

BIOEROSION PATTERN AS A PALEOTOOL TO ENVIRONMENTAL INTERPRETATION: A CASE OF STUDY OF CABO RASO (PATAGONIA, ARGENTINA)

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Cabo Raso is located in the north of Bahía Camarones, in Central Patagonia, Argentina. The marine Quaternary deposits from this area are poorly studied and scarce paleontological and geological studies have been made. These deposits are preserved as parallel beach ridges with mollusc shells, one of the principal substrates of bioerosion traces. In the last year, an ichnological analysis was made from these deposits. Here, we describe the preliminary results of this study.

The outcropping Pleistocene deposits are approximately 90 cm thick. They begin with a sandy matrix-supported conglomerate with mollusc shells, followed by a level of fine-grained sandstones to medium-grained conglomerates with sporadic mollusc shells and the uppermost part is similar to the base. Regarding the Holocene deposit, represented by fine to medium-grained conglomerates with mollusc shells, an excavation of 50 cm was made to collect a bulk sample.

A total of 489 mollusc shells were analysed and 61.5% are bioeroded. In the Pleistocene sample, 70.4% of the shells show bioerosion and 12 ichnotaxa were distinguished. The most dominant ichnogenera were *Iramena* (borings with circular to oval aperture produced by cheilostome bryozoans), *Maeandropolydora* (a trace produced by annelids), *Oichnus* (a predatory trace produced by gastropods) and *Podichnus* (attachment trace produced by articulated brachiopods). In the Holocene samples, the bioeroded shells decreased (51.3%) and only four ichnogenera were observed: *Iramena*, *Maeandropolydora*, *Oichnus* and *Podichnus*. The Modern sample presents a major number of ichnogenera (13), where *Iramena*, *Finichnus* (attachment scars produced by cheilostome bryozoans) *Podichnus* and *Maeandropolydora* are the most abundant ichnotaxa.

In the last years, it has been demonstrated that the mollusc shells (and the associated traces) preserved in the marine Quaternary deposits of Patagonia represent a proxy of paleoenvironmental conditions. According to previous studies, the bryozoan biodiversity is higher in colder waters of high chlorophyll-a concentration. Therefore, the dominance of bioerosion traces produced by cheilostome bryozoans in the Pleistocene might be associated with the colder waters present at that time. The bioerosion pattern observed in the modern samples is very similar to the Pleistocene. This could be indicating that both present similar environmental conditions. The cold Malvinas current presents a more extensive and intensified position at the present day. This causes a decrease in the sea surface temperature (SST) and high productivity on the Patagonia coast. Therefore, it is probable that the Pleistocene coast also presented high productivity. In the mid-Holocene, a period of maximum warming called the Hypsithermal event occurred. This event increased the SST and weakened the oceanic anticyclones that provoked the increase in the energy of marine storms. The rise of the temperature might impact in the marine community changing the ontogenetic stages and interaction predatory-prey while the storm waves have implications for intertidal and shallow subtidal systems (vulnerable to hydrodynamic disturbance). Also, these climatic changes could modify the nutrient supply and, therefore, productivity. This might be the cause of the low number of ichnogenera in the Holocene sample.

This study represents the first ichnological characterization of the Quaternary deposits in the Cabo Raso locality.