Annali dell'Università di Ferrara
Museologia Scientifica e Naturalistica

ISSN 1824-2707
Volume Speciale (2025): pp. 164-176
DOI:10.15160/1824-2707/3090

MESO2025 - 11th International Conference on the Mesolithic in Europe

Session 8

Mobility and Communication

Coordinated by Dorothée Drucker and María Natividad Fuertes-Prieto

Mobility and communication patterns during the Mesolithic are recurrent topics of study that capture subsistence movements, territorial exploitation, and the exchange of ideas and cultural materials among Early Holocene hunter-gatherer-fishers. From the origin of raw material and prey to debitage techniques, ornamental distributions, and group sharing, different lenses of analysis are required to build models of mobility, territoriality, and social networks. By mobility, we refer not only to movements of artefacts but also to individuals or groups who may be motivated by economic and/or social factors. With communication, we seek to provide insights into the social relationship driving raw material and worked object exchanges, economic and cultural practices, and genetic interactions. Our goal is to decipher strategies of occupation, as well as links among different cultural groups and territories. Among other topics, we would examine to what extent patterns of mobility and communications may have been resilient to short- and long-term climatic changes (e.g. the 8.2 ka event).

Combining approaches as diverse as lithic raw material provenance, the management of chaînes opératoires, the origin and making of ornaments, subsistence seasonality, and genetic relationships will allow us to gain new and diverse perspectives on movements and exchanges. We invite submissions from researchers with any focus, including lithic/organic raw material, lithic/bone industry, ornaments, zooarchaeology, proteomics, stable isotopes, and paleogenetics. Thematic studies focusing on specific geographical regions or diachronic perspectives are especially welcome. Studies based primarily on one line of evidence should be contextualised in a large chronological and/or temporal context. In bringing together different methods and materials, we aim to gain novel perspectives on mobility and communications during the different phases of the Mesolithic and the transitions with the Final Paleolithic and Early Neolithic.

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ORAL PRESENTATION

Thursday 18th September, h.09:00-09:15

First Mesolithic networks: the circulation of techniques and lithic industries in Western Europe

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The style notion is widely used in archaeology, including Prehistory. This concept is often associated with the idea of 'culture', leading to confusion between the two. In fact, these concepts are largely superimposed and often defined by a particular lithic industry, specific to an area and a period. Through a shift of meaning, these notions have sometimes been correlated with armatures and arrowheads alone within Mesolithic research, leaving large areas of prehistoric toolmaking, and therefore of the people involved, in the dark. However, 'style' is not just about the appearance of certain objects. It can also be found in the technical skills and ways in which all lithic tools were used. Finally, style goes beyond the materiality of the object itself, giving it a meaning, a message intended to be communicated over long distances, both geographically and temporal. This presentation examines from a new angle the evolution of the chaînes opératoires used in the manufacture of retouched lithic tools in the early Mesolithic period (between 9,500 and 6,500 BC) in western Europe. Morphological variations of these objects are also observed. To do this, statistical analyses are used to compare the assemblages, in particular the calculation of dissimilarity index and principal coordinate analysis. This work led to the networking of the Mesolithic sites studied, demonstrating the circulation of skills and objects in space and their continuity over time.

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ORAL PRESENTATION

Thursday 18th September, h.09:15-09:30

Exploring "litho-espace" and mobility in the 2nd Mesolithic: a preliminary approach through case studies from the Quercy Region (France)

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The Quercy region, located in the south-west of France, stands out for its unique karstic landscapes, consisting of limestone plateaus delimited by deep valleys, and featuring a high density of dolinas and sinkholes. This exceptional natural setting, rich in diverse resources, caves and rockshelters has favored continuous human settlement since the Paleolithic. The Haut-Quercy, which will be discussed here, provides an ideal context for studying prehistoric societies, particularly those of the Mesolithic. This presentation examines the concept of "litho-espaces" in relation to mobility strategies during the 2nd Mesolithic, drawing on data from the sites of Cuzoul de Gramat and Jonquilles cave, located about ten kilometers apart. The goal is to understand circulation territories and formulate hypotheses regarding the complementarity of the various sites identified in the region. Indeed, other sites are known in this area, but the available data remain fragmentary due to the antiquity of past excavations and the subsequent destruction of archaeological layers. However, the material from certain sites, although disturbed, allows for the identification of cultural traits, particularly via flint tool analysis. Although partial, these data provide essential insights as lithic markers have enabled the estimation of the chronology and duration of occupations, as well as to highlight raw material circulation and mobility patterns within a restricted territory characterized by a high density of sites. This work is still ongoing, and further analyses will complement and refine these hypotheses.

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Thursday 18th September, h.09:30-09:45

RAW MATERIAL ECONOMY AND LAND-USE PATTERNS OF MESOLITHIC HUNTER-GATHERERS AT THE OPEN-AIR SITE ALPE VEGLIA IN NORTHERN ITALY

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The Mesolithic open-air site Alpe Veglia (Alpi Lepontine, Val d'Ossola, Novara) is situated within a nature park in Northern Italy at the foothills of Monte Leone. It is located on an alluvial fan at an elevation of 1750 m above sea level. Several mountain passes to the northwest link the area with the Upper Valais in Switzerland. Large-scale excavations carried out by the University of Ferrara between 1988 and 1997, covering an area of more than 100 m2, revealed the remains of fireplaces, lithic workshops and stone structures. While most Mesolithic sites in the region reflect relatively short stays, Alpe Veglia has the character of a larger base camp. The lithic raw material is dominated by rock crystal, followed by radiolarian chert and Cretaceous flint. The presence of triangular microliths (including Sauveterre points) dates the archaeological features to the Early Mesolithic (Sauveterriano). Furthermore, trapezoidal microliths suggest that there was also a Late Mesolithic phase of occupation. Petrographic analyses in combination with field surveys give interesting insights into the raw material economy of people inhabiting the site in the Early Holocene. Additionally, spatial analyses using GIS allowed the reconstruction of seasonal mobility patterns between high altitude zones in the Alps and large lakes in the borderland between Northern Italy and Switzerland.

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SETTLEMENT DYNAMICS AND CHRONOLOGY BETWEEN THE EARLY AND LATE MESOLITHIC IN THE DOLOMITES REGION: THE HIGH ALTITUDE OPEN-AIR SITE SA44 IN UPPER VAL DURON (ITALY)

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The area between the Adige Valley and the Dolomites is the most surveyed Alpine area from the archaeological point of view of research on the Mesolithic where hundreds of sites have been identified since the 1960s. Systematic surveys carried out since 1991 and extended within the project "Archaeological research on humans, Settlement and land use in the Lower Holocene, Cresta di Siusi-Val Duron" have made it possible to identify 125 sites over an area of 1 sq km. Based on these new data it was possible to outline a mobility model for Mesolithic hunter-gatherer groups, with some differences between the Early Mesolithic (Sauveterrian) and the Late Mesolithic (Castelnovian). The contribution focuses on the SA 44 open-air hunting camp site in the upper Val Duron located at an altitude of 2200 meters a.s.l. investigated on an area of 88 square meters. The excavation made it possible to document and compare the chronologies and settlement strategies of the Sauvetterian (SA44A-B) and Castelnovian (SA44B-C) occupation.

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ORAL PRESENTATION

Thursday 18th September, h.10:00-10:15

"That ain't no whale". Long distance communication in Northern Europe inferred from a case study of unusual raw material choice in slotted bone technology

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Slotted bone technology generally is understood as a key component of the Mesolithic traditions of Northern Europe. Slotted points encompass a variety of rather similar implements, typically uni- or biserial, with or without notches and other morphological features, such as well-defined tangs. The majority of these items, typically ranging from c. 10-28 cm in length, are considered projectiles. Slotted bone daggers, on the other hand, are generally lager (from c. 24 cm) and show greater heterogeneity in design. In 1947, a large slotted object was recovered in a peat bog in Uppland, eastern Middle Sweden. The object must be considered unique in its morphology and length (43 cm), as well is the raw material choice. Renewed study of the object and the find context along with radiocarbon dating and ZooMS-analysis has brought new information about this special piece. We have identified evidence of long- distance communication (artefact mobility) between a brackish estuary environment in Uppland, Sweden, with human utilization of deep-sea marine mammals, possibly along the North Atlantic coast or the Arctic Ocean.

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Shellfishing and human mobility in northern Iberia during the Late Mesolithic: New data from an archaeomalacological study of the Mesolithic sequence at the shell midden site of La Chora Cave (Cantabria, Spain)

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The Mesolithic shell middens are abundant deposits along the European Atlantic coast, particularly on the northern coast of the Iberian Peninsula. Coastal resources were crucial for the subsistence strategies of Mesolithic groups along the shoreline, as previous studies have demonstrated. This paper shows the results of an archaeomalacological study of marine and terrestrial mollusc shell remains recovered from the Mesolithic sequence of the shell midden site of La Chora cave (Cantabria, Spain) during the 2021 campaign. Currently, the site is located approximately 4 km from the head of the estuary of the River Asón and approximately 10 km from the open shore. Due to sea-level changes, the cave was slightly farther from the coast during the expanse of this period (10,700-6,700 cal BP). The complete Mesolithic sequence includes seven stratigraphic units and has been radiocarbon dated to the Late Mesolithic. The analysis of more than 150,000 shells and other littoral resources remains reveals the practice of shellfishing in various coastal environments, including open rocky shores and estuarine areas. These data reveal slight differences compared to other Cantabrian Mesolithic shell middens, indicating that littoral resources were harvested from a larger collection radius, which suggests that the inhabitants of La Chora might have traveled over 10 km to the open coast to gather shellfish. The results show that the mobility of these communities for resource procurement was greater than previously thought and expands the available data about the subsistence strategies of Mesolithic groups in a scarcely studied area of the Cantabrian region.

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ORAL PRESENTATION

Thursday 18th September, h.11:15-11:30

From the sea to the mountains, the road of Columbella rustica shells in central Italy

Mussi Margherita * (1) (2), Emanuela D'Angelo (3), Di Bianco Luca (4) (5) (2), Brunelli Elisa (6), Catelli Eliana (7), Gazzoli Delia (8), Piarulli Flavia (9), Ruta Giancarlo (2), Altamura Flavio (2)

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Perforated Columbella rustica shells are ubiquitous in the Mesolithic sites of Italy, including Sicily and Sardinia, elsewhere in the circum-Mediterranean and in areas more distant from the sea as well. As in the case of Croatia, they are held as heralding exchange systems and human circulation. Here we explore the evidence provided by a string of sites in central Italy, from Riparo Blanc on the Tyrrhenian coast to Grotta di Pozzo in the middle of the Apennine range of mountains.

Riparo Blanc at Monte Circeo (11,300-9,500 cal BP) overlooks the sea and yielded more than 1300 Columbellae, both perforated and unperforated ones, the largest such assemblage in Italy. Grotta di Pozzo, at 700m above sea level on the shores of the former Fucino lake and surrounded by mountains, yielded 45 perforated Columbellae in the Sauveterrian levels (10,500-9,000 cal BP). More, even if in small numbers, occur at other sites around the lake, while 164 of them were found at Grotta Polesini on the Aniene River, a tributary of the Tiber River. Grotta Polesini was excavated with poor scientific control in the fifties of last century and the number of collected shells is probably a minimum one. The Aniene valley allows relatively easy movement from the coast to the central Apennines and could have been followed on a seasonal circuit from coast to mountains, as from Riparo Blanc to Grotta di Pozzo, 100 km apart as the crow flies.

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ORAL PRESENTATION

Thursday 18th September, h.11:30-11:45

Drowning land: large-scale land loss in the Doggerland region and its effects on Mesolithic landscape use and information

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New models of the inundation of Doggerland have provided improved insight into the variable rate of Early Holocene land loss in the North Sea Basin. Combined with an extensive archaeological radiocarbon dataset, these models permit to evaluate the relationships between climate-driven environmental dynamics at multiple spatiotemporal scales. In this paper we will present the major findings of the modelling work, and discuss how these can be understood with respect to changing landscape use as reflected in the archaeological record of the Netherlands, with a special emphasis on the use of 'pit hearths', a phenomenon that seems to represent one or several specific types of activity that persisted throughout most of the Mesolithic in the region. The environmental and geographical changes driven by the inundation of Doggerland are likely to not only have affected landscape exploitation, but will also have impacted the acquisition and sharing of information about resources and related and unrelated groups of people. In addition, as the landscape is an intrinsic part of cultural practices and beliefs, environmental and geographical changes will also have affected the perception of and stories about the land. We will present some preliminary results from the research project 'Resurfacing Doggerland' which focusses on the patterning in e.g. tool typology, technological choices, as well as food economy and human aDNA signatures to broaden insights into sociocultural developments in the context of a drowning landscape.

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POSTER

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Seasonality of coastal resource exploitation patterns in northern Iberia during the Late Mesolithic based on stable oxygen isotope values of Patella depressa (Pennant, 1777) limpets from La Chora Cave (Cantabria, Spain)

León Cristóbal Alejandro * (1), García-Escárzaga Asier (2), Fano Miguel Ángel (1), Arniz-Mateos Rosa (3), Gutiérrez-Zugasti Igor (4)

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The Mesolithic shell middens are abundant deposits in the Atlantic façade of Europe, particularly on the northern coast of the Iberian Peninsula, coinciding with the beginning of the Holocene. Coastal resources were frequently exploited by Mesolithic groups that inhabited littoral locations, and they played a significant role in their subsistence strategies, as shown by previous investigations. The use of stable oxygen isotope values from marine shells can serve as powerful recorders of seawater temperatures during shell growth, offering the possibility of determining the season when molluscs were collected. This paper presents the results of stable oxygen isotope analyses on Patella depressa (Pennant, 1777) limpet shells recovered from the stratigraphic unit 103 of La Chora Cave (Cantabria, Spain). The results indicate that most of the specimens were consumed by the last hunter-fisher-gatherers populations primarily during winter and early spring, and to a lesser extent, in autumn. These findings are generally consistent with conclusions previously obtained from other Cantabrian Mesolithic shell middens, thus strengthening our understanding of the seasonal marine resource exploitation strategies developed by the last hunter-fisher-gatherers in Atlantic Europe, mainly during the colder months.

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POSTER

Thursday 18th September, h.11:45-12:00

The search for a fourth source for ground stone axes in Mesolithic western Norway. Can pXRF analysis contribute to the provenance of the axes?

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The existence of three major sources of raw material for Mesolithic and Neolithic ground stone adzes and axes in western Norway has been known for some time. The greenstone quarries at Hespriholmen and Stegahaugen at Bømlo and the diabase quarry at Stakaldeneset in Florø. However, in Solund, which is situated at the coast between Bømlo and Florø there is now evidence of a fourth source that must have been of some importance. In the absence of an actual quarry and workshops, it has been difficult to pinpoint a closer location of this source. A recent archaeological excavation of a residential site in Solund uncovered a large quantity of debris and preforms suggesting that a greenstone quarry might be close to the site. This prompted an investigation combining archaeological and geological data. First, we wanted to see if we could use geochemical analysis to link the archaeological finds to the local geology. When this proved successful, we wanted to see how this material related to axes and adzes found in different regions of western Norway. To avoid intrusive and damaging sampling, pXRF analysis was carried out on about 150 objects. The study is thus also a test on whether pXRF analysis is suitable for distinguishing between the different sources for ground stone axes in western Norway. The paper presents the study and discusses some preliminary implications of the results.

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POSTER

Thursday 18th September, h.11:45-12:00

Reconstructing Seasonal Patterns: High-Resolution Analysis of Limpet Shells from Oronsay

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The island of Oronsay, with its cluster of shell midden sites, plays a pivotal role in the study of the Scottish Mesolithic. However, recent research, particularly on its seasonal occupation, remains limited. This lack of investigation is problematic, as the site cluster has been used to suggest near-sedentary mobility among hunter-gatherers, yet the evidence base—primarily fish remains—for this year-round occupation remains heavily debated. With recent advancements in sclerochronological techniques—studying the physical and chemical properties of hard tissues to reconstruct life histories and environmental conditions—these issues can now be addressed with more accuracy and on a higher chronological resolution. New research using Laser Induced Breakdown Spectroscopy (LIBS) shows the potential of using limpets, the dominant species in the Oronsay shell middens, as high-resolution source for seasonality data. This innovative approach will reveal seasonal temperature changes recorded in the shells, allowing us to determine each specimen's time of death and, consequently, the season of collection. To renew the study of Oronsay and the seasonal use of its shell middens, we are planning new research on the island. This involves targeted excavations planned for July and August 2025, in which we aim to locate dense deposits of limpet shells and to analyses them using LIBS. The preliminary results of this analysis will be presented.

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POSTER

Thursday 18th September, h.11:45-12:00

Raw material variation in relation to watersheds, fjords and archipelagos of Northern Norway. Late Mesolithic slate knives and slate sources in focus

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One characteristic of the Late Mesolithic in Northern Scandinavia is the use of slate for the production of polished tools like knives and spearheads. This study uses pXRF to analyse variability in the slate used for producing knives in northern Troms and Finnmark in Northernmost Norway. The spatial patterns in the distribution of raw material groups are discussed in relation to the geographical extent of watersheds, fjords and archipelagos. It is suggested that seasonal rounds of groups of Late Mesolithic hunter-gatherers in the region often took place within single watersheds/fjords, but also may have included adjacent off-shore islands and outer coast. The poster is a case study conducted within the Stone Age Demography project at Tromsø University, Norway.