## Back to Hoedic: Recording the Breton Mesolithic cemeteries from a 21st century perspective

Pablo Arias\*<sup>†1</sup>, Grégor Marchand², Ángel Armendariz³, Fernando Buchón , Jorge Calvo , Catherine Dupont⁴, Patricia Fernández³, Fernando García , Florian Hermann , Eneko Iriarte⁵, François Lévêque , Paul Naumann , Felix Teichner⁶, Luis Teira³, and Jorge Vallejo³

<sup>1</sup>Instituto Internacional de Investigaciones Prehistóricas de Cantabria [Santander] (IIIPC) – Edificio Interfacultativo Avda. de los Castros,s/n Tel. 942 202090 E-39005 Santander Cantabria, Espagne
 <sup>2</sup>Centre de Recherche en Archéologie, Archéosciences, Histoire (CReAAH - UMR 6566) – Universite de Rennes 1, Centre National de la Recherche Scientifique - CNRS – Campus de Beaulieu, Bâtiment 24-25, 263 Avenue du général Leclerc, CS 74205 - 35042 Rennes Cedex, France

<sup>3</sup>Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Universidad de Cantabria (UC)

– Espagne

<sup>4</sup>Centre de Recherche en Archéologie, Archéosciences, Histoire (CReAAH - UMR 6566) – Le Mans Université, Université de Rennes 1, Université de Rennes 2, Centre National de la Recherche Scientifique : EA- UMR6566, Université de Nantes : UMR6566, Ministère de la culture – Université de Rennes 1 - Bâtiment 24-25 - Campus de Beaulieu - 263 avenue du général Leclerc - CS 74205 - 35 042 Rennes Cedex, France

<sup>5</sup>Laboratorio de Evolución Humana. Dept. Historia, Geografía y Comunicación, Edificio I+D+I, Universidad de Burgos (LEH - UBU) – Espagne

 $^6$ Philipps-Universität Marburg, Vorgeschichtliches Seminar – Biegenstraße 11, 35037 Marburg, Allemagne

## Résumé

The Breton cemeteries are among the key sites for the study of the late Mesolithic of Atlantic Europe. The excavations carried out by Saint-Just and Marthe Péquart at Téviec (1928-1930) and Hoedic (1931-1934) provided one of the richest funerary assemblages of Europe's last hunter-gatherers. Both the human remains and the associated Archaeological items have been one the main sources of information on the late Mesolithic of Western Europe, and they have been the object of numerous re-analysis, including relatively recent techniques such as stable isotopes or Palaeogenetics. However, in spite of the high standards of the Péquarts' field work and the good preservation of the materials, dealing with old Museum collections is a challenge that presents serious limits. Issues such as the precise chronology of the funerary structures, the formation processes of the sites, or the relationship between the graves and other coeval features are very hard to study without direct contact with the field.

That is why we have decided to return to the sites. Since 2018, a Spanish-French team has

<sup>\*</sup>Intervenant

<sup>&</sup>lt;sup>†</sup>Auteur correspondant: pablo.arias@unican.es

started a new programme of field work at Hoedic, intending to re-analyse the cemetery and its context using 21stCentury techniques, thus providing resources for a better understanding of the Archaeological information gathered nearly ninety years ago. Our project will follow a strict and updated fieldwork protocol which will allow us to apply a wide series of analytical techniques. It will include georeferencing all the archaeological materials and samples and processing the sediments with floatation and water-sieving procedures. The excavated surfaces will be recorded using photogrammetric techniques, and non-visible features will be explored through high-resolution surface mapping of the magnetic field and molecular analysis of the floors. The analytical programme will include Radiocarbon dating (including pairs of marine and atmospheric samples to establish the  $\Delta R$  parameter for this sector of the Atlantic coast), Chemostratigraphic and Micromorphological analysis of the sediments, lithic analysis (including raw materials, tecnological and micro-wear analysis), Archeobotanics (Palynology, Carpology and Anthrocology) and Archaeozoology (mammals, birds, fish, and marine and terrestrial invertebrates, including geochemical and biochemical analysis such as stable isotopes and ZooMS). The excavation in the necropolis area opens the possibility that new human remains are recovered. If so, a strict protocol will be followed to get samples for Palaeogenetic and Biochemical analysis (d13C,d15N, 87Sr/86Sr,d34Sy d13O) and proteomic and metagenomic analysis of dental calculiin the best possible conditions.

The first field seasons, developed in 2018 and 2019, have focused on a detailed exploration of the site. More than 5,000 square meters have been recorded using several surveying techniques: Ground-penetrating radar (GPR), Electrical resistivity tomography (ERT), Magnetogradiometry, and mapping of the magnetic field intensity. Moreover, sedimentological cores, 2 m deep, were taken with a percussion window sampler using a Van Walt/Eijkelkamp mechanical corer, and limited test pits were opened in the margins of the site, allowing us to get a precise pre-view of the stratigraphic sequence of the site. This has permitted us to establish with a reasonable precision the extension of the Mesolithic site, and to select some areas where anomalies suggesting the existence of Prehistoric features have been found. That will allow us to plan the new excavations on a realistic basis.

Mots-Clés: Cemeteries, Brittany, shell middens, Archaeology of Death, Field Archaeology