AEA Spring Meeting
Kirkwall, Orkney
1-2 April 2016

St. Magnus Centre
Palace Road
Kirkwall
Organisers:
Ingrid Mainland
Jen Harland
Scott Timpany

Photo credits:
Rebecca Marr (photograph on page 3 and on website)
Welcome

Islands: Isolation and Connectivity

Islands have immense appeal to archaeologists, both as a self-defining study area – a world in microcosm – and as a destination for fieldwork. It became apparent early on in the planning of this meeting that islands have immense appeal as a conference venue too. What was intended to be a short day of papers quickly expanded when we started to receive so many interesting abstracts. We are delighted to welcome over 70 of our colleagues from British, European and North American institutions. Papers will be presented describing results from many archipelagos, from the islands of the Mediterranean and the Canary Islands, to Iceland and the cold reaches of the North Atlantic. Topics are diverse too, encompassing many aspects of environmental archaeology: archaeobotany and zooarchaeology, biomolecular and multidisciplinary analyses, and landscape to seascape. This is the third AEA meeting on the theme of islands, indicating their enduring interest to environmental archaeologists.

Three local companies have kindly provided us with free drink for our evening reception on Friday: Orkney Brewery, Highland Park Distillery and Scapa Distillery. We trust you will enjoy sampling our local beer and whisky and should you wish to try their diverse range of drinks, you will find plenty in our local bars and pubs. Several organisations have supported the conference, including Beta Analytic, PastHorizons and Oxbow Books. The Scottish Archaeological Research Framework in conjunction with the Society of Antiquaries of Scotland provided several student bursaries, while a limited number of our delegates were awarded travel grants through the COST Action Oceans Past Platform, lead by Poul Holm from Trinity College Dublin. Finally, a few of our delegates have benefited from AEA travel bursaries.

Welcome to Orkney!

Ingrid, Jen and Scott
SUMMARY OF EVENTS

Friday 1st April

Registration opens at 9:00am, in the St Magnus Centre, Palace Road, Kirkwall

Papers presented from 9:30am through to 5:30pm

Lunch from 1-2:00pm, served in the Peedie Kirk opposite the St Magnus Centre

Evening wine reception from 7:30pm in the St Magnus Centre, with a plenary lecture by Prof Terry O’Connor: ‘Islands: isolation and connectivity’. Orkney whisky and beer will be available. Held in conjunction with the Orkney Archaeology Society and open to the public

Saturday 2nd April

Registration opens from 9:00am, in the St Magnus Centre

Papers presented from 9:30am through to 6:00pm

Lunch from 1-2:00pm, served in the Peedie Kirk opposite the St Magnus Centre

Evening dinner from 7.30pm at the Lynnfield Hotel, Holm Road, Kirkwall

Sunday 3rd April

Professional Zooarchaeology Group meeting, in the St Magnus Centre, papers presented from 10:00am through to about 5:30pm. Lunch from 1-2:00pm, served in the St Magnus Centre

-and-

Field trip departing from outside the St Magnus Centre, Kirkwall at 9:30am and returning around 4:00pm, led by Scott Timpany

Evening wine reception and tour of the Stromness Museum, Alfred Street, Stromness from 7:30pm. UHI minibuses will run from Kirkwall to Stromness, leaving Kirkwall Harbour at 6:00pm and again at 7:00pm and returning from the Stromness Travel Centre at 9:30pm

Alternatively, Stagecoach X1 departs Kirkwall Travel Centre at 17:20, arriving Stromness Travel Centre at 17:50 (giving you time to have a pub meal or fish and chips before walking to the museum); departs Stromness Travel Centre at 21:05, arriving Kirkwall Travel Centre at 21:35

Monday 4th April

Fieldtrip around Orkney’s World Heritage Area, departing from outside the St Magnus Centre, Kirkwall at 10:00am and returning around 5:30pm, led by Mark Edmonds

Tuesday 5th to Friday 8th April

Archaeomalacology Working Group Meeting, Archaeology Institute, East Road, Kirkwall
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<td>Introduction</td>
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<td>11:20-11:40</td>
<td>Farrell, Michelle, Rowan McLaughlin, Rory Flood, Chris Hunt, Caroline Malone</td>
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<td>11:40-12:00</td>
<td>Castellano Alonso, Pablo, Amelia Rodriguez Rodríguez, Marta Moreno García</td>
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<td>Valenzuela-Suau, Lua, Silvia Valenzuela-Lamas, Jordi Hernández-Gasch</td>
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<td>Cucchi, Thomas, Natalia Martinkova, Ross Barnett, Jeremy Searle, Keith Dobney</td>
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Morning chair: Ruth Pelling

Central Mediterranean islands: fragility and sustainability in prehistory

Zooarchaeology of the Canary Islands: status of the issue

S’Illot des Porros during the Naviform period. Occupation, functionality and management of meat resources

Where do the cod come from? Assessing the first historical presence of cod in Iberia: preliminary isotopic analysis

Unravelling seasonal shellfishing behaviour during the Late Stone Age at Pinnacle Point, South Africa, through sclerochronological analysis

Exploring accumulation rates of shell deposits through seasonality data

Land snails and environmental change in the Western Isles and Orkney

Oh deer, what can the matter be?

Islets for isolation, and causeways for connectivity: fluctuating identities in Hebridean prehistory

The Orkney vole: an insular history driven by men

Plants and people in Neolithic Orkney: local adaptations and cross-regional connections

Afternoon chair: David Orton
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<td>Pálsdóttir, Albina, Jón Hallstein Hallsson, Sanne Boessenkool</td>
<td>Origins of North Atlantic domestic animals: Current knowledge and the possibilities of interdisciplinary studies</td>
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<td>Mulville, Jacqui</td>
<td>Shipping species? Human mediated movement of animals in the British islands</td>
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<td>10:10-10:30</td>
<td>O’Connell, Michael</td>
<td>Small islands in the context of nearby large islands: glorious isolation or close integration? Palaeoecological case studies from western Ireland</td>
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<td>People land-use and time: Investigating human-environment interactions in North Munster, western Ireland</td>
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<td>11:40-12:00</td>
<td>Evans, Sally, Jacqui Mulville, Camilla Speller, Keri Roswell, Krista McGrath</td>
<td>Biomolecular whaling; Capturing cetacea via proteomics</td>
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<td>Rofes, Juan, Thomas Cucchi, Anne Tresset</td>
<td>Insular syndrome and Holocene diversification of Crocidura suaveolens (Mammalia, Soricidae) on the NW fringe of the European Continent: natural forcing or human driven process?</td>
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<td>Harrison, Ramona, George Hambrecht, Konrad Smiarowski, et al.</td>
<td>Comparative Island Ecodynamics in the Norse North Atlantic – An initial project report</td>
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<td>Cussans, Julia</td>
<td>Iron Age economies of Scotland: Islands versus mainland</td>
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<td>2:40-3:00</td>
<td>Jones, Jennifer, Jacqui Mulville</td>
<td>Feasting, foddering and farming: A stable isotopic and zooarchaeological approach towards understanding the consumption and use of marine resources in the Scottish North Atlantic Islands</td>
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<td>3:00-3:20</td>
<td>Ölafsdóttir, Guðbjörg Ásta</td>
<td>CodStory; multidisciplinary research on Atlantic cod, climate and historical fisheries in the North Atlantic</td>
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<td>4:10-4:30</td>
<td>Orton, David, Lembi Löugas, Eve Rannamäe, Daniel Makowiecki, Tamsin O’Connell, James Barrett</td>
<td>‘From Stockfish to Strekfusz’ and other Baltic cod tales: stable isotope evidence for developments in Baltic cod fisheries and fish trade during the 13th to 16th centuries</td>
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<td>Best, Julia</td>
<td>Home to Roost: Local and distant capture of avian resources in the North Atlantic Islands</td>
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### POSTER SESSION
Delegates to stand by their posters during Saturday afternoon tea/coffee session

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<td>From the fish middens to the herring: medieval and post-medieval fishing in the Northern Isles</td>
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<td>Murray, Stewart</td>
<td>A case for prehistoric apiculture</td>
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<td>Powell, Adrienne</td>
<td>Oh, whistle, and I’ll come to you!</td>
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<td>Rizzetto, Mauro</td>
<td>Two shores of the same sea: British insularity and the Continent in the Roman and early Anglo-Saxon periods</td>
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<td>Servera Vives, Gabriel, Montserrat Vivo Sastre, Arnau Garcia Molsosa, Llorenç Picornell Gelabert, Manuel Calvo Tria</td>
<td>The creation of islandscapes in the Balearic Islands: the study-case of northern Minorca (Balearic Islands)</td>
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ABSTRACTS

Friday, 1st April
Morning session chair: Ruth Pelling

9:40 - 10:00 am

People, trees and cultural landscapes in the islands of Mallorca and Menorca (Balearic, Western Mediterranean) based on anthracological, palynological and archaeological data

Picornell-Gelabert, Llorenç
Gabriel Servera Vives, Manuel Calvo Trias

Recent development of archaeobotanical studies in the Balearic Islands offers the possibility to deal with diverse socio-environmental phenomena occurred during Prehistory. This has broadened the research goals of anthracology, especially in Mallorca and Menorca between c. 2000 cal BC until the era change (Picornell-Gelabert 2012, Picornell-Gelabert and Servera forthcoming). Besides, palynological studies have been undertaken since the 1990s, evidencing a drastic vegetation change in the Middle Holocene with the replacement of the dominant mesophilous vegetation by a Mediterranean maquia dominated by wild olive trees and shrubby termophilous taxa (Yll et al. 1999; Burjachs et al. 1994). In this context, our research have been driven by a set of theoretical and methodological assumptions in order to face a general research goal: the study of humans-plants/landscapes interactions in an insular context and in the framework of specific socio-environmental systems developed by prehistoric societies in the northern islands of the archipelago. To develop this research, archaeobotanical assemblages have been studied as the material (archaeological) remains of past socio-environmental interactions and put in relation with palaeoenvironmental and archaeological studies. Some unexpected trends of the Mediterranean vegetation have been evidenced in this research, as the evergreen oak forests expected to be dominant in the Balearic landscape during all the Holocene are almost invisible in the anthracological record, while off-site pollen records show noticeable values of this taxon. On contrary, open sclerophyllous formations, with a marked shrubby character and with sclerophyllous shrublands, dominated by *Olea europaea*, characterize the vegetation of the islands. This research also allows a better understanding of socio-environmental interactions in such island environments during Bronze and Iron Age, based on a dialog between archaeobotany, palaeoenvironmental studies and archaeology that reveals the landscape rationalities and landscape practices of prehistoric societies in relation to trees and forest vegetation.


10:00 - 10:20 am

Sardinia, animals and the sea: endemism, new arrivals and exploitation in antiquity

Wilkens, Barbara

Sardinia is separated from the mainland by a wide stretch of sea, such as to prevent access to all species of terrestrial animals. This condition is completed in the postglacial period, even when the island is separated from Corsica by the rise of sea level.
This condition, which persists throughout the Holocene, first leads to a depopulation due to the extinction of the main species of endemic mammals and then to a repopulation by animal species whose arrival depends exclusively by men.

Archaeozoological studies demonstrate the existence of alternate phases of animal population in conjunction with moments of expansion of human populations, and phases of internal evolution at times when human people was less interested in the possibilities offered by the sea also as a source of food.

The main moments of incoming of the animal species that at present inhabit Sardinia are the Early Neolithic and to a lesser degree its most recent phases, the period from the Late Bronze Age to the early Iron Age, when the island becomes an object of interest for foreign human populations, and the Roman period.

The study of the faunal remains from several archaeological sites has highlighted moments of arrival of the main species of domestic and wild mammals and the morphological changes that some domestic species have undergone over time.

10:20-10:40 am

Standing apart from the Final PPNB, the Cypriot site of Khirokitia: New data about the plant economy

Parès, Andréa

Cyprus is nowadays considered as the first example of colonisation and diffusion trans mare from the Near East, during the Neolithic period. The links to the mainland is initially obvious. Then around 7000 cal. BC, island communities developed their own culture markedly different from the mainland during the Final PPNB. Khirokitia, situated on the south east of the island, is one of the best examples of this key-period, identified with the Khirokitia culture.

This presentation will focus on the evolution of the subsistence economy and settlement pattern of Khirokitia identified through twelve stratigraphic levels representing about one thousand years. Thanks to the archaeobotanical analysis that began in 2010, new data allows a better understanding of agricultural practices, cereal processes in the village and gathering activities. This study will highlight that some elements of this evolution reflect not only a material differentiation from the mainland but also the assertion of their own cultural characters.

11:20-11:40 am

Central Mediterranean islands: fragility and sustainability in prehistory

Farrell, Michelle, Rowan McLaughlin, Rory Flood, Chris Hunt, Caroline Malone

From around 3600 to 2350 BC the Maltese Islands supported a flourishing Late Neolithic culture, the Maltese Temple Culture, which is characterised by highly elaborate megalithic architecture and figurative art. It is currently unclear how these small, relatively isolated, resource-poor islands were able to support such a complex society for over a millennium. Existing palaeoenvironmental evidence indicates that early Holocene woodland began to be cleared before 5500 BC, and subsequent land-use during the Neolithic consisted of both crop cultivation and animal husbandry. Archaeological data indicate a possible ‘collapse’ occurring at around 2350 BC, but currently there is no clear explanation for this event.

As part of a major ERC-funded interdisciplinary project which seeks to investigate the emergence, maintenance and eventual disappearance of the Maltese Temple Culture, palaeoenvironmental sequences have been recovered from several sites in the islands. Geochemical, palynological, malacological and chronological analyses of these sequences are providing insights into the impact of prehistoric human settlement on the
Maltese environment, as well as possible effects of changing environmental conditions on the Neolithic population of the islands. Archaeological evidence indicates that this population, although relatively large, was constrained by the availability of water and soils. The Maltese landscape is highly susceptible to erosion and is currently heavily terraced to reduce the catastrophic effects of soil loss.

In this paper we present some of the results from our analyses of the new sedimentary sequences, and argue that the sustainability of the Maltese Temple Culture or any agricultural system in the islands of the Central Mediterranean would have been heavily reliant on the development of robust soil retention strategies.

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**Zooarchaeology of the Canary Islands: status of the issue**

Castellano Alonso, Pablo,
Amelia Rodríguez Rodríguez, Marta Moreno García

The Canary Islands archipelago lies in the Atlantic Ocean less than a hundred km off the Moroccan coast, and geographically belong to the African continent. First human settlement on the seven isles has been radiocarbon dated to the First Millennium B.C., although there are a wide range of dates depending on the island, thus in some of them dates are after the change of Era. Then, between 1402 and 1496 A.D., the established indigenous communities were ‘conquered’ by the Castilian Kingdom.

Archaeologists are still discussing the probable origin of the colonising human and faunal inhabitants of these islands. Did they arrive simultaneously or was colonisation a gradual process? Did the colonisers originate from one or many locales? To what degree were the communities isolated or networked through the centuries? These same questions relate to introduced fauna: goats, sheep, pigs and dogs.

A wide range of zooarchaeological research will be discussed, including exploitation of livestock, animals in ritual, consumption of unusual species, such as giant rats and lizards, animal extinctions, or osteometric and morphological characterisation of some species. Additionally the contribution of genetic research to our understanding of the origins of insular populations over time, including human, plant and animal communities will be considered. This approach reveals interesting results on the persistence of aboriginal elements after the Castilian conquest.

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**S’Illot des Porros during the Naviform period. Occupation, functionality and management of meat resources**

Valenzuela-Suau, Lua,
Sílvia Valenzuela-Lamas, Jordi Hernández-Gasch

S’Illot des Porros is an archaeological necropolis located on an islet on the north-east of Majorca, distant, only 25 meters from the island coast. The better known structures date from 4th-3rd c. BC, and they consist of three collective burial chambers, although there are some funerary remains which belong to the 6th-5th c. BC, at the beginning of the second Iron Age in Majorca (Post-talaiotic or Balearic period).

Prior its use as a necropolis, several unidentified structures containing abundant faunal remains (NISP= 5260) were excavated. These structures date from the middle and final Bronze Age or Naviform period (ca. 1600/900-850 BC). The faunal remains were associated with a special kind of pottery – tonels, thought to be used for storing food and for exchange – some of them decorated, a particularity unusual for this period.

This work will present the first results obtained in the PhD "The Bronze Age in Mallorca. A perspective from zooarchaeology". It will discuss certain aspects of the landscape and environment, the species present at the site,
and the deficiency of remains of marine origin for human consumption in this and other contexts of prehistoric
Majorca.

Where do the cod come from? Assessing the first historical presence of cod in Iberia: preliminary isotopic analysis

Llorente-Rodríguez, Laura, Eufrasia Roselló-Izquierdo, Arturo Morales-Muñiz, Rachelle Martyn, David Orton, Oliver Craig

Data on archaeological isotopic values of Atlantic cod from the North Sea and the Baltic support the existence of North Atlantic trade networks for preserved fish since at least the medieval period. However, the ichthyoarchaeological record of this period from the southern part of Atlantic Europe remains scarce and scattered despite well-known historical resources. These documents highlight the importance of fisheries in Iberia and reveal an increasing fish trade in the case of Seville, Spain, since the XVth century AD that may include commerce with Basque fisheries operating in Scottish and Irish waters. Two specimens of cod from the XVth-XVIth century AD site of La Cartuja in Seville have been interpreted as remains of traded fish from more northerly waters. We evaluate the potential geographic origin of these specimens through stable carbon and nitrogen isotope analysis. This will represent the first ichthyoarchaeological attempt to disentangle the fish trade in early modern Iberia.
Unravelling seasonal shellfishing behaviour during the Late Stone Age at Pinnacle Point, South Africa, through sclerochronological analysis

Nelson-Viljoen, Cindy

The Pinnacle Point Shell Midden Complex (PPSMC) is a Late Stone Age (LSA) open air coastal shell midden site situated on the Pinnacle Point Beach and Golf resort near Mossel Bay, South Africa. Molluscan remains recovered at the site indicate an exploitation pattern focused on the mid- to low intertidal zone from nearby rocky shores and sandy beaches and are known to have played a significant role in the diet of past people living along the coast. Pinnacle Point is one of several cave sites on the southern coast of South Africa that have proved pivotal for our understanding of the development of ‘modern’ forms of behaviour and cognition, which are capable of yielding detailed information on seasonality and paleoenvironment over long timescales. Determining past climate and environmental conditions at PPSMC (dated from c. 3200 to 800 cal BP) is critical for understanding seasonal procurement strategies, resource use and occupation patterns during the LSA. As molluscs preserve past and present environmental data in the structural, morphological and chemical composition of shell, this enables the reconstruction of palaeoclimate data and seasonality via shell growth rates and oxygen isotope signatures. My research uses incremental growth and stable oxygen isotope analysis \( \delta^{18}O \) of both modern and archaeological shells of Oxystele sinensis (pink-lipped top shell), a commonly found species in LSA shell midden sites in South Africa, to generate seasonal-resolution palaeoenvironmental data, which can then be used as a basis for assessing human-environment interactions. This paper presents the preliminary results of the analyses, highlighting issues in the use and effectiveness of O. sinensis for sclerochronological research.

Exploring accumulation rates of shell deposits through seasonality data

Hausmann, Niklas, Matthew Meredith-Williams

Here we address the problem of estimating accumulation rates of short-term depositions in shell middens below the resolution that radiocarbon dating can provide. We do this by employing seasonality data from short-term shell deposits from the Farasan shell mound cluster in the Red Sea, Saudi Arabia. The cluster comprises over 3000 shell midden sites which result from intensive coastal exploitation during the mid-Holocene (6,500–4,500 calBP). One of these sites has been chosen to: 1) explore the potential of seasonality data to reconstruct accumulation rates, 2) analyse the intensity of shellfish exploitation and 3) assess the visibility of short-term shellfish depositions. Stable isotope values \( \delta^{18}O \) were obtained from the marine gastropod Conomurex fasciatus (Born 1778) to reconstruct season of capture. Seasonality data was combined with a sampling method in the field that allowed successive episodes of deposition throughout the stratigraphic sequence of the deposit to be connected. This allowed to estimate an accumulation of shell meat of \( \sim 200 \) kg over a 7 month period (~400 shells/day). We argue that excavation methods and low resolution stratigraphic data are the main causes of imprecision in seasonality data and hence the low visibility of rapidly accumulated shell deposits. Additionally, we argue that an increase of analysed shells per excavation unit will enable to reveal the seasonal brickwork of more middens in the future.
Land Snails And Environmental Change In The Western Isles And Orkney

Law, Matt, Nigel Thew

This paper explores how the analysis of mollusc shells from vertically and laterally sampled layers and structures through and across a number of dated archaeological sites excavated in the Western Isles and Orkney has permitted a detailed picture of environmental change to emerge that spans from the Neolithic period to historical times. In combination with other proxy indicators such as pollen and sedimentary records these have contributed to an extensive vegetation history across the islands. Just as importantly, the molluscan assemblages provide important indicators of site formation processes linked with different activities within and around sites, such as the presence of buildings or the use of midden material and seaweed to enrich and stabilise the dry sandy machair soils, and agricultural land-use practices, such as ploughing, grazing and leaving land to lie fallow. Natural processes such as the accumulation of wind-blown sand as a result of increased storm activity, or seasonal flooding, especially during periods with a damper, cooler climate, have been detected. Furthermore, this work has shown that the arrival and spread of certain biostratigraphical marker species within machair sites in later prehistory may be used as a relative dating tool for archaeological and natural deposits.

Oh deer, what can the matter be?

Powell, Adrienne

Zooarchaeological evidence indicates the presence of red deer (Cervus elaphus) in the Scottish islands since the Neolithic. As the only large terrestrial mammal present, apart from the domesticates, it was undoubtedly of some importance to the people inhabiting the islands, but in what ways and how might these have changed over time? A most unusual aspect of many assemblages is the presence of neonatal individuals, not merely the odd bone but in numbers comparable to the representation of neonatal cattle and well outnumbering that of sheep in the same assemblages. The high neonatal cattle mortality may be attributed to dairying, confirmed by biomolecular analyses, but what is its significance with respect to the deer? Are we seeing deliberate management? Opportunistic exploitation of a seasonal resource? This paper will consider the role of red deer in these islands from prehistory to the medieval period.

Islets for isolation, and causeways for connectivity: fluctuating identities in Hebridean prehistory

Rennell, Rebecca

The Outer Hebrides are a group of a very watery islands; islandscapes within islandscapes. Unsurprisingly, the use of natural islets is a recurring theme of Hebridean history and prehistory. Some of the earliest Neolithic settlements from this area are found on islets. During the Iron Age these places dominate the settlement record. Again in the medieval period islets resume significance archaeologically. In-between, however, are long periods of abandonment. Taking a broad landscape approach, this paper will explore fluctuating patterns of islet usage and will examine concepts of isolation and connectivity with regard to changing prehistoric identities.
The Orkney vole: an insular history driven by men

Cucchi, Thomas,
Natalia Martinkova, Ross Barnett, Jeremy Searle, Keith Dobney

The Orkney vole has been one of the greatest biogeographic puzzles in Europe. In this communication we will present our latest understanding on its origin and evolution using combined palaeogenetic and geometric morphometric on current and archaeological populations introduced onto the Orkney archipelago by Neolithic colonizers some 5000 years ago. We first investigated the extent of phenotypic divergence of Orkney and continental European populations and assessed the influence of climatic factors. Second, phenotypic differentiation amongst Orkney populations was tested against geography, time and neutral genetic patterns. Finally, rates of phenotypic evolution measured the tempo of change after introduction. We found that founder events and adaptation triggered by the initial Neolithic translocation on Orkney induced a drastic and rapid evolution towards an endemic from without any transitional stage seen in the archaeological record. Later dental idiosyncrasy among Orkney voles is the result of further founder events during human induced prehistoric translocation around the archipelago. Finally, shifts in evolutionary rates from the 4th century AD seem to respond to the introduction of terrestrial predators (foxes and cats) on Orkney from the 1st century AD. These results reveal the major role of human agency in the shaping of the Orkney voles’ uniqueness.

Plants and people in Neolithic Orkney: local adaptations and cross-regional connections

Bishop, Rosie

To what extent was Neolithic plant use on Orkney typical of broader patterns across Scotland? Did the Neolithic economy develop along a different trajectory in Orkney? The relative wealth and preservation of the archaeological evidence for Neolithic settlement and economy on Orkney, together with the relative environmental marginality of the Orkney Isles compared to mainland Scotland, presents both opportunities and challenges for understanding the nature of Neolithic subsistence in Scotland. This paper will first of all discuss in detail the nature of Neolithic plant use on Orkney through an inter-site comparison of the archaeobotanical and physical evidence for cultivation and wild plant use from across the Orkney islands, and will then highlight the similarities and differences between the evidence for Neolithic plant use from Orkney and the mainland. The presentation will consider the challenges in identifying the degree to which the evidence from the Orkney Isles is typical of wider economic strategies across Scotland, in the context of preservation and environmental differences between the mainland and Orkney.
ABSTRACTS

Plenary Lecture

1st April
Islands: isolation and connectivity

O’Connor, Terry

Islands hold a special place for geographers, poets, biologists and archaeologists. All field sciences have to define their study area, and islands usefully define themselves. For biogeographers and ecologists, they are places of special theoretical importance: tightly-constrained systems where processes of colonisation, competition and adaptation can be observed. For archaeologists, islands allow particular study of cultural contact, the movement of resources and occasional examples of distinctive insularity. Latterly, archaeology has increasingly asked whether islands are necessarily insular and isolated. The seascapes around and between them may have been resource-rich places of relatively easy movement and contact compared to the islands themselves. And what about the archipelago of disciplines that makes up archaeology? How isolated and complete unto themselves are prehistory, palynology, zooarchaeology and so on? Can we detect insularity amongst our scattered subdisciplines? Just as the intervening seas can be a busy cultural milieu within which physical islands are set, can environmental archaeology, that most interdisciplinary of disciplines, be the busy intellectual seascape that links the island system of archaeology, facilitating and encouraging travel between them?
ABSTRACTS

Saturday, 2nd April
Origins of North Atlantic domestic animals: Current knowledge and the possibilities of interdisciplinary studies

Pálsdóttir, Albina,
Jón Hallstein Hálsson, Sanne Boessenkool

The livestock breeds that settlers brought with them to the Faroes, Iceland and Greenland forever changed those island landscapes and shaped local ecosystems. While much has been written on these changes, many issues remain unresolved regarding the origins of the livestock breeds and their role in the settlement process. Molecular analysis of modern breeds suggests that the livestock in the Faroes and Greenland originated in Scandinavia and Icelandic breeds are thought to have been introduced from Norway specifically. However the people of the North Atlantic did not originate from a single location, but represent a mixture of people from Scandinavia and the British Isles. The uniform Scandinavian origin of livestock breeds in Iceland, Greenland and the Faroes contradicts the mixed origin of the people that settled there in the Viking Age. Moreover, despite the fact that the North Atlantic islands all had import-export relations with European countries throughout the ages, the livestock populations are believed to have remained isolated since settlement. Understanding the initial distribution and origins of livestock breeds in the North Atlantic is vital to our perception of the settlement process, environmental change and farming practices in the region. In the presentation we will review current knowledge in the area and outline future lines of research with a focus on the integration of traditional zooarchaeological methods and genetic studies.

Shipping Species? Human Mediated Movement of Animals in the British Islands

Mulville, Jacqui

Insular colonisations, adaptations and innovations provide a direct record of human diaspora, trade, exchange and cultural attitudes to the natural world. With over 700 offshore isles, the deep human history of insular Scotland is a dynamic example of biocultural interactions within fluctuating environments. Processes of transportation, innovation and elaboration, interspersed with periods of extreme conservation, are evidenced within the unique, well preserved archaeologies of the isles. In particular, there is a relative wealth of biocultural information provided by the remains of numerous animals that represent the entirety of insular histories, compared to the few surviving examples of humans. This presentation focuses on the exceptional faunal assemblages of the Western and Northern Isles and considers the natural and human-mediated transport of wild species, and their subsequent management within insular settings, with particular reference to new genetic data.

Small islands in the context of nearby large islands: glorious isolation or close integration? Palaeoecological case studies from western Ireland

O’Connell, Michael

The British Isles, namely that archipelago of islands that lies at the Atlantic edge of the European continental landmass, is essentially defined by the two larger islands, namely Britain and Ireland. While these two islands are central to the archipelago, associated smaller islands, sometimes constituting archipelagos in their own rights, e.g. Orkney, have preserved in them, in many instances, striking evidence for long-term human activity including settlement. In this presentation, an overview will be presented of research carried out over recent
decades on islands—large and small—off the west coast of Ireland. Particular attention will be given to long-term human impact as revealed by palaeoecological records and how these records stack-up against that from nearby ‘mainland’ sites.

11:20 - 11:40 am

People Land-use and Time: Investigating human-environment interactions in North Munster, western Ireland

Spencer, Daisy

This paper will present a discussion of the methodologies and initial analysis of the PhD project, ‘People, Land-use and Time’ which is investigating human-environment interactions from the Neolithic to Late Bronze Age within North Munster on the island of Ireland. The area of North Munster appears, from the archaeological evidence, to have developed a regional identity as far back as the Neolithic and includes the two study areas of Roughan Hill on the Burren and the Mooghaun landblock in central Clare. The area of North Munster can perhaps be viewed as a ‘conceptual island’ which, whilst demonstrating links across Ireland and further afield, appears to have followed a different trajectory to elsewhere in the country.

A 10.59m long sediment core has been extracted from Lough Inchiquin, to the south of the Burren in order to investigate changes in land use and the chronology, nature and dynamics of human activity. This paper will concentrate predominantly on the multi-proxy approach used which is combining pollen, chironomid and geochemical analysis in addition to the archaeological data. Whilst traditionally used for temperature reconstruction, chironomids have recently been shown to be responsive to human impact with catchment agricultural cover established as a dominant control (Potito et al 2014) and the dynamics of prehistoric farming established through chironomid analysis elsewhere in Ireland (Taylor et al 2013). This technique correlates well with lake sediment geochemistry, in particular, nitrogen isotope values which are more positive in agricultural catchments.

This multi-proxy approach will increase the validity of interpretations and create a more nuanced approach to the study of human environment interactions. The integration of archaeological and palaeoenvironmental data will allow questions on social dynamics to be explored and the methodological approach could be applied to other landscape areas of archaeological interest including smaller islands or island groups.

11:40 - 12:00 pm

Biomolecular whaling; Capturing cetacea via proteomics

Evans, Sally,
Jacqui Mulville, Camilla Speller, Keri Roswell, Krista McGrath

North Atlantic islands have a special draw for humans evidenced by their continual colonisation from the Mesolithic onwards. In mainland Britain, the arrival of farming heralded a major decline in wild resource exploitation. However the Isles offered early farmers unexploited lands and rich marine and avian resources resulting in a different trajectory with hunting, fishing and gathering remaining central to procurement strategies throughout history. This project focuses on the Bronze Age to Norse human relationship with the sea as evidenced in the exceptional cetacean assemblages of the Western Isles (e.g. Mulville 2002).

Cetacean bone is relatively common in insular assemblages but remains an under-studied facet of the archaeological record, a situation stemming from difficulties with applying standard morphological methods of identification to worked or fragmentary material (Mulville 2002). Proteomics (Buckley et al 2014) and aDNA (Evans et al 2015) have had considerable success in identifying cetacean species from even tiny fragments of bone. This paper presents our initial research applying proteomic techniques to the identification of cetacean from the Iron Age to Norse settlement at Bornais, South Uist. The implications for both archaeological interpretations and modern conservation biology will be discussed.


**12:00 - 12:20 pm**

**Insular syndrome and Holocene diversification of Crocidura suaveolens (Mammalia, Soricidae) on the NW fringe of the European Continent: natural forcing or human driven process?**

Rofes, Juan,
Thomas Cucchi, Anne Tresset

The lesser white-toothed shrew (*Crocidura suaveolens*) is nowadays distributed on many islands of the north-western margin of Europe. Its status, indigenous or accidentally introduced by humans is still debated. Early observations strongly suggest that *C. suaveolens* originally occupied most of the islands of the Channel, Iroise Sea and French Atlantic Façade, before it was swept out by its competitor, *C. russula*, more anthropophilous and today present on islands that have intensive exchanges with the continent. Therefore, *C. suaveolens* could have been present from the Scilly Islands to the east of the Channel and to the Loire estuary before the Flandrian transgression, from 14 000 years ago. Alternatively, this species, which has a moderate anthropophilous behavior, could have been introduced to islands before modern times.

Molène Archipelago (MA) (Bretagne, NW France) is an excellent location to investigate these alternatives. Natural and anthropic phenomena may have driven its insular population characteristics. Together with the marine transgression that led to the current MA configuration, human contacts with the continent and among the different islands have modeled its communities of small mammals. To date, the earliest archaeological record of *C. suaveolens* has been found in the mid Bronze Age abandonment levels of Beg ar Loued (Molène island, ~1500 cal BC), before the terminal episodes of fragmentation of the islands. Through a geometric morphometric approach, including both archaeological and modern material from several islands of the MA, the English Channel and the continent, we try to explain the evolutionary history of *C. suaveolens* in these particular insular contexts. The development of insular syndrome (poorly known for shrews in general) and the differences in mandibular shape among the islands are discussed, as well as the extent in which natural factors (climate forcing, chronology of the post-glacial recolonization and Flandrian transgression) and human expansion conditioned the process.

**12:20 - 12:40 pm**

**Hanseatic falcon hunting and trading in Iceland during the 15th to 17th centuries**

Küchelmann, Hans Christian,
Natascha Mehler

During the period of intensive Hanseatic trade with Iceland from the 15th to 17th century trade with alive Icelandic gyrfalcons (*Falco rusticolus*) became a regular feature. Being the largest falcon species in the world, especially white gyrfalcons were sought by the highest ranks of the European nobility for falconry sports and gained an important role as status symbol. However, since their native range is the Arctic region, access to
these birds was limited. The demand thus created was met by Hanseatic merchants particularly from Hamburg, who specialised in the trade with gyrfalcons. Although only a small portion within the volume of the Hanseatic trade with Iceland in general, gyrfalcons were extremely valuable items that could make a substantial economical impact for the individual merchants involved. The falcon trade thus offers the opportunity to look at this specific species from an environmental aspect as well as providing detailed insights in economic circumstances and social relations.

In case of the gyrfalcons the island Iceland serves as an almost unique source of a "raw material", provoking questions like: How much did the increasing demand affect the islands falcon populations? What were the benefits and drawbacks of the trade for the local population compared to the merchants and the final customers?

In our paper we would like to present results from the analysis of historical documents and paintings. The study is part of the research project "Between the North Sea and the Norwegian Sea – Interdisciplinary studies of the Hanseatic League" at the German Maritime Museum in Bremerhaven.
Comparative Island Ecodynamics in the Norse North Atlantic - An initial project report

Harrison, Ramona

In 2012-16 a major international, interdisciplinary collaborative project funded by US, UK, Nordic, and Canadian agencies pooled the resources of the North Atlantic Biocultural Organization (NABO, www.nabohome.org) to take on a major research question with potentially broad impacts on our understanding of islands as scale models for human ecodynamics on island earth. A mixed Nordic/Celtic population settled both Iceland and Greenland in the early Viking Age, and the two settlements rapidly diverged in many ways. The ultimate outcomes of these two “long term experiments in human ecodynamics” provide a stark contrast between extinction and survival on the millennial scale, and the fate of Norse Greenland remains controversial in the literature of sustainability. Why did one society end and the other endure to the present? The Comparative Island Ecodynamics Project (CIE) involved closely collaborative excavation projects in several areas of Iceland and the former Eastern Settlement region in Greenland, generating large new collections of all sorts and a growing array of laboratory analyses (human Bioarchaeology, Zooarchaeology, aDNA, stable isotopes, AMS C14, Archaeobotany, Geoarchaeology, Artifacts) integrative models, and new data management tools. This presentation offers an initial overview of this major international project and its first results.

Iron Age Economies of Scotland: Islands versus Mainland

Cussans, Julia

This paper presents a pilot study which is intended as a forerunner to a much larger research project, examining differences and similarities between island and mainland economies in Iron Age Scotland. This initial stage is aimed at characterizing island and mainland economies in terms of animal species present and their relative abundances, to act as a starting point for further research.

Whilst it is generally accepted that the three principal domesticates (cattle, sheep, pig) are ubiquitous across Iron Age Scotland little work has been done to examine, in detail, differences in their distribution between island and mainland populations. In addition to this core group of livestock species a variety of other domestic and wild animal species were exploited, in particular coastal and marine species, and variations in the presence and abundance of these will also be examined. This research aims to identify and investigate differences and similarities between the Scottish island groups and mainland Scotland in terms of animal species exploitation, and hence determine what this may mean in terms of resource availability, sustainability and utilization as well as social, cultural and economic trends across Iron Age Scotland. This will further facilitate our understanding of the movement of people, animals and ideas around Iron Age Scotland and further develop our understanding of the concepts of isolation and connectivity within this area.
Feasting, foddering and farming: A stable isotopic and zooarchaeological approach towards understanding the consumption and use of marine resource use in the Scottish North Atlantic Islands

Jones, Jennifer, Jacqui Mulville

In the Scottish Islands the Mesolithic-Neolithic transition saw an abrupt change in diet away from the consumption and use of marine resources and towards a reliance on domestic species to provide meat and milk protein, a phenomenon thought to have continued until the arrival of the Vikings in the Norse period. Managing these animals in the hostile insular environments would have been crucial to the survival of prehistoric populations in the Islands. Similarly further exploration of the importance of marine foods in human diets in prehistory is required. This paper combines carbon and nitrogen stable isotope analysis of animals and humans in the islands, with more traditional zooarchaeological approaches to understand the changing role of marine resources in both human diets and animal management in the islands.

Initial results showed that marine resources played a role in human diets to in the Bronze Age, and increased in importance during the Iron Age. Thorough prehistory shorefront resources were used by prehistoric populations in Orkney, and Western Isles in the management of sheep. Cattle appear to have been typically kept further from coastal pastures. Throughout prehistory pigs exhibit very diverse dietary variation, and during the Middle Iron Age at the broch site of Dun Vulan were fed fish, possible to prepare them for feasts. The North Atlantic Island populations had a diverse and complex relationship with marine resources, and the shorefront played a vital role in the human and animal economies during Prehistory.

CodStory; multidisciplinary research on Atlantic cod, climate and historical fisheries in the North Atlantic

Ólafsdóttir, Guðbjörg Ásta

Genetic variation and stable isotope signatures of Atlantic cod were examined over the period of 1500-1910 AD using zoo-archaeological material recovered from excavations of historical fishing sites in western Iceland. The results showed loss of genetic variation in Atlantic cod, most likely associated with a population size reduction, and a shift in stable isotope signatures both coinciding with the cooling of the northern hemisphere, or the onset of the “little ice age”. In the current phase of the project the geographical range of samples is increased and high resolution genetic markers (SNPs) added, thereby facilitating inference on both Atlantic cod population structure and adaptive dynamics. The combined patterns of classic zoo-archaeological analysis, temporospatial genetic variation, otolith growth patterns and stable isotopic signatures of Atlantic cod over this geographical range allows evaluation of the stability of contemporary patterns and may provide further answers to fundamental questions in evolutionary ecology and fisheries management. The questions addressed in this project include; have climatic fluctuations affected the population size, distribution ranges or feeding migrations of Atlantic cod across the North Atlantic and does either climate variation or historical fishing pressure correlate with demographic variation or adaptive genetic variation in the Atlantic cod on a temporal scale.
‘From Stockfish to Strekfusz’ and other Baltic cod tales: stable isotope evidence for developments in Baltic cod fisheries and fish trade during the 13th to 16th centuries

Orton, David, Lembi Lõugas, Eve Rannamäe, Daniel Makowiecki, Tamsin O’Connell, James Barrett

Stable carbon and nitrogen isotope ratios in archaeological cod bones reflect ecological, climatic, and hydrological factors, potentially revealing region of catch. This paper exploits the Baltic’s distinctive isotopic signature to track developments in cod fishing and trade in the region during the 13th-16th centuries.

Previous work by the authors indicated that the first widespread medieval consumption of cod around the eastern Baltic littoral primarily involved imports, most likely Scandinavian stockfish, with evidence for Baltic catches not apparent until around AD1400. Here, we expand the dataset with 103 new specimens from 16 sites in Poland, Latvia, Estonia, and Finland, allowing us to (a) compare developments between urban, military, and monastic sites under a range of political/economic influences (notably the German Hanse and the Prussian and Livonian branches of the Teutonic Order); and (b) explore geographical variation in isotopic signatures within the Baltic.

The new results push the apparent emergence of Baltic cod fisheries back to the middle of the 14th century, although non-Baltic imports persist until at least the 16th century, particularly at inland sites. There is tentative evidence that ‘local catches’ at some sites represent a distinctive Baltic preserved cod product (previously suggested for Uppsala: Jonsson 1986) that could plausibly be the historically attested strekfusz. Represented primarily by cranial bones and cleithra (very few sampled vertebrae have local isotopic signatures), this product may be present at inland Order castles including Dinaburg, Latvia, 200km from the Baltic. The possibility of an intra-Baltic cod trade network may explain inconsistent geographical patterning observed in isotopic composition of cranial bones.

Finally, we test the assumption that size of archaeological cod bones can be used to distinguish Baltic catches from long-range imports, finding that only the largest fish (more than around 1m total length) can reliably be assumed to be imported.

Home to Roost: Local and distant capture of avian resources in the North Atlantic Islands

Best, Julia

Birds were a small but often important component of diet and economy in the past particularly in islands as a diverse range of birds, especially aquatic birds, thrive in coastal and island locations. Large colonies of gregariously breeding seabirds would have provided past populations of these locations with a concentrated resource base that could be targeted intensely or sporadically for meat, eggs, oil and fat. Bird use in the North Atlantic Islands is therefore integral to fully understanding life, diet and resource use in these settings.

This paper presents results from a large-scale investigation of Mesolithic to Post-Medieval bird use in the North Atlantic Islands that involved collating pre-existing avian data and combining it with new, in-depth analyses. The archaeological dataset is considered alongside modern species profiles, and contextualised within the wider historically documented tradition of fowling.

The zooarchaeological dataset reveals that whilst many birds were sourced locally, others required specific fowling trips to more distant areas of the landscape. Several key species exploited through time and space.
(such as gannet and guillemot) would have been acquired from dangerous areas of terrain such as cliff-faces. These targeted avian species demonstrate that fowling was part of a wider picture of mobility and interconnectivity in marine resource use that involved moving around the seascape and to different island landscapes. Changes are seen in the exploitation of locally sourced taxa resulting from preference, seasonality, and species populations (including sustainability issues as evidenced in the great auk’s decline and extinction). The creation of unique fowling profiles responding to specific needs (e.g. netting of waders in winter to supplement the diet) indicates a degree of isolation in these landscapes. Historically documented case studies such as the fowlers of St Kilda characterise the duality of isolation and connection in these island locations and their resource networks.

4:50 - 5:10 pm

**Whales in the northern Baltic Sea – a prehistoric perspective**

Mannermaa, Kristiina

Baltic Sea is a northern brackish water reservoir with access to the North Sea via Danish Straits. The salinity of the water is lowest in the northern parts (Bothnian Bay and the Gulf of Finland), and highest in the southern parts. In addition to the regular but rare porpoise (*Phocoena phocoena*), three seal species, the ringed seal (*Pusa hispida*), the grey seal (*Halichoerus grypus*) and harbor seal (*Phoca vitulina*) are the only marine mammals living in the Baltic Sea in modern times. Observations of visiting whales are reported yearly, and these visits have sometimes reached also the Bothnian Bay. Archaeological data has several whale finds in the northern Baltic Sea area. In Finland eight archaeological porpoise finds have been reported (Ukkonen & Mannermaa, forthcoming). One has been radiocarbon dated: a burnt porpoise bone from Vantaa, southern Finland has the age of 3000 cal BC (Leskinen & Pesonen 2008). Three geological finds of whales have been radiocarbon dated: a porpoise skeleton found in Närpio, western Finland to c. 4600 cal BC (Ukkonen & Mannermaa, forthcoming), a vertebra of a humpback whale (*Megaptera novaeangliae*) found in the bottom sediments in Archipelago Sea off Hanko, southern Finland was dated to 4950 cal BC (Mannermaa et al., forthcoming), and remains of a potential blue whale (*Balaenoptera musculus*) in the Gulf of Finland has been dated to c. 5200 cal BC (Nord Stream gas Pipeline construction and operation in the Finnish EEZ/Environmental Monitoring Q1-Q2/2012; Samira Andersson, pers.comm.12.02.2014). Geological and archaeological data indicates that whales have been more common in the northern Baltic Sea areas during some prehistoric periods, especially 5000-4000 cal BC. This leads to the need to consider that not only porpoises but also great whales may have been potential prey for hunter-gatherers also in the northern Baltic Sea area.

Andersson Samira, personal communication to Kristiina Mannermaa by e-mail 12.02.2014


Nord Stream gas Pipeline construction and operation in the Finnish EEZ/Environmental Monitoring Q1-Q2/2012 at https://www.nord-stream.com/download/.../205/? Read 27.11.2015

Mannermaa, K. et al. forthcoming.


5:10 - 5:30 pm

**Commercial whaling in Iceland 1600 – 1915**

Edvardsson, Ragnar

Commercial whaling in the North Atlantic began in the late 15th century and in the early 17th century the first whalers appeared in the waters around Iceland. In 1610 Basque whalers built the first whaling stations in Iceland but these stations were later taken over by other nations, probably Dutch or English. The whaling
stations were occupied throughout the 17th century but by the late 17th century all shore stations had been abandoned and commercial whaling were not carried out again from Iceland until the late 19th century. In 1880 Norwegian whalers established whaling stations in Iceland and hunted whales commercially on a massive scale until 1915.

This paper discusses commercial whaling in Iceland in general, especially the influence - or the lack of influence - foreign whalers had on Icelandic society. Throughout the history of Iceland domestic whaling was opportunistic with Icelanders mostly harvested beached whales. Even though Icelanders had both the knowledge and the opportunity to learn from the foreign whalers, operating on land in the 17th and 19th centuries, it was not until the mid 20th century that Icelanders began hunting whales commercially. Although the reasons for this are not fully understood historical research suggests that the general population of Iceland was against the Norwegian whaling in the late 19th and early 20th century, which resulted in a complete ban on commercial whaling in 1915. The reasons for this general opposition to whaling may have originated from cultural sources and be closely linked to the strong tradition for fishing and fishing societies in Iceland.
ABSTRACTS

Posters
In the middle of the Mediterranean: animal exploitation in Sicily from Byzantine to Norman times

Aniceti, Veronica

Due to its peculiar geographical position, Sicily has always been a coveted borderland and a melting pot of the many different people who settled it. Located in the centre of the Mediterranean, it represented a potential gateway linking the north with the south, as well as the east with the west, the sea representing a well-known and tested medium of movement and communication.

In the 9th century AD, when the Byzantines controlled the island, Sicily became a frontier of the Arab world. The conquest proceeded from south-west moving eastwards; soon the island became politically and culturally divided into two main sub-regions: dar al-Islam, converted to the Muslim religion, and dar al-Ḥarb, which remained Christian. Two centuries later, it was the turn of the Normans, who conquered the island within thirty years and established an ambiguous relationship with the Muslims.

In sum, a number of invaders with different cultural backgrounds and socio-political structures have administrated Sicily during the Middle Ages. The aim of this research is to assess to what extent and in which way these entities affected animal exploitation in the island. For example, the perspectives and ambitions of the Muslim administration could have led to the introduction of new breeds from the mainland. At the same time, dietary taboos and imported traditions could have been loosely or firmly applied on the dominated population or naturally adopted by the latter.

If in one hand the Mediterranean provided multiple links with different cultural and economic areas, on the other hand it could have represented a barrier for the spread and penetration of such external elements. Nowhere as in Sicily did the concepts of isolation and connectivity alternate, contrast and, inevitably, coexist through a multitude of different realities, as an island actually made up of many smaller islands.

'They graze on wave and ocean plants'. Foddering strategies in island environments: pig, sheep/goat and cattle diet in Late Norse Orkney

Ascough, Philippa

Ingrid Mainland

Island environments place constraints on livestock husbandry, with finite resource availability limiting herd size and impacting on animal health, nutrition and productivity. Analysis of animal diet is thus an important aspect of research into the resilience of island societies in the past. Within the archaeological literature, the Northern Isles of Scotland are typically seen as being at the limits of arable and pastoral farming. In these islands, the use of foreshore grazing and of seaweed as fodder from the Neolithic period onwards is often equated with marginality, a farming system under pressure, with animals reduced to foraging on the shore to obtain an adequate diet. Yet, today and in the recent past, livestock farming has been one of the mainstays of the economy of the islands, with the fertile coastal soils of Orkney in particular providing ideal grazing for cattle and sheep. Using Iron Age to Late Norse Orkney as a case study, and integrating zooarchaeological approaches (age-at-death, palaepathology) with stable isotope analysis ($\delta^{13}C$, $\delta^{15}N$) we explore the idea of pastoral farming at the margins through an analysis of the differing herding, foddering and grazing strategies employed for domestic livestock at Norse farmsteads of different size and status across the islands.

Putting flesh on the bones: Reconstructing Pictish cultural and economical strategies using osteological and isotopical analysis

Farrar, Danielle

The unpublished excavation of Church Knowe, Rousay, Orkney revealed 5 sets of human remains, 4 of which were examined within this study using a multi-strand approach of investigation. The methods used were osteological, isotope and radiocarbon dating analysis.
The osteological analysis showed that the individuals were determined to be a 8-20 year old male, with a stature of 131–152 cm, a male over the age of 25-30 years old, 1-7 year old female, and a 1-4 year old male with a stature of 74 cm +/- 2.46cm. The isotopic analysis revealed that the individuals had a mixed diet, consisting of a terrestrial and marine diet. The dentine analysis also indicated the effects of weaning. The radiocarbon dating analysis revealed the individuals originate from the Post-Medieval period of Orkney.

With Church Knowe having a small population, it was very insightful in regards to the information learnt using multiple techniques, giving valuable, historical information about the Post-Medieval period of Orkney.

**Fishing, diet, and environment in the Iron Age of the Northern Isles**

Fitzpatrick, Alex

This ongoing project reconsiders the argument that no fishing occurred during the British Iron Age using fish bone assemblages from the site of Swandro, Rousay, Orkney. By identifying the fish species and bone elements present in these assemblages, the following is hoped to be determined: the range of species present, the treatment of the fish, the method of capture, and their influence on diet. Scanning electron microscopy may be used to identify evidence of butchery/charring, while an investigation of carbon: nitrogen ratios may be used to investigate the effect of these fish on human dietary ratios.

**The Geoarchaeology of Burnt Mounds: Cases from Northumberland, and thoughts from Sanday**

Gardner, Tom

Burnt mounds, Neolithic and Bronze Age dumps of fire-cracked stone, ash, and charcoal, are regularly encountered by field archaeologists across north-western Europe, but are rarely the subjects of sustained research and academic discourse. While interpretation has now moved beyond a uni-functionary appreciation of these enigmatic site types, the methods with which burnt mounds are investigated have often been reserved to small area excavations and limited environmental sampling (Armit & Braby, 2002). New study however, has begun to diversify the methods of investigation, with some (Hawkes, 2015) moving towards refined absolute dating sequences, and others (Halliday, 2007) assessing the wider patterns of burnt mound distributions within prehistoric landscapes. More recently, the presenter’s PhD has begun to use a combination of thin section micromorphology and simultaneous phytolith analyses to understand how burnt mounds were deposited, over what scale of time, and under what depositional circumstances. Assessing the depositional biography of these complex deposits under the microscope, has allowed a variety of preliminary interpretations to be drawn from a suite of sites across Northumberland, including the potential for hiatuses in deposition, changing fuel use strategies, and seasonal use of sites. The next stage for this analysis is to expand new case studies across the north-western Europe, which has begun with the sampling of Meur burnt mound on Sanday, Orkney. Although the samples from Meur have not yet been analysed, this poster combines some of the data and interpretations from Mounds 1 and 3 at Hoppenwood Bank, Northumberland, with early observations from Meur, in order to strike a discourse about the similarities and differences between the burnt mounds in these two regions, and to provide a platform for further discussion on sampling methodologies, interpretations, and ultimately the role of burnt mound sites within wider prehistoric socio-economic systems.
From the fish middens to the herring: medieval and post-medieval fishing in the Northern Isles

Harland, Jen

The heyday of Viking Age and medieval fishing in the Northern Isles of Scotland can be traced in the huge deposits of fish bones that appear circa AD 1000. This "fish event horizon", as it has come to be known, is a phenomenon now recognized throughout Europe. It can be explained by numerous factors, including Christian fasting, the rise of urbanism, and developing market economies. However, a few hundred years later, fishing in the Northern Isles had taken a dramatic downturn. Small-scale, subsistence fishing in relatively safe coastal waters became the norm. Early modern writers deplored the state of fishing in the islands in the late 18th century, while repeated attempts to develop commercial fisheries floundered due to lack of knowledge and investment. This poster examines archaeological evidence for the decline of fishing, looking at the fish bones from later medieval and early modern sites. Using estimates of fish sizes, species present and historical sources, it reconstructs fishing methods and likely fishing grounds, and asks why there was such a striking decline in fishing fortunes in the Northern Isles. The curious absence of herring bones from the archaeological record will also be discussed, a particularly relevant and perplexing question given that the herring industry became so important to the Northern Isles in recent centuries.

A case for prehistoric apiculture

Murray, Stewart

Today, the complex relationships between human populations and insects is a significant factor in sustainable planning. Over 80% of all living organisms on earth belong to the class Insecta, and while human-insect relationships are given consideration in research agendas ranging from low-scale food production to space exploration, they are poorly understood by archaeologists. Summarising research conducted on the extent and likelihood of prehistoric apiculture, archaeologists are introduced to the basic principles of honeybee biology and behaviour in order to equip them with the knowledge to appreciate challenges faced by beekeepers, and how this relates to beekeeping through time. Though publications exploring human-bee interactions in the past are limited, a series of resources will be highlighted, showing areas of potential interest to future researchers of palaeo environments, diets, and even cultural activities. Finally, using the Orkney archipelago as a case study, place name evidence and pollen records pointing to climatic change in the Bronze Age is shown to correlate with the rise in the coverage of plant species that represent a significant source of honeybee forage, and may indicate a period of development in apiculture technologies and techniques known from other areas across northern Eurasia.

Oh, whistle, and I’ll come to you!

Powell, Adrienne

A recent find of a bone whistle worked from a cat tibia in Norse deposits at the site of Cille Pheadair, South Uist is described. Bone whistles are not uncommon archaeological finds but these are usually worked from large bird bones or sheep tibia, neither in short supply at this site. So why cat? Some wild speculation may occur.

Two shores of the same sea: British insularity and the Continent in the Roman and early Anglo-Saxon periods

Rizzetto, Mauro

The sea separating Britain from mainland Europe has often been seen as a physical barrier to past communities, restricting the mobility of people and goods. At the same time, however, it represented a trade route and an actual link between the island and the Continent. In Roman times, this becomes clear in many
respects, cultural, economic and socio-political alike; still, the island nature of Britain did affect the Romanisation of the province. Therefore, any interpretative approach that places Britain’s insularity within its schemes can potentially provide new insights into our understanding of the British past.

The spread of ‘Romanised’ practices of animal exploitation and the persistence of indigenous traditions can be used to evaluate the extent of Britain’s marginality within the Roman world-system. Typical Roman elements of animal food production included a major focus on cattle, as well as an overall standardisation of animal management. The zooarchaeological indicators for such elements, however, suggest a gradual diffusion emanating from the south-east; to some extent, the ‘island effect’ limited and delayed the advance of continental influences. The import of domestic breeds from the mainland has recently been suggested, and reflects a scale of operations which clearly embraced Britain within a wider economic system.

The aim of this research project is to assess and interpret similarities and differences between Britain and the Rhineland in the development of animal management during the post-Roman period. A pilot study on two British sites has confirmed that, already by the 5th century, animal management had reverted to a generalised strategy typical of subsistence economies. The comparison between sites from both sides of the Channel will allow identifying the variables which affected early medieval animal exploitation. The practical and cultural implications of Britain’s insularity surely provide food for thought for interpreting the results of this and similar studies.

The creation of islandscapes in the Balearic Islands: the study-case of northern Minorca (Balearic Islands)

Servera Vives, Gabriel, Montserrat Vivo Sastre, Arnau Garcia Molsosa, Llorenç Picornell Gelabert, Manuel Calvo Tria

Islands have largely been considered as laboratories for the study of cultural development (Evans 1973). The Mediterranean region constitutes a “place of passage”, and the Balearics are not an exception. The history of islanders is a history of movement and connectivity (Knapp, 2007), which lead to the creation of islandscapes (Broodbank, 2000). In this sense, insularity cannot be perceived purely as an environmental or a geographic matter that directly explains cultural or biological evolution, as have been perceived by determinist approaches (Knapp, 2007). Insularity and islandness are greatly more complex than the conception used by biogeography or the concept of the island ‘laboratory’. In this sense, Balearic Islands represent a key site to decipher socioenvironmental interactions because of the late arrival of humans compared to other Mediterranean islands (Guerrero et al., 2007). Although first settlement of the Balearics is a controversial subject, recent archaeological studies propose that stable occupation of the Islands took place during the III millennium cal BC even though previous frequentations seems probable (Gerrero & Calvo, 2008). Despite the pioneering palynological works carried out in the 90’s and 2000s (e.g. Yll et al., 1999; Burjachs, 2006), the correlation of paleoenvironmental, historical and archaeological data have not been well established and the construction of cultural landscapes in Majorca and Minorca islands is still misunderstood. For this reason, a multi-proxy analysis has been performed in a sedimentary sequence of northern Minorca in order to decipher cultural landscape construction and natural resource management since the prehistory. The methodology lies on a multiproxy palynological study combining off-site data (pollen, NPP and macrocharcoals), anthracological and archaeological data. Such type of microrregional study constitutes a suitable approach to studying the human-environment interactions as they are prone to display the patchiness of landscape throughout time.

Resources and disposal in an island landscape: microarchaeology of middens at the Ness of Brodgar, Orkney

Shillito, Lisa-Marie

Pilot studies applying ‘microarchaeological’ methods to the investigation of middens at the Ness of Brodgar have shown the preservation of a wide range of features and deposits at the microscale, including ashes, burnt bone and organic remains. One aim of this research is to investigate the types of plants that were being exploited for food and fuel, through analysis of these ash deposits, and how this varied spatially and through time, by investigating different areas of the site. Using a combination of micromorphology, geochemistry and phytolith analysis (microscopic remains of plants), we can detect traces of fuel use that are often missing from the charred macrobotanical record. This information will contribute significantly to our understanding of Neolithic subsistence and resource use, for example what types of plant were being used for fuel? Were different types of fuel used during different times of the year, and how did this relate to the local environment? Did the strategies used by these northern people differ from what was happening in southern Britain? The longer term aim of this study is to integrate this highly specific ‘on-site’ data with reconstruction of the wider landscape, as seen through pollen records, to understand how the use of resources varied over time within a changing landscape.

Palaeoenvironmental analysis of early to mid-Holocene wood peat sequences at the Laggan-Tormore Shetland Gas Plant, Sullom Voe, Shetland

Timpany, Scott,
Tim Mighall

This poster provides results of the palaeoenvironmental investigation of a peat layer containing macrofossil wood remains was uncovered during peat stripping for temporary and permanent access roads relating to the construction of the Laggan-Tormore Shetland Gas Plant adjacent to the Sullom Voe Terminal, Shetland. Multi-proxy analysis of pollen, non-pollen palynomorphs (NPPS), microscopic charcoal, wood identification and waterlogged plant remains analysis was undertaken on a series of Monolith, hand collected and bulk samples taken from multiple locations across the development area.

The results show that the layer of macroscopic wood peat at Sullom Voe represents a willow-birch carr-woodland with a ground flora dominated by sedges and other damp/wet ground loving vegetation including marsh cinquefoils, greater spearwort, brambles and marsh violet. Radiocarbon dating of the peat profiles combined with the palaeoenvironmental data indicate that this willow-birch carr-woodland formed locally at approximately 6400 cal BC and lasted until around 3395 cal BC when a possible combination of deliberate woodland clearance and increased mire wetness caused its demise. This study also provides new evidence for burning events that have been recorded in the microscopic charcoal record and in particular periods of intense burning during the Mesolithic and Early Neolithic periods. These burning events are shown to be accompanied by falls in tree and shrub pollen and increases in disturbance indicators within the pollen record, together with peaks in fungi associated with animal dung suggesting that they may represent anthropogenic activity. Phases of probable human-environmental interaction were also found to positively correspond with archaeological and archaeobotanical evidence for an Early Neolithic settlement at the Hill of Crooksetter, dating to 3600-3400 cal BC.
The Scottish Archaeological Research Framework (ScARF) reflects the current state of knowledge regarding Scotland’s past.

The Scottish Archaeological Research Framework is delighted to be supporting the Association of Environmental Archaeologists annual conference 2016.

This collaborative project brought together over 350 experts from a range of disciplines to provide an up to date overview of archaeological research in Scotland. Nine panel reports were published in 2012 and covered the Palaeolithic right through to the Modern day. The reports are freely available at www.scottishheritagehub.com and their research recommendations have already been used to help shape archaeological policies and practice, as well as provide avenues for new projects to explore.

The ScARF Student Network, is open to any students studying or working within Scottish archaeology. The aims of the network are:

- to encourage collaboration within the student community working in Scotland;
- to help students gain experience in presenting their research at conferences and other events;
- to encourage students to share their research through the ScARF website, thus helping keep the framework relevant and up to date but also gaining publicity for the students themselves.

Students are the future of archaeological research and by building a relationship with ScARF, we can ensure that future research is relevant and effectively contributes to our understanding of the past. By providing bursaries for students to attend this conference, ScARF hopes we can all learn something!

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