EAA 2021 Kiel, 6-11 Sept.

Widening Horizons

Virtual Meeting

ABSTRACT BOOK

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ORGANISERS

European Association of Archaeologists

Kiel University
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27th EAA Annual Meeting (Kiel Virtual, 2021)

ABSTRACT BOOK

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9 BIRDS IN PRE-CHRISTIAN SLAVIC ICONOGRAPHY AND RELIGION

Abstract author(s): Szczepanik, Pawel (Institute of Archaeology Nicolaus Copernicus University in Torun)

Abstract format: Oral

The studies of early medieval Slavic religion, beliefs and magic have a very long tradition. The scholars focused primary on analysing negligible written sources, archaeological sources and finally on ethnographic and linguistic materials. In this paper I would like to show small part of animal studies, focused on the role of birds in Slavonic religion and beliefs. The simple, but complex world of the early medieval Slavic iconography shows birds both, as the independent artefacts, and as the elements of larger representations. Both categories were probably related directly to the mythical reality, showing the role of birds in myths, rituals and beliefs. One of the most excited context is the Slavic cosmology, where in some examples birds play roles of creators of the universe. Selected iconographic representations from various categories of artefacts (e.g.: bronze fittings, jewelry, images on ceramic vessels, images on stones) as well as information from the pages of written sources, will be discussed. In written sources we can find information about swallows having a nest on the breast of Rugiaevit. Also we can find medieval texts informed us about the sacral roles of birds and their functions in the divinations. The corpus of artefacts constructed in this way, will be examined from the comparative perspective. All of this will allow for an anthropological interpretation of birds in the religion of early medieval Slavs. This research is a part of the Project financed by National Science Centre in Poland - "Religions and their things. Comparative analysis of early medieval objects connected with religiosity discovered on the territory of Poland".

10 LAST CROWS: GAMEFOWL IN VIKING AGE FUNERARY PRACTICES AND BELIEFS

Abstract author(s): Karpinska, Klaudia (Museum of Cultural History, University of Oslo)

Abstract format: Oral

During the Viking Age, people interacted with various species of birds. These animals were observed during daily works and distant traveling (e.g. perching birds), hunt for meat (e.g. ducks), trained for falconry (e.g. Northern goshawks), or breed (e.g. geese). Some of these feathered beings were also significant parts of rituals and beliefs (e.g. common raven, eagles). Among this great variety of bird species, were also wild and domesticated gamefowl (order Galliformes). Animals belonging to this order were not only connected with everyday human life but they were elements of funerary ceremonies. Domestic chickens were sacrificed during cremation and inhumation rituals, and their eggs were placed in different graves. Wild galliforms (e.g. black grouse, peafowl) were killed during elaborate inhumation burials. Furthermore, gamebirds are also mentioned in Ibn Fadlān's Risāla, Saxo Grammaticus' Gesta Danorum, and several Old Norse written sources as sacrifices during elaborate funerals, mysterious offerings and occupants of the otherworld.

As current research has shown, wild and domestic gamefowl remains were present in the humble and very elaborate graves of women, men and children. Bones of domestic chickens (both hens and cocks) and wild galliforms have also been documented together with the remains of other birds (e.g. raptors) and mammals (e.g. dogs, horses). Interestingly, some of the chickens were not burnt on pyres and placed later in the grave pits with ashes.

The main aim of this paper is to discuss the different aspects of interactions between humans and gamefowl in the scope of funerary rituals in Viking Age Norway and Sweden. This paper will take into account not only new analyses of Viking Age graves with remains of gamefowl but also the descriptions of these airborne beings known from Eddic poems, sagas and non-Scandinavian written sources.

A. VIKING FALCONRY – A NEW TAKE ON THE RAPTOR REMAINS AT THE VIKING SETTLEMENT OF WOOD QUAY, DUBLIN

Abstract author(s): White, Hilary (Irish Hawking Club; International Association of Falconry and Conservation of Birds of Prey)

Abstract format: Poster

Wood Quay remains one of the most important Viking settlements uncovered outside of Scandinavia. Dating from the arrival of the Vikings in the 9th Century, the site tells an unprecedented amount about the people who settled there and established the city over generations. Huge amounts of artefacts were found preserved in the wet riverside mud. Among animal bones there were also various raptor species, presumed to be food stuffs and or for arrow quills.

However, one artefact possibly sheds new light on the presence of falconry remains at Wood Quay. A satchel, presumably from a monastery, contained a raptor's foot which was estimated to have belonged to an eagle. The design of the bag is exactly like the hunting bag that every falconer around the world uses to this day – a large over-the-shoulder pouch into which hunting equipment and game can be carried out of sight of the possessive hunting bird. I am in the process of tracking down these bones to have them re-examined. It is plausible that the bone fragments inside are not those of an eagle species but one of the larger falconry species that we know the Vikings availed of – a hawk or a falcon. A large female goshawk or gyrfalcon would have a very large foot, and if the remains were only fragmentary, it could be that they were misidentified as an eagle. Falcon remains were also found at the Fishamble side of Wood Quay where a bustling marketplace stood at that time. Vikings harvested falcons and traded these birds as a commodity, and my theory is that the raptors at Wood Quay might also have been intended for falconry. The presence of these remains is worthy of discussion in the context of falconry activities in Hiberno-Norse trade.

143 DENDROARCHAEOLOGY: WOOD SCIENCE FOR THE RECONSTRUCTION OF PAST LANDSCAPES AND HUMAN-ENVIRONMENT INTERACTIONS BASED ON ARCHAEOLOGICAL AND HISTORICAL STUDIES OF WOOD REMAINS

Theme: 1. Widening horizons through human-environment interconnections

Organisers: Shindo, Lisa (ROOTS cluster of excellence, Christian-Albrechts Universität, Kiel) - Wazny, Tomasz (Nicolaus Copernicus University, Toruń)

Format: Regular session

Wood has been used by many human societies as a basic building material and for everyday life. On archaeological sites, it is found in various forms: waterlogged, dry or carbonised, and in various dimensions: from small particles to large-sized constructions. Numerous disciplines related to archaeology are dependent on investigations of wood remains. Dendrochronologists, anthracologists, wood anatomists, historians, engineers and representatives of other disciplines provide information on ancient silvicultural and wood-technological practices, and make it possible to reconstruct past landscapes shaped by various forms of human activity.

Because of their quantity, variety and good preservation, waterlogged wood remains are the most suitable material for this type of study. But what about dry and carbonised wood? How can studies not only at the single site scale, but more complex and over a large area contribute to our knowledge about past societies and their use of wood?

We invite all researchers who study wood to present and compare their analyses from all periods. We want to identify the extent to which dendrology and dendrochronology can play a part in the investigation of past human-environment interactions and then extend our current knowledge in an interdisciplinary framework.

ABSTRACTS:

1 A QUESTION OF METHOD AND PLACE? COMPARING METHODS OF DENDROARCHAEOLOGY, ANTHRACOLOGY AND ROUNDWOOD ANALYSIS

Abstract author(s): Bleicher, Niels (Underwaterarchaeology / DendroLab City Of Zürich)

Abstract format: Oral

Dendroarchaeology in the Northern Alpine Foreland has repeatedly postulated the existence of managed woodland as early as during the Neolithic. This hypothesis is based on dendrotypological results. Dendrotypology is a combination of archaeological typology and dendroecology. For the study of woodland management practices based on historic and early modern material, however, dendroecologists adopted different approaches.

The typological idea was then taken up and adapted by anthracologists who endeavor to reconstruct modes of fuelwood exploitation based on small fragments of charcoal. Similar to dendrotypology, anthracotypology compares archaeological datasets to modelled data of idealised woodland types and the remains that these are expected to produce in the archaeological record.

Recently, the idea of managed woodland has been challenged on the basis of diameter/age analyses of waterlogged wood from different sites in Europe.

Thus, four approaches from three disciplines are being used for similar questions and give sometimes different answers. This talk compares the methods and offers a possible solution to apparent contradictions, based on landscape archaeological considerations.

2 ANTHRACO-TYPOLOGY AS A METHOD OF UNDERSTANDING FIREWOOD EXPLOITATION AND WOODLAND MANAGEMENT PRACTICES THROUGH ARCHAEOLOGICAL CHARCOAL FRAGMENTS

Abstract author(s): Picornell-Gelabert, Llorenc (Universitat de les Illes Balears) - Dufraisse, Alexa (Sorbonne Universités, CNRS, Muséum national d'Histoire naturelle. UMR 7209 Archéozoologie, Archéobotanique: sociétés, pratiques et environnements) - Coubray, Sylvie (Sorbonne Universités, CNRS, Muséum national d'Histoire naturelle. UMR 7209 Archéozoologie, Archéobotanique: sociétés, pratiques et environnements; INRAP Centre-Ile-de-France) - Alcolea, Marta (Universitat Autònoma de Barcelona) - Girardclos, Olivier (Université de Franche-Comté; CNRS, UMR 6249 Laboratoire de Chrono-Environnement)

Abstract format: Oral

Anthracology has been largely developed as the archaeobotanical discipline dealing with charcoal fragments as archaeological remains of past woodlands and human-forest interactions. In doing so, the discipline has faced diverse challenges, as the difficulty to move beyond taxonomical identification in order to build a comprehensive approach to woodland management practices. In this sense, dendro-anthracology has recently emerged as a prospective venue to deepen the interrogation of anthracological assemblages through the analysis of tree-ring width and convergence of ligneous rays. In this context, the aim of this presentation is to show the diverse dendro-anthracological tools and parameters developed to further interrogate the minimum diameter estimation (charcoal-pith distance), radial growth patterns (tree-ring width), and heartwood formation. By combining these three parameters for each charcoal fragment we have defined the anthraco-typology approach as an intuitive way to organize dendrological information and to characterize the studied assemblages, especially tree organ provenance (i.e., trunk vs. branch). We have built up referential datasets and adapted the anthraco-typology approach to wood anatomy of both broadleaved trees (Quercus petraea/robur) and

gymnosperms (Pinus halepensis and Pinus sylvestris) from temperate Europe and Mediterranean ecosystems-. This methodology allows us to decipher key issues from archaeological charcoal assemblages, such as the characterisation of wood exploitation practices in contexts broadly dominated by one single species, the evaluation of the occurrence or not of species overrepresentation in burnt contexts, the identification of timber remains among charcoal fragments assemblages or the characterisation of tree-growing conditions and human clearing of trees affecting forest physiognomy. Accordingly, anthraco-typology constitutes a relevant tool to improve the interrogation of archaeological charcoal assemblages to define past woodland management and to assess human influence on forests.

3 AUTOMATED 3D TREE-RING DETECTION AND RING-WIDTH CALCULATION FROM X-RAY COMPUTED TOMOGRAPHY

Abstract author(s): Martinez, Jorge (Lucerne University of Applied Sciences and Arts, School of Engineering and Architecture, Horw) - Stelzner, Ingrid - Stelzner, Jörg (Römisch Germanisches Zentralmuseum Mainz) - Gwerder, Damian - Schuetz, Philipp (Lucerne University of Applied Sciences and Arts, School of Engineering and Architecture, Horw)

Abstract format: Oral

Tree ring analysis is essential in the understanding, modelling and assessment of the evolution of wood samples over time. It provides quantitative data about the whole ring structure which can be used, for example, to measure the impact of the fluctuating environment on the tree growth, to support global vegetation models and for the dendrochronological analysis of archeological wooden artefacts. There currently exist several methods for tree-ring detection and tree-ring parameters estimation from imaging data. However, despite advances in computer vision and edge recognition algorithms, detection of tree-rings is mostly limited to 2D datasets and performed in some cases manually. This contribution presents a new approach to extract the whole 3D tree-ring structure directly from X-ray computed tomography data and illustrates how average tree-ring widths can be estimated from it. The approach relays on a modified Canny edge detection algorithm, which detect fully connected tree-ring edges throughout the measured image stack. The obtained results show that the approach performs well on six tree species having conifer, ring-porous and diffuse-porous ring boundary structure. In our study image denoising proofed to be a critical step to achieve accurate results.

4 RECONSTRUCTION OF FOREST DEVELOPMENT IN THE MEDIEVAL ORE MOUNTAINS: PROS AND CONS OF USING WOOD DENSITY OF MINING TIMBER

Abstract author(s): Ahlgrimm, Svenja - Scharnweber, Tobias (University Greifswald)

Abstract format: Oral

The Ore Mountains are one of the most important medieval mining areas in Europe. Interdisciplinary approaches have been used to understand the development of the area as a highly dynamic cultural landscape. During excavations of mining complexes from the 12th and 13th centuries a remarkable amount of thousands of construction timbers were recovered and dendrochronologically dated.

In addition to tree-ring width, we also measured annual maximum latewood density (MXD) on a subset of historical wood samples. This parameter shows better correlations to summer temperatures and can be used to cross-date shorter tree-ring sequences. Furthermore, the positive relationship between elevation and latewood density can provide a basis for reconstructing origin of timbers and thus helps in dendroprovenancing.

However, wood decay and post-sedimentary processes such as concretions of iron or manganese in wood can bias the measurements. Therefore, we studied different extraction techniques and quantified their impact on absolute/relative wood densities and on element concentrations. Our results reveal that especially medium (decadal) time frequency signals in annual wood densities are affected by metal concretions. In order to reduce this bias, we propose a new extraction technique.

Despite these methodological limitations, this unique archive can provide new insights into aspects of landscape and climate history. Focusing on the parameter of wood density, we would like to discuss how our dataset can contribute to our knowledge of the composition and resilience of the medieval Saxon primeval forest as well as human interventions.

5 BEYOND CHARCOAL ANALYSIS. WOOD USES AND WOODLAND MANAGEMENT FROM BRONZE TO IRON AGES IN NORTHERN IBERIA

Abstract author(s): Martin Seijo, Maria (Universidad de Cantabria)

Abstract format: Oral

Charcoal is the most common archaeobotanical remain recovered from archaeological contexts dated to Bronze or Iron Ages in northern Iberia. Up to now, a large number of charcoals have been analysed in the last decade providing an excellent opportunity to test the possibilities of going beyond taxonomic identification. In our research we have systematically combined charcoal analysis in tandem with registering dendrological and taphonomic attributes. This has provided information to better characterise the kind of wood resources managed, the combustion process, the state of wood before burning and the depositional and post-depositional processes affecting to archaeobotanical assemblages. But it has also been obtained information about wood uses, woodland management practices, and even about the relationship established between people and their environment. This presentation will summarise the results obtained from several case-studies dated from the Bronze to the Iron Ages in the northern part of the Iberian Peninsula which have allowed the identification of specific uses of wood as well as sylvicultural practices.

6 MIDDLE AGES DENDROPROVENANCING: MAPPING WOOD EXPLOITATION AND CONSUMPTION FOR SAN ESTEBAN ARCHAEOLOGICAL SITE IN THE 12TH AND 13TH CENTURIES

Abstract author(s): Celma Martínez, Mireia - Baño López, Ana (Professional Archaeologist) - Eiroa Rodríguez, Jorge (Departamento de Prehistoria, Arqueología, Historia Antigua, Historia Medieval y Ciencias y Técnicas Historiográficas Facultad de Letras, Universidad de Murcia) - González Ballesteros, José Ángel (Professional Archaeologist) - Hernández Robles, Alicia - Haber Uriarte, María (Departamento de Prehistoria, Arqueología, Historia Antigua, Historia Medieval y Ciencias y Técnicas Historiográficas Facultad de Letras, Universidad de Murcia)

Abstract format: Oral

This research has focused on the probable dendroprovenance of woody taxa determined for San Esteban (http://sanesteban.um.es/) archaeological site through charcoal analysis, the revision of the medieval written sources, GIS proposal, and the complementary bioarchaeological analysis as an interdisciplinary synthesis.

4,620 charcoal from different contexts (maqbara, main streets, funduq, building II) were analysed and resulted in 36 woody taxa. The determined taxa correspond to different ecological and plant-bearing realities. The current topographical layout presents an ecological niche at the bottom of the valley through which the Segura river flows, and where Medina Mursiya was founded. The local acquisition is considered from the basis of bioclimatic stages natural environment of the determined taxa for the Thermo-Mediterranean, Meso-Mediterranean, Supra-Mediterranean, and typical riverside vegetation, in addition to the orchard fruit-tree production and if they were all able to grow in the surrounding territory.

The aim is to approach the site into the woods and cropland nearby environment woody taxa available and to analyse the demanded trade input when a lack of timber and wood fuel existed in every developed activity.

Firstly, a combined methodology analyzing charcoal from both by hand and light/heavy floatation fractions, introducing soft sieving to divide the remains into >2 mm and > 4mm, allowed to deepen increasing the number of taxa and the possibilities for further paleoecological and paleoeconomic interpretation for all contexts. Secondly, a review of the synchronic medieval written sources was gathered to explore traded wood and its provenance. Thirdly, a GIS was developed to locate taxa on its ecological environment and bioclimatic stages according to the historical transformation of the landscape. Finally, complementary bioarchaeological analyses are being produced to review and connect the archaeological record with the geographical chemical indicators, and to revise the reliability of the written sources.

7 MODERN TAR KILN FROM THE BIAŁOWIEŻA PRIMEVAL FOREST. ARCHAEOLOGICAL AND DENDROLOGICAL STUDY

Abstract author(s): Szubski, Michal - Szubska, Magdalena (Cardinal Stefan Wyszynski University in Warsaw) - Klisz, Marcin (Forest Research Institute) - Wojnar, Joanna (Cardinal Stefan Wyszynski University in Warsaw) - Langer, Jerzy (Faculty of Chemistry, Adam Mickiewicz University in Poznań)

Abstract format: Oral

The Białowieża Primeval Forest is one of the largest forested areas in Poland, it occupies nearly 1500 km2 of which 42% is in Poland and the rest is located in Belarus. Significant part of this area is covered by various types of protected zones including the Białowieża Forest World Heritage site.

As part of the project “Cultural and natural heritage of the Białowieża Forest”, over 1700 archaeological features with preserved anthropogenic relief were discovered with archival query and aerial laser scanning. Many of them are remnants of the modern charcoal production - over 250 charcoal kilns and 54 tar kilns have been located. They often occur near prehistoric barrows, creating a palimpsest-like cultural landscape.

The tar kiln in the Łozice Forestry has 20 meters in diameter. A trough-shaped depression (tar kiln) is surrounded by a circular heap, approx. 50 cm high, which is ditched in the southern part by a channel that drains tar to three reservoirs. During the field excavations, the remains of a burnt wooden structure were discovered, as well as a tar tank coat with clay and fragments of tar. The pottery shards obtained during the research allow the site to be initially dated to modern times (18th century).

The obtained samples were then itemized by specialist analyzes. The preserved pieces of wood were dendrological analyzed, while tar substances were studied with microscopic and Fourier Transform Infrared (FTIR). Additionally, the soil from the tar kiln area was sent for chemical composition analyzes.

This first attempt of interdisciplinary research of this kind of kiln in the Białowieża Primeval Forest show us big opportunities of investigating modern features and will be continue in the future. They are an example of human interaction with the forest for the production of tar and charcoal, which is still visible in the landscape.

8 NEOLITHIC WOOD USE AT THE SCHELDT RIVER BANKS IN BOUCHAIN (HAUT-DE-FRANCE)

Abstract author(s): Leroy, Gilles (DRAC Hauts-de-France, Service régional de l'archéologie – UMR 8164 Halma - CNRS) - Jaouen, Gwénaelle (Independent Researcher) - Tegel, Willy (Institute of Forest Sciences, Chair of Forest Growth and Dendroecology, Albert-Ludwigs-University Freiburg) - Salvador, Pierre-Gil (Univ. Lille, Univ. Littoral Côte d'Opale, ULR 4477) - Boulen, Muriel (Palynologist, Institut National de Recherche en Archéologie Préventive - INRAP – UMR 7209 - CNRS-MNHN) - Salavert, Aurélie (UMR 7209, Archéozoologie, Archéobotanique: sociétés, pratiques et environnements - CNRS-MNHN)

Abstract format: Oral

Archaeological sites with wetland or waterlogged conditions provide excellent preservation conditions for organic material, particularly wood, making one of the most important prehistoric sources for dendroarchaeological studies available. Dendroarchaeological research allows detailed insights into ancient technologies, wood selection and utilisation. Furthermore, annual resolved dendrochronological dates can deliver important information on the spatio-temporal development of prehistoric occupations.

The site of Bouchain (Haut-de-France, dep. Nord) is located on the bank of a paleochannel close to the Scheldt river, which flows from south to north into the North Sea. As a result of regularly floods with different intensity, the site conditions are waterlogged leading to formation of peat. Archaeological evidence reveals activities between the Middle Neolithic and the end of the Late Neolithic (4260 to 2475 cal BC). Six excavation campaigns between 2014 and 2019 discovered vast amounts of wooden remains. Wooden artifacts have been sampled for dendroarchaeological analyses within an interdisciplinary program, further involving palynological, carpological and anthracological studies. A total of 1450 individual wood objects were studied including architectural elements (posts, stakes and planks), tools (axe handles), hunting weapons (arrow shafts and bows, throwing sticks, slingshot balls), tableware, production waste from woodworking (chips) and finally two log boats. In addition, natural wood residues from peat and alluvial layers were collected in order to obtain a more comprehensive picture of the Neolithic forest vegetation on-site.

The dendroarchaeological investigations combined with other environmental studies will provide first results regarding environmental reconstructions, the dating of various Neolithic occupations, the management of wood resources and wood working techniques.

9 FROM DENDROCHRONOLOGY TO BRONZE AGE WOODLAND AND COSMOLOGY: TWO TIMBER CIRCLES ON ENGLAND'S EAST COAST

Abstract author(s): Robertson, David (Forestry Commission England)

Abstract format: Oral

In the late 1990s two timber circles were discovered on a north Norfolk beach. The one now known as 'Seahenge' was fully excavated; the second circle was recorded over the next fifteen years as it was gradually destroyed by the sea. Peat and waterlogged conditions ensured excellent preservation of timbers in both structures, providing insights into the ways wood was utilised in practical and potentially symbolic ways. Dendrochronology dated the felling of the trees used to build both monuments to the spring or summer of 2049 BC, a few centuries after the introduction of metal tools. Studies of Seahenge's timbers revealed the largest assemblage of Bronze Age toolmarks then known from the United Kingdom.

This paper will explore how Seahenge's timbers can help us understand the species, size, age, and number of the trees used in its construction. It will use this information, and associated palaeoenvironment remains, to attempt a reconstruction of the Bronze Age woodland in which they stood prior to felling. It will go onto consider the layout, dating and direct association of the two circles, offering one possible explanation for their erection and use. In the process the paper will touch on how the treatment, positioning and orientation of timbers may reveal Bronze Age beliefs associated with the sky, celestial bodies, and an underworld.

10 WOODLAND MANAGEMENT IN THE PILE DWELLINGS OF THE LJUBLJANSKO BARJE, SLOVENIA, IN THE ENEOLITHIC?

Abstract author(s): Out, Welmoed (Moesgaard Museum, Dept. of Archaeological Science and Conservation, Højbjerg) - Hänninen, Kirsti (BIAX Consult, Zaandam) - Merela, Maks (University of Ljubljana, Biotechnical Faculty, Department of Wood Science and Technology, Ljubljana) - Velušček, Anton (Research Centre of the Slovenian Academy of Sciences and Art, Institute of Archaeology, Ljubljana) - Vermeeren, Caroline (BIAX Consult, Zaandam) - Čufar, Katarina (University of Ljubljana, Biotechnical Faculty, Department of Wood Science and Technology, Ljubljana)

Abstract format: Oral

Woodland management, i.e. coppicing and pollarding, is regularly suggested to have taken place in Europe from the Mesolithic or at least the Neolithic onwards. Is this actually the case? This study focuses on prehistoric pile dwellings in the Ljubljansko barje (Ger. das Laibacher Moor), Slovenia, dating to the Eneolithic period, between 3700 and 2400 BC. These settlements were inhabited by people of different cultural groups and are all characterized by a highly developed copper metallurgy. Due to waterlogged conditions, organic material at these sites has remained preserved through time.

Archaeological excavations since 1995 have enabled systematic collection of waterlogged wood for dendrochronological dating. This resulted in the collection of a large data set of over 8,500 wood samples from 16 pile dwellings, allowing a regional analysis of wood exploitation. The wood assemblage includes 11 genera and is dominated by ash (Fraxinus excelsior) and oak (Quercus robur and Quercus petraea). Earlier analysis of ash and oak piles from one of the sites, Stare Gmajne, indicates the exploitation of unmanaged wood during 3160-3110 BC (Out et al. 2020). The aim of the present work is to investigate the characteristics of wood exploitation at the other sites that date both to earlier (3700 -3330 BC) and later (ca. 2800-2400 BC) periods. We focus on woodland management at two clusters of sites that were during some periods populated simultaneously.

11 SASANIAN WOODLAND USE IN TREELESS LANDSCAPES

Abstract author(s): Shumilovskikh, Lyudmila (Georg-August-University Göttingen)

Abstract format: Oral

Palaeobotanical data from radiocarbon-dated sediments and archaeological excavations represent important source of information for our understanding of human-environment interactions. Compilation of palynological, wood anatomy, charcoal and botanical macroremain analyses provide new insights into woodland management in the treeless landscapes of the Gorgan Plain (NE Iran) during the Sasanian era. Palynological research points to natural origins of the open steppe vegetation in the Gorgan Plain. During the Sasanian period, local sources provided enough firewood for kilns in short-term use, but were insufficient for fortifications which required additional supplies from the Hyrcanian forests. These forests provided the main source of firewood for sites located close to the Alborz Mountains. Cultivation of trees was widespread during the Sasanian Empire for fruits, shadow and possibly moriculture for silk production. The palaeobotanical records are still very rare in the Gorgan Plain. New data are a high desideratum to gain further insights into woodland use before, during and after the Sasanian Empire.

12 A 19TH CENTURY WHALER IN PATAGONIA, ARGENTINA: DENDROCHRONOLOGICAL ANALYSIS OF THE BAHÍA GALENSES SHIPWRECK

Abstract author(s): Mundo, Ignacio (IANIGLA-CONICET) - Murray, Cristian - Grosso, Mónica (PROAS, Instituto Nacional de Antropología y Pensamiento Latinoamericano, Buenos Aires) - Rao, Mukund - Cook, Edward (Tree-Ring Laboratory, Lamont-Doherty Earth Observatory, Columbia University, New York) - Villalba, Ricardo (Laboratorio de Dendrocronología e Historia Ambiental, IANIGLA-CONICET, Mendoza)

Abstract format: Oral

Since the late 18th century, the demand for products derived from the exploitation of cetaceans and pinnipeds led North American and European vessels to explore new hunting areas in the southern oceans. Numerous historical sources accounts for these commercial activities involving a great number of vessels. Many of these ships were lost at sea and their precise locations remain unknown.

In 2002 the remains of a wooden shipwreck were discovered on the coast of Golfo Nuevo, northern Patagonia, Argentina. The wreck was named "Bahía Galenses" after the historical name of the cove where it was found. The results of the archaeological research carried out so far indicate that it would be a whaler built in the 19th century employing northern hemisphere timbers.

Some archaeological and written evidence suggest that it could be the Dolphin, a whaler built in Warren, Rhode Island, USA, in 1850 and shipwrecked in 1859 at Golfo Nuevo. To test this hypothesis, using dendroarchaeological provenance methods and a novel approach based on the gridded North American Drought Atlas (NADA), we found highly significant correlations between the wreck's tree-ring width series and oak and pine chronologies from eastern US. Our findings indicate that the Bahía Galenses shipwreck have the same origin and historical moment of construction of the Dolphin. As far as we know, this research would the first study conducted in South America to date and determine the origin of a shipwrecked whaler through dendrochronological methods.

The results of this study stimulate further interdisciplinary projects to study the large number of unidentified wooden shipwrecks found along the extensive Patagonian coasts of the South Atlantic Ocean, many of which may have been involved in the exploitation of marine resources during the 19th century.

A. ARCHAEOLOGICAL AND DENDROLOGICAL STUDY OF TWO TYPES OF CHARCOAL KILNS IN THE BIAŁOWIEŻA PRIMEVAL FOREST

Abstract author(s): Wojnar, Joanna (Cardinal Stefan Wyszynski University in Warsaw) - Klisz, Marcin (Forest Research Institute)

Abstract format: Poster

Located on the eastern part of the country the Białowieża Primeval Forest is one of the largest forested areas in Poland. The whole forest complex occupies nearly 1500 square kilometres. Around 42% of it is located in Poland and the rest in Belarus.

Archaeological research in Białowieża Forest discovered thousands of features with preserved anthropogenic relief including many remnants of the modern charcoal production. All of them were detected with airborne laser scanning archaeological reconnaissance and verified in the field.

Here we present the preliminary results of archaeological and dendrological studies of samples from selected charcoal kilns. The analysed samples were collected from two different types of charcoal kilns located around one kilometre from each other. Features differ in term of morphology – one is rounded with shallow ditch, second is plain mound without ditch.

The preserved pieces of wood and charcoal were analysed by dendrological and wood anatomical methods to establish the tree-ring chronology of each charcoal kiln and to determine the tree species of wood samples used in both types of analysed charcoal kilns.