



Ancient limpet shells as paleo-environmental and ethno-archaeological archives: the case of Beniguet Island's shell middens (Iroise Sea)

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During the winter 2013-2014, severe storm events caused a coastal erosion in the southern part of the Beniguet Island (Brittany, France). The associated shoreline retreat had uncovered three layers of shell middens interbedded into an aeolian sand dune deposit. From several radiocarbon dating crossed with the study of ceramic and lithic contents, the shell middens were dated to the Final Neolithic (2400 BC), the Early Bronze Age (2000 BC) and the Early Middle Age (800 AD) respectively. This site offers a unique opportunity to collect two types of information: palaeo-environmental (palaeo-temperature of sea water) and archaeological (determination of harvest season). In this study, we focus on gastropod of the genus *Patella* which represent 90% of the remains found in this midden. This organism is potentially a highly valuable archive for these environments because they are intertidal and relatively sedentary.

We studied the growth rings in the outer calcitic layer of individual limpet shells from the Neolithic, Early Bronze Age and Present Day populations. We report here the results of $\delta^{18}\text{O}$ analyses. We found a similarity between the reconstructed palaeo-temperature in the Neolithic and the Present periods (between 13 and 14°C in summer and about 8 – 9°C in winter). However, palaeo-temperatures of the Early Bronze Age shells are significantly lower in winter (5 – 6 °C). Moreover, the initial results of the $\delta^{18}\text{O}$ analyses at the margin of these shells showed that they were harvested during a specific season (end of spring or early summer). Additional work will be done to address questions about shell growth dynamics of these species. These results confirm the interest of using ancient limpet shells as palaeo-environmental and archaeological archives.