

ABSTRACTS

Project Sentinela: the use of digital twins to assess endangered cultural heritage

Patricia Valle Abad, Adolfo Fernández Fernández, & Nerea Ruanova Álvarez, GEAAT, University of Vigo

Launched in 2022, Project Sentinela focused on monitoring endangered cultural heritage located along the coast and affected by climate change or human intervention. It was carried out in the Atlantic Islands of Galicia Maritime-Terrestrial National Park, a group of small islands located at the mouths of the estuaries that shape Spain's northwestern coast. The monitoring was conducted at two different levels: a general catalogue and annual visual inspections of the islands' heritage, and a detailed study of the changes affecting three different sites using digital twins and comparative models.

This presentation will analyse the methodology used during the project, highlighting its strengths and weaknesses, as well as the results obtained after three and a half years of periodic monitoring. It will also present a feasible method for assessing changes affecting these cultural remains—one that can be replicated in other similar landscapes—and discuss the challenges involved in preserving heritage located on small islands.

Integrating UAV LiDAR, Shallow-Water Photogrammetry and Beyond-Visible Remote Sensing at Keros

Jitte Waagen, 4D Research Lab, Amsterdam Centre of Ancient Studies and Archaeology

This paper presents an integrated UAV remote-sensing campaign on Keros and Dhaskalio in the Cyclades designed to evaluate complementary methods for documenting archaeological landscapes across land, coast and shallow water. The uninhabited island of Keros, and the small islet of Dhaskalio to its west, have been under scholarly attention since 1963, and, since 1987, have seen a series of archaeological research projects directed by Prof Colin Renfrew under the auspices of Cambridge University and the British School at Athens (BSA). The current Keros Project (2025-29) is a synergasia between the BSA, the Cyprus Institute, and the Greek Ministry of Culture (Ephorate of Antiquities of Cyclades). This summer, ACASA and the 4DRL were welcomed into the project for both fieldschool and research activities.

This paper will report on the technology and methodology applied to the lidar survey, beyond-visible light documentation, and photogrammetric bathymetry on the site. UAV LiDAR was acquired across 227.96 ha using combinations of flight altitude, scan mode and grid orientation. RGB imagery of the Keros–Dhaskalio causeway produced a

promising shallow-water photogrammetric surface. Reflectance-calibrated, pan-sharpened multispectral imagery and thermal orthomosaics of Dhaskalio extend interpretation beyond visible wavelengths. Together, these datasets provide basis for identifying terrain, built remains, vegetation patterns and submerged archaeological topography in an island setting.

Investigating the Diversity of Indigenous Lifeways in Small Island Contexts:

A case study from Amboina, Bonaire

Jason Laffoon, Leiden University

Bioarchaeological and biochemical approaches have become increasingly popular in archaeological research. Isotope analyses, in particular, have become effective tools for addressing a wide range of research questions. One strength of these methods is that the individual unit of analysis permits investigations into inter-individual diversity in lifeways including diet, mobility, health, activity patterns, and lived experiences. Perhaps unsurprisingly, isotopic research on numerous archaeological populations has revealed a high degree of diversity in past lifeways globally, and this pattern is also observed amongst prehistoric Indigenous peoples of the Caribbean. Although less isotopic research has been conducted on small islands, such places are often characterized as ideal ‘laboratories’ owing to their more limited variability. Here I present the results of a recent small-scale research project combining archaeological, osteological, and isotope data to shed new light onto the lifeways of the prehistoric inhabitants of the site of Amboina on Bonaire in the southern Caribbean region. Although the sample size is small, the isotope results provide no evidence for individual mobility. However, the stable isotope data: permit reconstructions of individual diets; indicate a very high degree of dietary diversity; and suggest that dietary practices in the southern Caribbean differed substantially from the rest of the insular Caribbean.

Community stewardship of small island archaeology.

Ellie Graham, University of Aberdeen

The Shetland islands are a vibrant and archaeologically rich archipelago, though much of their heritage lies on the coast and is threatened by coastal change, erosion and sea level rise. This paper will present a series of small community-led interventions and monitoring programmes undertaken jointly as PhD research in partnership with landowners and the local community group Archaeology Shetland to mitigate and respond to the risk to several

of these vulnerable heritage sites through excavation, recording and survey. The sites represent a diversity of types, periods and have been ascribed various judgements of archaeological ‘importance’. They are located on a variety of the coastal landscapes that characterize the rugged and beautiful Shetland islands. However, they are all highly valued by the archaeologically-educated and engaged community and the resulting preservation by record achieved in advance of their destruction is thanks to community championing for some form of investigation. This paper will examine the importance of social value as a metric of significance in prioritizing sites for action in the face of threat, and the contribution this can make to the archaeological record.

Stories from the Island. Local ideas about Archaeology on Zakynthos, Greece

Gert Jan van Wijngaarden, Universiteit van Amsterdam

The island of Zakynthos, off the western coast of Greece, is not very well known for its archaeology. In fact, many islanders would publicly claim there is no archaeology at all on the island. In the framework of the Zakynthos Archaeology Project, which has been carried out since 2005, many conversations have been held with people on Zakynthos. These conversations range from chance encounters in the field to formal recorded interviews. It has become clear that there are many different attitudes on the island regarding the past and its remains. In this paper, I will explore these attitudes and try to relate them to people’s notions about the islandscape in general. Moreover, I will discuss the role of archaeological authorities in the ways the islanders view archaeology on Zakynthos.

Title??

Heleen van Londen & Josje van Leeuwen, Amsterdam Centre for Ancient Studies and Archaeology & Buro de Brug/Stichting Tastbare Tijd

CARE Schylge is a long-running archaeology project with two tiers: education and participation. Since 2023, every summer we have spent three weeks on Terschelling to try and discover the unwritten history of the island. Before this time, only one archaeological dig had ever been done on the island and almost all interpretation had been based on this research from the 60ies. In our project, we have started to uncover completely new stories about human presence on Terschelling together with our second-year bachelor students and the islanders themselves. This last input has been vital to our understanding of the archaeology, as sometimes hilarious anecdotes illustrate. Working together with islanders over the years, we are struck by how we find ourselves surprised by the effect real, long

running participation has on us as scientists. The reciprocal effect greatly enhances the scientific, but also the emotional value of our research.

Of Swamp and Sand: Coastal and Island Archaeology in North Frisia, Germany

Ruth Blankenfeldt, Leibnitz-Zentrum für Archäeologie

Of Swamp and Sand: Coastal and Island Archaeology in North Frisia, Germany

The coast of North Frisia, now part of the UNESCO World Heritage Site “Wadden Sea”, has repeatedly undergone major geomorphological transformations. Since the last Ice Age, large areas remained swampy and uninhabitable for centuries or even millennia.

Exceptions were the so-called Geestkerne: elevated Pleistocene landforms that protruded from the surrounding wetlands and remained permanently dry. Together with accumulating marine sediments, they formed the cores of today’s North Frisian islands. Although inhabited since the Neolithic, these islands saw the emergence of larger settlement clusters around the beginning of the Common Era. Owing to favourable preservation conditions, traces of these communities survive in exceptional quality. On Amrum, for example, a broad belt of dunes formed in recent centuries covers numerous archaeological sites. Extensive geophysical surveys, soil analyses and excavations conducted there have produced a wealth of new evidence and insights. From the twelfth century AD onwards, Frisian settlers extensively embanked, drained and cultivated the coastal marshes and fenlands. Many of these hard-won areas were flooded and lost during severe storm surges. Preserved beneath today’s tidal flats, however, their remains can now be mapped using modern non-invasive methods.

Suas gu Deas: Perceptions & Prehistoric Population Mobility amongst the Hebrides

Mairie McLean, Barra & Vatersay Heritage Centre

Located along the western seaboard of Scotland, the Inner and Outer Hebrides are frequently discussed in terms of being “on the edge”, remote and difficult to access throughout history. This talk summarises the author’s PhD research, which explores whether these ideas of remoteness and inaccessibility are reflected in the archaeological record of prehistoric Hebrideans. Using stable isotope analysis to look at the diet ($\delta^{15}\text{N}$, $\delta^{13}\text{C}$) and mobility ($\delta^{34}\text{S}$) of both human and animal populations, this research explores our ability to show direct evidence of mobility whilst questioning the impact that ideas of remoteness and inaccessibility have had on the development of Hebridean archaeology.

An Archeozoological reassessment the Pleistocene Faunal Assemblage of Liko Cave, Crete

Mirre van der Velden, graduate Saxion University of Applied Sciences

The timing and nature of human arrival on Crete remain among the most debated questions in Mediterranean archaeology. While human occupation of the island is well established during the Holocene, evidence for a much earlier Pleistocene presence remains contested. This presentation examines the faunal assemblage from Liko Cave, Crete, to assess whether the material provides evidence for human interaction with the island's endemic fauna. The assemblage was investigated through literature research, comparative osteological identification, and taphonomic analysis, with particular attention to surface modifications, breakage patterns, preservation, and depositional context. The assemblage is dominated by the endemic deer *Candiacervus*, while smaller mammals, birds, reptiles, and occasional dwarf elephant remains are also represented. Although a small number of specimens display possible anthropogenic modifications, 96.9% show no evidence of human alteration. One antler fragment exhibits modifications potentially consistent with intentional working, but its recovery from a disturbed layer prevents a secure chronological association with the Pleistocene fauna. Overall, the evidence suggests that Liko Cave functioned primarily as a natural accumulation site. The study highlights the challenges of distinguishing possible human activity from natural taphonomic processes and demonstrates the need for cautious interpretation when assessing claims of early human presence on Crete.

Dangerous or Scary? Risk Perception and Shipwreck Probability in Coastal Navigation

Manuela Ritondale, University of Trier

The proximity of the coast entails both risks and benefits for seafaring, and the contrasting ways these were assessed in Classical and Medieval sources underline the central role of risk perception in shaping ancient maritime movement, especially in littoral zones. Yet this factor, and, more broadly, the influence of seamanship and human hazards, has never been formally incorporated into computational models of ancient seaborne mobility, which tend to privilege environmental, technological and socio-economic parameters over cultural and cognitive ones. This contribution first examines these theoretical caveats and their impact on current modelling of ancient seafaring and shipwreck probability. It then presents a GIS-based model assessing coastal attractiveness and shipwrecking probability within the 12-nautical-mile zone. The model assumes that sailors sought coastal benefits

while avoiding hazards, and that shipwrecks cluster where perceived and actual dangers misalign.

Microregional mobility and community-building in the precolonial Gulf of Fonseca, Pacific Central America: a view from El Tigre Island (AD 600-1520)

Marie Kolbenstetter, Leiden University

El Tigre is one of the largest of the 34 small islands dotting the Gulf of Fonseca, one of the few inlets on the Pacific Coast of Central America. By examining evidence for microregional mobility from several archaeological contexts from El Tigre Island, this presentation seeks to question the validity of insularity biases by exploring what role, if any, territoriality played in community building in the precolonial Gulf of Fonseca. Indeed, ethnographic, archaeological, malacological, and provenance data speak to a variety of mechanisms which actively sought to maintain and strengthen inter-community bonds within the social landscape of the Gulf of Fonseca. These combined data suggest an intensity of mobility and inter-community interactions between coasts and islands which reach far beyond what would typically be expected from a bounded territory. Our results then suggest that this connectivity may have been foundational to the identity of island communities in the precolonial Gulf of Fonseca, who actively sought to anchor themselves within the wider social landscape. Finally, this presentation will explore how island environments invited and facilitated specific sets of interactions through time.

Beachware as a cultural resource in prehistoric small island societies: convergence and divergence in the Western Isles and Ryūkyū Islands

Matt Law, Bath Spa University

This paper introduces and applies the concept of 'beachware', a suite of economically-useful materials collected from the shoreline, including driftwood, seaweed, stranded marine mammals, pumice, lithics, and shell, as a distinct analytical category for understanding prehistoric coastal and island economies. Drawing on archaeological evidence from the Western Isles of Scotland and the Ryūkyū Islands of Japan, the paper examines how strandline exploitation functioned as a resilience strategy that diversified and complemented terrestrial resource bases.

In the Western Isles, driftwood and whale bone were especially valued in the context of a largely treeless landscape and poor lithic resources, with exploitation intensifying as terrestrial woodland declined from the Neolithic onwards. In the Ryūkyū

Islands, where terrestrial resources were more abundant, shell was the dominant beachware material, sustaining a rich tradition of tool and ornament manufacture extending back at least 35,000 years to the assemblage from Sakitari Cave, Okinawa.

The paper argues that beachware exploitation required vigilant monitoring of the shoreline, influenced social organisation through the control of foreshore access, and generated periodic communal activities around windfall events such as whale strandings. Its unpredictable, feast-or-famine character distinguishes it from both marine harvesting and terrestrial foraging, and merits explicit consideration in reconstructions of prehistoric coastal and island economies.