Lat. 34°03'S</p> <p>Tramandai Lat. 29°52'S</p> <p>Paranaguá Lat. 25°32'S</p> <p>Cabo Frio Lat. 22°51'S</p> <p>P. Castelhanos Lat. 20°47'S</p> <p>Mucuri Lat. 18°05'S</p> <p>Ituberá Lat. 13°45'S</p> <p>Mosqueiro Lat. 11°09'S</p> <p>Recife Lat. 08°06'S</p> <p>Rio Jaguaribe Lat. 03°59'S</p> <p>Rio Tucunduba Lat. 02°07'S</p> <p>Muiranêu Lat. 00° 2'N</p> <p>Ilha de Marajó Lat. 01°20'N</p> <p>Rio Oiapoque Lat. 04°25'N</p>	<p>Actinocythereis 1</p> <p>Ambocythere 2</p> <p>Trachyleberis 3</p> <p>Cypridella 4</p> <p>Genus M 5</p> <p>Australicythere 6</p> <p>Bensonella 7</p> <p>Cushmanella 8</p> <p>Urocythereis 9</p> <p>Hemicytherura 10</p> <p>Krithe 11</p> <p>Callistocythere 12</p> <p>Hermanites 13</p> <p>Perissocythereis 14</p> <p>Argilloecia 15</p> <p>Bairdia 16</p> <p>Gaudites 17</p> <p>Cytherella 18</p> <p>Cytheropteron 19</p> <p>Echinocythereis 20</p> <p>Xestoleberis 21</p> <p>Cythereilloides 22</p> <p>Costa 23</p> <p>Pteridocythereis 24</p> <p>Bradleya 25</p> <p>Quadracythere 26</p> <p>Cytheretta 27</p> <p>Copypis 28</p> <p>Paracypris 29</p> <p>Paracytheridea 30</p> <p>Kanabina 31</p> <p>Semicytherura 32</p> <p>Phlyctocythere 33</p> <p>Loxosconcha 34</p> <p>Macrocypris 35</p> <p>Pellucistoma 36</p> <p>Monoceratina 37</p> <p>Burtonia 38</p> <p>Orionina 39</p> <p>Puriana 40</p> <p>Mutulus 41</p> <p>Henryhowella 42</p> <p>Genus B 43</p> <p>Triebelina 44</p> <p>Proponocypris 45</p> <p>Paradoxostoma 46</p> <p>Cytherura 47</p> <p>Genus L 48</p> <p>Sclerochilus 49</p> <p>Hemicytheridea 50</p> <p>Cativalia 51</p> <p>Huilinsina 52</p> <p>Microcythere 53</p> <p>Genus D 54</p> <p>Eucytheridea 55</p>

Chart 4

Rio Doce
19°38'S 39°53'

Barra Nova

18°53'

The chart displays a series of depth soundings and navigational aids. Key features include:

- Depth Soundings:** Numerous numerical values representing depths in fathoms, such as 19, 20, 39, 40, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
- Navigational Aids:** Various symbols and numbers indicating the presence of buoys, lighthouses, and other navigational markers. Examples include "19", "20", "39", "40", "51", "52", "53", "54", "55", "56", "57", "58", "59", "60", "61", "62", "63", "64", "65", "66", "67", "68", "69", "70", "71", "72", "73", "74", "75", "76", "77", "78", "79", "80", "81", "82", "83", "84", "85", "86", "87", "88", "89", "90", "91", "92", "93", "94", "95", "96", "97", "98", "99", "100".
- Geographical Features:** The chart shows the coastline of Barra Nova and the Rio Doce, with various landmarks and navigational points marked.

Chart 6

SAMPLES IN FRONT OF THE AMAZONAS RIVER DELTA

03 38			5/2	03 48	03 32	03 23	03 09		5/44	03 17		5/2	03 49		5/66	03 07		5/2	03 42
5-3472 □		9/1		5-3487	5-3486 sterile	5-3471 sterile	5-3470 F		17/2	5A-3567		19/1	5-3480		14/10	5A-3568			5-3481
		12/1							31/1			32/1			17/1				
		17/1							32/2						18/1				
									34/1						20/1				
															31/3				
															32/1				
															34/4				
															35/9				
50 23				50 21	50 15	50 05	49 50			49 32			49 24		49 21			49 19	
47				63	49	43	36			75			93		91			94	
	5/28		03 00		5/36	03 22		5/8	03 00		5/22	03 28	02 28		5/30	02 53			02 18
9/3				18/2									5-3469 sterile	17/1					
14/2				20/2		5A-3562				5A-3564				29/1		5A-3565			
17/3				32/2							32/1			31/1					
31/2				38/7										37/7					
														44/1					
52/1																			
				48 59		48 53			48 32		48 49		49 20		48 20		48 26		
				89		95			110		95		14		93		42		

NORTH

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