

# MICROHABITATS AND GEOHABITATS AS ECOLOGICAL INDICATORS IN PONTA NEGRA BEACH, RN, BRAZIL

Eichler, P.P.B<sup>1,2</sup>, Barcellos, R.<sup>3</sup>, Santos, L.<sup>3</sup>, Vital, H.<sup>1</sup>, Gomes, M.P.<sup>1</sup>

<sup>1</sup>Programa de Pós-Graduação em Geodinâmica, e Geofísica, Centro de Ciências Exatas e da Terra da Universidade Federal do Rio Grande do Norte, <sup>2</sup>Universidade do Sul de Santa Catarina (UNISUL). Departamento de Oceanografia, Centro de Tecnologia e Geociência, Universidade Federal de Pernambuco,

**RESUMO:** This study aims to evaluate microhabitats and geohabitats responses to natural patterns and to local contamination by domestic sewage using a foraminiferal approach. Eighteen sediment samples were collected at depths of 5–10 m on the inner continental shelf adjacent to Ponta Negra Beach, an important touristic location in Natal, Rio Grande do Norte, Northeast Brazil, in October 2013. Sediment samples were collected using a Van Veen grab sampler just offshore Ponta Negra Beach. The sediment analysis included grain-size, calcium carbonate and total, elemental and isotopic organic matter. Oxygen and temperature were measured using a calibrated HI 9146 dissolved oxygen meter from Hanna Instruments. For analysis of the foraminiferal assemblages, the uppermost layer of the grab sample (about 1 cm) was stored in a mixture of buffered ( $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ ) 70% alcohol. Faunal analysis followed standard procedures, where a fixed volume of 50 cm<sup>3</sup> of sediment was washed through a sieve with 0.062 mm openings. Using a dry micro splitter (model from Green Geological Services), the residue was split into subsamples of approximately 100 specimens (live and dead) and the taxa were counted. All specimens were counted when the number of foraminifers in a sample was less than 100. In northern samples, closer to Potengi estuary, siliciclastics sediments (3.2–19%  $\text{CaCO}_3$ ), foraminiferal assemblages with higher diversities and evenness, with lower dominances, predominate. At the 5 m isobath, *Ammonia tepida* and *Quinqueloculina angulata* dominate; and at 10 m isobath *Textularia gramen* dominates. In the central part, fine silicibioclastics sediments (31–39%  $\text{CaCO}_3$ ) have abundant *Pseudononion atlanticum*, *Bolivina translucens* and *Q. atlantica*. Bottom waters of this central part of the inner continental shelf are poorly oxygenated, with more silt and clay deposits. At the 10 m isobaths in the central and southern parts of the study area, biosiliciclastics sediments (50–55%  $\text{CaCO}_3$ ) are less diverse and less stable foraminiferal habitats. PCA revealed one outlier, based on silt, clay, surface temperature, and oxygen values. Multivariate analysis on the foraminiferal fauna, excluding the outlier, produced two distinct groups (5 m and 10 m isobaths), and MDS showed that the faunal pattern followed depth, silt, clay, carbonate, and organic matter content. Three (*Ammonia tepida*, *Pseudononion atlanticum*, *Bolivina translucens*) out of six dominant foraminiferal species (*Q. angulata*, *Q. atlantica*, *Textularia gramen*) are opportunistic and anoxia-tolerant. These benthic foraminifera revealed that sediment plumes can influence the microhabitats in the inner continental shelf adjacent to Ponta Negra Beach, especially in the retreated coastline.

**PALAVRAS-CHAVE:** MICROHABITATS, GEOHABITATS, DIVERSITY