

CENOZOIC INVERTEBRATES FROM WEST ANTARCTICA: AGE AND PALEOENVIRONMENT DETERMINATIONS

Quaglio, F.*; Anelli, L.E.*; Santos, P.R. dos*; Rocha-Campos, A.C.*; Siga Jr., O.*
Instituto de Geociências – Universidade de São Paulo

Fossils shells represent an important data base for paleoclimatic and paleoenvironmental reconstructions. The King George Island (KGI), situated at northeastern of Antarctic Peninsula, preserves the most complete sedimentary record from Antarctic Cenozoic, allowing the search for material in view of geochemical analysis, fundamental to elucidation of the complex paleoclimatic and paleoenvironmental history of the region. During Early Cenozoic the antarctic region underwent alternate cooling and warming episodes, as well as geodynamic events, culminating on thermal isolation and outcoming recent ice shields. These new conditions culminated in great modifications on flora and fauna, previously under more stable environmental conditions. Recent studies recognized four glacial sedimentation episodes in the KGI from Eocene to Early Miocene times (eg Birkenmajer 1996): Krakow, Polonez, Legru and Melville glaciations, which corresponds lithostratigraphically to Magda Nunatak, Polonez Cove Formation, Legru Bay Group and Cape Melville Formation sediments. Recent investigations accomplished at 2003 and 2004 summers at Cape Melville (Cape Melville Formation) and Vauréal Peak (Polonez Cove Formation) localities provided data to stratigraphic, sedimentologic, paleontologic and chemostratigraphic studies. Stratigraphical (Perinotto *et al.* 2004) and sedimentological analysis suggest a model in which only two glacial events are recognized on KGI Cenozoic rocks, distinct from that early proposed. Paleontological studies recognized seven bivalve *taxa* described for Cape Melville Formation (Anelli *et al.* submmited) and around 11, among bivalves, brachiopods and bryozoans, to Polonez Cove Formation, currently under analysis (Quaglio *et al.* 2004). Fossil material preserved under biogenic carbonate will be utilized in chemostratigraphic analysis ($^{87}\text{Sr}/^{86}\text{Sr}$, $\delta^{18}\text{O}$ e $\delta^{13}\text{C}$), in paleoenvironmental studies and age determination. Fossil carbonate from Cape Melville and Polonez Cove formations were selected and, after mechanical cleaning processes, chemical analysis (Mg, Mn, Fe, Ca, Rb, Sr e Na) and scanning electronic microscopy, will be selected to chemostatigraphic analysis ($^{87}\text{Sr}/^{86}\text{Sr}$, $\delta^{18}\text{O}$ e $\delta^{13}\text{C}$). These analytical techniques on biogenic carbonates will be for the first time accomplished in Centro de Pesquisas Geocronológicas laboratories at IGc-USP, according to methodology described by McArthur (1994) with some modifications. Data on paleotemperature, paleosalinity and organic material availability, resulted from stable isotopes analysis, will be applied for the paleoenvironmental reconstitution. Paleontologic and chemostratigraphic studies will provide data for studies on the origin and affinities of Cenozoic invertebrate fauna from the KGI. These, associated with sedimentologic and stratigraphic studies, will complement the data base for the reconstitution of Early Cenozoic paleoclimatic and paleoenvironmental history of the KGI.

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