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Volume Speciale (2025)

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11th International Conference on the Mesolithic in Europe

Ferrara, 15th-19th September 2025

PROGRAM & ABSTRACT BOOK

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11th International Conference on the Mesolithic in Europe

15-19th September 2025 - Ferrara (Italy)
Palazzo Giordani, Corso Ercole I d'Este 46

MESO 2025

Program and Abstract book

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AIQUA

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Introduction

For its eleventh edition, the MESO Conference will be held for the first time in Italy, hosted by University of Ferrara, from the 15th to 19th September 2025.
The first International Conference on the Mesolithic in Europe was held in 1973 in Warsaw, initiated by Stefan K. Kozłowski. Since then, the Conference has been held every five years, bringing together scholars from leading research institutions and laboratories around the world.
From the outset, these conferences gained significant scientific recognition, playing a key role in advancing research on the Mesolithic and in securing its rightful place in the broader context of prehistoric and archaeological studies.
With one exception, the proceedings have been regularly published, providing valuable updates on the state of research and reflecting the evolving understanding of the Mesolithic as a distinct and meaningful historical period.
The most recent edition took place in Toulouse in 2020. Despite excellent organization, the event was held online due to pandemic-related restrictions.
We now look forward to welcoming the Mesolithic research community in person once again for the 11th edition of the conference, which will be held in Ferrara, continuing the dynamic tradition that has always defined European Mesolithic studies.

General Information

Registration:
Registration for all participants will take place at **Palazzo Giordani, Room 7** (see map) starting **from 8:00** on each day of the Conference, except for Wednesday 17th September when mid-conference excursions will take place.
A welcome desk will be available throughout the day for information and assistance.

Conference badge:
Upon registration, each participant will receive a personalized conference badge, which has to be worn visibly during the event. Badges will grant access to:
All scientific sessions
Coffee and lunch breaks
Mid-conference excursion and social dinner (if included in your registration)
If you lose your badge, please contact the welcome desk for assistance.

Sessions:
On each day of the Conference, **two contemporary sessions** will be held in Room 9 and Room 10 at Palazzo Giordani (see map), **from 9:00 on**. For detailed information please refer to the schedule included in the booklet.
Please note that:
Individual paper abstracts will not be printed in the booklet. Instead, they will be accessible online via a QR code for each thematic session (see page 33)
Posters will not be physically displayed during the conference. Instead, they will be available for viewing on the official conference website
You have to be logged in to the MESO2025 website to get access to online contents.

Breaks:
Coffee breaks will be offered daily, except for 17th September, in the Courtyard of Palazzo Giordani (see map) at 10:45 in the morning (on

15th September at 11:00 a.m.) and at 16:15 in the afternoon.
Lunch breaks will be offered to all registered participants in the main exhibition room at Palazzo Turchi di Bagno, Corso Ercole I D'Este 32, on 15th, 16th, 18th and 19th September from 13:15 to 14:30.

Social dinner:
The social dinner (if included in your registration) will take place on **Thursday 18th September** at the Istituto Alberghiero Vergani Navarra, hosted in the historical building of **Palazzo Pendaglia**, via Sogari 3, in the city center (see map).
Mid-conference excursions:
On Wednesday **17th September 2025** two parallel mid-conference excursions will take place. The itineraries comprise some of the most important Alpine Mesolithic sites and museums displaying Mesolithic finds from these and other notable sites.
Excursion 1 will lead us to MUSE - Science Museum of Trento, and Gaban rockshelter.
During Excursion 2 we will visit Museo "Vittorino Cazzetta" in Selva di Cadore, and to the mountain area of Passo Giau - Pra' Comun.
The departure for both the excursions is Wednesday morning from viale Cavour, 11, in front of the Touring hotel. See p. 39-40 for the details of each excursion.

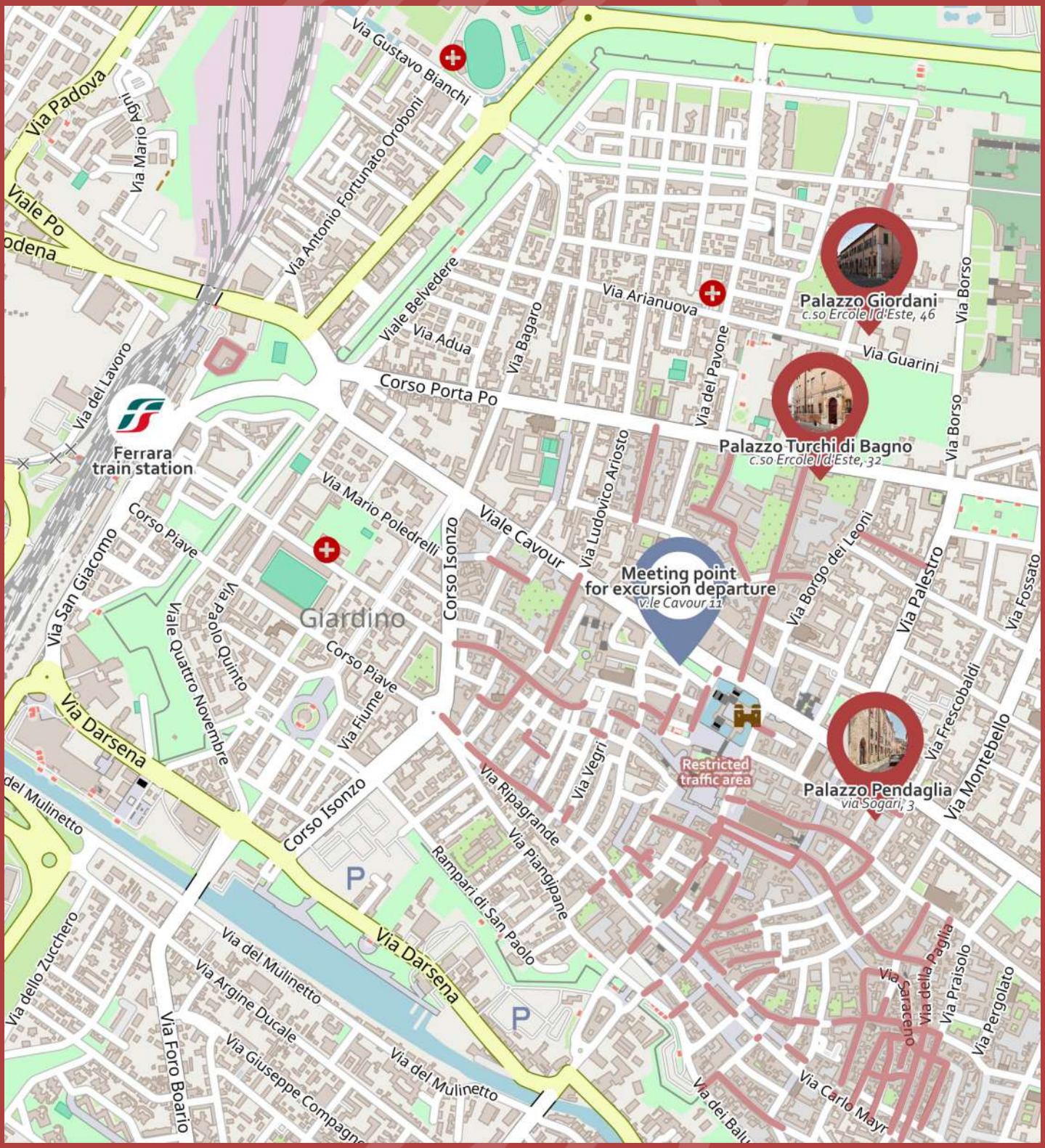
Venue

The **city of Ferrara**, situated in Italy's Emilia-Romagna region, boasts a rich historical legacy and a captivating atmosphere. The city reached its peak during the Renaissance under the rule of the Este family, whose influence is still visible in its distinctive architecture. Notable landmarks include the Estense Castle, a moated fortress that once served as the Este family's residence, the Palazzo dei Diamanti, named for its striking diamond-shaped marble façade, and other important historical and artistic sites such as Palazzo Schifanoia. Ferrara's urban layout reflects its Renaissance ideals while still preserving elements from its Medieval past, as seen in the Cathedral and other structures. Today, Ferrara is a lively and dynamic city. Its bustling squares and quiet alleyways blend the charm of a storied past with the energy of a modern university town, creating a vibrant environment full of cultural and academic opportunities.

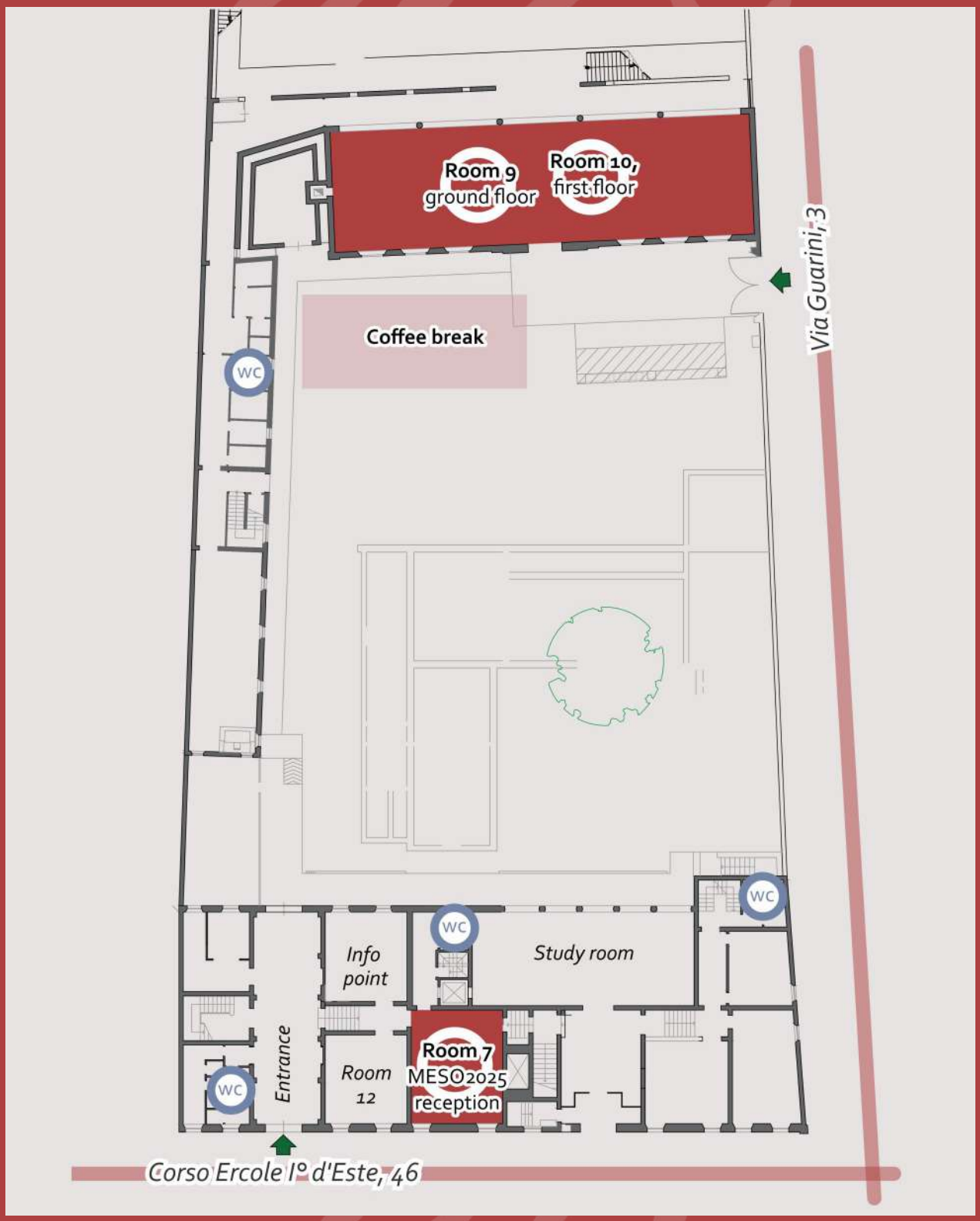
Founded in 1391, the **University of Ferrara** has been a center of academic excellence for centuries. It offers a multidisciplinary educational environment, with strong programs in medicine, humanities, engineering, and law. Within this broad academic offering, prehistoric studies have long held a place of distinction. Ferrara is a leading institution in Italy for research on the prehistory of hunter-gatherers, with fieldwork and excavations extending from the Alpine and Pre-Alpine regions to various sites across the Italian peninsula, covering periods from the Lower Palaeolithic to the Neolithic.

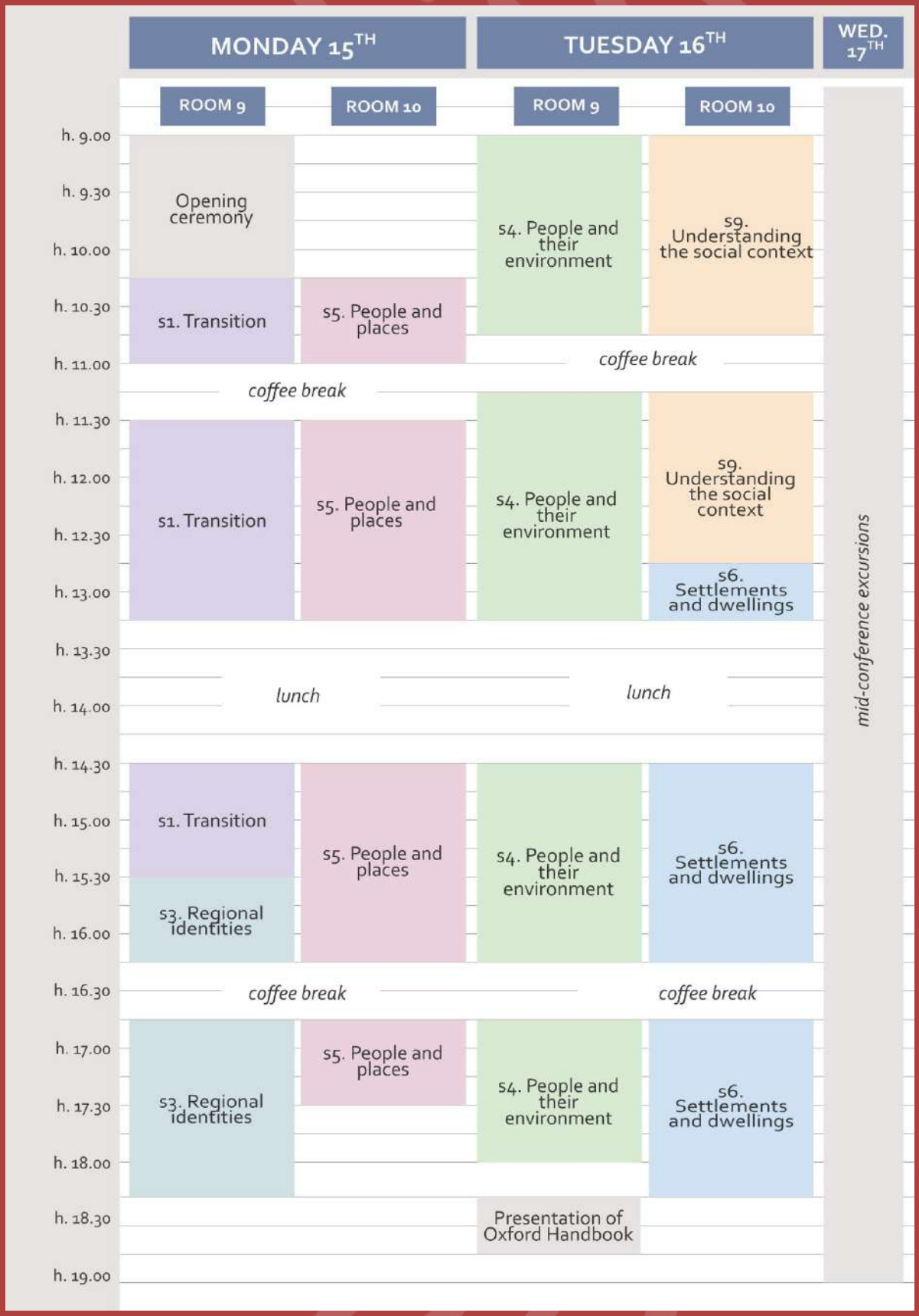
Palaeontological and Palaeoethnological research began with Professor Piero Leonardi, founder of the Institute of Geology. In the 1960s, Professor Alberto Broglio's pioneering studies led to the identification of the Mesolithic in Northern Italy, laying the foundation for modern research on this period in our country. His work was continued and expanded by other prominent scholars at the University of Ferrara, including Professors Antonio Guerreschi, Carlo Peretto, and Benedetto Sala, all of whom contributed significantly to the institution's leading role in prehistoric research.

Ferrara City Map



Palazzo Giordani

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coffee break
s3. Regional identities
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s4. People and their environment
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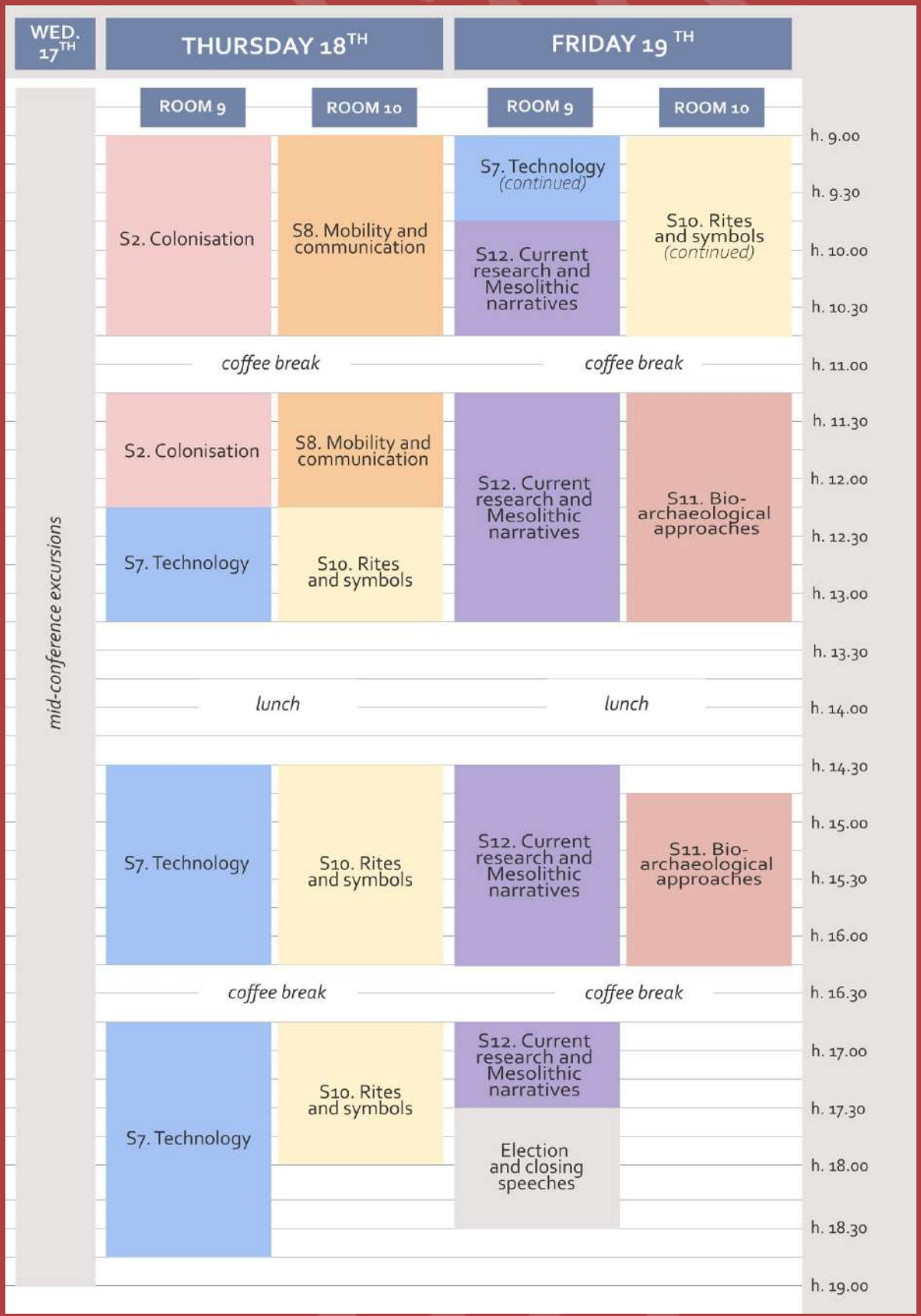
Presentation of Oxford Handbook
mid-conference excursions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coffee break
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coffee break
S7. Technology
S10. Rites and symbols
S12. Current research and Mesolithic narratives
Election and closing speeches

MONDAY 15TH SEPTEMBER

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	Session 1. Transitions chairs: Starnini E., Angelin A. and Valdeyron N.	**Session 5. People and places** chairs: Crombé P. and Posch C.
h. 10.15 - 10.30	The Final Palaeolithic and Early Mesolithic on Flixton Island: what can we learn about the Palaeolithic-Mesolithic transition? Milner N., Taylor B., Conneller C. and Zander A.	Danish Late Mesolithic coastal settlement following the postglacial rise in sea-level. An example from a local perspective Skousen H.
h. 10.30 - 10.45	The lithic industry of Remouchamps, the (epi-)Ahrensburgian of the Meuse valley and the start of the Mesolithic Vandendriessche H., Halbrucker É., Verheyden S., Burlet C. and Crombé P.	Stone Age Atlantis on Lolland-Falster? The value of reclaimed landscapes and their archaeological potential Mâge Bjørnar T. and Groß D.
h. 10.45 - 11.00	The Late Pleistocene-to-Early Holocene transition in the Venetian pre-Alps: new data from the Landro cave in the Cansiglio plateau Visentin D., Potì A., De Lorenzi M., Bassetti M., Bertola S., Esposito C., Fasser N., Nannini N. and Peresani M.	Synergy and simulation - constructing large-scale frameworks for prospecting submerged Mesolithic landscapes Butler M., Walker J., Harding R., Fitch S., Cook Hale J., Murgatroyd P., Fraser A., Pelling R., Urmston B. and Gaffney V.
h. 11.00 - 11.30	Coffee break	
h. 11.30 - 11.45	Absolute population and Mesolithic traditions in Early Neolithic northern Europe Mclaughlin R.	Mesolithic hunter-fisher-gatherer (HFG) landscape interaction in coastal Atlantic Europe - anchor points in a fluid world Gibbons K.
h. 11.45 - 12.00	Fishing identities in southern Scandinavia: new data on the Mesolithic-Neolithic transition from Syltholm Fjord, southeast Denmark Koivisto S., Robson H. K., Philippsen B., Schmölcke U., Brinch M. and Groß D.	Predicting and protecting lithic landscapes - understanding the distribution of lithic scatters across Dartmoor, UK Stockley E., Basell L., Bray L. and Chapman H.
h. 12.00 - 12.15	Cross-channel flint knapping connections during Mesolithic-Neolithic transition of Britain from 5.000-3.700 BC Lawrence T.	Mesolithic waterlogged sites in the north of Lower Saxony König J. and Mahlstedt S.
h. 12.15 - 12.30	Discussion	Discussion
h. 12.30 - 12.45	Transitioning to the Neolithic through stone tools in Belgium Halbrucker E., Burnett A., Engels I., Dhaenens M., Cristiani E., Denis S. and Crombé P.	Forming axes, forming bonds - a geochemical study of lithic raw procurement strategies in the Central Norwegian Mesolithic Spjelkavik Skule O. S.

h. 12.45 - 13.00	Variability of technical traditions, cultural, functional and economic practices between the end of the Mesolithic and the beginning of the Neolithic: cross-referencing lithic and archaeozoological data, the example of la Baume de Montclus (Gard, France 6.300 - 5.000 BCE) Derbord L., Philibert S., Defranould E. and Perrin T.	Hunter-gatherers in the mountains: interdisciplinary research into Late Glacial and Mesolithic landscapes of the Cairngorms, Scotland Warren G., Bishop R., Buchanan D., Butler M., Claeys L., Crowell C., De Smedt P., Doughty A., Fenn K., Lifton N., Kelley S, Mann B., Moucheron M., Pendleton S., Redmond J., Skelton R., Verhegge J. and Youngeagle D.
h. 13.00 - 13.15	From foraging to farming in the (Circum-)Alpine region: a mosaic of realities Della Casa P., Bassin L., Jakob B. and Van Willigen S.	New palaeolandscape reconstructions for the Northern Adriatic: coastal environments and ecologies of the last hunter-gatherers Ongaro S.
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h. 14.30 - 14.45	Babina Špilja: a new Mesolithic site on the Island of Hvar, Croatia Boric D., Burić M. and Cristiani E.	Holocene hunter-fisher-gatherer occupation of Adriatic Islands: example of Korčula Island Kačar S. and Vukosavljević N.
h. 14.45 - 15.00	Mesolithic resilience in Southern Portugal Soares J.	Predictive modelling and settlement strategy analysis in Friuli-Venezia Giulia during the Mesolithic Faraoni M., Fasser N., Cecchetti M., Bertola S., Visentini P., Visentin D., Pizziolo G. and Fontana F.
h. 15.00 - 15.15	Use-wear analysis as a proxy to understand transitional periods, the case of the Ensisheim site (France) Lallauret C., Guéret C. and Griselin S.	Reevaluating the Mesolithic occupation of Western Liguria: preliminary results Riel-Salvatore J., Arobba D., Ghislandi S., Rellini I., Ricci G., Sparacello V. S., Gravel-Miguel C. and Negrino F.
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h. 10.15 - 10.30	Resource management before farming - Mesolithic fish traps in naturally fishless Norwegian lakes Mjaerum A. and Friis E. K.	Mobility, diet, and lifeways of the individuals buried in the Early Mesolithic and Middle-Late Neolithic rock shelter of Abri des Autours, Belgium Capuzzo G., Fiorin E., Salesse K., Polet C., Veselka B., Brecko J., Cauwe N., De Groote I., Cristiani E. and Snoeck C.
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h. 12.00 - 12.15	Aspects of human-animal relations in the Mesolithic of northern Germany Kipke N.	Paws on pots: metapodial bone impressions on Eastern Baltic hunter-fisher pottery (4th millennium BC) Bērziņš V., Haferberga V. and Macāne A.
h. 12.15 - 12.30	Mesolithic lifeways in the Meuse Basin: insights into mobility, diet, and adaptation through multidisciplinary research De Groote I., Toussaint M., Rivollat M., Robert P., Van Hattum I., Polet C., Semal P. and Blevins K. E.	Poster presentations A unique discovery: Mesolithic painted pebbles from Vlakno Cave Cvitkusic B., Cristiani E. and Vujević D. Discussion **Session 6. Settlements and dwellings** chairs: Groß D. and Milner N.
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h. 12.45 - 13.00	Poster presentations Early and Middle Holocene fishing hooks from Lubana Lake: preliminary results of multidisciplinary studies Osipowicz G., Orłowska J., Zagorska I., Bosiak M. and Kubiak-Martens L. High-resolution research at Mesolithic shell middens in the Cape St. Vincent area, SW Iberia Simões C., Aldeias V., García-Escárzaga A., León Cristóbal A., Monteiro P., Oliveira R., Reis H. and Soares R. First stage in the *chaîne opératoire* of animal teeth pendants at Zvejnieki: an experimental study of animal teeth extraction methods and wider social implications Macāne A., Nordqvist K., Mannermaa K., Needham A., Pomstra D., Cifuentes Alcobendas G., Reblis J., Zagorska I. and Little A. Mesolithic hunting seasons: reading between the cracks of taphonomy Gardeur M.	How long is a short stay? Eigeland L., Sigrid A. D.
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h. 13.15 - 14.30	Lunch	
h. 14.30 - 14.45	First evidence of the exploitation of the Sardinian pika in the Mesolithic from Su Carroppu di Sirri (Sardinia, Italy) Thun Hohenstein U., Fanari S., Laura F. and Lugliè C.†	Unveiling the frozen past: reindeer hunting and landscape use at the glacial Fetegga site in the Alpine wilderness of Western Norway Ramstad M.
h. 14.45- 15.00	The zooarchaeology of Skateholm - analysing and integrating the bones from old and new excavations to interpret subsistence and economy at a Late Mesolithic iconic site Boethius A. and Magnell O.	Mesolithic deep-pit systems in France Riquier V.
h. 15.00 - 15.15	New archaeobotanical data from the Sauveterrian open-air site of Contrada Pace (Tolentino, Macerata, Central Italy) Carra M., Potì A., Finocchi S., Mazzieri P., Fontana F., Peresani M., and Visentin D.	Reconstructing the spatial organisation and architecture of Mesolithic structures at Star Carr Bates J., Little A., Conneller C. and Milner N.

h. 15.15 - 15.30	Wrapping the world together: first results of interdisciplinary research on the collection of cords and wrappings from the Subneolithic Šventoji site complex in Lithuania Osipowicz G., Orłowska J., Piličiauskas G., Piličiauskienė G., Cristiani E., Kubiak-Martens L., Lucas M., Brown T., Theis Zetner T. J., Ramsøe M. and Chiang Y.	The Mesolithic sites of Neuenwalde, Northern Germany, and the advantages of settling along wetland edges Mahlstedt S., Wolters S. and Siegmüller A.
h. 15.30 - 15.45	The use of plants in pottery production among the Swifterbant culture in NW Europe: taxonomic identification and 14C dating of plant temper materials (ORG-ID project) Teetaert D., Deforce K., Wojcieszak M., Ligovich G., Kubiak-Martens L., Schröer L., Ngan-Tillard D., Cnudde V., Raemaekers D., De Clercq W., Crombé P. and Boudin M.	A holey trinity: reassessing three Mesolithic sites on the east coast of Ireland - towards new narratives Moucheron M., Onfray M., Gilhooly B., Trafford A. and Warren G.
h. 15.45 - 16.00	Poster presentations The Late Mesolithic deep pit site of Sannerville "Cité les Conquérantes" (Normandy) Ghesquière E. The small mammal remains from the Mesolithic site Galgenbühel/Dos de la Forca (Salorno, Bolzano, Northern Italy): preliminary remarks De Curtis, O. and Wierer, U. Roe deer versus chamois: the importance of distinguishing the two at la Grande Rivoire rockshelter Derbord L., Bray F., Angelin A. and Costamagno S. Fire use in prehistoric clay structures: Casal Leitão (Lourinhã, Portugal) through the lens of charcoal analysis Monteiro P., Cruz J., Costa A. M., Neves C. and Araújo A. C.	A house in the reeds, wooden constructions in the lake. The Mesolithic site complex Dagsmosse Jussberg in Sweden Hallgren F., Hinders N., Blaesild P. and Sjöström A.
h. 16.00 - 16.15	Discussion	Discussion
h. 16.15 - 16.45	Coffee break	
h. 16.45 - 17.00	*Prunus ssp.* management among hunter-gatherers and first farmers in Eurasia Berihuete-Azorín M., Allué A., Mas B., Expósito I. and Filipović D.	Dwelling places in the Netherland, the Kampen hut in broader perspective Muller A.
h. 17.00 - 17.15	Flux, change, saturated meeting grounds: past environments and archaeo-palaeo-ecology with cases from Dagsmosse, South-central Sweden Blaesild P. and Sjöström A.	Three Early Mesolithic (9th millennium BC) sunken house floors in south-eastern Finland Nordqvist K., Kriiska A., Tapani R., Khrustaleva I. and Macāne A.
h. 17.15 - 17.30	The contribution of continental malacology to the study of Mesolithic sites: one indicator, multiple research directions Granai S. and Limondin-Lozouet N.	Ljungaviken, a well-preserved Swedish site with over 58 Mesolithic houses and a dog burial Kjällquist M. and Persson C.
h. 17.30 - 18.00	Poster presentations Burnt artefacts and Mesolithic pyrotechnologies in the French Pre-Alps: issues and new developments Audiard B., Auréade H., Burguet-Coca A., Martínez-Varea C. and Ricci G. Speleothems to trace human activities and environment in Belgium during the Pleistocene-Holocene transition Verheyden S., Burlet C., Vandendriessche H. and Crombé P. Strange landscapes, great archives: environmental archaeology of bohemian 'rock cities' Mesolithics Šída P. Ptáková M. and Pokorný P. The role of rapid climate changes and fire in shaping the Mesolithic lifeways in the sandy lowlands of Belgium and the S Netherlands using palynological and microcharcoal analyses Pincé P. and Van Maldegem E.	Invisible practices in Mesolithic shell mound construction Simões C., Aldeias V., Arias P., Bicho N., Cascalheira J., Diniz M., Gonçalves C.

h. 17.45 - 18.00	Discussion	Poster presentations **A Late Mesolithic household at Strandvägen, Motala** Molin F. **Elusive dwellings in the Early Mesolithic of Western Norway** Tøssebro C., Simpson D., Zinsli C., Hervig S. and Årskog H. **Mesolithic settlements (9th to 6th millennia BC) at Roquemissou (Aveyron, France)** Perrin T., Arbez L., Boboeuf M., Bouby L., Bréhard S., Defranould E., Gardeur M., Henry A., Hervé G., Le Bourdonnec F.-X., Lejay M., Marquebielle B., Mauran G., Mensan R. and Philibert S. **Sedentary lifestyle in Late Mesolithic Western Norway?** Zinsli C., Hervig S., Tøssebro C., Årskog H. and Åstveit L. I.
h. 18.00- 18.15		Discussion
h. 18.15 - 18.45	**Presentation of The Oxford Handbook of Mesolithic Europe** Nilsson Stutz L., Peyroteo Stjerna R. and Törv M.	

Tuesday 16th September

THURSDAY 18TH SEPTEMBER

	ROOM 9	ROOM 10
h. 8.00 - 9.00	Registration	
	Session 2. Colonisation chairs: Nyland A. J. and Warren G.	**Session 8. Mobility and communication** chairs: Drucker D. and Fuertes-Prieto M. N.
h. 9.00 - 9.15	Migration, cross-cultural interaction, and re-colonisation in North and South East Norway at the Early to Middle Mesolithic transition Rosenvinge C. S.	First Mesolithic networks: the circulation of techniques and lithic industries in Western Europe Hauguel-Bleuven L.
h. 9.15 - 9.30	A land beyond the sea: the colonisation of Sardinia after the evidence of the SOMK site (9.500-7.800 cal BP) Melis R. T. and Mussi M.	Exploring "litho-espace" and mobility in the 2nd Mesolithic: a preliminary approach through case studies from the Quercy Region (France) Constans G.
h. 9.30 - 9.45	Caves and rock shelters in southeastern Sweden Alexandersson K. and Karlsson A.-K.	Raw material economy and land-use patterns of Mesolithic hunter-gatherers at the open-air site Alpe Veglia in Northern Italy Hess T., Fontana F. and Guerreschi A.
h. 9.45 - 10.00	Pioneers of the Alps: the Preboreal Mesolithic site Cascina Valmaione in the Central Alps (Lombardy, northern Italy) Starnini E. and Biagi P.	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) Bassetti M., Kompatscher K. and Hrozny Kompatscher N. M.
h. 10.00 - 10.15	Early Mesolithic pioneers on the shore of the Baltic Sea, 8.000 BCE Hagberg L.	"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 Gummesson S., Macane A. and Hallgren F.
h. 10.15 - 10.30	Shifting shores and early settlements: insights from Torsviken in Kolmården, Sweden Westermark A.	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) León C. A., García-Escárzaga A., Fano M. Á., Arniz-Mateos R. and Gutiérrez-Zugasti I.
h. 10.30 - 10.45	Discussion	Discussion
h. 10.45 - 11.15	Coffee break	
h. 11.15 - 11.30	The absolute chronology of Sauveterrian at Grotta del Romito (Southern Italy) in the context of the Early Mesolithic in Italy Lo Vetro D. and Martini F.	From the sea to the mountains, the road of *Columbella rustica* shells in central Italy Mussi M., D'angelo E., Di Bianco L., Brunelli E., Catelli E., Gazzoli D., Piarulli F., Ruta G. and Altamura F.
h. 11.30 - 11.45	'Villabruna', Epigravettians, and origins of the European Mesolithic George R.	Drowning land: large-scale land loss in the Doggerland region and its effects on Mesolithic landscape use and information Peeters H., Hoebe P. and Amkreutz L.
h. 11.45 - 12.00	Insights into highland colonization patterns in the south-eastern Alps: the Early Mesolithic camp-site of Prà Comun, Passo Giau - PC1 (Belluno Dolomites, Italy) Fontana F., Visentin D., Fasser N., Cecchetti M., Cavulli F., Bassetti M., Bona F., Cristiani E., Dilaveri K., Esposito C., Guarnieri G., Dipino N., Fontana A., Marchesini M., Monticone G., Philibert S. and Valdeyron N.	Poster presentations Raw material variation in relation to watersheds, fjords and archipelagos of Northern Norway. Late Mesolithic slate knives and slate sources in focus Hallgren F. The search for a fourth source for ground stone axes in Mesolithic western Norway. Can pXRF analysis contribute to the provenance of the axes? Linge T., Bergsvik K.-A. Bonsall C. and Pedersen R. B.

Thursday 18th September

		Reconstructing seasonal patterns: high-resolution analysis of limpet shells from Oronsay Hausmann N., Piper S., Robson H. and Harland J. 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 A., García-Escárzaga A., Fano M. Á. Arniz-Mateos R. and Gutiérrez-Zugasti I.
h. 12.00 - 12.15	Discussion	Discussion
	Session 7. Technology chairs: Araújo A. C. and David É.	**Session 10. Rites and symbols** chairs: Nilsson Stutz L. and Płonka T.
h. 12.15 - 12.30	Tech Lumière - Processing past stories through technology Dugstad S. A. and Eigeland L.	Animate stone bodies in death contexts Little A.
h. 12.30 - 12.45	Mesolithic technology and knowledge transfer: the diffusion of the handle core pressure concept Söderlind S.	Crushed bones and burnt grave goods. A Late Mesolithic double grave in southernmost Sweden Larsson L. and Boethius A.
h. 12.45 - 13.00	Lithic technology on the Western-Estonian archipelago Moon R.-M.	Early Mesolithic batons with ornamentation and their Magdalenian predecessors Płonka T., Kufel-Diakowska B., Diakowski M., Trąbska J., Wesełucha-Birczyńska A. and Trybalska B.
h. 13.00 - 13.15	First assessment of the Early Mesolithic lithic assemblage from Contrada Pace (Tolentino, Central-Adriatic Italy) Alfonsi G., Fontana F., Bertola S., Discosti R., D'ulizia A., Potì A., Finocchi S., Mazzieri P., Peresani M. and Visentin D.	Generations implemented in clay: ceramic figurines of the Circum-Baltic Forest Neolithic Kashina E. and Piezonka H.
h. 13.15 - 14.30	Lunch	
h. 14.30- 14.45	Exploring the Mesolithic of the Cantabrian littoral (northern Iberia): a preliminary approach to the lithic industry of El Toral III rock shelter Fuertes-Prieto M. N., Herrero-Alonso D., Gutiérrez-Zugasti I., Arniz-Mateos R. and González-Morales M.	Mapping the past and sketching the future of Mesolithic art research Herskind L. L.
h. 14.45 - 15.00	Changes, ruptures and transitions: reflections from the Mesolithic of the Ebro Valley Soto A., Alday A., Rafa D. and Montes L.	Mesolithic water funerals in coastal western Norway. New analyses of the human skeletons from Bønes and Bleivik Bergsvik K.-A., Hufthammer A. K. and Simpson D.,
h. 15.00 - 15.15	Activities and resource management in Early Mesolithic highland hunting shelters. Technological data from Mondeval de Sora - VF1 and Prà Comun, Passo Giau - PC1 (Belluno Dolomites) Dilaveri K., Visentin D., Clemente Conte I., Fontana F. and Philibert S.	Micro-archaeological research on human-animal identities in the Late Mesolithic Skateholm I and II cemeteries, Sweden Kirkinen T.
h. 15.15 - 15.30	Poster presentations Exploiting little flint pebbles: the Mesolithic lithic assemblage of Riparo Blanc (Monte Circeo, central Italy) Fontana F., Forte D., Altamura F. and Mussi M. Polishing and sharpening in the Mesolithic: evidence of practices in the Extreme West of the Iberian Peninsula Rosa A.	Mummification in the Mesolithic. Putting a newly discovered ritual practice into perspective Nilsson Stutz L. and Peyroteo Stjerna R.

Thursday 18th September

	Tooth-derived tools and technological traces: issues in identification Lozovskaya O. and Malyutina A.	
h. 15.30 - 15.45	Discussion	Discussion
h. 15.45 - 16.00	Differences in the lithic production on quartz in Central Sudan during Mesolithics Kapustka K., Varadzinová L. and Varadzin L.	Of powder and bones: questioning the use of ochre in the Mesolithic mortuary practices in northern France Glas C.
h. 16.00 - 16.15	Technological choices of Late Mesolithic coastal populations: a functional approach on the knapped lithic tools in the Oslo fjord region, Norway Calvo-Gómez J., Berg-Hansen I. M. and Schülke A.	Ornamental types and decoration techniques in the context of bone industries during the Transition Period (late 7th – early 6th millennium cal BC) Lozovskaya O.
h. 16.15 - 16.45	Coffe break	
h. 16.45 - 17.00	Technology, use-wear and residue analyses of the Sauveterrian lithic assemblage from Galgenbühel (South Tyrol, Italy) Wierer U., Arrighi S. and Dominici C.	Symbolism expressed through artefactual deposits of antlers and human bones from Mesolithic burials at Hoëdic (Morbihan) and Mas d'Azil (Ariège) David É.
h. 17.00 - 17.15	Looking at function on geometric microliths: the case of the Mesolithic shellmidden of Cabeço das Amoreiras, Portugal Lima R., Nukushina D. and Diniz M.,	The dog burial from Ljungaviken - perspectives on Mesolithic dogs Magnell O.
h. 17.15 - 17.30	How many techniques to apply a microburin blow? An experimental approach for exploring the microburin blow technique variability Fasser N.	The tradition that unites. The conservatism of the burial rites at the Stone Age hunter-gatherer sites Dudka and Szczepanki in Masuria, NE-Poland Bugajska K.
h. 17.30 - 17.45	The material and its use: combining petrography and technology to understand how a rock is exploited. The case of the microquartzite in the Mesolithic Brittany (France) Yven E., Guiavarc'h M. and Kayser O.	Poster presentation The Mesolithic needle in the haystack. Reassessing material culture and human remains from Grotta Moser (Trieste Karst, Italy) at the NHMW, Vienna Posch C., Fontana F., Visentin D., Bertola S., Bosch M. D., Drucker D. G., Fabbricatore A., Paronuzzi P., Posth C., Ruhland T., Saliari K. and Wiltschke-Schrotta K. Mesolithic art in Italy. Traditions, innovations, regionalisations, transterritorial connections Martini F.
h. 17.45 - 18.00	The Moynagh points from Moynagh Lough: using pXRF analysis to determine variability within an assemblage Buchanan D.	Discussion
h. 18.00 - 18.15	Use of birch bark tar in Prehistory in the Eastern Baltic Region Khrustaleva I., Kriiska A., Macāne A., Nordqvist K., Oras E., Chen S., Ueni A., and Metspalu M.	
h. 18.15 - 18.30	Poster presentations Using a double awl from the SOMK Mesolithic site in Sardinia Fiore I., Mussi M., Funedda A., Fancello D., Chiriu D. and Melis R. T. A slow burn: an ethnographic review of hunter-gatherer fire-transport methods, and their consequences for archaeological findings at Star Carr Fentiman A.-M. and Needham A. Quartz scrapers: evidence of curated technology and personal gear in Northern Sweden Lundin J., Guinard M. and Boström S.	
h. 18.30 - 18.45	Discussion	

Thursday 18th September

FRIDAY 19TH SEPTEMBER

	ROOM 9	ROOM 10
h. 8.00 - 9.00	Registration	
	Session 7. Technology (continued) chairs: Araújo A. C. and David É.	**Session 10. Rites and symbols** (continued) chairs: Nilsson Stutz L. and Płonka T.
h. 9.00 - 9.15	New insights into the role of bone tools in the acquisition of bark by Mesolithic communities: the case of 'bone daggers' from Dąbki 9, Poland, and bevel-ended tools from Pulli, Estonia Orłowska J. Osipowicz G., Lõugas L., Luik H.	Variability of burial practices in the Middle Mesolithic through the recent discovery of new burials in Yvelines (France) Pecqueur L., Corona A., Abadie I., Blin A., De Kepper A.-G. and Lawrence-Dubovac P.
h. 9.15 - 9.30	Retrieving osseous biographies: development and transmission of technologies in the Baltic Sea region c. 9.500–3.000 BCE Macāne A. and Gummesson S.	Ritual by the sea: unveiling the symbolism of marine references in the cosmology of late hunter-fisher-gatherer communities in Southwestern Europe Finocchiaro C.
h. 9.30 - 9.45	Discussion	Forgotten, hidden, or carefully deposited? Jensen Granados T.
	Session 12. Current research and Mesolithic narratives chairs: Guéret C. and Soto Sebastián A.	
h. 9.45 - 10.00	The NAUTICC (Norms and Uses of Techniques in Prehistoric Coastal Communities) database: a tool for prehistoric maritime techniques Pirrone G.	The "shaman" burial of Bad Dürrenberg, Saxony-Anhalt, Germany - New multidisciplinary analysis and results Orschiedt J., Siegl A., Knoll F. and Meller H.
h. 10.00 - 10.15	The Skoklefall site revisited - resource exploitation and subsistence in coastal Late Mesolithic, southeast Norway Damlien H., Rosenvinge C. and Solheim S.	Human skeletons in motion, defleshed animals in action and transformations of species in the northern tradition rock art of Scandinavia. A preserved proxy for insight into world views of the Mesolithic Lodoen T.
h. 10.15 - 10.30	Not just a disaster story - investigations of the social impacts of the Storegga tsunami 8.200 years ago Nyland A. J.	Poster presentations A new look at an old burial. Multidisciplinary analysis of the organic residues included in the burial goods of Mondeval de Sora - VF1 (Belluno Dolomites, Italy) Visentin D., Henry A., Mazuy A., Rageot M., Eftekhari N., Vaccaro C. and Fontana F. Mesolithic burials and funerary practices in central Italy: new evidence from Riparo Blanc (Mount Circeo, Latium) Altamura F., Rubini M., Zaio P., Gozzi A., Fiore I. and Mussi M. Photogrammetry of Boulder Artworks from Lepenski Vir Cristiani E., Boric D., Mihailovic B. and Zupancich A.
h. 10.30 - 10.45	The impact of Storegga in Northern Scotland: excavations at Tarradale 2D Elliott B. and Grant E.	Discussion
h. 10.45 - 11.15	Coffee break	
		Session 11. Bioarchaeological approaches chiars: Borić D. and Riel Salvatore J.

h. 11.15 - 11.30	**Excavations at No Name Hill: an Early Mesolithic wetland site in the Star Carr landscape** Taylor B., Gray-Jones A., Overton N. and Piper S.	**Ancient DNA from artefacts offers a new perspective on the Mesolithic in Southern Scandinavia** Jensen T., Niemann J., White A., Sørensen L. V., Lou Bendtsen M., Sjöström A., Huang Y., Carøe C., Boethius A., Vang Petersen P., Sikora M. and Schroeder H.
h. 11.30 - 11.45	**Writing Mesolithic hunter-fisher-gatherers: a view from archaeozoology and multispecies archaeology** Živaljević I.	**Exploring the genetic legacy of Mesolithic populations in the Eastern Alps: DNA evidence from the Veneto and Trentino-Alto Adige regions** Posth C., Reiter E., Gnecchi-Ruscone G. A., Yavuz Orhan E., Mottes E., Fontana F., Duches R., Sparacello V. and Nicolis F.
h. 11.45 - 12.00	**Poster presentations** **Increasing the scientific and public value of Europe's Mesolithic coastal heritage – approaches on contemporary nature-culture relations in the HORIZON MSCA Doctoral network ArCHe** Schülke A. **A database on shell middens, a tool to compare them across the Atlantic coast of Europe** Butsch A., Dupont C. and Troccaz O. **Finding Mesolithic time: assessing Scotland's Mesolithic stone tools as a heritage resource** Rodrigue L. **New stratigraphic evidence from Grotta dell'Arco (Palermo, Sicily): the spread of Mesolithic in the Central Mediterranean** Speciale C., Vergès J. M., Sicart X., Battaglia G. and Forgia V.	**From bones to mummification: breaking ground in Mesolithic mortuary studies with bioarchaeology** Peyroteo Stjerna R. and Nilsson Stutz L.
h. 12.00 - 12.15	**Discussion**	**Mandibular morphological changes in the Mesolithic-Neolithic transition are impacted more by population history than by diet** Godinho R. M., Simão P., Umbelino C., Gonçalves C., Cascalheira J., Bicho N. Siklósi Z. Anders A., Raczky P., Gémes A., Wiltschke-Schrotta K., Semal P., Polet C., Évinger S., Hajdu T., Smith P. and Von Cramon-Taubadel N.
h. 12.15 - 12.30	**Mesolithic hearth features of SW Iberia. New fuel for an old discussion** Bruno Cruz J., Abreu C., Costa A. M., Martinho M., Monteiro P., Neves C., Simões C., Teixeira A., Tomás C. and Araújo A. C.	**Mandibular shape in the Meso-Neolithic transition: the Zvejnieki case study** Correia M. A.,Schulting R., Godinho R. M., Zariņa G., Czermak A. and Gonçalves C.
h. 12.30 - 12.45	**Uncovering Mesolithic life: archaeological excavations and interpretations at Cabeço da Amoreira, Muge (Central Portugal)** Gonçalves C., Bicho N., Umbelino C., Godinho R. M., Coutinho Nogueira D., Rufà A., Filipe L., André L., Cascalheira L.	**Interactions with the dead: the potential for 3D digital microscopy to reveal post-mortem manipulations of the body.** Gray-Jones A. and Silvia B.
h. 12.45 - 13.00	**New evidence of Mesolithic presence in northwestern inland Iberia: a Cova de Veiga do Muín (León, Spain)** Fernández-Rodríguez C., Fuertes-Prieto M. N. and Ramil-Rego E.	**The biological profile of Mesolithic infants: a geometric morphometrics technique for sex estimation using the auricular surface** Simão P., Nogueira D. C. André L. Garcia S., Bicho N., Cascalheira J., Gonçalves C., Umbelino C. and Godinho R. M.
h. 13.00 - 13.15	**Level 3 Bauma dels Fadrins (7.200-6.700 cal BC): a new Mesolithic occupation in the Eastern Pyrenees** Tornero C., Díaz-Cansco C., Del Valle H., Berihuete M., Morales J. I., Soto M., Picornell-Gelabert L. and Carbonell E.	**Discussion**
h. 13.15 - 14.30	**Lunch**	
h. 14.30 - 14.45	**The Mesolithic occupations at the new site of Balma del Barranc del Regatxol (Mas de Barberans, Catalonia, Spain): implications for the Prehistory of the lower Ebro River basin** Gironès Rofes I., Vicens Saiz L. V., Monforte Barberan A., López De Pablo J. S., Alcàntara Fors R., Marín González L., Sicart Chavarria X., Jiménez Fuentes C., Gibaja Bao J. F., Bosch Argilagós J., Pardo Gordó S., Bach Gómez A. and Molist Montaña M.	**The shaman's Mesolithic burial of Bad Dürrenberg (Saxony-Anhalt, Germany): environmental and dietary reconstruction** Drucker D., Baumann C. and Orschiedt J.
h. 14.45- 15.00	**La Baume de la Bruyère 3: new evidence of Early Holocene human occupation in Southeastern France** Ricci G., Audiard B., Bignon M., Hoareau L., Julien M.-A. Purdue L., Szymanec M. and Tomasso A.	**Investigating Mesolithic foodways at the transition to agriculture** Craig O., Mclaughlin T. R. Lucquin A., Philippsen B., Milner N., Bailey G., Dekker J., Gonzalez Carretero L., Meyer A.-K., Lundy J., Doliente Jonica E., Groß D., Heron C. and Robson H.

h. 15.00 - 15.15	Poster presentations **New data on Mesolithic occupations in the Bayas river valley (northen Spain)** Soto A., Alday A., Rodríguez-Lejarza A., Nieto M. and Villaluenga A. **The Mesolithic occupations of Jonquilles cave: first interdisciplinary results** Constans G., Arbez L., Garcia-Tarac E., Gardeur M., Henry A., Lejay M., Mallye J.-B., Martínez-Varea C. M. and Royer A. **A new Mesolithic frequentation in the Romagna Apennine: Comignolo open-air site on the shores of Lake Ridracoli (Emilia Romagna, Italy)** Discosti R., Bertola S., Milantoni C., Monti M., Urbini L., Pirraglia R. and Peresani M. **A Mesolithic site under the football field: rescue excavation at Scandicci (Florence, Central Italy)** Wierer U., Balli P., Biagiotti F., Boschin F., Capotorti A., Crezzini J. and Muro J. G.	**What was the Mesolithic? Reassessing coastal adaptations by hunter-gatherers in Italy** Mannino M. A.
h. 15.15 - 15.30	Discussion	**Fishful thinking: stable isotope analysis of amino acids in Eastern Baltic foragers and early farmers** Tõrv M., Talbot H., Sepp H., Morrone A., Craig O. and Smith C.
h. 15.30 - 15.45	**The Early Holocene occupation of the Ljubljansko barje (Ljubljana Marshes), Slovenia. The case of the Vrbičev hribec site** Turk M.	**Looking for diachronic patterns in Danish Mesolithic diets** Meadows J. and Fischer A.
h. 15.45 - 16.00	**The Final Paleolithic - Mesolithic site Rostislavl 2 in the Central East European Plain** Kuzminova Y., Leonova E. and Simonenk A.	Poster presentations **Transitions and changes in eastern Middle Sweden 5.000-2.200 BC** Carlsson T. **11.000 year old human skulls from south-western Lithuanian peat bog** Daubaras M., Brazaitis D., Jankauskas R., Kozakaitė J., Mittnik A., Skipityte R. and Reich D.
h. 16.00 - 16.15	**When the dead become alive: life histories of Mesolithic individuals from Northern Europe** Mannermaa K.	Discussion
h. 16.15 - 16.45	Coffe break	
h. 16.45 - 17.00	**History of research, archaeological data and relative chronology: what do we know about Mesolithic in Kaliningrad district, Russia (South-Eastern Baltic)?** Tkach E.	
h. 17.00 - 17.15	Poster presentations **The Early Mesolithic site Djupedalen 111 at Stord, Western Norway: the northernmost maglemosean site in Europe?** Waraas T. A. and Åstveit L. I. **Ground stone tools in action: subsistence strategies of Early and Middle Holocene hunter-gatherer-fishers at Šventoji, Lithuania** Orłowska J., Cristiani E., Piličiauskas G., Piličiauskienė G. and Osipowicz G. **Stone Dead Project: a multi-proxy study of lithic grave goods from Zvejnieki cemetery** Petrović A., Macāne A., Bates J., Nordqvist K., Zagorska I., Edmonds M. and Little A. **The tunnel valley of Ahrensburg: status and plans for new activities** Richter D., Hinrichs M., Unglaub C., Weber M.-J. and Gaudzinski-Windheuser S.	
h. 17.15 - 17.30	Discussion	
h. 17.30 - 18.30	Election and closing speeches	

Mid-Conference Excursion 1

MUSE - Trento Science Museum and Gaban Rockshelter (Trentino)

The history of Mesolithic research in Northern Italy is closely linked to the city of Trento and the Adige Valley. Excavations carried out in this area during the last century uncovered some of the most important Mesolithic sequences in Southern Europe, including those from Romagnano Loc III, Pradestel, Vatte di Zambana, and Riparo Gaban. These sites yielded important discoveries such as lithic and bone tools, portable art objects, and human burials, which have played a crucial role in shaping our understanding of one of Europe's best-known Mesolithic landscapes.

This excursion will include a visit to the MUSE - Trento Science Museum, which houses findings from major regional sites spanning the Palaeolithic, Mesolithic, and Neolithic periods, alongside exhibitions on the evolution of the natural environment. We will also explore the Gaban Rockshelter, a key site for studying the Mesolithic-Neolithic transition in the Adige Valley, notable for its exceptional stratigraphic sequence. Excavations are still ongoing under the supervision of the University of Trento, whose researchers will guide us during the visit.

Schedule:

h. 7.00: departure from Ferrara city centre (meeting at 6:40 in viale Cavour, 11, in front of Touring hotel, see map). Make sure to bring everything you will need for a one-day excursion (water, snacks, suitable clothing in case of wind or rain and comfortable outdoor shoes).

- h. 10:15: arrival in Trento; visit to MUSE - Museum of Science
- h. 12:30-13.00: lunch at MUSE (included)
- h. 13:30-14.00: visit to Gaban rockshelter
- h. 16:30: departure from Trento
- h. 19:30: approximate time of arrival in Ferrara.

Mid-Conference Excursion 2

Mondeval de Sora Mesolithic burial at Museum "Vittorino Cazzetta" (Selva di Cadore) and Passo Giau mountain area (Venetian Dolomites)

The Mondeval de Sora site and burial are among the most significant Mesolithic discoveries in Europe. The Early Mesolithic (Sauveterrian) occupation at Mondeval de Sora provides a remarkable example of a high-altitude residential camp, while the Late Mesolithic (Castelnovian) burial, accompanied by rich and varied grave goods, offers a unique insight into the lives and deaths of hunter-gatherer communities.

During this excursion, we will explore the story of Mondeval's man ("Valmo") and the surrounding territory. At the "Vittorino Cazzetta" Museum in Selva di Cadore, we will see the original burial remains and grave goods alongside finds from daily life at the site of Mondeval from the Mesolithic to Medieval times.

The field excursion will then take us to Passo Giau, one of the most spectacular and historically rich mountain passes in the Dolomites, where the landscape itself tells the story of countless Mesolithic visits. A short walk from here leads to the Pra' Comun 1 rockshelter, another Mesolithic seasonal residential campsite, currently under excavation by the University of Ferrara.

Schedule:

- h. 6.30: departure from Ferrara city centre (meeting at 6:10 in viale Cavour, 11, in front of Touring hotel, see map). NOTE: the excursion includes a field-trip in a high altitude environment. For this reason, be sure to carry with you all the necessary equipment including: bottle of water, waterproof jacket, warm clothes, and trekking shoes. The planned walk is short (15'-20') and easy but the terrain, although almost flat, may be harsh and slippery
- h. 11:00: separate arrivals in Selva di Cadore/Passo Giau. Visit to the Museum and the area of Giau Pass and Pra' Comun site
- h. 13:00-13.30: lunch at Selva di Cadore museum (included)
- h. 14:00-14:30: the group that visited the museum will move to Passo Giau and Pra' Comun site and vice versa.
- h. 16:30: separate departures from Selva di Cadore/Passo Giau
- h. 21:00: approximate time of arrival in Ferrara.

Two-day Post Conference

Arene Candide Cave, Finale Museum, Bàsura cave (Liguria)

The post-conference field trip will lead us to some of the most relevant Late Paleolithic cave sites of Liguria and to the Museum of Finale where the famous burial of the "Prince" is on display. The excursion will take place on the 20th and 21st September 2025.

The Arene Candide Cave is a prehistoric site of international relevance, known for its long history of human occupation and the remarkable discovery of the burial of the "Young Prince." This burial belongs to a young Upper Paleolithic individual, who died around the age of 15 due to a severe facial injury and was laid to rest with a rich grave assemblage, suggesting he held a position of high status. The continuous human presence at Arene Candide Cave is evidenced by a dense sequence of archaeological layers, beginning in the Upper Palaeolithic, when it served as a shelter and burial place for Gravettian and Epigravettian groups. Later, starting around 7,800 years ago, Neolithic herders and farmers used the cave both as a burial site and as an animal shelter. The history of this extraordinary cave is presented at the Museo Archeologico del Finale, where we will see reconstructions of the "Young Prince" burial, along with several Neolithic burials and the most significant artifacts recovered from the site.

The Bàsura Cave, located in the Val Varatella area near Toirano (Savona), was subject to archaeological investigations as early as 1889. However, the deeper chambers, reaching around 400 meters into the hill, were only discovered in 1950 by a group of local speleology enthusiasts. The first descriptions of the cave's archaeological and paleontological heritage were made by Ginetta Chiappella, who documented significant evidence of human presence. These included footprints, finger traces on the floor and walls, charcoal stains, small piles of charcoal, and clay balls mixed with charcoal adhering to the cave walls. There were also numerous traces of cave bears, such as claw marks on the walls, footprints, and abundant bone remains. Unfortunately, part of this valuable material had already been lost by the time of her later visits. Initially, the cave's human activity was attributed to Neanderthals, based on research from the early 1950s. At that time, a set of linear engravings was also discovered, which, in accordance with the new

dating, were attributed to the Upper Paleolithic period. More recent analyses confirm these findings and place the human occupation of the Bàsura Cave, now attributed to *Homo sapiens*, within the cultural context of the Late Epigravettian.

Program:

Saturday 20th September

- h 8:00: departure from Ferrara city centre (we will meet at 7:30 at in viale Cavour, 11, in front of Touring hotel, see map)
- h 13:00: arrival in Borgio Verezzi and lunch
- h 14:30: visit to the Arene Candide cave
- h 16:00: transfer to Finale Ligure and visit of the Museo del Finale

- Overnight near Toirano and dinner at a local restaurant.

Sunday 21st September

- h 8:00: arrival in Toirano and visit to the Val Varatella Museum (materials from Colombo, S. Lucia, Bàsura and Olivo Caves: cave bear fossils, Middle Paleolithic, Upper Paleolithic, Neolithic and Eneolithic finds) and Bàsura cave ("Corridor of the Paleolithic footprints" and "Bear cemetery"), return to the Museum and presentation of the Mesolithic burial of new-born "Neve" from Arma Veirana (cave) by Fabio Negrino (University of Genova).
- h 13:30: Lunch (1-hour time) and departure for Ferrara.
- 19:30: approximate time of arrival in Ferrara.
- Arrival in Ferrara at around 20:00 (with the possibility to stop in Bologna for those who have a flight from G. Marconi Airport the day after).

We thank Fabio Negrino (University of Genova) and Elisabetta Starnini (University of Pisa) for their kind support to the organisation of this field trip.

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Abstract Book


ME²SO

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Session 1

Transitions

Coordinated by Elisabetta Starnini, Alexandre Angelin and Nicolas Valdeyron†

Transitions? We talk about transitions every time we identify archaeological evidence that seems to interrupt a gradual cultural evolution process. Relevant examples are the transitions between the Upper Palaeolithic and Mesolithic, First (or Early) and Second (or Late) Mesolithic, Mesolithic and Neolithic, and so on. But, are we sure that the term transition is the most appropriate for all of these instances? In fact, a true transition is a long and gradual process, as observed for example in the Near East with the development of the PPN. Many of the changes that occurred in Europe at the beginning of the Holocene happened quite rapidly. Are we sure the word replacement would not be more fitting? Actually, the changes we observe from the perspective of material culture could have occurred with very different modalities and even differ consistently from one territory to another.
This session welcomes contributions focused on relevant changes involving the Mesolithic period. In particular, we invite contributions presenting new data on "transitional periods" involving Mesolithic hunter-gatherer-fisher societies at different territorial scales, from regional trends to specific case studies. At the same time, we welcome synthesis works based on new analytical studies carried out by applying traditional as well as new methodologies, contributing to the current debate on the origin and development of the Mesolithic period by offering new interpretative perspectives.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Monday 15th September, h.10:15-10:30

S1

The Final Palaeolithic and Early Mesolithic on Flixton Island: what can we learn about the Palaeolithic-Mesolithic transition?

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In this paper we present new research on the Palaeolithic-Mesolithic transition, based on recent excavations at the site of Flixton island in the Vale of Pickering (UK). Flixton Island, previously excavated in the 1940s, was recently re-excavated revealing a large-scale horse butchery site dating to the Final Palaeolithic. This assemblage provides insights into the hunting strategies and subsistence practices of Final Palaeolithic groups in the region. Adjacent we discovered a new Mesolithic site with a large quantity of lithic remains and some faunal material. Together with data recovered from other sites in the Vale of Pickering, including Star Carr, it is possible to consider this landscape at a time of transition with changing climate, changing environment and changing material culture. This research contributes to our understanding of the complex cultural and environmental changes that occurred during the Palaeolithic-Mesolithic transition, highlighting the adaptability and resilience of human populations in response to changing conditions.

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ORAL PRESENTATION

Monday 15th September, h.10:30-10:45

S1

The lithic industry of Remouchamps, the (Epi-) Ahrensburgian of the Meuse valley and the start of the Mesolithic

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Currently, new interdisciplinary research is being undertaken on the collections of the cave site of Remouchamps. The site is well-known for its numerous faunal remains (mainly of reindeer, but also horse, ptarmigan, hare, chamois...etc.), as well as several less mundane finds such as a few decorated bone objects, perforated shells and ochre-painted lithic artefacts. A revision of the chronological framework, based on a series of 33 new radiocarbon dates, demonstrated that the main occupation of the site took place between ca. 12,180/11,990 cal BP and 11,645/11,360 cal BP, in other words at the transition from the Younger Dryas to the Holocene (Crombé et al., 2024). In this presentation, we will discuss the lithic industry of the site based on the results of an attribute analysis and a refit study. Debitage seems to have been completely focused on the production of bladelets instead of blades (> 5cm). The latter are scarce and Gross- or Riesenklinge (sensu Taute, 1968) seem to be lacking entirely. Armatures mainly consist of obliquely truncated points, alongside of very small tanged points and are by consequence also already entirely 'microlithic' in nature. Based on this, we will assess the representativity of the Remouchamps assemblage compared to other (Epi-)Ahrensburgian assemblages and we will explore the similarities and differences between the latter and the regional Initial Mesolithic and Early Mesolithic assemblages. Taken together, the lithic industries seem to evoke a long and gradual transition rather than an abrupt break in traditions.

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ORAL PRESENTATION

Monday 15th September, h.10:45-11:00

S1

The Late Pleistocene-to-Early Holocene transition in the Venetian pre-Alps: new data from the Landro cave in the Cansiglio plateau

Visentin Davide * (1), Potì Alessandro (1), De Lorenzi Matteo (1), Bassetti Michele (2), Bertola Stefano (1), Esposito Corrado (1), Fasser Nicolò (1), Nannini Nicola (3), Peresani Marco (1)

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Northeastern Italy is a key region for the study of the Mesolithic in southern Europe. Hundreds of sites and find spots have been identified since the 1960s. The local Early Mesolithic facies is known as Sauveterrian and, since its first discovery in the Adige valley, has been interpreted as a local evolution of the Late Epigravettian. Nonetheless, the centuries in which the transition occurred are still poorly understood. More specifically, sites which yielded stratigraphic sequences covering the end of the Late Pleistocene and the beginning of the Early Holocene are rare, and radiocarbon evidence is particularly scarce. In 2017, a new site was discovered on the Cansiglio plateau, a pre-Alpine massif well known for its Late Epigravettian and Mesolithic open-air sites. The site, known as Landro Cave, yielded a thick stratigraphic sequence spanning the centuries preceding the beginning of the Holocene. This paper will present the data obtained from the study of the lithic and faunal assemblages recovered from the most recent layers dated to the Younger Dryas. Although the material culture has been entirely attributed to the Late Epigravettian, this context sheds light on the appearance of several Sauveterrian traits, also in the frame of the extensively documented Mesolithic evidence of the plateau.

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ORAL PRESENTATION

Monday 15th September, h.11:30-11:45

S1

ABSOLUTE POPULATION AND MESOLITHIC TRADITIONS IN EARLY NEOLITHIC NORTHERN EUROPE

Mclaughlin Rowan * (1)

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Agent-based models (ABMs) can provide a framework to understand the palaeodemographic dynamics of the Neolithic transition in northern Europe. In case studies from Ireland, Britain and Southern Scandanavia, the model simulates interactions between Mesolithic hunter-fisher-gatherer communities and incoming Neolithic farmers, integrating evidence from archaeology, biomolecular data, and isotopic analysis. The model reconciles apparent contradictions between genetic evidence indicating population replacement and archaeological findings showing continued marine exploitation, and the sporadic use of domesticates by Mesolithic communities, centuries before the transition. By simulating demographic growth, cultural exchange, and dietary shifts, the ABM demonstrates how a small but rapidly expanding Neolithic population could account for the observed changes in the archaeological record without necessitating abrupt environmental collapses or economic failures.The simulations highlight the role of differential fertility and cultural assimilation in driving demographic transitions, illustrating Mesolithic transitions could persist alongside the growth of farming economies.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Monday 15th September, h.11:45-12:00

S1

Fishing identities in southern Scandinavia: new data on the Mesolithic-Neolithic transition from Syltholm Fjord, southeast Denmark

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Archaeological excavations in and around the prehistoric Syltholm Fjord on southern Lolland have provided important insights into fishing technologies and the use of aquatic resources in Stone Age southern Scandinavia. The waterlogged area with its rare preservation of organic materials has yielded abundant evidence of passive fishing practices and their long-term adaptation in a coastal lagoonal landscape over millennia. Our in-depth analysis of these materials, together with direct 14C dating and contextualisation with comparable archaeological and ethnographic data, indicates a continuity of similar techniques from the Mesolithic and throughout the Neolithic (and later), highlighting a more complex interplay of subsistence strategies and cultural changes in the aquatic resource-rich coastal areas of southern Scandinavia.
The continued use of millennia-old fishing techniques - and some of the prime fishing locations - during this transition sheds new light and adds nuances to our current understanding of the Neolithisation process in the region, suggesting a continued reliance on the aquatic economy alongside emerging agricultural practices. Based on our long-term dataset from what is today Denmark, we conclude that the transition phase between the 5th and 4th millennia BCE must be seen as a prolonged period of interaction, adaptation and subsistence diversity, rather than an abrupt economic and dietary change amidst the recently proposed population turnover.

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ORAL PRESENTATION

Monday 15th September, h.12:00-12:15

S1

CROSS-CHANNEL FLINT KNAPPING CONNECTIONS DURING MESOLITHIC-NEOLITHIC TRANSITION OF BRITAIN FROM 5000-3700 BC

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The narrative of the Mesolithic–Neolithic transition in Britain has often been polarized between colonization and indigenism. Many processes have been oversimplified either due to a lack of well-dated late Mesolithic evidence or unwillingness to fully engage with hunter-gatherer research. These approaches have resulting in a stilted, one sided story of the transition, comparing well-dated Neolithic evidence with a generic Mesolithic spanning evidence across millennia. However, in recent years, a plethora of well-dated fifth-millennium sites has emerged, offering an opportunity to reinvigorate and reimagine centennial-scale processes and varied connections. In this paper, we step away from the generalized narrative and immerse ourselves in the small-scale processes that may have occurred during the transition, using the medium of knapping practices. We explore the technological connections between Mesolithic and Neolithic groups, between Britain and the continent, using these as proxies of interaction, creating a more vibrant and nuanced picture of the transition than previously proposed.

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ORAL PRESENTATION

Monday 15th September, h.12:30-12:45

S1

TRANSITIONING TO THE NEOLITHIC THOUGH STONE TOOLS IN BELGIUM

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Neolithisation is a highly-debated topic regarding the spread of adaptative techno-cultural changes from foraging to an agro-pastoral settled life. In the beginning, it was called a revolution. Later studies showed a more gradual process, but still relatively fast across most of Europe. For the sandy lowlands of North-Western Europe, this process was a gradual transition, where a primarily foraging lifestyle persisted much longer (until c. 4300 BC) by "hunter-gatherers in transition" (Swifterbant (SW) Culture), while neighbouring loess areas were already colonised by the farmer-herders of the Linearbandkeramik Culture (starting c. 5300 BC). The contact dynamics between foragers and farmers in the coversand area remain the subject of intense debate, with hypotheses ranging from complete acculturation to demic diffusion or a combination of both. So far, the issue of contact has mainly been addressed through pottery and archaeobotanical analysis, while lithics have generally been neglected. Yet, these also contribute substantially to the debate. We demonstrate this by presenting the results of detailed, multidisciplinary research on a specific tool-type, the faceted tools. Since this tool-type is found on both indigenous SW hunter-gatherer sites and early farming sites, it allows us to investigate similarities and differences in technology, morphology, and use. Our paper mainly focuses on the functional aspect, presenting data from microwear and residue analysis, using the traditional approaches of microwear analysis and physical characterisation and chemical staining of residues. We also explore the potential of proteomic analysis, aided by state-of-the-art taxonomic classification, to identify organic residues relating to lithic use.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Monday 15th September, h.12:45-13:00

S1

VARIABILITY OF TECHNICAL TRADITIONS, CULTURAL, FUNCTIONAL AND ECONOMIC PRACTICES BETWEEN THE END OF THE MESOLITHIC AND THE BEGININNING OF THE NEOLITHIC: CROSS-REFERENCING LITHIC AND ARCHAEOZOOLOGICAL DATA, THE EXAMPLE OF LA BAUME DE MONTCLUS (GARD, FRANCE 6300 - 5000 BCE)

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For the Late Mesolithic, the Castelnovian techno-complex is often perceived as a monolithic entity, defined solely by lithic technology and the presence of regular blades produced by indirect percussion or pressure, as well as trapezoidal microliths. Similarly, the onset of the Neolithic is often understood only through ceramic data, which limits our ability to examine the transition between these two entities. Consequently, the consideration of a multiplicity of proxies, particularly through the integration of functional and archaeozoological data, allows for a more nuanced approach to these phenomena. The site of La Baume de Montclus in southern France, with its well-developed stratigraphy, serves as an illustrative case in point. Several occupations attributed to the Late Mesolithic and Early Neolithic are distributed between 6300 and 5000 BCE and have yielded abundant lithic and faunal assemblages. A previous study focused on the rich corpus of arrowheads revealed significant changes in the production and hafting modalities of these armatures. These findings suggested that techno-functional discontinuities could serve as markers of economic or socio-cultural transformations. Building on this work, we now propose to expand this preliminary evolutionary framework by incorporating results from the analysis of the entire lithic 'chaîne opératoires', traceological studies of the full range of knapped stone tools, and the variability of faunal spectra. The objective is to investigate changes in hunting practices and environmental exploitation, as well as butchery activities, with particular attention to carcass and hide processing.

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ORAL PRESENTATION

Monday 15th September, h.13:00-13:15

S1

FROM FORAGING TO FARMING IN THE (CIRCUM-)ALPINE REGION: A MOSAIC OF REALITIES

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A recent reappraisal of archaeological sites, features and finds pertaining to the Meso-/ Neolithic Transition in Switzerland and the neighboring regions (Jahrbuch Archäologie Schweiz 107, 2024) revealed for the 6th and 5th millennium BCE a very diverse and complex situation, both in terms of geographical and chronological settings, and with regard to biotic and material cultures. Using a term coined already twenty years ago for a similar situation in Southeastern Europe, we use the label Mosaic to describe a spatial and temporal side by side of social entities that share little or no common traits and might have belonged to different cultural spheres and/or spheres of influence. A classical subdivision would be to look for Mesolithic (foraging) and Neolithic (farming) traditions in the archaeological record, but the evidenced archaeological realities are not so easily brought to these categories – besides the fact that in highly dynamic natural and social environments, realities of life can undergo (rapid) changes. This paper intends to set up a framework of reflection and investigation in order to better assess and understand the cultural circumstances and the transformative mechanisms of the 6th/5th millennium transition, taking into consideration elements of the natural space, vectors of cultural traditions, and environmental proxies.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Monday 15th September, h.14:30-14:45

Babina Špilja: a new Mesolithic site on the Island of Hvar, Croatia

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Systematic research in Babina Cave on the southwestern part of the island of Hvar began in 2021 through an international collaborative initiative Prehistory of Hvar and the Adriatic Region (PHAR). Babina Cave is a small cave of at least 30 m² surface area, which was covered with rocks and a partially collapsed entrance vault. The cave's entrance faces southeast and is located directly above a deep ravine that ends in a bay near the village of Zaraće, with a clear view of the islands of Korčula and Sušac. Excavations have revealed the presence of prehistoric layers, with possibly more significant sedimentation in the northeastern part of the cave. Within the surface layer, fragments of Late Neolithic Hvar ceramics were found, along with fragments of Impressed Ware, typical for the Early Neolithic of the Adriatic region. Direct AMS dating of a pointed bone tool from this layer indicated an age of around 6000–5900 BCE, corresponding to the earliest Neolithic dates in the region. Just below these layers, a massive Mesolithic layer was found with a large number of remains of hares (Lepus sp.) and various species of limpets (Patella sp.), with frequent occurrences of perforated and non-perforated marine gastropods Columbella rustica. A large concentration of finds was associated with the remains of hearths, and traces of burning were observed on some of these remains. This layer has been dated to the period 6450–6250 BCE, suggesting the use of the cave space during the Late Mesolithic.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Monday 15th September, h.14:45-15:00

S1

MESOLITHIC RESILIENCE IN SOUTHERN PORTUGAL

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The late Mesolithic hunter-gatherer communities of Southern Portugal would have perceived the benefits and disadvantages on the adoption of the Neolithic economic and technological innovations, and on being integrated into the respective socio-cultural system. They adopted selectively Neolithic novelties in accordance with their subsistence needs and cultural believes, probably through cultural osmosis. In the Sado paleo-estuary, plentifully of rich wild resources, semi-sedentary Mesolithic communities (affluent foragers) resisted till the first half of the 5th millennium cal B.C the adoption of agro-pastoral economy, in fact a trap for the hunter-gatherer way of life, reducing mobility and individual freedom, and imposing an economic intensification with greater labour investment. From the Neolithic package, they only adopted few polished stone tools and pottery. Similar behaviour can be observed for the Mesolithic fishing population of the Southwest Coast and might be expected to have occurred in the middle basin of Guadiana River. So far, the dual model of Mesolithic huntergatherers and Neolithic peasants as bounded entities is rejected. On the contrary, we propose the co-existence of several stages and rhythms of neolitization between neighbouring groups.

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ORAL PRESENTATION

Monday 15th September, h.15:00-15:15

S1

USE-WEAR ANALYSIS AS A PROXY TO UNDERSTAND TRANSITIONAL PERIODS, THE CASE OF THE ENSISHEIM SITE (FRANCE)

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Studying transitional phases in archaeology implies approaching past societies' cultural transformations. In France, the arrival of agropastoral societies marked the end of the Late Mesolithic period. It is a significant change, in opposition with the subsistence strategies of Paleolithic and Mesolithic populations, based on hunting, gathering, and fishing.Nevertheless, Late Mesolithic and Neolithic populations shared practices in the manufacture of lithic tools. Both toolkits are made by indirect percussion (or by pression in South of France) combined with trapezes arrowheads. In northern France, few sites have yielded both Late Mesolithic and LBK occupations, such as the open-air site of Ensisheim (Alsace) - an essential settlement for understanding the transformations occurring during this period. Recent excavations revealed three loci with a lithic industry linked to Mesolithic technical traditions but dated between 5200 and 4800 BCE. These loci are contemporary with the Neolithic settlements in the region and raise questions about the region's settlement patterns. This presentation presents the results of the use-wear analysis of the Ensisheim lithic industries. Functional approaches allow us to explore the processes involved in the disappearance or the persistence of technical traditions of the last hunter-gatherer-fisher societies. This paper aims to present the functional analysis results from the Ensisheim lithic industries and provides new insights about the reasons for the last hunter-gatherers' functional and technical traditions' disappearance.

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POSTER

Monday 15th September, h.15:15-15:30

S1

UNPICKING COLONIAL BIASES IN BRITAIN'S MESOLITHIC-NEOLITHIC TRANSITION

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As approaches in archaeology have moved through different theoretical paradigms, such as culture-history, processualism, and post-processualism, and introduced new methodologies such as stable isotope and aDNA analyses, the very terms 'Mesolithic' and 'Neolithic' have picked up new meanings (i.e. chronological periods, cultural packages, or genetic signatures). Despite the introduction of new and exciting analytical perspectives and techniques, I argue that the focus of the Mesolithic-Neolithic transition in Britain continues to be rooted in a colonial ideal that implies the shift from hunting and gathering to farming was an all-important revolution, kick-starting what has sometimes been described as the origin of 'civilised' society. This poster presents the ways in which the differing definitions of 'Mesolithic' and 'Neolithic' have compounded on one another, adding to an entangled messiness of terminologies which hinder our ability to have discussions which are as productive as they can be, unable to move away from labels derived from colonial frameworks. To investigate this in more depth, NVivo has been used to analyse specific language used across relevant texts. This poster proposes the use of a theoretical framework rooted in assemblage theory and animist thought to aid in breaking away from the traditional nature/culture binary and in the unpicking of some of the biases still present in many discussions of the period.

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Session 2

Colonisation

Coordinated by Astrid J. Nyland and Graeme Warren

This session welcomes contributions that explore themes related to colonisation processes in the Mesolithic and Late Palaeolithic. This can involve several aspects and situations. Firstly, "pioneer" colonisation of previously uninhabited regions or specific areas, including mountainous/alpine regions, or islands or archipelagic landscapes. This may sometimes mean re-colonisation of areas deserted for differing periods of time. In such context, the potential "memory" of these earlier landscapes is an under-explored topic. Another related process involved migrating people entering (to them) new lands, but where people already lived. How are such meetings visible in the archaeological material and how does considering these meetings as a colonisation process help us understand them?

Colonisation processes need to be engaged with in different ways via the application of different methods, explanation models, and theoretical perspectives. Here are some potential questions to address: (i) Is "colonisation" an appropriate term to use to describe the processes by which people moved into new landscapes in European prehistory? (ii) How do various types of "mobility" fit with the concept of "colonisation"? (iii) What caused people to move to new lands? (iv) Can we identify "memory" of previously occupied landscapes? (v) Which climatic or environmental conditions push people out or make areas attractive? Are there limits to ecological conditions to where people choose to settle? (vi) Can we improve the chronological resolution of colonisation processes? (vii) How did people familiarise themselves with new territories, resources, and people? (viii) How are relations to new or old lands and people maintained or expressed? (ix) How can we differentiate between permanent moves into new land and seasonal exploitation of marginal landscapes? (x) How do new sources of evidence, such as genetic data, change our understanding of colonisation processes and how do we best combine data of different kinds?

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ORAL PRESENTATION

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

S2

Migration, cross-cultural interaction, and re-colonisation in North and South East Norway at the Early to Middle Mesolithic transition

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Recent research has argued that a migration of Eastern European hunter-gatherers into the already populated Scandinavian Peninsula, was a contributing factor to changes in material culture at the transition from the Early to Middle Mesolithic c. 8500-8000 cal.BC. However, our understanding of this process, the possible cultural contact between Western and Eastern groups and how this may have impacted the sociocultural developments is still in its infancy. Through a first-hand analysis of macro tools (i.e. stone axes, adzes, and mace heads) from sites in North and South East Norway, Finland and North West Russia, new perspectives on how the eastern migration changed Mesolithic society has been gained. In Northern Norway, the migration process led to a coexistence and cross-cultural contact between people belonging to different traditions and origins. Over time, this resulted in a reorientation of social networks and profound changes in the cultural traditions. In South East Norway, the western groups were possibly displaced by the Lower Glomsjø flash flood, followed by a repopulation by eastern hunter-gatherers. With the migration and introduction of eastern groups and traditions, changes encompassed not only technological aspects, but also served as a catalyst for changes in social structures and the development of new social territories.

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ORAL PRESENTATION

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

S2

A LAND BEYOND THE SEA: THE COLONISATION OF SARDINIA AFTER THE EVIDENCE OF THE SOMK SITE (9500-7800 CAL BP)

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During the LGM, Sardinia was part of the Sardo-Corsican massif, by then the largest Mediterranean island. When the sea level started to rise Sardinia separated from Corsica and progressively acquired the current conformation, remaining far away from the coasts of the Italian peninsula and continental Europe. The Pleistocene fauna was limited to a few endemic species, which were further reduced in the Early Holocene, when Prolagus sardus, an ochotonid the size of a hare, was the only sizable terrestrial mammal. Human presence is so far unproven before the Mesolithic, when a small number of sites attests to the colonisation of Sardinia and nearby Corsica. In Sardinia the largest archaeological record is from SOMK (i.e. S'Omu e Sorku), a collapsed rockshelter on the south-western coast. The stratigraphic sequence starts with undisturbed archaeological levels dated 9500 cal BP which are capped by multiple wildfire deposits (8900–7800 cal BP) and ends with a rockfall. The record includes lithic industry, fauna, ochre and burials with rich grave goods, the earliest such evidence in the island. The prehistoric groups, however, faced demographic isolation as well as abrupt environmental changes, as well documented at SOMK. In the long run, this Early Holocene colonisation and adaptation does not seem to have been successful, and there is no hint of continuity with the early Neolithic which appears several centuries after the last firm evidence of the Mesolithic.

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ORAL PRESENTATION

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

S2

Caves and rock shelters in southeastern Sweden

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Caves and rock shelters have historically exerted a significant attraction for humans, ranging from the earliest hunter-gatherer groups traversing the landscape to contemporary societies. In southeastern Sweden, approximately 100 caves and rock shelters have been identified. Archaeological investigations at some of these sites have predominantly revealed evidence of activities dating to the Mesolithic. This study, which focuses on caves and rock shelters in southeastern Småland, has undertaken systematic fieldsurveys to identify potential sites, with a primary emphasis on locating evidence of early human occupation. Particular attention has been directed toward sites situated above the post-glacial Baltic shoreline, with the aim of advancing knowledge about regions where hunter-gatherer groups likely established themselves following the retreat of the ice sheets approximately 12,000–13,000 years ago. The northernmost Late Paleolithic sites in the region are located near Finjasjön in northern Skåne (Götz & Carlie, 1983; Larsson, 1996). In southern Småland, a potential find of a Bromme projectile point has been documented (Westergren, 1979; Hansson, 1999). The regression of the Baltic Sea further resulted in the exposure of new landmasses, rendering them accessible for habitation. One such location is Blå Jungfrun, where archaeological finds beneath a rock shelter constitute evidence of settlement from the earliest phase of human occupation in the area. Our study also addresses the cultural and functional significance of caves within early hunter-gatherer societies. Were these sites primarily utilized as practical refuges, or were they imbued with symbolic or ritualistic meaning?

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ORAL PRESENTATION

Thursday 18th September, h.09:45-10:00

S2

Pioneers of the Alps: The Preboreal Mesolithic site Cascina Valmaione in the Central Alps (Lombardy, northern Italy)

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Excavations carried out in 1993 and 1994 at Cascina Valmaione in the central Alps of Valcamonica (Lombardy, northern Italy) have led to the discovery of several archaeological sites, one of which yielded a characteristic knapped stone assemblage attributed to the early Mesolithic Preboreal Sauveterrian cultural aspect. The attribution is reinforced by four charcoal radiocarbon dates which show that the site was settled around the middle of the 10th millennium uncal BP. The site is located in the centre of a wide mountain saddle that opens at 1778 m a.s.l., very close to the northern edge of a watering hole. The excavations uncovered ca 50% of the site. The finds consist exclusively of knapped stone artefacts and charcoals. Bones are absent due to the acidity of the mountain soil. Careful water sieving of the whole deposit led to the recovery of thousands of micro debitage items and some lithic artefacts that escaped the on-sight collection. The information inferred from the presence of the micro debitage help to understand the activity performed by the pioneer groups of hunter-foragers exploiting the high-altitude mountain environment. The preliminary analysis of the lithic raw material helps to reconstruct possible itineraries that these groups used to travel between the valley bottom and high altitudes.

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ORAL PRESENTATION

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

S2

EARLY MESOLITHIC PIONEERS ON THE SHORE OF THE BALTIC SEA, 8000 BCE

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During the spring of 2020 archaeologists from the Swedish Historical Museums conducted an excavation of an early Mesolithic settlement in Lårbo outside Linköping, one of the oldest known sites in the region of Östergötland, Sweden. The settlement included a well-preserved dwelling with an associated floor layer containing finds of worked quartz, several flint blades and charred fish bones. The hut was dated to 8200-8000 BCE which represent the earliest possible phase of colonisation to the shores of this area and can thus be considered the mark of its very first inhabitants. The altitude, approximately 70 meters above sea level, places the settlement along the mouth of the river Svartån and directly on the shores of a virgin inner archipelago in the Baltic Sea basin, just risen out of the Ancylus lake. The Lårbo site is interpreted as a seasonal settlement with a suggested economy adapted to the colder months of the year. The structures, such as the post-supported hut, indicate an organized semi long-term use of the settlement. The flint blades demonstrate connections to southern or western regions of Sweden and could be seen as reflections of mobility and exchange patterns, suggestibly along the Baltic Sea coast during its Ancylus period.

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ORAL PRESENTATION

Thursday 18th September, h.10:15-10:30

S2

Shifting shores and early settlements: insights from Torsviken in Kolmården, Sweden

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The middle Mesolithic settlement of Torsviken in Kolmården, Sweden, belongs to the earliest established settlements of the region. It dates to c. 7500-7000 BC and consists of a dwelling and surrounding hearths and activity areas. The find assemblage consist mainly of worked quartz, quartzite and green stone which are locally retrieved raw materials. Despite being placed on a sandy beach next to the sea, the few remaining bones belong to land living animals such as deer. Kolmården is a forested area in eastern Sweden. After the retraction of the inland ice, c. 9600 BC, it consisted of an archipelago that eventually grew out to be a peninsula, surrounded by the Littorina sea. Torsviken is one of only three sites in Kolmården dated to c. 7500-7000 BC. Up until this time the landscape rapidly changed because of land rise, which caused the shoreline to move several kilometres in only a few hundred years. The other two sites, Böksjö and Gullvagnen, are located by smaller lakes, a few kilometres from the seashore. The location of the Böksjö and Gullvagnen sites, and the bones from land living animals from Torsviken indicate that people moved between the sea and the forested areas further in-land.

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ORAL PRESENTATION

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

S2

The absolute chronology of Sauveterrian at Grotta del Romito (Southern Italy) in the context of the Early Mesolithic in Italy

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Abstract The transition between the Late Pleistocene and the Early Holocene is considered a moment of climate changes that drove people and faunal population to adapt to new environments. Grotta del Romito (Calabria, Southern Italy) is one of the most important Palaeolithic sites in the Italian peninsula which preserves an impressive stratigraphy spanning from the Upper Palaeolithic to the Early Mesolithic. In the rock shelter area, part of the stratigraphic sequence consists in an uninterrupted series of levels ranging from Final Epigravettian to Sauveterrian. A detailed series of radiocarbon dates places the emergence of Sauveterrian at Grotta del Romito at the beginning of the Preboreal confirming the early appearance of this technocomplex on the lower Tyrrhenian side as already suggested by the absolute chronology of Sauveterrian from Grotta della Serratura (Southern Campania). Starting from this point some main topics related to the rise and diffusion of Sauveterrian in Italy are discussed.

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ORAL PRESENTATION

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

S2

'Villabruna', Epigravettians, and origins of the European Mesolithic

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The Mesolithic has often been perceived as a relatively static period wedged between the Upper Paleolithic (UP), characterized by Early Human colonisation and climactic upheavals, and the Neolithic, associated with the arrival of Near Eastern farmers. The emerging paleogenetic data, however, paints a different reality. Mesolithic populations from western and central Europe have been shown to possess a striking similarity, and were subsumed within the 'Western Hunter Gatherers' (WHG) genetic cluster. This term was coined on the basis of analytical anteriority - the earliest published representative of the WHG cluster were from western Europe. However, the term is somewhat misleading, as WHG do not in fact descend from the preceding UP populations of Western Europe. The prevailing genetic origins of WHG is instead related to Late UP populations from Italy, typologically associated with the Epigravettian. This presentation will outline the possible 'migration routes' of the Late UP expansions which gave rise to Final Paleolithic and Mesolithic populations in central and western Europe and demonstrate distinctive clusters and social networks within the WHG meta-cluster. A final consideration will be given to the genesis of the pivotal Villabruna cluster. Although the paleogenetic record remains uneven, the ancestral Villabruna population does not appear to derive from any singular European UP population, but might have developed due to complex interactions which stretched from the Po-Adriatic plain to Eastern Europe.

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ORAL PRESENTATION

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

S2

Insights into highland colonization patterns in the south-eastern Alps: the Early Mesolithic camp-site of Prà Comun, Passo Giau - PC1 (Belluno Dolomites, Italy)

Fontana Federica * (1), Visentin Davide (1), Fasser Nicolò (1), Cecchetti Marzio (1), Cavulli Fabio (2), Bassetti Michele (3), Carra Marialetizia (4), Cristiani Emanuela (5), Dilaveri Klaus (1), Esposito Corrado (1), Guarnieri Gianmaria (1) (1), Dipino Noemi (6), Fontana Alex (6), Marchesini Marco (7), Philibert Sylvie (8), Valdeyron Nicolas† (8)

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The colonization of mountain areas is one of the major aspects of Mesolithic adaptations and it is a well-attested phenomenon in the Alps, especially in its southeastern side. Despite this and the numerous multidisciplinary studies carried out in the last decades, several questions remain open related to the variability of Mesolithic groups' settlement choices and their land use patterns. In recent years, the Belluno Dolomites have become a key area for discussing such issues. Among the several mapped sites, the rock-shelter of Prà Comun-Passo Giau (PC1 – 2,018m a.s.l.) is currently under excavation. Although partially disturbed by the following Early Middle Ages occupations, the Early Mesolithic layer of PC is unusually well preserved. Besides a rich lithic assemblage, it has yielded faunal remains, abundant wooden charcoals and some osseous tools and ornamental beads, a condition rarely found in highland sites and shared with the Mesolithic site of Mondeval de Sora, located a few kilometres south-eastward as the crow flies. Despite their proximity, these two sites are situated in fairly different locations. Through multidisciplinary studies involving geoarchaeology, archaeobotany, zooarchaeology, technological and use-wear analysis of bone and lithic artifacts, as well as spatial analysis, we aim to explore various aspects of settlement and subsistence strategies of the Mesolithic groups who occupied the site. These include the duration and intensity of occupation, exploitation of local faunal and vegetal resources, technological systems, and mobility, with the goal of highlighting the various factors related to occupation of the Alpine highlands.

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Session 3

Regional Identities

Coordinated by Dmytro Kiosak and Thomas Perrin

Archaeologists have long sought to grasp regional identities of the past through the concept of archaeological culture and a related typo-chronological approach. In that sense, an archaeological culture cannot of course reflect a prehistoric ethnic reality, but serves as a flexible categorization, suggesting both persistence over time and the geographical consistency of comparable artifacts within the archaeological sites. To truly grasp prehistoric realities, however, one must look beyond these classifications and grasp the true duration and spatial dimension of these societies. By adopting this approach, these categorical units can acquire tangible historical significance: examining both advances and regressions allows a deeper understanding of human influence and action.

Classical archaeological culture is only one type of spatial and temporal distribution of material culture variability. Only by comparing the spatial and temporal distribution of different categories of artefacts can we propose the identification of prehistoric cultures. At different scales and using different approaches, regional facies or larger techno-complexes can also be identified. Do pattern of variability of lithics, ceramics, bone items, decorations coincide in time and space? Often they do not. Accordingly, we are interested in new approaches to understanding the nature of multicriteria variability: networks, spatial regression models, fuzzy sets approaches and agent-based modelling. These cases of inconsistency between the distributions of different categories of material culture have the greatest heuristic potential for understanding the nature of past identities.

Moreover, radiocarbon dating has given us a powerful new tool for testing typochronologies - and quite often, typochronologies fail this test. So, the question is why? Why did certain types of things that should have existed for a limited period of time actually exist for longer? Why did types that should have outlived each other actually coexist? What are the social mechanisms of innovation behind these cases?

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ORAL PRESENTATION

Monday 15th September, h.15:45-16:00

S3

Polymorphism and singularity of the Second Mesolithic of Southern France

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Between the middle of the 7th and 6th millennia BCE, with the spread of the « Blade and Trapezes Complex « (BTC), southern France can be divided into two main groups, based on lithic production. In the East, in from the Mediterranean to the northern Alps, the Castelnovian complex, first defined by Max Escalon de Fonton, is characterised by the production of regular blades produced by pressure or indirect percussion, from which various types of trapezoidal, often asymmetrical, arrowheads were later derived. To the West, from the plains of Roussillon to the Atlantic coast, the so-called absence of laminar production and the existence of an original type of armature, such as « Gazel points » or « Bastard points », testify to the presence of another cultural sphere. During the 80's, some referred to as the 'Cuzoul Gazel group', a notion now abandoned for lack of internal coherence and chronlogical inconstancy. This Second Mesolithic of Occitania and Aquitaine is actuly under revision due to a major documentary renewal, with the excavation of several sites and the revision of other lithic and chronostratigraphic assemblages, especially in the area between the Rhône Valley and the Aude. Our talk will therefore provide an opportunity to take stock of the available data and to determine whether or not these industries are original in terms of the spread of the blade and trapeze complex.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Monday 15th September, h.16:00-16:15

S3

The Undifferentiated Epipaleolithic facies in South-Western Italy: the lithic industries from Grotta Santa Maria, Grotta della Serratura and Grotta della Madonna (Campania, Calabria) in the peninsular and insular context

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The Undifferentiated Epipaleolithic is a Mesolithic technocomplex which roots in the late Epigravettian tradition. It was first noticed and described at the beginning of the 1990s by F. Martini after his researches at Grotta della Serratura in Cilento; it was later defined in more detail, also thanks to several evidence coming from southern Italy, Sardinia, Corsica and Sicily. The authors present an update on the knowledge on this technocomplex and its origin, also derived from the revision of three lithic assemblages from the lower Tyrrhenian side: the Mesolithic industries of Grotta della Serratura and Grotta della Madonna, and that from Grotta di S. Maria, which could be an Epigravettian genetic antecedent of the Undifferentiated Epipaleolithic. These stone assemblages share common techno-typological traits as: a low-investment flaking strategy based on local resources and aimed at the production of irregular and non-standardised flakes, the low degree in blanks transformation, the abundance of flake-tools (denticulates, flake scrapers) and the lack or rarity of geometrics and backed tools. These features are comparable with those of other coeval undifferentiated complexes in the Mediterranean. A peculiar aspect of this Mesolithic facies is that it is the only one associated with the maritime mobility of the last hunter-gatherers and their pioneering attempts to move away from the continental coasts towards the Mediterranean. Whether or not there was a conscious strategy to establish a network of landing places linked either to the exploitation of marine resources or colonising movements towards new territories cannot yet be assessed.

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ORAL PRESENTATION

Monday 15th September, h.16:45-17:00

S3

Extending the Mesolithic research to the Western Carpathians

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The vast mountainous territory of the watershed of the middle Danube and Upper Vistula rivers is physiographically diverse in a far-reaching way. In the Early Holocene, the areas of the Western Carpathians, in terms of botany, were more dense forest complexes than can be found in areas located further north and south. So far, Mesolithic research does not concern the Western Carpathians enough, which are usually described as arbitrary boundaries between hunter-gatherer cultures of Central Europe. The Mesolithic settlement from the north reaches almost the border of this mountain range, creating clusters well saturated with findings in the Upper Vistula valley. The materials are diagnostic and classified to the northern technocomplex, represented in the Early Holocene by the Komornica culture. In the Middle Holocene this area was occupied by the Late Komornica culture (with Maglemosian influences) and the Janisławice culture of Eastern origin. At the southern border of the Western Carpathians the situation is less distinct and elements of the western technocomplex are visible. Here, data on the Mesolithic is growing. Three clusters of the settlement have been identified. One, related to the gorges of mountain tributaries of the Vistula River, and two others located in Tatra Piedmont. These findings generally indicate a predominance of northern elements. The specificity is evidenced by the local raw materials used (Mikuszowice Hornstone and Pieniny radiolarite) and a tendency to choose places at the edge of precipitous and high riverbanks in their breakthroughs.

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ORAL PRESENTATION

Monday 15th September, h.17:00-17:15

S3

KUKREK BURINS OR KUKREK CORES?

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Among the characteristic products of the Kukrek culture or techno-complex are the so-called Kukrek burins. However, their interpretation varies significantly. These artifacts may be identified as burins on blades, burins on Kukrek inserts (featuring a flat trimming on the ventral side), or burins on flakes with a flat burin facet. The latter definition, however, is particularly problematic. Morphologically unstable, these products demonstrate an angle of inclination of the burin facet relative to the product's axis that is difficult to control, as experimental studies suggest. A more consistent understanding of Kukrek burins defines them as multiple burins on flakes, where the previous burin detachment serves as a platform for subsequent ones. Such burins are systematically found in classical Kukrek collections and are notably rarer in other Mesolithic assemblages from the region. However, detailed analysis of these artifacts, including partial refitting studies, suggests that they were likely not tools but situational nuclei on thick flakes. The knapping principles observed align more closely with those used for edge knapping of secondary cores. This raises an essential question: cores or tools? If these objects are indeed situational nuclei, another key category of Kukrek products gains a technological explanation. However, this redefinition risks blurring the boundaries of the Kukrek culture or techno-complex, potentially diminishing its heuristic value. The informed deconstruction of traditional typological concepts through technological analysis offers a pathway to modernize the typological map of the Mesolithic in southern Eastern Europe.

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S3

Late Mesolithic blade core concepts in Southeast Norway: characterizing their variability through time and space

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The Mesolithic archaeological record of south-eastern Norway is characterized by abundant and varied lithic assemblages enabling both diachronic and synchronic studies of technological traditions and social connections. South-eastern Norway is bordered by contrasting geographical regions, which makes the area particularly interesting in terms of cultural interactions. During the Middle Mesolithic, the conical blade core concept was the central method for producing blades and microblades in south-eastern Norway. However, towards the latter part of the Middle Mesolithic, and throughout the Late Mesolithic, several new core types for producing microblades appear in the region. These core types have been labelled "narrow faced core", "keeled/wedge shaped core", "handle core", "atypical handle core" and simply "microblade core". While there is a clear morpho-typological variability in these core concepts, the knapped products seem to respond to the same qualitative and morphological attributes. Our knowledge of these Late Mesolithic core types and their temporal and spatial distributions is not well developed, nor are our insights into sociocultural relations. Through a technological analysis of classified blade/microblade cores from coastal and interior Late Mesolithic sites in south-eastern Norway, we aim to shed light on these matters. We discuss our results in connection to raw material conditions, population trends and cultural networks in the Late Mesolithic.

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Monday 15th September, h.17:30-17:45

S3

CORE ISSUES: NEW INSIGHTS INTO BLADE MANUFACTURING IN SOUTHERN NORWAY DURING THE LATE MESOLITHIC

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Diachronic trends in blade manufacturing technology have been a prominent focus of Stone Age research in Norway during recent years. The temporal and geographic locus of such studies has however been somewhat uneven, and the resulting differential resolution of knowledge concerning developments in lithic technology can have implications for the significance attributed to apparent regional variations during certain periods. In southern Norway, one of the most prominent technological divergences occurs ca. 5,600 BC when the handle core concept replaces the conical core concept as the primary method used for blade manufacture in the southeastern part of the country. Handle core technology is known from across Scandinavia as well as other parts of northern Europe and its apparently limited distribution within Norway has been important in defining a regionally specific Late Mesolithic techno-complex known as the 'Nøstvet'. This interpretation is however tentatively problematized by the occurrence of hundreds of handle cores in the collections of archaeological institutions in the western part of the country. This body of material has received little attention and until recently has not been integrated into research of Late Mesolithic technology in Norway. In this paper we present the results of an audit of a selection of reported handle cores from museum collections in western Norway. Our work adds important nuance to established knowledge of intra- and inter-regional developments in blade manufacturing and, consequently, models of socio-techno regionality in southern Norway during the late Mesolithic.

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ORAL PRESENTATION

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S3

CRAFTING SOAPSTONE 'COFFEE-BEAN' SINKERS: REGIONAL TRADITIONS AND LOCAL VARIATIONS

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A trend of increasing regionality is apparent throughout the Norwegian Mesolithic. One example of this are small, engraved, soapstone artefacts attributed to the Late Mesolithic and interpreted as line sinkers—also referred to as coffee-bean sinkers for their typical shape. These are unique to the West-Norwegian coast, despite line fishing being attested in other regions of Mesolithic Norway as well. In my ongoing PhD project, I use a combination of methods to study how these sinkers were made. Experiments and photogrammetry inform on the tools and techniques used, while pXRF offers insights into the chemical composition—and hopefully origin—of the source material. By taking on a little-studied artefact type and using novel methods, this project provides new perspectives on Late Mesolithic crafting and regionality in West Norway. I will present specifically on my current study aimed at identifying cross-regional traditions as well as local trends and variations in sinker crafting, and thereby expanding on theories regarding sub-divisions within the West-Norwegian Late Mesolithic social territory.

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POSTER

Monday 15th September, h.18:00-18:15

S3

Technological and traceological approach to lithic industries of the Second Mesolithic in Southern France

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Between 6500 and 5000 BCE, the groups of the Second Mesolithic in southern France are distinguished from each other by various technological characteristics. The southeast is marked by pressure flaking and trapezoidal microliths (Castelnovian), while the southwest is characterized by the production of specific arrowheads, delineating several areas – such as the "pointe de Gazel" in Languedoc or the "pointe du Martinet" in the northern Aquitaine Basin. However, certain areas, such as the center of the Aquitaine Basin and the northern fringe of the Pyrenees, where the absence of sites is notable, complicate the identification of these spaces. Furthermore, the transition from the Mesolithic to the Neolithic in the Southwest is difficult to discern due to the absence of clear Neolithic markers (ceramics, domestic fauna, cereals). The lack of these markers highlights the necessity of a deeper understanding of lithic industries, particularly arrowheads. However, these tools are often ambiguous, indicating a probable technological permeability between these two spheres. Although arrowheads have been the subject of numerous studies, they are subject to interpretative biases due toclassification methods (typology, technology), researchers' assumptions, or the scale of study chosen. Therefore, we propose to standardize the data on a broader scale by integrating a traceological approach, in order to enrich and verify existing interpretations.

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POSTER

Monday 15th September, h.18:00-18:15

S3

MESOLITHIC IN THE CANTABRIAN REGIÓN (SPAIN): STATE OF RESEARCH AND DEBATES RAISED

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This poster presents the state of research on Mesolithic in Cantabrian region (Spain), focusing on four aspects: i. It analyses the settlement pattern, determined by the geomorphology of the area, the chronology of the settlements, in some cases, derived from climatic conditions and the deglaciation of mountainous areas, and the availability of economic resources. We present 131 new Holocene shell midden sites that have been located in recent survey projects in Asturias, in the western Cantabrian region. ii. The broad-spectrum economy is analyzed, with the exploitation of the resources offered by the different biotopes. iii. With regard to lithic technology, a latent issue is addressed, regarding cultural unity or diversity in the region, related to the availability of raw materials and the frequency of certain typologies, which mark cultural characteristics and sequences, due to the presence of macro industries such as the 'Asturian peak' in the western part, or geometric microliths, more frequent in the eastern part, with a scarce presence in the central and western part of the region. iiii. Possible inter-territorial and/or allochthonous socio-cultural exchanges.

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Session 4

People and Their Environment

Coordinated by Auréade Henry and Harry K. Robson

The nature of the relationships hunter-gatherer-fisher societies had with their natural environment is key to understanding their "being-in-the-world". Indeed, while organic remains reflect the palaeoenvironment, they also offer a unique insight into daily subsistence strategies, settlement patterns, mobility, techniques, health, worldviews and cultural traditions.

Throughout the Mesolithic, the use of plants and animals has some uniformity and great heterogeneity over time and space, reflecting the diversity of environmental and socio-economic interactions at play. Although central, the place of organics within Mesolithic societies remains difficult to grasp due to taphonomic issues but also because historically, most remains of organic origin have received less attention than stone (and bone) artefacts that have been used as "diagnostic fossils" to define Mesolithic techno-cultural complexes.

Over the past decades, a range of techniques have developed, allowing us to identify "invisible" or undeterminable remains (e.g., through proteomics, microscopic or organic residue analyses), interpret incremental patterns (e.g., cementochronology), and traces (e.g., traceology on inorganic and organic remains, dental use-wear). These advances have broadened our interdisciplinary research frameworks and have significantly increased the body of knowledge about Mesolithic environments, used taxa and palaeoethnoecological practices.

This session deals with the interactions of Mesolithic humans with their biological environment, focusing on how specific components of this environment were acquired, prepared/transformed, used and/or discarded, and what these actions may have implied in societal terms (economy, social organisation, territories, seasonality, diet, etc.). We welcome contributions dealing with palaeoenvironmental, palaeoclimatic and/or palaeoeconomic reconstructions based on plant, animal, fungal or bacterial remains.

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ORAL PRESENTATION

Tuesday 16th September, h.09:00-09:15

CONNECTIONS WITH SEA ICE – CREATING HOLISTIC FRAMEWORKS OF CULTURE, CLIMATE AND ECOLOGY

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S4

Sea ice shapes maritime cultural landscapes and influences subsistence strategies, navigation and perceptions of seasonality. A conceptual link can be made to its ecological function in the lifecycles of sympagic organisms and pagophilic marine mammals, which use sea ice as haul-out sites, breeding grounds or hunting grounds. Although the maximum extent of sea ice varies cyclically year-round, the social and cultural impact of the current decline in average sea-ice extent is a topic being explored in cultural anthropology, while the extent of past sea ice is an emerging topic in historical- and palaeoclimatological studies. Multiple proxies and modelling approaches have been proposed to reconstruct the spatiotemporal dimensions of sea ice. The exploitation of marine mammals in Europe goes back at least to the Late Palaeolithic and is evidenced by depictions in cave- and portable art, as well as artifacts made from, and assemblages containing, marine mammal osteological material. This interdisciplinary study will therefore explore and review the potential of sea ice as a conceptual framework and address newly-identified gaps in our knowledge and understanding of hunter-fisher-gatherer subsistence in Europe during the Late Palaeolithic and Mesolithic by incorporating and synthesising archaeological, ecological, climatological and ethnographic literature and perspectives.

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ORAL PRESENTATION

Tuesday 16th September, h.09:15-09:30

How did prehistoric societies deal – culturally and economically – with environmental change?

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S4

How did prehistoric societies respond—both culturally and economically—to environmental change? This project explores how humans used culture to cope with sudden environmental shifts and identifies different patterns of human behaviour in prehistoric coastal societies of the Baltic Sea region. One of the key global environmental events studied is the 8200 cal BP cold event in the Mesolithic, which has been linked to cultural changes worldwide but remains largely unexplored in the Baltic Sea region. By integrating archaeology, bioarchaeology, marine mammal ecology, and environmental studies, we investigate how environmental changes influenced human culture and marine ecosystems. To date, 233 bones from 13 species—including humans, terrestrial animals (aurochs, red deer, elk, roe deer, wild boar, bear, wolf, and dog), and marine animals (grey seal, harp seal, ringed seal, and harbor porpoise)—have been analyzed from Middle Mesolithic sites (Tågerup, Segebro, Bredasten, Norje Sunnansund, Stora Förvar, Dagsmosse, Kanaljorden, and Strandvägen). These sites, which cluster chronologically around the 8.2 ka event, are associated with the hunter-fisher-gatherer Kongemose Culture (c. 8500–7400 cal BP) in southern Sweden and corresponding cultures in east-central Sweden. Stable isotope analysis (oxygen, carbon, and nitrogen) has been conducted to reconstruct paleoclimate and diet, revealing a pronounced decrease in oxygen isotope values from 7000 to 6000 BC, likely linked to the global temperature decline of the 8.2 ka event. This paper presents preliminary results from this multidisciplinary study, demonstrating the interplay between climate change, human adaptation, and marine mammal ecology in prehistoric coastal societies.

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ORAL PRESENTATION

Tuesday 16th September, h.09:30-09:45

A Mesolithic seafood platter in Brittany

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S4

While the rise in sea level during the Holocene submerged many prehistoric coastal sites, four Late Mesolithic shell-middens in Brittany were preserved: Beg-en-Dorchenn, Beg-er-Vil, Téviec and Hoedic, all broadly contemporary and in geographical proximity. Hoedic was the only island site during the Mesolithic. Recent research on the human remains from the late Mesolithic cemeteries of Téviec and Hoedic has shed new light on the socio-cultural practices of these last coastal hunter-gatherer groups. Stable isotope testing showed that the two populations had a signature which indicated a high consumption of marine protein, but this was particularly pronounced in the individuals from Hoedic, indicating that the two groups, which were more or less contemporary, had different subsistence practices. While isotopic analysis gives a general indication of diet, the preservation of remains in the shell midden allows a much finer analysis of aspects of the subsistence practices of these populations. It is not just a question of resources available but diet is part of the culture and identify and has a role in maintaining social relations. In this paper we present the results of the analyses the shellfish and the crab fragments from samples collected during recent excavations of the Beg-er-Vil and Hoedic shell middens, in order to better understand the choices made in terms species selected for consumption, where they were collected, and how these practices differ between the groups

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ORAL PRESENTATION

Tuesday 16th September, h.09:45-10:00

MESOLITHICS ON THE SHORE: REASSESSING MARINE RESOURCES EXPLOITATION IN THE MEDITERRANEAN SEA DURING THE MESOLITHIC

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This presentation explores marine environments and human fishing and shell-collecting strategies in the Mediterranean Sea during the Mesolithic period. The study is based on an extensive dataset collected through the ERC MERMAID (M-ARCHives database), which aims to reconstruct marine ecosystems and human exploitation in the Mediterranean based on marine faunal data from coastal sites. To this day, a total of 30 sites yielding Mesolithic layers have produced more than 122,000 fish and invertebrate remains. The record constitutes a direct inventory of exploited marine resources during this period. It allows us to highlight fishing techniques and their evolution during the Mesolithic. Additionally, it offers an indirect insight into marine ecosystems, climatic conditions, and the natural distribution of marine species. Given the broad geographical distribution of collected data, a regional analysis is possible. Part of the presentation will focus on the northwestern Mediterranean. The combination of data produced within an ongoing PhD thesis (University Côte d'Azur, France) and the M-ARCHives database highlights a well-preserved environment resembling present-day conditions. It also reveals the exploitation of a range of coastal and marine environments. Mesolithic hunter-gatherers targeted a diverse array of fish and shells, although certain species were favoured. Various fishing techniques can be inferred with a preference for traps and hook-and-line. It is expected that this important dataset will be further expanded with ongoing PhD work on marine assemblages. Finally, a first evaluation of the role of marine resources within the entire spectrum of exploited animals will be attempted on selected datasets.

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ORAL PRESENTATION

Tuesday 16th September, h.10:00-10:15

How to fish during the Castelnovian : aquatic environment, fishing practices and targeted species in "La Font-des-Pigeons" (Châteauneuf-les-Martigues)

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This presentation examines the exploitation of aquatic environments and fishing strategies during the Mesolithic period, more specifically the Castelnovian, at the La Font-aux-Pigeons rockshelter near Marseille (southern France). The site yielded over 27 087 fish remains. We employed standard archaeo-ichthyological methods, including taxonomic and anatomical identification, quantification, osteometry and the observation of growth annuli. The study was further enriched with data on the bio-ecology and ethology of the identified fish species. This multidisciplinary approach revealed a highly diversified exploitation strategy encompassing both marine and freshwater systems near the rockshelter. Marine environments were characterized by high biodiversity and featured a complex food web and a stable ecosystem, similar to those found along the modern coastline of Marseille. Various fishing techniques were likely employed, depending on the ecosystem, species, and size of the fish. Notably, fishing in freshwater environments often involved an unusual method: poison fishing. The use of this technique suggests a strong understanding of the freshwater environment and an intensified fishing effort. This activity appears to have been conducted from late winter to early spring. The combination of anatomical representation and distinct marks on the fish bones also provided insights into fish processing and consumption, as well as potential food waste management practices.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Tuesday 16th September, h.10:15-10:30

RESOURCE MANAGEMENT BEFORE FARMING – MESOLITHIC FISH TRAPS IN NATURALLY FISHLESS NORWEGIAN LAKES

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The development of agriculture is undeniably a pivotal aspect of human history as this method of manipulating nature has, in many instances, facilitated the creation of advanced tools, complex societies, and civilisations. However, an overemphasis on agriculture presents a simplistic, evolutionary perspective of history that does not fully align with archaeological records. In this paper, we present evidence that hunter-gatherer-fishers were intentionally transporting and releasing brown trout (Salmo trutta) into previously fishless mountain lakes in Norway around 5000 BC (7000 cal. BP), at a time when all populations in Scandinavia were still living as hunter-gatherer-fishers. This practice expanded the range of available resources for humans and permanently altered these Norwegian mountain lake environments. One such mountain lake is Tesse, where hunter-gatherer-fishers constructed and maintained stationary fish traps to harvest from the established fish population both in the Mesolithic (c. 5000 cal. BC) and the Neolithic (c. 3700 cal. BC and 2700 cal. BC) periods. These traps provide evidence of early resource management and even a form of food production among hunter-gatherer-fisher populations, challenging the categorisation of human societies into distinct groups of hunter-gatherer-fishers and farmers. These findings from the Norwegian mountains thereby offer new insights into the trajectory of human cultural development, and also inform us about how past populations actively shaped and permanently transformed nature.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Tuesday 16th September, h.11:15-11:30

HUMANS AND FRESHWATER ECOSYSTEMS - MESOLITHIC POPULATIONS AND THE EXPLOITATION OF WETLANDS ALONG THE ADIGE VALLEY (TRENTINO, ITALY)

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The beginning of the Holocene in the Adige Valley (Trento, Italy) was characterised by rapid climatic warming that led to significant environmental changes and the end of the deglaciation process. The new landscape, consisting of a freshwater basin formed by the meandering course of the Adige River, offered new and rich resources to the human groups that settled along the valley.

Within this general framework, our research aims to reconstruct the interactions between humans and the complex ecological mosaic of the Adige Valley through the study of fishes, mammals (e.g., otter and beaver) and reptiles (e.g., pond turtle) closely linked to freshwater environments.

For this presentation, we focussed exclusively on the fish fauna, which was studied using two comparative osteological collections housed at the Laboratory of Zooarchaeology of the MUSE (Italy) and the University of Tübingen (Germany). The analysed ichthyofaunal assemblage comprises approximately 10,000 remains from multilayered sites located near Trento: Riparo Pradestel, Riparo Gaban and Riparo Romagnano Loc III. Within the latter, a considerable contribution to the study of the fish fauna comes from the particularly rich layers U, V, Z, here analysed for the first time.

This research assessed the aquatic biodiversity, the seasonality of fish mortality, the different modalities of fish treatment for food purposes as well as the different fishing techniques in the Adige Valley at the beginning of the Holocene.

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ORAL PRESENTATION

Tuesday 16th September, h.11:30-11:45

Let's settle here! Long-term hunter-fisher-gatherer interactions in northwestern Lithuania wetland ecosystems

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Northwestern Lithuania is characterized by a young morainic landscape with an abundance of overgrown lakes. As seen from past archaeological excavations and various stray finds, the area was inhabited since the Final Palaeolithic. Former excavations showed well organic preservation from various Stone Age periods, highlighting the potential of the area to unveil more about human-environment interactions in the Stone Age. In 2023 and 2024 a new excavation campaign was initiated in Sarnelė site, which is located in the palaeolake of Ertenis. Previous excavation and the reanalysis of organic artefacts (osseous and wooden) revealed that humans were active in the area since the Late Glacial; however, the most intensive occupation phases seem to correspond to the 6th–4th and 3rd millennia cal BC. As seen from the available data, people engaged in large and small terrestrial mammal hunting, but fishing seems to be more important due to the sites' location and the presence of fish remains and fishing gear. The Ertenis palaeobasin is characterized with an abundance of small hills located in the wetlands, likely past islands. New test excavations around these areas revealed additional hunter-gatherer sites with organic preservation, providing more data about human interaction in this specific ecosystem during prehistory. Within this paper, we aim to present the latest fieldwork and laboratory results from excavated sites, and further emphasize the importance of local ecosystems for humans in the Stone Age.

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ORAL PRESENTATION

Tuesday 16th September, h.11:45-12:00

My deer, your boar. Differences in hunting and fishing structure between neighbouring Stone Age forager sites Dudka and Szczepanki, Masuria, NE-Poland.

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S4

Dudka and Szczepanki are sites located on two islands of the former Staświn Lake, one of the largest in Masurian Lakeland in NE Poland. The settlements on both islands occurred simultaneously starting in the Late Palaeolithic (Allerød) with occupations covering the entire Mesolithic and the Para-Neolithic Zedmar culture until the Late Neolithic (early Subboreal). Dwelling places and main activity areas were located on the south-eastern parts of both islands, practically at the same places throughout the whole Stone Age. Likewise, the economy was very similar at each site during the Mesolithic, Para-Neolithic and in the Late Neolithic. The subsistence was based almost exclusively on hunting, fishing and gathering even in the Late Neolithic. However, distinct differences are observable between the sites, and furthermore, between the encampments on the same island. The significant differences between settlements concern the shares of fish bones and contributions of fish species, as well as the proportions between Cervidae and Suideae bones. These dissimilarities took place during the same periods at both islands, so they couldn't arise from environmental differences. It appears that these divergences could result from the exploitation of different hunting areas within the lake and surrounding woods, which could belong to a particular clan or family of the local hunter-fisher-gatherer society. Considerable differences in bone structures and their reoccurrence in following periods might suggest food exchange between sites.

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ORAL PRESENTATION

Tuesday 16th September, h.12:00-12:15

Aspects of human-animal relations in the Mesolithic of Northern Germany

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S4

Faunal assemblages can offer significant insights into ancient ecological systems that have since disappeared. Beyond this, they also provide a glimpse into economic processes. In addition to established analyses on topics such as methods of slaughtering and bone processing, seasonality and spatial distribution, studies of the decision-making process and its economic basis are also an important part of the analysis of subsistence strategies. With regard to this, the sites on the former shore of ancient Lake Duvensee and the Rothenklempenow site, which boast favourable preservation conditions, offer particularly informative bone inventories and could be a valuable resource for further research in this matter. The bone finds from both sites demonstrate a broad spectrum of anticipated bone remnants. Furthermore, they provide an array of bone instruments and tools as well as artefacts whose function is predominantly presumed to be of a ritual nature. These bone assemblages also point out to an original representation of the fauna of the era, whose distribution and behaviour may have exerted an influence on the population dynamics of humans and shaped the exploitation of their ecological niche. When considered as a whole, these findings have the potential to provide a vivid representation of Mesolithic behaviour and to evaluate the underlying socio-economic trade-offs.

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Tuesday 16th September, h.12:15-12:30

MESOLITHIC LIFEWAYS IN THE MEUSE BASIN: INSIGHTS INTO MOBILITY, DIET, AND ADAPTATION THROUGH MULTIDISCIPLINARY RESEARCH

De Groote Isabelle * (1) (2), Toussaint Michel (1), Rivollat Maïté (1), Robert Prudence (1), Van Hattum Ijk (1), Polet Caroline (3), Semal Patrick (3), Blevins Kelly Elaine (4), Fernández-Domínguez Eva (4), Crombé Philippe (1)

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The Meuse Basin in Belgium offers a vital context for understanding the lifeways, mobility, and diet of Mesolithic hunter-gatherers during a time of significant environmental and demographic change. Following the Late Glacial Maximum, warming climates enabled human groups to reoccupy north-western Europe, with migrations originating from southern refugia. The ROAM project (Regional Outlook on Ancient Migration; www.roam-ugent.be) aims to unravel the complexities of these populations through a multidisciplinary approach combining zooarchaeology, archaeology, and biological anthropology – the latter field being the focus of this talk. A systematic radiocarbon dating campaign targeting cave burials in the Meuse Basin has revealed that many sites previously identified as exclusively Mesolithic often include mixed deposits from multiple periods, prompting a reassessment of burial chronologies. Biological anthropology and stable isotope analyses have provided critical insights into health, diet, and subsistence practices. These analyses evaluated the importance of aquatic resources alongside terrestrial foods in Mesolithic diets and their possible influence on radiocarbon dates. Moreover, isotopes of strontium and oxygen have uncovered patterns of mobility, offering insights into localized resource use and with movements across broader landscapes. Genetic studies further contextualize the population history of the Meuse Basin, confirming connections with the Late Upper Palaeolithic. This research underscores the Meuse Basin's significance in the broader narrative of postglacial human reoccupation, emphasizing the interplay of environmental adaptation, dietary strategies, and mobility in shaping Mesolithic lifeways.

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Taphonomic and spatial analysis of faunal remains in a Mesolithic combustion feature at Cabeço da Amoreira (Muge, Portugal)

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S4

Since their discovery, the Muge shellmiddens have accumulated an extensive archaeological record, offering a unique framework to study human subsistence behaviors and the complex depositional history of these sites. This study examines terrestrial vertebrate remains recovered from Feature C of the Mesolithic shellmidden of Cabeço da Amoreira (Muge, Portugal). The primary aims are to enhance understanding of subsistence strategies in the midden and identify the function and post-depositional history of the feature. The unusual spatial preservation and the high concentration of thermally altered artifacts (faunal remains, lithics, thermoclasts, and charcoals) indicate its function as a combustion structure. This hypothesis is reinforced by the taphonomic and spatial analysis of the faunal assemblage, which provides valuable information into the dietary practices of the Mesolithic community. Evidence of carnivore activity, particularly canids, was identified within the feature. The rapid and homogeneous coverage of the structure by a sedimentary matrix suggests limited post-depositional disturbance. Species consumption appears consistent between the mid and upper levels of the midden; however, discrepancies in the preferential transport of animal remains suggest behavioral changes over time. These variations may reflect adaptations to evolving landscapes or pressure related to overexploitation of specific taxa.

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ORAL PRESENTATION

Tuesday 16th September, h.14:30-14:45

First evidence of the exploitation of the Sardinian pika in the Mesolithic from Su Carroppu di Sirri (Sardinia, Italy).

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In Sardinia, the Mesolithic occupation was sporadic and lasted for more than two millennia, until the 8.2 ka climatic event. The human presence in the post-glacial phases appears discontinuous both with respect to the earlier Late Pleistocene phases and to the more consistent evidence of the first Neolithisation, starting from the threshold of the 6th millennium BCE. There are only a few contexts of Mesolithic phases, mainly located in the north-central part of the island. Recent fieldwork carried out by Carlo Lugliè in the Sulcis region of Sardinia (south-west Sardinia) has made it possible to recover the site of Su Carroppu di Sirri, a key site for the study of the human occupation and exploitation of Sardinia in prehistoric times, representing the oldest direct evidence of human presence in Sardinia and Corsica. A first archaeozoological and taphonomic study has been carried out on the entire fauna of SU9, which points to the Mesolithic occupation of the site. It is a combustion structure near the mouth of the covered part of the rock shelter, which through radiocarbon dating on the charcoal, has provided a chronological framework that can be placed between the 8th and 7th millennia BCE. At the moment, this is the only Sardinian site attributed to the Mesolithic where faunal remains have been analysed. The Sardinian pika (Prolagus sardus) is the dominant species and shows clear signs of human exploitation, suggesting that it was the food basis of these communities for a long time.

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ORAL PRESENTATION

Tuesday 16th September, h.14:45-15:00

THE ZOOARCHAEOLOGY OF SKATEHOLM – ANALYSING AND INTEGRATING THE BONES FROM OLD AND NEW EXCAVATIONS TO INTERPRET SUBSISTENCE AND ECONOMY AT A LATE MESOLITHIC ICONIC SITE

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S4

Skateholm, a significant Late Mesolithic site in southern Sweden, has garnered extensive scholarly interest since the early 1980s due to its rich burial grounds and associated cultural layers. With a collection of over 80 human graves and multiple dog interments, the site serves as a focal point for understanding territorial claims and social structures among hunter-gatherer-fisher societies. Despite the extensive excavations and numerous publications, a notable gap persists in the archaeological exploration of economic and subsistence practices deducible from within the site's cultural layers. This paper presents a new zooarchaeological analysis from previously unanalysed bones excavated in the 1980s and 1990s, as well as the analyses of the bone material from new excavations conducted in 2022 and 2023. The paper aims to address long-standing questions regarding the economy at Skateholm, its development, and on-site distribution patterns. By employing a stratigraphic and contextual approach to the zooarchaeological material we have refined our understanding of the site's spatial organisation and resource utilisation and contribute to a more nuanced understanding of subsistence practices at Skateholm. Through the zooarchaeological material, Skateholm underscores its significance not only as a burial site but also as a vital lens into Late Mesolithic subsistence practices in the Baltic Sea region. It remains a cornerstone for future research into the complex interplay of social and environmental dynamics in Mesolithic coastal landscapes.

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ORAL PRESENTATION

Tuesday 16th September, h.15:00-15:15

New archaeobotanical data from the Sauveterrian open-air site of Contrada Pace (Tolentino, Macerata, Central Italy)

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S4

Contrada Pace (Tolentino, Macerata, Central Italy) is an important open-air site occupied by Early Mesolithic hunter-gatherer groups, with a unique extension and spatial organization that distinguish it from other Italian and European sites. The archaeological layers are embedded within a paleosoil that was rapidly covered by fine sediments, sealing off and preserving its contents in an excellent state. Radiocarbon dating place this Mesolithic site in the 11,000-9,800 cal BP range.

The excavation was carried out between 2019 and 2020 in the frame of a preventive archaeology activity. Soon after the excavation, a multidisciplinary project involving researchers from various universities and institutions aimed to investigate the site in all its aspects. Paleoenvironmental studies, through intensive and systematic sampling, were particularly significant. Several hundred samples were collected during the excavation, and the analysis of macroscopic plant remains is underway via manual flotation techniques. Microscopic screening allowed the discovery of carpological and anthracological remains in fair preservation conditions. This study aims to reconstruct the use of plants by humans and the complex relationships between Mesolithic groups and the environment.

This presentation reports the results of the archaeobotanical analysis of two layers rich in landsnail shells, associated with a large number of lithic and osteological materials located in the central area of the excavation.

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ORAL PRESENTATION

Tuesday 16th September, h.15:15-15:30

WRAPPING THE WORLD TOGETHER: FIRST RESULTS OF INTERDISCIPLINARY RESEARCH ON THE COLLECTION OF CORDS AND WRAPPINGS FROM THE SUBNEOLITHIC ŠVENTOJI SITE COMPLEX IN LITHUANIA

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The multi-purpose processing of plant materials was one of the most important factors influencing the nature of the economy of prehistoric European societies. One of its key aspects was the production of cords and wrappings of various types, which served many purposes. These materials were used to connect structural elements in house construction and to secure bone and stone tools in their mounts. They also played an essential role in producing everyday objects, such as fishing nets, mats, and baskets. The study of such objects produced by hunter-gatherer-fisher communities during the early and middle Holocene in the East Baltic Plain region, is a central focus of the project PlAnt Raw maTerialS in the life of middle Holocene hunter-gatherer-fisher communities of the southeastern coast of the Baltic Sea (PARTS project), funded by the National Science Center in Cracov in Poland, and the Research Council of Lithuania. As part of the project, one of the largest known collections of Subneolithic (=Ceramic Mesolithic) cord fragments and wrappings, originating from the Šventoji site complex in Lithuania, is being subjected to multi-proxy analysis. In this presentation, we will share the first results of interdisciplinary research on this collection, including archaeobotanical studies, residue studies, DNA analyses and experimental studies to identify plant and animal fibres used to produce these artefacts. Additionally, we will present insights into the weaving techniques used by hunter-gatherer-fisher communities based on evidence from the Šventoji site complex.

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ORAL PRESENTATION

Tuesday 16th September, h.15:30-15:45

The use of plants in pottery production among the Swifterbant culture in NW Europe: taxonomic identification and 14C dating of plant temper materials (ORG-ID project)

Teetaert Dimitri * (1), Deforce Koen (2), Wojcieszak Marine (3), Ligovich Gaia (3), Kubiak-Martens Lucy (4), Schröer Laurenz (5), Ngan-Tillard Dominique (6), Cnudde Veerle (5), Raemaekers Daan (7), De Clercq Wim (1), Crombé Philippe (1), Boudin Mathieu (3)

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Many pottery traditions from the Late Mesolithic and Neolithic period in NW Europe are characterized by the use of plant material as a tempering agent. Despite preliminary studies we still know little about the types of plants that were used for this purpose. However, these materials can be of great importance. Charred remains of these plant additives are often preserved inside the pottery up to this day and provide a valuable, yet understudied, resource for AMS 14C dating. This paper focuses on plant temper in pottery of the Late Mesolithic to Early Neolithic Swifterbant culture in NW Europe (5th millennium cal BC). As part of a larger research project (ORG-ID, funded by BELSPO and FWO), Swifterbant pottery with plant temper was sampled from six archaeological sites in Belgium and the Netherlands. For the taxonomic identification of the plant temper, the charred plant material and related voids inside the pottery are analysed using thin sections and X-ray µCT, in combination with microscopic and SEM analysis of the extracted plant remains. By testing various methods, a protocol is developed for the extraction and chemical pre-treatment of plant temper for AMS 14C dating. Finally, the reliability of the obtained plant temper dates is evaluated by comparing them to other chronological data from the same sites. The project aims to increase our knowledge of plant use among late hunter-gatherer populations and to test the possibility of using plant temper as a reliable source for radiocarbon dating.

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ORAL PRESENTATION

Tuesday 16th September, h.16:45-17:00

PRUNUS SSP. MANAGEMENT AMONG HUNTER-GATHERERS AND FIRST FARMERS IN EURASIA

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Prunus species, e.g., sloe (Prunus spinosa), appear recurrently in the Eurasian archaeobotanical record. Their berries and seeds have traditionally been and continue to be used; they can be eaten raw or roasted, while flowers are edible too. Their wood is also appreciated as firewood, and was so in the past, as corroborated by the charcoal assemblages. Pollen records also indicate its long-term and widespread presence in the Eurasian region. Although in expansion, our knowledge about plant use by past hunter-gatherer communities is limited due to several reasons such as taphonomic processes, ancient plant processing and transformation practices, as well as research gaps. In addition, the limited availability of several Prunus species in certain locations and their possible preference for specific cultural practices may have influenced how communities managed and used this resource. The fact that most studies are focused on a specific region, site or chronology and only consider one or two types of remains further hinders our view of the use and management of particular species. This is true in the case of Prunus species and it is, therefore, important to bring together the available albeit scattered pieces of information.In this paper, we revise the remains retrieved by different archaeobotanical proxies and discuss the role of Prunus spp. in a broad region and within the general temporal and interpretative framework of the early-mid Holocene prehistory.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Tuesday 16th September, h.17:00-17:15

Flux, change, saturated meeting grounds: past environments and archaeo-palaeo-ecology with cases from Dagsmosse, South-central Sweden

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The study of past human occupation in lost, spontaneously alternated and unforeseen environments - resulting from stratigraphically concealed archaeological material by rapid sedimentation and anoxic conditions - offer in many cases excellent preservation of (environmental) organic proxy material, with direct or indirect relevancy for the archaeological material at hand. Geological and botanical proxies such as pollen analysis, possibly combined with elemental analysis, geophysical analysis and/or studies into fungal, algae, microorganism and -fossil communities (Non-Pollen Palynomorph (NPP) or microfossil analysis) provide key insight into ecological niches and formation history of a site, ranging from the microscopic, supra-local to regional scale. Additionally, it gives insight into human modes of interacting or intervening at various levels of ecological function, usually exhibited as non-successive, counterintuitive modes of vegetation development and taxa resilience in datasets. This paper present palaeoecological work done in conjunction with the investigations at Dagsmosse bog, south-central Sweden as part of Author 1's PhD project, focusing on the theoretical background steering its empirical scope, sampling and analysis strategy. The paper exemplifies specific archaeological adaptation of pollen analysis, i.e. the adoption of palaeoecological methodology after archaeological interests and research questions. This direction enables creation of ecologically informed and directed archaeological knowledge, conceptually useful as a baseline for countering divisions between nature and culture - both at theoretical and methodological stances. Additionally, investigations into adjacent lost, altered and submerged environments, such as underwater surveys of submerged forests and wetland areas in lake Vättern, will be discussed by reference.

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ORAL PRESENTATION

Tuesday 16th September, h.17:15-17:30

The contribution of continental malacology to the study of Mesolithic sites: one indicator, multiple research directions

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S4

While continental paleomalacology is rarely used on Mesolithic sites throughout Europe, it is in full expansion in France. In the 1990s and 2000s, initial studies were carried out on thick natural tufa sequences dating from the first half of the Holocene. These first investigations, outside the field of archaeology, highlighted the gradual recolonisation of northern France by molluscs, in particular by forest species that had left the region during the Pleniglacial period. This recolonisation went through several waves, for which biostratigraphic markers are available. Paleomalacological analyses carried out on archaeological sites dating from the Mesolithic period initially focused on open-air sites on alluvial plains. These sites often yielded malacological remains that were partly reworked by the biological activity of the soil. Since the late 2010s, with the discovery of numerous pits dated to the Mesolithic period in the Champagne region, malacological analyses have been carried out on sealed, radiocarbon-dated contexts. The malacological successions observed enabled a renewed biostratigraphic framework to be established, and chronological attributions to be proposed for features with no chronological evidence. In addition, as the Champagne sites are located on slopes and plateaus, malacology provides a valuable local bioindicator for spatializing the paleoenvironmental information collected by archaeobotanists. Finally, on a broader European scale, an arid climatic event around 6500 cal. BC seems to have halted the colonization of molluscs. The coincidence of this event with the transition to the Second Mesolithic in Europe is worthy of further investigation.

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POSTER

Tuesday 16th September, h.12:45-13:00

EARLY AND MIDDLE HOLOCENE FISHING HOOKS FROM LUBANA LAKE: PRELIMINARY RESULTS OF MULTIDISCIPLINARY STUDIES

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Early Holocene bone tools associated with the hunter-gatherer-fisher communities of Europe hold exceptional cognitive value, primarily because of their uniqueness. Among these artefacts, tools related to the exploitation of aquatic resources are particularly significant, as the aquatic environment played a crucial role in the economy during this period. However, identifying these tools is often challenging. This is because the use-wear traces formed on bone tools during fishing have not yet been fully classified, making it difficult to distinguish these weapons from other hunting equipment. In turn, artefacts associated with this type of activity, due to their form, i.e. fishing hooks, are very rare. Our poster will present the preliminary results of multidisciplinary studies of the largest collection of bone fishing hooks in Europe, associated with the hunter-gatherer-fisher communities of the early and middle Holocene. This collection originates from Lake Lubana in Latvia. We will present the results of typological analysis, combined with new radiocarbon dates, results of chemical analysis of binders present on the hooks' surfaces, and archaeobotanical studies of identified cords and wrappings. Finally, we will present the results of technological studies aimed at the interpretation of the chaîne opératoire of hook production, as well as use-wear analyses aimed at classifying the traces of use observed on these artefacts.

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High-resolution research at Mesolithic shell middens in the Cape St. Vincent area, SW Iberia

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The area of Cape St. Vincent in SW Portugal hosts a multiplicity of shell middens of various prehistoric and historical periods. Castelejo and Rocha das Gaivotas are two of the oldest Mesolithic sites, resulting from intermittent occupations of coastal foragers for long timespans that encompass the transition to the Neolithic. While the chronology and logistical function of these successive short occupations have been established, the modes and temporalities of shell mound construction and the local paleoenvironmental conditions that framed such habitual behaviour through millennia are largely unknown. To tackle these issues, high-resolution, multidisciplinary analyses of microstratigraphy, archaeomalacology, shell stable isotopes, lipid biomarkers, and charcoal, were carried out. Preliminary results from one layer of Castelejo dated to 8.5 k cal BP, revealed a reiterated tossing of marine molluscs, coralline algae and abundant wood charcoal, alongside other burnt remains of terrestrial and aquatic plants, likely corresponding to an event of continued processing and cooking of shellfish during the springtime and, to a lesser extent, late summertime. At Rocha das Gaivotas, results from a flat combustion feature dated to 7.6 k cal BP, show that terrestrial plants and possibly also aquatic organic matter was burnt, alongside few marine gastropods. These results demonstrate that high-resolution analysis in shell midden contexts is crucial to address the Prehistoric coastal populations' full range of aquatic resources foraging and their temporalities, but also the ways of collecting and processing shellfish, an idiosyncratic activity which has remained a staple through time at the region.

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POSTER

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MESOLITHIC HUNTING SEASONS: READING BETWEEN THE CRACKS OF TAPHONOMY

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Knowing the seasons of death of the hunted prey is necessary to address Mesolithic subsistence strategies, seasonal complementarity of resources and mobility systems. Traditional archaeozoology methods are accurate for the youngest individuals of species with a single, short birth time in the year. They are not, for adult individuals or extinct species and those with a spread of births over the year and two annual litters. It therefore seems appropriate to approach the hunting seasonality through the prism of cementum analysis which involves the study of seasonal records of dental cementum. This method is effective for identifying the season of death of the animal, for both present-day and fossil samples. However, in an archaeological context, dental remains undergo taphonomic alterations. They can have a greater or lesser impact on the conservation of dental cementum, due to its fragility and structural permeability, causing a partial or total impact on the legibility of the increments and, consequently, alter the reliability of the observations of the season of death. Based on dental series from Mesolithic sites in south-west France, the aim of this presentation is to discuss the micro-taphonomy of dental cementum. Our results underline the importance of conducting a more in-depth analysis in order to provide information on the taphonomic history of the tooth; increase the reliability of the results for identifying the season of death; question the relevance of applying cementum analyses in certain archaeological contexts and the complementarity of methods for discussing the seasons of death of hunted animals.

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First stage in the chaîne opératoire of animal teeth pendants at Zvejnieki: an experimental study of animal teeth extraction methods and wider social implications

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Animal teeth were amongst the most common materials utilised for personal ornament production during the Stone Age, especially in the Northern Hemisphere. The Zvejnieki cemetery (Latvia) is a clear example of this, with more than 2000 animal teeth excavated from grave contexts. Animal tooth pendants from the site have received significant scholarly attention, largely focusing on their faunal identification, type of use, placement within graves, as well as aspects of their production. Considerably less attention, however, has been given to the process of tooth extraction and the corresponding physical traces this might leave behind. This gap in knowledge is evident across early prehistory more generally, with previous studies neglecting this key aspect in the technological chaîne opératoire of animal tooth pendants. This has arguably confounded the assumption that teeth used for pendant making were readily available as pre-forms, requiring little time/energy investment in the sourcing and extracting phase. We employed experimental archaeological methods to critically evaluate possible Stone Age techniques of tooth extraction from key ungulate species, assessing the diagnostic traces created on the tooth itself and on the skull or mandible. Here we present our results and suggest that tooth extraction was not only a functional aspect of processing animal carcasses but also deeply embedded in everyday life, most notably, in cooking practices. These findings provide insights into the relationships between different spheres of hunter-gatherer life and death at Zvejnieki, specifically the acquisition of game animals, their treatment, and the rarely acknowledged interconnectedness of hunter-gatherer craft and subsistence activities.

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The Late Mesolithic deep pit site of Sannerville "Cité les Conquérantes" (Normandy)

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The Sannerville site was preventively excavated by Inrap in 2023. 34 deep truncated, conical or hemispherical pits with central over-digging were revealed, forming 30 m wide and 280 m long arcuate band. Radiocarbon dating attests to an occupation centered on the Late Mesolithic in the interval 6800-5900 cal BC. Few flints from laminar production were discovered in their fillings. Although it is in some cases questionable, the functionality of these pits probably relates here to hunting traps. In support of this hypothesis, we note the significant depth of these structures and their volume between 5 and 10 cubic meters. The hypothesis defended here is that of a pitfall trap, equipped with a trunk where the departures of the blunted branches in the central post hole would impale the animal. The malacological analysis focused on four of the pits and highlighted fairly sparse woody cover, which has no equivalent in the Normandy sequences for the same periods. Thus, the impact of the Mesolithic populations of Sannerville could be particularly high and have significant consequences on local afforestation.

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Roe deer versus chamois: the importance of distinguishing the two at la Grande Rivoire rockshelter

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Archaeological excavations at La Grande Rivoire rockshelter, conducted over nearly four decades (1986–2024), have provided significant evidence of human occupation throughout the Mesolithic period. Located in the northern French Alps at 580 masl, it displays a chronostratigraphic sequence spanning from the Early Mesolithic (10th millennium cal. BCE) to the final phase of the Late Mesolithic (6th millennium cal. BCE). The site has produced a substantial assemblage of faunal remains, enabling detailed reconstructions of local resource exploitation practices through diverse and well-preserved faunal spectra. Ongoing archaeozoological analyses reveal the presence of large game species (red deer, wild boar, ibex, brown bear, canids) as well as smaller vertebrates (lynx, badger, wild cat, mustelids, beaver, pond turtle), hunted from the immediate vicinity of the site. Notably, roe deer are underrepresented, and chamois are virtually absent throughout the sequence. This has led to multiple hypotheses regarding specialized hunting strategies, selective resource selection, and/or cultural factors influencing practices. The high degree of fragmentation observed in the osteological remains, along with the morphological similarity between roe deer and chamois skeletal elements, has raised questions about potential methodological biases inherent in traditional archaeozoological analyses. To address these limitations, Zooarchaeology by Mass Spectrometry (ZooMS) was applied to analyze collagen proteins extracted from over 100 bone samples. This approach aims to improve taxonomic identification at the species or genus level, refining our understanding of Mesolithic resource exploitation strategies in mountain environments and identifying trends in resource use.

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POSTER

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Fire use in prehistoric clay structures: Casal Leitão (Lourinhã, Portugal) through the lens of charcoal analysis

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The function of Mesolithic clay structures is still largely unknown; therefore, the study of their content is crucial to understanding their utility to past communities were using them for. The evidence of thermally altered clay suggests that combustion occurred in these structures and played a role in their formation. Consequently, the study of charcoal recovered in these structures is fundamental to understanding their use and functionality. Casal Leitão is an Early Mesolithic site recently discovered in Lourinhã, nearby Lisboa (central Portugal). So far, seven clay structures (70-80cmin diameter) containing charcoal fragments in their sedimentary infills have been identified. During the field and laboratory-controlled excavations of these clay structures, charcoal fragments were recovered both by handpicking and through flotation of sediments. Charcoal samples recovered from Casal Leitão were analysed for taxonomic determination (using wood anatomy atlases) and taphonomical alteration. The results demonstrate that Quercus spp. evergreen (oak) and Ericaceae (e.g. heather) were used as fuel. The combination of these taxa is particularly notable due to the high calorific properties of heather and the long-lasting burning of oak, usually combined in ovens and hearths. Our preliminary results indicate that there were no differences in terms of fuel choices across the different structures, suggesting that they were part of the same system and had similar functions.

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The small mammal remains from the Mesolithic site Galgenbühel/Dos de la Forca (Salorno, Bolzano, Northern Italy): preliminary remarks

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We present preliminary remarks of the small mammals recovered from the Sauveterrian site of Galgenbühel/Dos de la Forca (South Tyrol, Northern Italy). This rockshelter, frequented by hunter-gatherers during the Early Holocene, is part of the Mesolithic site system of the Adige valley bottom, consisting of other contemporary shelters such as Pradestel, Romagnano, Bus de la Vecia, Vatte di Zambana and Borgonuovo/Mezzocorona. A total amount of 3029 small mammal remains from the entire stratigraphic sequence were analysed. At least 10 species were determined, with 7 belonging to the order Rodentia and 3 to the order Eulipotyphla. The abundance of Arvicola ex gr. amphibius remains (more than 57% NR), the presence of Neomys sp. and the absence of mole remains allow us to hypothesise that aquatic habitats were widely distributed. Such habitats extended near the roosts of birds of prey, the probable agents responsible for the accumulation of the sample. The presence of arboreal species (Sciurus vulgaris, Glis glis, Dryomys nitedula) associated with others indicative of woodland environments (Clethrionomys glareolus, Apodemus gr. sylvaticus/flavicollis), together with the occurrence of Sorex minutus, which is well adapted to mesic microhabitats of the forest, are indicative of extensive woodlands, both on the valley bottoms and on the slopes. The snow vole (Chionomys nivalis) documents the presence of rocky substrate habitats. No indicators of other open habitats, such as grasslands, were found. The study documents the dominance of the forest, as expected for the Early Holocene in the alpine valley bottoms.

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The role of rapid climate changes and fire in shaping the Mesolithic lifeways in the sandy lowlands of Belgium and the S-Netherlands using palynological and microcharcoal analyses

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The complex interplay between hunter-gatherers, climate and the environment is essential for understanding Mesolithic societies. While recent climate records have identified several centennial-scale Rapid Climate Changes (RCC), such as the 9.3 and 8.2 ka cooling events, their impact on NW-European environments and Mesolithic populations remains poorly understood. Furthermore, fire regimes also played a transformative role in these environments, yet their drivers remain debated. In NW-Europe it is generally assumed that humans only started influencing their environment when farming was introduced in the Neolithic. However, ethnographic research shows that hunter-gatherers actively shape their surroundings in various ways, notably through the use of fire. Understanding how RCCs and fire regimes interacted with ecosystems and Mesolithic populations is essential for understanding the Mesolithic adaptive strategies and lifeways. This study examines these interconnections by integrating high-resolution palynological analysis and microcharcoal quantification from well-preserved peat deposits in abandoned river channels in the sandy lowlands of Belgium and the southern Netherlands. Pollen data are used to determine the synchronicity of vegetation changes with RCCs, offering insights into climate-driven ecological shifts. Microcharcoal analyses explores the extent to which fire activity was influenced by natural processes or human agency, while palaeodemographic modelling connects these environmental dynamics to human responses and adaptations. A high-resolution chronological record is employed to align the different datasets. By employing a multiproxy approach, this research investigates the causality between climatic events, fire regimes, and human behaviour, providing new perspectives on the resilience and adaptability of Mesolithic populations in the face of environmental change.

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Speleothems to trace human activities and environment in Belgium during the Pleistocene-Holocene transition

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Speleothems are currently one of the best datable terrestrial palaeoclimatic and environmental archives that additionally enable reconstructions at a resolution down to seasonal depending on individual characteristics. Their capacity to 'register' human traces such as objects or bones (Bruxelles et al., 2019; Lari et al 2015), anthropogenic breakage of speleothems (Brady et al., 1997; Jaubert et al., 2016; Delannoy et al 2024) or incorporation of soot due to human occupations of cave sites (Vandevelde et al., 2018) increase their use in archaeological contexts. In the frame of the UGent-KBIN joint Meuse Basin project (The Research Foundation Flanders, G0C9323N) we present first results on the chronology of soot incorporation in a speleothem from the Remouchamps cave, occupied during the late Younger Dryas and Early Mesolithic (Crombé et al., 2024). Black layers were deposited in the calcite between 11.0 ka and 9.3 ka. Breakage of speleothems occurred just after 77ka but we currently cannot discriminate between a human cause or a natural for this breakage e.g. frost, earthquake, animals. Environmental and climate reconstructions in Han-sur-Lesse caves' speleothems are ongoing and aim at the reconstruction of the rapid climate changes during the Pleistocene-Holocene transition.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

POSTER

Tuesday 16th September, h.17:30-17:45

Burnt artefacts and Mesolithic pyrotechnologies in the French Pre-Alps: Issues and New Developments

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With the recolonisation of temperate forests at the beginning of the Holocene, Mesolithic populations faced a renewal of available plant resources inducing changes in subsistence and technological behaviour. In many rockshelters and caves of southwest Europe, important ash and charcoal accumulations, burnt sediment, as well as a high diversity of thermally altered vestiges such as hazelnut shells, ornaments, and lithic materials testify of specific fire-related activities whose nature and purpose are still difficult to grasp. The recently excavated sites of la Baume de Monthiver and les Baumes de la Bruyère (southern French Prealps) are no exception in this matter and provide an opportunity to develop new research avenues regarding Mesolithic pyrotechnology. We expect that the study of various combustion traces or residues (macro- and microbotanical analyses, physico-chemical characterization, distribution of combustion markers within the sites) will provide new data about fire and hearth management. This will contribute to a better understanding of Mesolithic techniques and spatial organization within the wider socio-economical context. A second aspect we are currently focusing on is stable isotope analysis applied to hazel macroremains and is aimed at reconstructing the climatic context of the occupations (temperatures and water availability) as well as mobility patterns via the modelling of hazelnut acquisition territories.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

POSTER

Tuesday 16th September, h.17:30-17:45

Strange landscapes, great archives: environmental archaeology of Bohemian 'Rock Cities' Mesolithics

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S4

The northern half of Bohemia is covered by Cretaceous sandstone, on which a specific relief of rock towns was formed during the Pleistocene. It is characterised by an extreme diversity of relief with deep canyons, rock towers and a considerable number of rock overhangs. Throughout the Holocene, there is a constant accumulation of sandy sediments in these rockshelters, resulting in a unique stratigraphy that separately documents human occupation. In addition to artefacts, stratigraphy up to 5m thick preserve a rich environmental record of all types. Together with other sites suitable for environmental research (lakes, peat bogs), we can reconstruct in great detail the environment of Mesolithic hunter-gatherers from their beginnings to their gradual decline. We can thus observe a significant intensification of landscape use, with fire dynamics indicating a strong human influence. We see indications of the management of hazel as a preferred crop and the exploitation of a wide range of plant resources, including some exotic ones such as Swiss stone pine. The extreme landscape diversity of the rock towns provided a wide range of resources for hunter-gatherers, supporting their subsistence strategies until the arrival of the first farmers. Towards the end of the Mesolithic, a crisis arose, reflected in the exploitation of atypical resources and the search for alternative survival strategies, which ultimately led to the transformation of the region's inhabitants into Late Neolithic forest herders.

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Mesolithic in Europe

Session 5

People and Places

Coordinated by Philippe Crombé and Caroline Posch

Prehistoric as well as modern humans form an integral part of the landscapes which they inhabit. Likewise, Mesolithic people lived and moved within their environment; they established, and abandoned campsites – often repeatedly in the same location; they hunted and exploited the faunal, botanical, and geological resources available to them; and when moving on to other regions, they took objects along with them, sometimes over hundreds of kilometres. However, as humans are space-acquiring beings with a tendency towards territoriality, movement and contact between regions and groups might not always have been unhampered but possibly at times restricted to a lesser or larger extent.

But how can questions regarding Mesolithic territoriality and perceptions of space be tackled? And how is the interaction of people with their local environment as well as the interconnectedness with other regions and groups on a supra-regional scale visible in the archaeological record of Mesolithic sites?

Within this session, we invite contributions which deal with the reconstruction of Mesolithic landscape usage. We invite theoretical and practical papers dealing with e.g. the detection of sites in the landscape (e.g., survey, remote sensing, predictive modelling, geophysical survey); reconstructions of supra-regional contacts and territoriality (e.g., GIS-modelling, typological/taxonomic analysis, network analysis); raw material management with special focus on lithic resources (e.g., sourcing and regional to supra-regional distribution); analysis of settlement systems (e.g. site function, site location, persistent places / ancestral places).

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ORAL PRESENTATION

Monday 15th September, h.10:15-10:30

DANISH LATE MESOLITHIC COASTAL SETTLEMENT FOLLOWING THE POSTGLACIAL RISE IN SEA-LEVEL. AN EXAMPLE FROM A LOCAL PERSPECTIVE

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S5

The postglacial rise in the sea-level has played a crucial role in the Mesolithic culture development, Mesolithic economy and research in Denmark, which can be illustrated by an example from a local perspective along the coast of East Jutland, close to the town of Aarhus, Denmark. Along the new coasts, following the rise in sealevel, in the late Mesolithic a predominantly coastal culture known as the Erteboelle culture is found (5.400-4.000 bc). Here, within a late glacial moraine topografi, a fjord was formed during the late 6th millennium BC. The fjord forms the frame of a late mesolithic Erteboelle coastal settlement system. Several settlements have been excavated, including one of the largest settlements from the Erteboelle culture, and contemporary with this a shell midden well-known as a caracteristic element from this culture epoch. The settlement system and investigations testify to a rich marine biotope, documented thanks to well-preserved organic refuse layers. The settlements can be associated to the rising sealevel and sea shore displacement. The coast and the landscape around the fjord also forms the base to the introduction of agriculture with some of the earliest neolithic settlements found in Denmark, c. 3.950 bc.

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ORAL PRESENTATION

Monday 15th September, h.10:30-10:45

STONE AGE ATLANTIS ON LOLLAND-FALSTER? THE VALUE OF RECLAIMED LANDSCAPES AND THEIR ARCHAEOLOGICAL POTENTIAL

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S5

In the water rich landscape of Denmark, coastal areas had a significant influence on where the Mesolithic sites were located. Since the modern Danish territory has no large height differences, changes in sea level had a massive effect on the availability and loss of land. For instance, the significant sea level rises seen during the Atlantic biozone inundated coastal settlements of the Maglemose and Kongemose culture but similarly created access to new resource area for the people of the subsequent, Final Mesolithic Ertebølle culture. The sea level has not changed much from the Late Holocene until historic times. Since then, several of the shallow fjords have been drained to provide agricultural land. The major archaeological investigations in the Femern project, prior of the Fehmarn Belt tunnel, an 18 km, submarine connection between Denmark and Germany, showed that especially the dammed areas must be considered a kind of Mesolithic Atlantis. Areas with great opportunities and potential to explore settlement structures and landscape utilization in the Late Mesolithic because almost the entire material culture is preserved and (economically) accessible. In this presentation, I will present three selected areas on Lolland-Falster where the preservation conditions and archaeological potential are assumed to be as great as what was seen during the Fehmarn project. I will contextualize this with economic considerations, due to their relevance for contract archaeology, and discuss their scientific and strategic value, also in comparison with underwater archaeology.

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ORAL PRESENTATION

Monday 15th September, h.10:45-11:00

SYNERGY AND SIMULATION - CONSTRUCTING LARGE-SCALE FRAMEWORKS FOR PROSPECTING SUBMERGED MESOLITHIC LANDSCAPES

Butler Micheal * (1), Walker James (1), Harding Rachel (1), Fitch Simon (1), Cook Hale Jessica (1), Murgatroyd Phil (1), Fraser Andy (1), Pelling Robyn (1), Urmston Ben (1), Gaffney Vince (1)

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S5

The submerged palaeolandcapes of the North Sea (Doggerland), would have once been a focal point of contact between regions across north-west Europe. Extending across much of the North Sea basin between continental Europe and Britain, it provided the means for the recolonisation and settlement of north-west Europe after the last glacial maximum. Yet, this area has largely remained terra incognita for archaeologists, due to the logistical difficulties of investigating these areas. The Submerged Landscapes Research Centre at the University of Bradford is the culmination of over a decade's worth of research aimed at understanding the palaeogeography of this vast frontier from the terminal Pleistocene to its disappearance in the mid-Holocene. Using innovative seismic mapping techniques, environmental analyses, sedimentary DNA, predictive modelling, and analytical methods, we have explored the make-up of this landscape and how it changed over time until its final inundation. In merging this data, large-scale computer simulations are being developed to explore the prehistoric populations who once inhabited this dynamic landscape. It is hoped that this will assist in the identification of areas of archaeological potential, to inform future expeditions. This paper summarises the work completed and ongoing at the Submerged Landscapes Research Centre at the University of Bradford across a number of projects, including Unpath'd Waters, Taken at the Flood, Life On The Edge, and Subnordica.

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ORAL PRESENTATION

Monday 15th September, h.11:30-11:45

MESOLITHIC HUNTER-FISHER-GATHERER (HFG) LANDSCAPE INTERACTION IN COASTAL ATLANTIC EUROPE – ANCHOR POINTS IN A FLUID WORLD

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S5

It has long been recognised that Mesolithic populations were living in coastal areas across Europe and exploiting resources distinct to these areas such as fish, shellfish and marine mammals. This appears to have culminated in the Late Mesolithic in formation of large and perhaps complex societies, based on specialist coastal adaptation. While evidence for these communities has increased considerably in recent years, the nature of archaeological investigation tends to be 'site' specific, meaning we lack understanding of how HFGs interacted with their wider landscape and environment. Investigation has also focused on the economic and subsistence benefits of coastal adaptation, ignoring less tangible motivations. This paper presents the approach and first results of a current PhD study conducted under the HORIZON MSCA Doctoral network ArCHe (www.arche.uio.no). The study re-evaluates existing data to better understand social and communicative meaning and function and cosmological aspects of HFG populations in coastal areas with special focus on the use of the landscape and seascape. The project approaches this issue using several methods. This paper focuses on the application of GIS techniques, to known site distribution, including viewshed analysis and least cost analysis to existing data from three discrete coastal areas of Europe, Southeast Norway, Northern Spain and Western France. The three areas under study are very different in their current climate, topography, preservation and survival, as well as material expression. Comparing them will allow us to bridge knowledge gaps between these areas and give a fuller understanding of hunter-gatherer-fisher landscape interaction in Mesolithic Europe.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Monday 15th September, h.11:45-12:00

PREDICTING AND PROTECTING LITHIC LANDSCAPES – UNDERSTANDING THE DISTRIBUTION OF LITHIC SCATTERS ACROSS DARTMOOR, UK

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S5

This paper explores the spatial distribution of prehistoric lithic scatters on Dartmoor, a granite upland and national park in the southwest of England, and the surrounding lowlands. We present a summary of new GIS predictive modelling developed over the last three years to characterise the extent and significance of Dartmoor's lithic scatters, highlighting the relationship between lithic and peat distributions. We describe how the model was tested using a citizen science methodology in 2023. Results of comparisons between upland and lowland areas will be presented. These involved the predictive model dataset, lithic scatter and control datasets from Dartmoor and lowland regions in the southwest peninsula. Analyses incorporated Least Cost Path Analysis and consideration of three environmental characteristics (aspect, elevation and slope). Combining these results with reviews of regional palaeoenvironmental change, wayfinding, extant hunter-gatherer groups and nutritional landscapes has allowed us to identify key differences between the environmental characteristics of upland and lowland lithic scatters with important implications for understanding Dartmoor's role in hunter-gatherer lifeways and future landscape management practices.

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ORAL PRESENTATION

Monday 15th September, h.12:00-12:15

MESOLITHIC WATERLOGGED SITES IN THE NORTH OF LOWER SAXONY

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S5

The existence of Mesolithic people in the north of Lower Saxony is mainly known from surface scatters hampering our understanding of the complex relation between changing landscape and hunter-gatherer societies during the first millennia of the Holocene. After the end of the last glaciation in northern Germany, a time of changes in the natural environment began. This includes reforestation, the sharp rise of the sea-level and the growth of fens and bogs. All of this must have had a strong influence on people who lived in this area. As part of the DFG-funded project "The Mesolithic in Northwest Germany" at the Lower Saxony Institute for Historical Coastal Research (NIhK), wetland sites with evidence of Mesolithic artifacts are being investigated for their early Holocene landscape development and the human traces from that time. In this interdisciplinary project, botanists and geologists at the NIhK support the work of the archaeologists. In a project phase of intense survey, sites with particularly positive conditions were identified. These have been investigated in recent years through prospections and excavation. The presentation focusses on the latest investigations in the area of the "Obere Wümmeniederung" south of Hamburg. There, a large collection of mostly early Mesolithic surface finds from the edge of a wetland area that comprises fen bogs and the headwaters of several streams and rivers provides an area with promising preservation conditions. We are going to present the first results from surveys, excavations and laboratory investigations.

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ORAL PRESENTATION

Monday 15th September, h.12:30-12:45

FORMING AXES, FORMING BONDS – A GEOCHEMICAL STUDY OF LITHIC RAW PROCUREMENT STRATEGIES IN THE CENTRAL NORWEGIAN MESOLITHIC

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S5

During the Mesolithic of Southern Norway people seem to have shifted from a highly mobile lifestyle to an increasingly sedentary way of life. An increase in the use of local lithic sources, settlement clusters around particular habitats and resource patches, and the construction of more permanent dwellings, all point in this direction. The distribution of different macro tool types and raw materials have been used to indicate the extent of regional groups and interaction patterns along the Western Norwegian coastline. However, little attention has been given to Central Norway – a region with a varied topography and climate, and which is situated between different tool traditions. Flint was the preferred raw material for lithics in this area, but this is not the case for macro tools, where various local fine-grained igneous and sedimentary rocks dominate. Could these tools and raw materials be a key to increase our understanding of the developments of local adaptations, incorporation of new technological impulses and inter-regional contacts in the period? Through a thorough geochemical and technological analysis of selected Mesolithic macro tools, we aim to uncover lines of contact and patterns of environmental and cultural interactions in the Middle and Late Mesolithic of Central Norway. By utilising the NTNU University museum's collections of both stray finds and excavated sites, we wish to challenge old postulations on territoriality and regionalisation and create new datasets for exploring Mesolithic landscape usage.

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ORAL PRESENTATION

Monday 15th September, h.12:45-13:00

Hunter-Gatherers in the Mountains: interdisciplinary research into Late Glacial and Mesolithic landscapes of the Cairngorms, Scotland

Warren Graeme * (1), Bishop Rosie (2), Buchanan Deborah (1), Butler Micheal (3), Claeys Lola (4), Crowell Clara (1), De Smedt Philippe (4), Doughty Alice (5), Fenn Kaja (6), Lifton Nathaniel (7), Kelley Sam (1), Mann Bruce (8), Moucheron Martin (1), Pendleton Simon (9), Redmond James (2), Skelton Richard (10), Verhegge Jeroen (4), Youngeagle Dakota (1)

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This paper synthesises the most recent phases of ongoing interdisciplinary archaeological, geomorphological and geological research carried out to examine Late Glacial and Early Holocene hunter-gatherer landscapes in the Cairngorm Mountains, Scotland since 2021. This work allows us to understand the changing relationships between people and place and reconstruct how mountain landscapes were used by hunter-gatherers in the Mesolithic. Our research has utilised a diverse range of methodologies, including those designed to deal with the challenges of survey and fieldwork in mountain landscapes. Our work has involved archaeological excavations and post excavation analyses; innovative forms of cosmogenic nuclide dating of ice retreat; characterisation of landforms and sediments; mathematical models of ice extent; the development of predictive models of Mesolithic site location; the development of policy advice for those managing these landscapes; and a range of outreach and engagement activities. This has provided outstanding new evidence of hunter-gatherer activity in the largest mountain landscape in Britain and Ireland; new data on the timing and character of landscape change from the Late Glacial into the Early Holocene; and indications of the relationships between the two.

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ORAL PRESENTATION

Monday 15th September, h.13:00-13:15

New Palaeolandscape Reconstructions for the Northern Adriatic: Coastal Environments and Ecologies of the Last Hunter-Gatherers

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The Northern Adriatic region is one particularly rich in Mesolithic sites, as testified by the numerous discoveries made in the Eastern Alps, the Trieste and Slovenian Karst, and Istria. While decisive insights have been obtained for higher altitude areas, our knowledge of the lowland occupation in this period is still limited to stray finds and occasional surface scatters. This is because of a variety of factors, including the geomorphological setting of the region, the impact of human activities on the current plain, and post-glacial sea level rise. Due to the latter, the Early Holocene coastlines are now submerged, thus strongly affecting archaeological visibility and hindering our understanding of the Mesolithic in the region. Therefore, this paper will present new palaeolandscape reconstructions for the Northern Adriatic between 9000 and 5000 cal BC, with the aim to explore the possible environments exploited by Mesolithic coastal communities in the area. This will be based on the analysis of unpublished sub-bottom profiles, which will be integrated with available sea level index points and environmental data. Thus, different paralic and coastal environments will be identified, changing over space and time and ranging from lagoons and estuaries to freshwater marshes and deltas. Finally, data from archaeological sites in the area will allow to investigate the relation between hunter-gatherers and these environments, with significant implications for a number of issues, including coastal resources exploitation and the spread of farming in the region.

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ORAL PRESENTATION

Monday 15th September, h.14:30-14:45

Holocene Hunter-Fisher-Gatherer Occupation of Adriatic Islands: Example of Korčula Island

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S5

While various factors, such as research biases, the challenges of detecting hunter-gatherer sites, Holocene landscape transformations, and the (subsequent) scarcity of Mesolithic sites in Dalmatia, have impacted our understanding of this period, the archaeological record suggests that Holocene hunter-gatherer sites in the region are predominantly located on islands. Most of these sites are concentrated on the island of Korčula, highlighting its significance for studying Mesolithic occupation in the Adriatic. Although the Adriatic coastline has undergone significant changes since the Last Glacial Maximum—due to ongoing warming and subsequent sea-level rise—many present-day islands were already isolated landforms by the beginning of the Holocene. This indicates that Mesolithic hunter-fisher-gatherers had adapted to and exploited island environments early on. This presentation provides an overview of the Holocene hunter-gatherer occupation of Korčula, examining potential differences between sites on the island and identifying specific characteristics of insular Mesolithic life compared to that of the mainland. Situated along the Transadriatic Bridge—a natural corridor that facilitated interactions between the eastern and western Adriatic—Korčula also offers valuable insights into the Mesolithic-Neolithic transition of the entire Adriatic region. The high density of Mesolithic sites on the island, along with unique site features, suggests that Neolithisation processes on the islands may have followed different trajectories than those observed in coastal and inland Dalmatia. This raises the possibility that local hunter-gatherer groups played a more active and influential role in shaping the transition to farming in these insular contexts.

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ORAL PRESENTATION

Monday 15th September, h.14:45-15:00

Predictive modelling and settlement strategy analysis in Friuli-Venezia Giulia during the Mesolithic

Faraoni Matteo * (1), Fasser Nicolò (1), Cecchetti Marzio (1), Bertola Stefano (2) (1), Visentini Paola (3), Visentin Davide (1), Pizziolo Giovanna (4), Fontana Federica (1)

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Within studies related to settlement and land-use strategies adopted by the Mesolithic hunter-gatherers, Northeastern Italy and, in particular, the Friuli-Venezia Giulia region, represent a high-potential geographical area to test the efficacy of predictive models, thanks to the numerous Mesolithic sites discovered since the second half of the 20th century. The distribution of these sites covers a wide range of environments, from low and high alluvial plains to mid and high altitudes, suggesting a great adaptability of human groups to different geo-morphological contexts, vegetation and ecotones. Despite the richness of the archaeological evidence, the quantity and distribution of sites appear underestimated and do not provide an exhaustive picture of the settlement dynamics. We developed a predictive approach using a GIS software to understand this variability and identify specific behaviours related to diverse environments and periods (Early Mesolithic vs. Late Mesolithic). To this purpose, several cultural (e.g. lithic raw materials, artefacts density, site function), geographical (e.g. elevation, slope, aspect, solar radiation, hydrology, wetland, landuse) and geological (e.g. lithology, chert outcrops) variables were combined with paleoenvironmental data. Lastly, the statistical significance of each variable and of their combinations were tested using RStudio Software. The model developed aims to identify the zones with the highest potential for Mesolithic occupation in Friuli and to understand the specific characteristics and factors that may have attracted Mesolithic groups in relation to specific units of landscape characterised by geographically homogeneous features.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Monday 15th September, h.15:00-15:15

REEVALUATING THE MESOLITHIC OCCUPATION OF WESTERN LIGURIA: PRELIMINARY RESULTS

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S5

Western Liguria has long been considered a conundrum in the larger panorama of research on the Mesolithic of Mediterranean Europe, largely due to the absence of dated Mesolithic assemblages from secure Ligurian stratigraphic contexts. This has led to the area being considered by some a 'no man's land' during the early Holocene. However, recent discoveries have forced a radical rethinking: the discovery of the in situ burial of a female infant dating to the Early Mesolithic (Sauveterrian) at Arma Veirana in the Neva Valley and the reanalysis and dating of human remains from Arma di Nasino, located in the Pennavaire Valley immediately west of the Neva Valley both provided indications that this long-held view was incorrect. In 2022, our team began a project aimed at redating a few key Western Ligurian sites, recontextualizing them and reanalyzing the relevant artifactual assemblage that had been collected from them over the decades. Here, we present the first results of these efforts, focused not only on new dates and first-hand stratigraphic observations, but also on the reanalysis of original field documentation and of archaeological material from targeted levels within them. The resulting data from Arene Candide, Arma dello Stefanin, and Arma degli Zerbi allow us to establish with certainty the presence of Sauveterrian-age human occupations at both these sites, thus demonstrating a Mesolithic presence from the coast to mid-altitude valleys of the hinterland.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Monday 15th September, h.15:15-15:30

Open-air Mesolithic sites in the Paris Basin: locations, spatial organisation and chronology. Overview of 15 years of preventive archaeology

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S5

After fifteen years of preventive archaeology, many Mesolithic sites have been discovered and excavated in the Paris region. In 2024, 53 archaeological sites (or levels) were identified in Île-de-France region. Between 2008 and 2023, 14 purely Mesolithic excavations were carried out in the Paris region. All were open-air sites. 47 dates from 12 sites are available. Sites from the 8th millenium are the most numerous and belong to the Beuronian. At the same time, numerous burials have been discovered and dated to the end ot the 8th millenium. The increase in Mesolithic excavations has been accompanied by a major effort in terms of excavation methods (extensive stripping, three-dimensional scoring of all the remains, excavation by quarters of a square metre, sieving). Frequently, the remains are scattered over several dozen square metres of surface area (from 20 to 100 m²) and several tens of centimetres in thickness (up to 30 or 40 cm). Most of the preventive Mesolithic excavations carried out in recent years have been in valley bottoms, while too few have been on plateaux. Furthermore, valley bottom sites, concentrated along the major rivers (Seine, Oise, Marne), are intensely reoccupied. It is therefore still difficult to understand the relationship between these two environments. Preventive archaeology and the many related discoveries now make it possible to draw up a chronocultural and palethnological assessment of the spatial organisation of the sites and their functions. Some elements about the exploitation of the territory and the frequentation of certain contexts will also be provided.

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ORAL PRESENTATION

Monday 15th September, h.15:45-16:00

Rock crystal and place during the Mesolithic in the Swiss Alps

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Throughout the Mesolithic, people's use of the Swiss Alps extended to all vegetation zones and persisted for millennia. The evidence from the Central and Southwestern Swiss Alps, esp. at higher altitude, is typified by an almost exclusive use of rock crystal/quartz as lithic raw material. This is in contrast with what is known from many other upland and lowland regions in Switzerland, where a combination of local and non-local raw materials tends to make up lithic assemblages. Most of our knowledge about Mesolithic activity in the Swiss Alps comes from survey finds and test-trenching. Still, recently discovered and analysed high-elevation occupation sites in the Valais, as well as the discovery of extraction sites, such as the Fuorcla da Strem Sut, confirm that the quartz/rock crystal used, is of regional origin and was purposefully extracted and used extensively. Both extraction and occupation sites were often repeatedly visited, forming nodal points in the landscape, sometimes over millennia. Although our knowledge of these sites is limited, together with observations of decisions on raw material use, they provide insights into alpine Mesolithic land-use and territoriality. Using old and new archaeological data, it will be attempted to answer questions such as: Can surface finds and test-trenching sites provide insights into alpine Mesolithic land-use and territoriality? What can extractions sites tell us about Mesolithic senses and use of place in the Swiss Alps? Is the singular use of rock crystal in certain regions an indication of Mesolithic territories?

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ORAL PRESENTATION

Monday 15th September, h.16:00-16:15

First Mesolithic cultural and environmental dynamics at La Grande Rivoire: a 3,000-year record of human activity in the Northern French Alps

Angelin Alexandre * (1), Chautard Marie-Amandine (2), Derbord Louise (3), Doubercourt Edgar (1), Ferrandon Jeanne (2), Henry Auréade (4), Martin Lucie (5) (6), Nicod Pierre-Yves (5), Picavet Régis (7), Rigaud Solange (8), Robbe Jocelyn (3), Vignier Aymeric (9)

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La Grande Rivoire rockshelter, located at 580 m asl in the northern French Alps, was discovered in 1986 and features a six-meter stratigraphic sequence. The site, occupied over a span of 10,000 years, offers significant insights into the Holocene period, particularly on the First Mesolithic (ca. 9200-6500 cal. BCE), which is the object of this presentation. Recent excavations (2020 to 2024), have focused on the earliest Mesolithic levels in the central area of the shelter, which has been preserved by its natural overhang. These investigations have enhanced the chronostratigraphic framework and deepened our understanding of how the Mesolithic groups interacted with their environment. Notably, the excavations uncovered deeper anthropogenic layers dating to the 10th millennium BCE, previously undocumented in other areas of the site, and which are particularly rare at a regional level. Paleoenvironmental data from the Mesolithic sequence provide crucial information regarding the impact of climate change on the landscapes over time, wild plant and firewood gathering practices. The archaeological assemblage is rich throughout the sequence, featuring various faunal remains that suggest the exploitation of locally available species. Additionally, the lithic industry reveals diverse flint-knapping techniques along with different manufacture objectives and ornamental artifacts provide evidence of varying cultural influences. These findings offer new insights on Mesolithic mobility patterns and contribute to a first attempt at reconstructing the different strategies of occupation and resource exploitation in the subalpine mountain range of Vercors and its surrounding areas over a diachronic scale of more than 3,000 years.

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ORAL PRESENTATION

Monday 15th September, h.16:45-17:00

The Early Mesolithic occupation of Malga Staulanza in the context of the peopling of the Belluno Dolomites (Italy) during the Sauveterrian

Cecchetti Marzio * (1), Bassetti Michele (2), Bertola Stefano (1), Visentin Davide (1), Fontana Federica (1)

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S5

The recently excavated site of Malga Staulanza (Belluno Dolomites, Italy) adds important new data and offers the chance to test the old hypotheses. The site is an open-air high-altitude settlement (1.681 m a.s.l.), occupied during the Late Glacial (Late Epigravettian) and the Early Holocene (Early Mesolithic, Sauveterrian). The lithic industry related to the latter phase presents typical Sauveterrian features and confirms the existence of a common know-how. However, compared to the other highland sites of the region, the site's altitude is unexpectedly low. Thanks to a multi-disciplinary approach involving lithic technology, raw material analysis, traceology and spatial analysis, it was possible to infer the reasons that led Mesolithic people to occupy this area during the Early Holocene. A complex relationship with local topographic and environmental features emerges from our study. In particular, the driving factor seems to be the presence of an intramorenic pond and its natural resources. Particularly significant is also the presence of a clear-out testified by the uncovering of a tree-thrown around which most of the activities took place. These data represent a further step forward in understanding the Mesolithic peopling of one of the best-known territories throughout Europe.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

POSTER

Monday 15th September, h.17:00-17:15

MESOLITHICS OF BOHEMIAN KARST

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Hunter-gatherer settlement in the Bohemian Karst has been studied for many years; however, the Mesolithic period has rarely been the central focus of specialist research. Despite this, the region holds significant settlement and burial evidence from this era. These remains are found across various landscape types—including under rock shelters, in caves, and at open-air sites. The Bohemian Karst is not only rich in archaeological material, but also hosts numerous important palaeoecological sites. Unfortunately, the archaeological and palaeoecological records are often studied separately and remain largely unintegrated. This poster presents new information within the context of existing knowledge about Mesolithic occupation in the region. To deepen our understanding, we focused on two key aspects: Radiocarbon dating of the sites, and Integration of archaeological and palaeoecological records. A central example is the Skalice rock shelter near Měňany. While this site has long been recognized for its valuable palaeoecological record, its archaeological materials remained unanalyzed until 2024. Recent research has revealed important evidence of both Mesolithic and Final Palaeolithic occupation. A new series of radiocarbon dates has been obtained to refine the chronological framework, and archaeological finds—particularly lithic assemblages—have been studied in greater detail.

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POSTER

Monday 15th September, h.17:00-17:15

PALÙ DI BRENTONICO (TRENTO, ITALIA). A NEW MESOLITHIC SITE IN THE FRAMEWORK OF THE ALPINE MID-MOUNTAIN FREQUENTATION

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S5

The climatic changes of the Early Holocene strongly influenced landscape transformations in the Southern Alpine area, particularly along the Adige Valley (Trentino, Northeastern Alps) and surrounding highlands. In this region, the emergence of wetlands provided new resources for Mesolithic hunter-gatherers, who adapted their subsistence and settlement strategies by focusing on repeated occupations of valley-floor sites and high-altitude hunting camps. However, little information is available regarding Mesolithic activity at mid-altitudes, especially around lake basins or other wetlands. Recent investigations at the Palù di Brentonico site, located at approximately 700 m a.s.l. on Monte Baldo (Province of Trento, Italy), have provided new data to shed light on these aspects.

The archaeological significance of this area has been recognized since the 1950s, following the discovery of an Early Medieval necropolis just a few meters upstream from the site. New excavations conducted in 2023 and 2024 have uncovered a complex stratigraphic sequence, revealing repeated human activity spanning from the Early Mesolithic to the Middle Neolithic along the shores of an ancient lake.

This poster presents the first data on these occupations and outlines the ongoing analyses aimed at reconstructing paleoenvironmental context of the site and its organization over time, highlighting how human groups adapted to transformations in the surrounding landscape during different settlement phases.

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POSTER

Monday 15th September, h.17:00-17:15

Persistent places, but for who?

Brogan Ashley * (1)

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This paper provides the first study within the project: "Revealing the invisible: Identifying preserved Pennine Mesolithic sites in the face of climate change". Numerous Mesolithic finds have been recovered from across the Pennine region of northern England, which have led to the allocation of 'persistent places' within the West Yorkshire Historic Environment Record. This study takes a statistical approach to assess the links between key collector areas, accessible places and erosion patterns to establish the extent of bias within the Historic Environment Record within the West Yorkshire Pennine region. Numerous collectors of flint artefacts have been active within the region for decades, which has created the dataset used for site distribution today. Whilst find density within these persistent places is high, perhaps the vast quantity of data produced has less to do with preferred Mesolithic places and may instead be a product of the collecting practices within the region. Before further steps can be taken to create a predictive model of 'invisible sites' using the Historic Environment Data, this paper tackles the issue of collector impact on the current dataset and asks... persistent places, but for who?

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MESO2025 - 11th International Conference on the Mesolithic in Europe

Session 6

Settlements and Dwellings

Coordinated by Daniel Groß and Nicky Milner

This session delves into the details of Mesolithic settlement patterns and dwellings through intrasite analysis. Recent archaeological excavations and methodological advancements have broadened our understanding on Mesolithic dwellings, prompting a reevaluation of traditional interpretations and unveiling fresh insights into prehistoric lifeways. Increasingly, evidence is contesting the model of fully mobile lifestyles and seasonal occupation patterns, and thus presents unique challenges and opportunities for understanding settlement organisation at a micro-scale level.

Key areas of discussion include the latest developments in the field, such as high-resolution excavation techniques, advanced dating methods, and innovative scientific and analytical approaches. By zooming in on individual settlement sites, we aim to unravel the complexities of Mesolithic settlements and dwelling structures, including their architectural features, spatial organisation, and functional aspects. Moreover, we will critically examine the sources of evidence, considering the reliability and interpretative implications of archaeological data, stratigraphic sequences, and environmental proxies.

Through a synthesis of interdisciplinary perspectives and case studies from diverse geographic regions, this session seeks to address fundamental questions regarding Mesolithic settlement patterns and the socio-economic dynamics that were the foundation of these communities. We want to discuss the intertwinement of artefacts, constructions, elusive features and activities and also welcome theoretical and methodological studies that advance our knowledge of Mesolithic lifeways and prehistoric settlement organisation on an intrasite level.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Tuesday 16th September, h.12:30-12:45

EXCAVATION AND ANALYSIS OF VERY LARGE MESOLITHIC SITES IN THE CONTEXT OF PREVENTIVE ARCHAEOLOGY : FEEDBACK FROM THE SAINT-MARTIN-LA-GARENNE EXCAVATIONS (ÎLE-DE-FRANCE, FRANCE)

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The Mesolithic site of Saint-Martin-la-Garenne, in the Paris area, is located along the Seine river, about 50 kilometers west of Paris. It was discovered in 2018, following an archaeological survey which identified Middle Mesolithic occupations over an area of around 10 hectares. Following these surveys, a number of preventive excavations have be carried out between 2019 and 2022, including three focusing on the Mesolithic period. These three excavations cover a total area of around 3 hectares, but had to be carried out with limited time and resources. The excavation methodology had to adapt to these constraints, as well as to the nature and quality of conservation of the occupations, which were not always the same, with the risk of Mesolithic occupations mixing. One of the major challenges was to identify the areas with the greatest potential for information and analysis, in the middle of thousands of square metres with no real empty zone of Mesolithic remains. These sites are characterised by exceptional densities of remains, testifying to the intense frequentation of the area during the Middle Mesolithic : the majority of which is flint, but also macrolithic sandstone tools, faunal remains, bone industry and ornaments. This presentation will provide an opportunity to discuss the methodological choices we have made and had to make, and also to demonstrate the scientific contributions that excavation of sites of this type, with multiple constraints, can make.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Tuesday 16th September, h.12:45-13:00

How long is a short stay?

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The Early Mesolithic period in Norway is securely placed on the microscale level. The settlement pattern is highly mobile and each site reflects single core families or small task groups. The sites often have a similar size and lithic composition. Comments and discussions of "short" occupations/stays flourish in the literature, but are rarely defined. How long is a short stay? If we do not have the means (or courage) to define the length of an occupation, the Early Mesolithic people have no room to grow and expand, socially or spatially. In this paper we ask the question: Was the Early Mesolithic really so monotonous? Can we discuss length of stays and degree of demographic complexity in a better way? Using both new and old criteria's for duration of occupation, for example; number of lithic artifacts, dwelling structures, technological strategies and apprenticeship, we want to shed new light on Early Mesolithic society and settlement structure. New excavation methods, uncovering larger coherent areas, also indicate a potential for discussing larger group composition during this period. Key words: Length of stays, lithic analysis, technological strategies, settlement patterns and group size, coastal and mountain sites

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Tuesday 16th September, h.13:00-13:15

Contemplations on Mesolithic cooking pits/pit hearths in Southeastern Norway and Western Sweden

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In 2022, the Museum of Cultural History excavated close to 40 structures interpreted as pit hearths/cooking pits at the site Knattås 2 in Sarpsborg municipality, Southeast Norway. The site presents the largest occurrence of this type of archaeological structure in Southeastern Norway/Western Sweden, and the radiocarbon dates from the site indicate several revisits of varying intensity through roughly a millennium spanning from c. 7700–6600 BCE. In general, Mesolithic cooking pits/pit hearths within the mentioned geographic regions are present on sites from around 7500 BCE onward, with only stray occurrences being older. Around the same time, we can observe certain changes in the technological aspects of the lithic traditions in the region, as well as climatic changes. The presentation will aim to consider the pit hearths from the Knattås site within the larger currents of change in the archaeological record during the Middle Mesolithic with regards to settlement patterns and landscape use, as well as to climatic and technological changes happening throughout the period.

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ORAL PRESENTATION

Tuesday 16th September, h.14:30-14:45

Unveiling the frozen Past: reindeer hunting and landscape use at the glacial Fetegga site in the Alpine wilderness of Western Norway

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The recent global warming-driven melting of high-altitude ice patches in the Norwegian mountains has led to the discovery of unprecedented archaeological assemblages linked to reindeer hunting and communication systems. However, as most glaciers and ice patches melted during the Holocene Thermal Maximum and reappeared at the transition to the Neolithic/sub-boreal period, very few Mesolithic ice patch sites have been recorded until the discovery of Fetegga in 2014. Fetegga offers a window into the complex social dynamics and adaptive strategies of Late Mesolithic hunter-gatherers. The strategic use of landscape and intimate knowledge of reindeer behaviour reflect sophisticated hunting practices that required cooperation, planning, and a deep understanding of the environment. The findings at Fetegga challenge traditional narratives of Mesolithic societies as simple and static, revealing a high degree of social complexity and economic specialisation. The site's well-preserved hunting structures and associated artefacts provide valuable insights into the ways Mesolithic people actively shaped their landscapes to create favourable hunting conditions, demonstrating their agency and resilience in the face of environmental changes. This study contributes to a broader understanding of human landscape use and adaptation in extreme environments, offering new perspectives on the socio-economic and cultural dimensions of Mesolithic life. By highlighting the interplay between environmental knowledge, social organisation, and technological innovation, the research at Fetegga underscores the dynamic and interconnected nature of Mesolithic societies.

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ORAL PRESENTATION

Tuesday 16th September, h.14:45-15:00

MESOLITHIC DEEP-PIT SYSTEMS IN FRANCE

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Over the past fifteen years, several research projects have been carried out in mainland France on the general theme of Mesolithic and Protohistoric deep pits. Thanks to discussions and field discoveries, a number of milestones have been reached on what can be considered a technical innovation of the Mesolithic period, both from a methodological point of view and in terms of scientific typology and chronology. They do not, of course, exhaust the subject, and many questions remain unanswered. The latest project, led by a network of Inrap researchers, has mapped all pit deposits dating from the Mesolithic period. Several hundred deposits of varying size and complexity have been discovered in recent years, from the north to the south of the country. The number of deposits, the regularity of discoveries and the chronological range involved, from Early to Late Mesolithic, confirm not only the global and enduring nature of this technical innovation, but also its disconnection from known cultural groups.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Tuesday 16th September, h.15:00-15:15

Reconstructing the spatial organisation and architecture of Mesolithic structures at Star Carr

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Spatially plotted microwear results within three post-built structures at the Early Mesolithic site of Star Carr, North Yorkshire have evidenced activity zones associated with diverse stone tools used to process a variety of materials (e.g. wood, bone, antler, plant, hide, meat, fish). With 341 lithic artefacts analysed, this research represents the first microwear study focused on the post-built structures at Star Carr. Zones of activity within one of the structures suggest that the working of some materials was more spatially restricted than others, despite high densities of flint deposition. Additionally, differences were observed in tool use across each structure, highlighting that intra-site and inter-site variability in Mesolithic structures should be anticipated. Building on these findings, this paper will also present recent digital and experimental work on reconstructing the architecture of Mesolithic structures from Star Carr, which have shown how variation in form and use can be visualised and presented to a public audience.

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ORAL PRESENTATION

Tuesday 16th September, h.15:15-15:30

The Mesolithic sites of Neuenwalde, Northern Germany, and the advantages of settling along wetland edges

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The Mesolithic find area of Neuenwalde in the vicinity of the recent German North Sea coast is known already for several decades. There, larger stone tool surface scatters stretch along a sandy promontory above vast wetlands. Recently, a DFG funded project at the Lower Saxony Institute for Historical Coastal Research started to unravel the early Holocene landscape development of that area. It turned out that paludification and erosional processes shaped the landscape in a much a more detailed scale than expected, having created a picture of a highly structured, patchy landscape. Along with this, an intense archaeological survey led to the detection of different activity zones and time slices of stone age settlement and landscape interference. Traces of human inhabitation in different landscape settings gave insight into various activities. They range from well preserved fire sites and excavated flint clusters to pit features on the bog edge. In this presentation we are going to discuss the different aspects of Mesolithic dwelling activities in relation to the reconstructed landscape features and their development through time. Integrating archaeological and ethnological legacy data from other contexts, we are going to explore the role of wetland surroundings in long settlement traditions or as places of repeated use. Applying an ontological approach to the Mesolithic inhabitation in these areas, we would like to go beyond the ecological and economical perspective of hunter-gatherer landscape use and perception.

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ORAL PRESENTATION

Tuesday 16th September, h.15:30-15:45

A HOLEY TRINITY: REASSESSING THREE MESOLITHIC SITES ON THE EAST COAST OF IRELAND – TOWARDS NEW NARRATIVES

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This paper presents the results of a PhD thesis completed in 2024, dedicated to reassessing three shell-bearing sites on the east coast of Ireland excavated between 1946 and 1970. Their initial interpretation came to play a significant role in shaping the Later Mesolithic narrative on the island. After re-examining the archives from the original excavations, and revisiting the sites with contemporary (geo)archaeological methods, this research proposes to break down current interpretations and suggests new connections and narratives. Following Catherine Dupont and Grégor Marchand, who warned that shell-bearing sites should not be considered a site type "but rather one of a variety of stratigraphic units that make up the total settlement pattern", we question the relevance of "midden" as a category, which tends to emphasise commonalities between very diverse layers, features, sites, and landscapes, and to understate connections with non-shell-bearing sites. Instead, we propose an alternative interpretation, centred on the concept of terraforming understood as "a practice that involves the manipulation, alteration or construction of elements of the landscape by moving physical material" (Grier and Schwadron 2018). By doing such, we widen the perspective beyond an identity of material (shells) to explore some parallels with other sites of the same period – such as the "platforms" identified in the Irish Midlands, but also non-shell-bearing coastal sites. As a meaningful practice, terraforming transcends site types, material, local trends, scale in time and space, and landscape features, and suggests new connections in the past, and new collaborations in the future.

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ORAL PRESENTATION

Tuesday 16th September, h.15:45-16:00

A HOUSE IN THE REEDS, WOODEN CONSTRUCTIONS IN THE LAKE. THE MESOLITHIC SITE COMPLEX DAGSMOSSE JUSSBERG IN SWEDEN

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A series of Mesolithic sites with well-preserved organic material has been discovered in the Dagsmosse wetland, Sweden, during the last decade. This presentation focus on the settlement site Dagsmosse Jussberg, which was located on a reed island in a shallow lake during the phase of occupation (c. 9000-8500 cal BP). Sections of the site were destroyed by peat-cutting shortly before it was found by archaeologists. The remaining parts consists of a settlement including a large pit feature, currently interpreted as a sunken floor house. That a sizeable wooden construction made of a large number of well-preserved wooden stakes, as well as two wicker fish traps, have been located on the former lake bottom next to the site add to the complexity, not only of the Jussberg site but of the Dagsmosse wetland as whole. The presentation summarizes the preliminary results of the excavations and analyses of this multifaceted Mesolithic site complex.

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ORAL PRESENTATION

Tuesday 16th September, h.16:45-17:00

DWELLING PLACES IN THE NETHERLAND, THE KAMPEN HUT IN BROADER PERSPECTIVE

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Mesolithic sites in the Netherlands are mainly recognized as flint scatters. Especially in Pleistocene sandy sediments, where organic artefact and other features are not well preserved. Excavation methods are therefore primarily focused on sieving sediments in grid cells to obtain lithics. At the Kampen Reevediep site (province of Overijssel, Netherlands), surprisingly, we found seven postholes in a small hexagonal configuration, beneath a high density flint scatter. The relation between the scatter and the post holes led to an interpretation as a dwelling structure. Only a handful of other (possible) structures were known from the Netherlands, so it was difficult to compare the structure with other sites in the region. So, we had to search for other analogies in North West Europe and found many similar structures in Scandinavia and Great Britain. This led to new questions, where are the other structures? Do we miss these dwelling structures due to the way we excavate or to taphonomical processes in the Rhine Meuse delta? And if there are more similar structures do we have to change our models on Mesolithic mobility and land use? In this presentation we present some papers about the Mesolithic dwelling in Kampen and how it could affect future field strategies and models on Mesolithic mobility.

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ORAL PRESENTATION

Tuesday 16th September, h.17:00-17:15

Three Early Mesolithic (9th millennium BC) sunken house floors in south-eastern Finland

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For almost two decades, archaeological field work has been carried out annually in the Kuurmanpohja area (currently the city of Lappeenranta) in south-eastern Finland. These studies have produced significant new data, material and insight into the post-glacial settlement of the area and its subsequent adaptation to local conditions. Archaeological excavations have been conducted at five settlement sites, which have been radiocarbon-dated approximately between 8700 and 8100 BC. At three of these sites (Saarenoja 2, Muilamäki, Hiekkasilta-Hiekkakuoppa), sunken house floors (pithouses) have been discovered, which clearly indicates that this type of building was already known and used by the first settlers of the area and that this tradition continued for several centuries. What all these constructions have in common, in addition to their semi-subterranean structure, is that they have been recognized primarily based on clearly defined distributions of lithic finds and burnt bone fragments (high-density find scatters) and, secondarily, on varying patches of stained or coloured soil (cultural layer). This presentation provides a description of these buildings and their characteristics, as well as briefly discusses their broader context.

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Ljungaviken, a well-preserved Swedish site with over 58 Mesolithic houses and a dog burial

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Ljungaviken, on the Baltic Sea coast in southern Sweden, is an early Holocene settlement of significant importance. The site comprises the remains of at least 58 houses with different types of constructions, over 800 hearths, numerous flint artefacts and preserved bone material in some areas. Radiocarbon dating of 127 samples indicates occupation between approximately 6,600 and 6,200 BC. However, most of the site was probably used for a shorter time period, based on the interpretation of the transgression process. The excavations conducted in 2016 and 2020, prior to residential construction, covered over 10,000 square metres, revealing a well-preserved settlement protected by 0.5 to 4 metres of sand and gyttja. It should be noted that the actual site was larger than the excavated area. The Mesolithic houses constitute a unique northern European complex, preserved under extensive transgression layers. Several sunken floors were also filled with gyttja during the transgression process, preserving many details. The various forms of building types found are interpreted primarily as being associated with different functions, with residential buildings often featuring sunken floors, while other types of buildings are constructed differently. Analyses of the bone material preserved in a few houses, together with construction details, indicate settlement during the winter months. Details also suggest that the houses were used for several seasons. The preliminary results suggest a high degree of social complexity, as evidenced by the varied housing constructions, waste disposal practices within some abandoned houses, and the burial of a dog.

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ORAL PRESENTATION

Tuesday 16th September, h.17:30-17:45

Invisible practices in Mesolithic shell mound construction

Simões Carlos * (1), Aldeias Vera (1), Arias Pablo (2), Bicho Nuno (1), Cascalheira João (1), Diniz Mariana (3), Gonçalves Célia (1)

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In the Holocene, estuaries formed in the valleys of the Sado and the Tagus Rivers in Portugal, where the repeated human occupation at specific sites resulted in accumulation of large Mesolithic shell mounds. The complex stratigraphy of these sites has been noted since the earliest investigations in the 1860's. Over the last decade, systematic micromorphological analysis of the shelly deposits and their stratigraphic contacts have revealed specific human actions involved in the formation of the mounds. Microstratigraphy and thermal alteration analysis of shells allowed for the identification of two major primary human actions: single tossing of shells, and transported mixing of previously deposited debris. Some of these debris were transformed in situ by compaction (possibly by trampling) and mass burning. Deposits likely resulting from shell cooking, were also identified. All these actions are invisible in macroscopic observations but become apparent through high-resolution analysis of the microstratigraphy layers showing striking similarities at three of the largest known sites: Cabeço da Amoreira and Cabeço da Arruda, in Muge, and Poças de São Bento in the Sado. Mesolithic hunter-gatherers deliberately produced and allocated shelly deposits and intentionally transformed and manipulated them repeatedly. Such repetition of common practices supports the idea of a protracted construction of these sites by through the same practices, across Muge and Sado contexts.

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POSTER

Tuesday 16th September, h.17:45-18:00

A Late Mesolithic household at Strandvägen, Motala

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Dwellings symbolize culture, give meaning to everyday activities and provide central places for a range of household activities. At Strandvägen in Motala, eastern Central Sweden, five dwellings have been studied in terms of indoor and outdoor activities. Here structural elements as well as spatial depositions of waste from bone craft, utilized lithics and bone- and antler tools, firewood selection and choices in diet and food consumption is used to illustrate hunter-gatherer households during the Late Mesolithic in Scandinavia, c. 5500-5000 cal BC. By studying methods of fishing and remains of fish processing it can be concluded that the inhabitants must have had ways of storage at the site. Through a combination of archaeobothanical studies and chemical analyzes we also confirm the exploitation of starch rich rhizomes and root tubers as part of the diet at the settlement. Post-built constructions, indoor hearths and estimated floor areas suggest the use of the dwellings as winter residences and probably utilized by multiple family units. Coeval ritual remains and burials emphasizes that these social units may have required rules for social interactions, for example in the form of decorated objects, ritual deposits, and burials.

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POSTER

Tuesday 16th September, h.17:45-18:00

Elusive dwellings in the Early Mesolithic of Western Norway

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Coastal Western Norway is a landscape that is rich in marine resources and holds a large amount of Early Mesolithic sites. Around 60 have been excavated in Vestland and Sunnmøre regions in Western Norway over the past 40 years, yet the presence of clear and proven dwelling structures from this period are scarce. Several of these locations are untouched by later human activity such as later stone age phases, agriculture or development, which should lead to optimal conditions for finding in-situ structures. Why are dwellings and other types of structures so hard to detect, is this related to methodological problems, or natural degradation processes after 10 000 years in the ground? Datable material is also extremely rare, and most sites are dated typologically based on lithic technology. To this day only a handful of sites have been successfully C14-dated to the Early Mesolithic within our study area. We want to explore the different factors that are affecting the archaeological record on this matter, and present three case studies from Øygarden outside Bergen in Western Norway, representing sites that contain possible dwelling structures.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

POSTER

Tuesday 16th September, h.17:45-18:00

Sedentary lifestyle in Late Mesolithic Western Norway?

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Sunken floor dwellings, rich deposits and large amounts of finds on Late Mesolithic sites of coastal Western Norway, in combination with C14-dates covering a long period of time, has long been considered an indication of a more sedentary way of life, in opposition to a highly mobile Early Mesolithic society. We will present two case studies of Late Mesolithic sites with sunken floor dwellings where depth studies of stratigraphic sequences, combined with different scientific approaches, suggest that these sites may be the result of multiple short visits rather than continuous occupation. Does this mean we have to reconsider our ideas of mobility in this period? In this study we will take a closer look at how to interpret C14-dating results from these sites and the implications this has for how we look at Late Mesolithic settlements of this kind in the region.

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POSTER

Tuesday 16th September, h.17:45-18:00

Mesolithic settlements (9th to 6th millennia BC) at Roquemissou (Aveyron, France)

Perrin Thomas * (1), Arbez Louis (2), Boboeuf Marc (2), Bouby Laurent (3), Bréhard Stéphanie (4), Defranould Elsa (2), Gardeur Marine (2), Henry Auréade (5), Hervé Gwenaël (6), Le Bourdonnec François-Xavier (7), Lejay Mathieu (2), Marquebielle Benjamin (1), Mauran Guilhem (2), Mensan Romain (2), Philibert Sylvie (2)

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The site of Roquemissou (Montrozier, Aveyron, France), on the south-western edge of the Massif Central, in a middle mountainous region, provides one of the most important regional stratigraphy of recent prehistory. Late Palaeolithic and Mesolithic occupations are particularly well documented. They show a succession of occupations from the middle of the 12th millennium BC to the middle of the 6th millennium BC. They then continue throughout the Neolithic period until around 2100 BC, forming a sequence of over 9000 years. During the Mesolithic period, occupation took place in a densely forested environment close to the river, where groups exploited wild plant and animal resources. They are mainly documented by their material production (flint, stone and bone industry), but also by a succession of different human settlements. Numerous hearths of various types are associated with these activities. There are also several pits, one of which stands out for both its size and the nature of its fill. Anthracological and stratigraphical evidence suggests that it was probably used for smoking hides. Such features suggest relatively long periods of occupation, although it is of course difficult to assess this objectively.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

Session 7

Technology

Coordinated by Ana Cristina Araújo and Éva David

This session focuses on one of the most important aspects of Mesolithic societies: their knowledge and their ways of converting raw materials into objects. Technology is a form of cultural expression that reveals different traditions, peoples, landscapes, and modes of production and operation, contributing to the knowledge of economic, social and symbolic aspects of humanity. Stone, bone, antler and shell, among other materials that have survived time and erosion, have been processed and used by groups for food, shelter, warmth and comfort, adornment, clothing, and so on. In this session we would like to bring emphasis on the enormous richness and diversity of technological solutions implemented by Mesolithic groups across time and space. We will explore the potential of new instrumentation (e.g. XRF, FTIR, 3D digital microscopy), approaches (e.g. artificial intelligence) and other analytical infrastructures and statistical tools for the study of Mesolithic technologies. Particular attention will be paid to current advances in the study of: (i) manufacturing processes; (ii) raw material procurement and circulation; (iii) function and use of objects; (iv) recognition of fashions and styles; and (v) role of experimentation. We would like to approach these subjects in a relational way, drawing on variables of past human behaviour that triggered differences in technical choices over various chronological sequences and/or geographic contexts.

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ORAL PRESENTATION

Thursday 18th September, h.12:15-12:30

TECH LUMIÉRE – PROCESSING PAST STORIES THROUGH TECHNOLOGY

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Tech Lumiére – Processing past stories through technology The term "Tech Noir" is a genre of fiction which presents technology "as a destructive and dystopian force that threatens every aspect of our reality". Playing with opposed terms, we propose that archaeologists dealing with studies of technologies are in the "Tech Lumiére" genre of scientific storytelling, in which technology is presented as a decisive and instrumental force in shedding light on cultural expressions of the past. In this paper we will use data from lithic studies of assemblages from mountain and coastal sites from Early Mesolithic Norway to detect differences in strategies when it comes to raw material selection, technological processes, learning situations and demography. An important aim is to demonstrate the potential in assessing the entire lithic material, and not only a few selected categories. Above all, we want to focus on the stories and individuals found behind the modes of production and traces discovered on the sites. Keywords: lithic analysis, technological organization, skill transmission, coastal and mountain sites

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ORAL PRESENTATION

Thursday 18th September, h.12:30-12:45

MESOLITHIC TECHNOLOGY AND KNOWLEDGE TRANSFER: THE DIFFUSION OF THE HANDLE CORE PRESSURE CONCEPT

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In this presentation I will discuss the Mesolithic Handle Core Pressure Concept (HCPC), focusing on its technology, chronology, and knowledge transmission. The HCPC, is a lithic technology that was used to produce small blades from single-fronted cores, and requires social learning for its diffusion and maintenance. Statistical analysis of attributes on cores and blades from Northern Europe reveals morphological similarities across the region, but also highlights regional technological differences, particularly related to core preparation, which correspond to two separate chronologies east and west of the Baltic Sea. Cores from Scandinavia show continuity with an earlier pressure-based blade technology from the Early Mesolithic. These findings suggest the diffusion of the HCPC through both vertical and horizontal social learning. The research underscores the role of mobility, material availability, tradition, and social interactions in the complex transmission of knowledge during the Mesolithic, offering insights into the long-term processes that shaped communication and learning in past societies.

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ORAL PRESENTATION

Thursday 18th September, h.12:45-13:00

LITHIC TECHNOLOGY ON THE WESTERN-ESTONIAN ARCHIPELAGO

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This presentation is about my PhD project that studies the lithic technology on the Western-Estonian archipelago. In this thesis lithic assemblages from Saaremaa, Hiiumaa and Ruhnu islands are analyzed. Sites date from the Mesolithic 7th millenium BC to Early Metal Age 1st millenium BC. The study uses the chaîne opératoire approach to analzing stone tool technology. The project consists of three articles: first one concentrates on the lithic technology of the first settlers on the islands, second article looks at lithic technology the Comb Ware Culture Complex (CWC) period and the last article studies lithic technology of Early Metal Age Estonia which mostly concentrates on Saaremaa island which is located west of Estonian mainland. The main aims of the research are to describe the lithic technology starting from pioneer colonist to see how these people adapted to the local island environment, raw material availability and to see possible migration patterns based of their stone tools and raw material usage. Secondly, it looks for changes in technology among the CWC settlement sites and looks for technological remnants of original colonists in CWC assemblages. Lastly I look at how the introduction of metal affected the use and development of stone tools.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Thursday 18th September, h.13:00-13:15

First assessment of the Early Mesolithic lithic assemblage from Contrada Pace (Tolentino, Central-Adriatic Italy)

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The Mesolithic in Italy is characterised by an uneven distribution of archaeological evidence, with higher concentrations of sites between the south-eastern Alps and the northern Apennines. In the central-southern regions, the number of identified sites is significantly lower and it almost exclusively consists of caves and shelters, explored over limited areas.
The open-air site of Contrada Pace, discovered in 2019 on a terrace of the Chienti Valley (Tolentino, Marche), stands out for its excellent preservation. Here, extensive excavations uncovered a seasonal settlement with various structures, including combustion features, escargotières, and tree stumps. In light of all these features, Contrada Pace can be seen as a kind of settlement so far unknown in the Italian Mesolithic. This work aims to discuss the first results of the techno-economic and typological studies of the lithic industry from US10, which was already analysed from a zooarchaeological, malacological and carpological perspective. US 10 is one of the most relevant archaeological features, consisting of a large and rich scatter of lithic artefacts and bone remains associated to a wide escargotière composed of tens of hundreds of land-snail shells of Helix cf. pomatella.
The lithic assemblage from US 10 is mostly realised on local cherts and can be assigned to the Sauveterrian tradition, representing the first evidence of an Early Mesolithic occupation in the Marche region. The numerous refittings that were realised provide valuable insights into the reduction sequences and production objectives, contributing to outline the technical traditions and socio-economic behaviour of local Early Holocene hunter-gatherers groups.

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ORAL PRESENTATION

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EXPLORING THE MESOLITHIC OF THE CANTABRIAN LITTORAL (NORTHERN IBERIA): A PRELIMINARY APPROACH TO THE LITHIC INDUSTRY OF EL TORAL III ROCK SHELTER

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The Mesolithic of the Cantabrian area in northern Iberia has drawn scientific interest since the early 20th century, mainly focusing on "Asturian" sites but also other Mesolithic contexts. Among them, El Toral III (Asturias, northern Spain) is currently under study. A 2009 rescue excavation identified several stratigraphic units with archaeological remains, including shell midden deposits. Radiocarbon dating places the occupation levels within two Mesolithic phases, with continued use of the site into the Neolithic, Copper Age and Bronze Age. This study examines the lithic technology and typology of the Mesolithic units at El Toral III, focusing on raw material provenance, production systems, and the manufacture of retouched tools and microliths. The objective is to reconstruct lithic chaînes opératoires to better understand resource management, exchange networks, and mobility patterns throughout the site's occupation. The findings will help position El Toral III within the broader framework of Mesolithic hunter-gatherer-fisher communities along the Atlantic coast during the Holocene. Additionally, they will enable comparisons with other local and regional Mesolithic sites, offering new insights into the adaptive strategies and cultural dynamics of these prehistoric populations.

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ORAL PRESENTATION

Thursday 18th September, h.14:45-15:00

CHANGES, RUPTURES AND TRANSITIONS: REFLECTIONS FROM THE MESOLITHIC OF THE EBRO VALLEY

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Technology is a conservative social practice that usually shows a progressive evolution. However, occasionally, the archaeological record presents radical transformations that break with the previous industrial tradition and replace it. In both cases, technological change occurs, but the mechanisms and factors that catalyse it necessarily respond to very different socio-historical realities. A good example of this is the Mesolithic of the Ebro Valley, which presents three very different transitional scenarios over time: 1) a progressive genesis of the Sauveterrian industries and their link with the industrial traditions of the final Late Glacial; 2) the particular development of the Mesolithic of notches and denticulates and its break with the technology of the northern Pyrenees; and 3) - the rapid adoption of the technology of the Late Mesolithic. Based on these examples, we want to reflect on how we analyse changes, ruptures and transitions in the archaeological record and their interpretative implications.

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

Activities and resource management in Early Mesolithic highland hunting shelters. Technological data from Mondeval de Sora - VF1 and Prà Comun, Passo Giau - PC1 (Belluno Dolomites)

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The Early Mesolithic occupation of the Alpine regions is well known, thanks to the hundreds of identified sites. For the populations of the Early Holocene, high-altitude environments represented a significant and non-negligible component of their economic and cultural systems. Among the numerous identified sites, rock shelters located under large boulders that feature multiple occupation phases play a crucial role in territorial mobility within high-mountain environments. Among them, the site of Mondeval de Sora - VF1 (Belluno Dolomites, Northeastern Italy) stands out for the richness of its archaeological findings. In recent years, a new rock shelter with rich Early Mesolithic layers has been discovered at approximately 3 km from it and excavated. This site is known as Prà Comun, Passo Giau - PC1. Currently, data on the economic role of these sites, in particular from a spatio-temporal perspective, are scarce, and their complexity is insufficiently detailed. However, the techno-traceological analysis of a sample of lithic artefacts from these two sites has provided new insight into the economic system that drove the occupation of such sites within the studied micro-regional context. The investigation has explored activities and utilisation needs, enabling a re-evaluation of the adopted technological systems. These preliminary data shed light on a small portion of the economic and organizational mechanisms of Mesolithic communities and help us define the role of these shelters within the seasonal mobility and resource management strategies applied in the Alpine landscape.

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Thursday 18th September, h.15:45-16:00

Differences in the lithic production on quartz in Central Sudan during Mesolithics

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Quartz emerges as ubiquitous raw material utilized extensively in lithic production across diverse geographic and temporal contexts. Here we focus on central Sudan and demonstrate through lithic collections from two Khartoum Mesolithic (ca. 9000–5000 cal BC) sites the variability in quartz tool production in this region. The compared sites are situated in different ecological niches and differ in the sources and types of quartz available as a raw material. All the studied material comes from excavated and radiocarbon dated contexts. The collection from Sphinx (Jebel Sabaloka), situated ca. 5 km from the Nile, shows predominant use of pebble quartz from the river terraces. In Shaqadud S1-B (Jebel Shaqadud), situated ca. 50 km from the river, quartz which eroded from the surrounding rocks mostly prevails. We will present the geological characteristics and knapping properties of the quartz used in these two collections to contextualize its significance as a raw material, describe the main characteristics of the studied assemblages and compare the findings to discern regional or chronological differences between the studied sites.

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TECHNOLOGICAL CHOICES OF LATE MESOLITHIC COASTAL POPULATIONS: A FUNCTIONAL APPROACH ON THE KNAPPED LITHIC TOOLS IN THE OSLO FJORD REGION, NORWAY

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The paper presents preliminary results of the MSCA postdoctoral project TeCh-Coast - Technological Choices of Coastal populations, that seeks to understand the technological choices of the coastal human groups in the Late Mesolithic (6300-4500 cal BC) in SE-Norway through the application of use-wear analyses of knapped lithic tools. As an intersection of marine and terrestrial biotopes, the coast is a critical ecological space for many human groups in past and present times. In the Scandinavian peninsula, from the end of the last Ice Age, human populations have lived and travelled along the coast, gaining from both biotopes. Technological systems are an important factor in the human/non-human relation. Food acquisition, toolmaking, travelling, or dwelling are some of the activities that have been performed by human groups, each representing specific and socialized technological choices. Knapped lithic tools are among the most common remains on the sites in the Oslo fjord region dated to the Late Mesolithic period. However, no exhaustive functional analyses have so far been performed on these materials. By combining macro and microscopic observations on large samples of materials of several sites, this project intents to reconstruct the functionality of a part of the coastal technological system. The identification of the treatment of marine materials with lithic tools will be a major clue to characterize the specific technological choices of the coastal groups, allowing a cross-regional comparative study of contemporary sites from the Bay of Biscay, as well as facilitate future comparisons with other coastal contexts from the Atlantic Europe.

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TECHNOLOGY, USE-WEAR AND RESIDUE ANALYSES OF THE SAUVETERRIAN LITHIC ASSEMBLAGE FROM GALGENBÜHEL (SOUTH TYROL, ITALY)

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The Mesolithic rock-shelter site Galgenbühel/Dos de la Forca, located in the Adige Valley (South Tyrol, Northern Italy), was frequented by Sauveterrian groups from the mid-9th to the mid-8th millennium BC cal. Sauveterrian lithic technology is often described as reflecting limited technical investment, especially compared to earlier and later prehistoric periods. Furthermore, due to the preponderant role of the armatures in the Alpine Mesolithic, along with the faunal remains largely dominated by the Ungulates, studies traditionally focused on hunting. However, recent techno-functional studies have revealed a wider range of practices, amongst which evidence for specialised tasks carried out at different sites. This pattern is consistent with a sophisticated settlement strategy, with sites fulfilling different roles within a dynamic subsistence system. Our study focuses on the lithic assemblage from Galgenbühel/Dos de la Forca, a site which is well known for the exploitation of wetland resources, especially fishing, with a specialization in pike fishing during the Boreal. We employed a multi-integrated approach, combining technological analysis with use-wear analysis (both low- and high-power approach) and residue analysis (combining 3D microscopy and FTIR spectroscopy). Our results revealed the occurrence of varied technical behaviours in producing, hafting and using lithic artifacts and suggest the presence of differentiated subsistence activities. These findings contribute to a broader understanding of the adaptive strategies employed by Mesolithic communities in the Alpine region where logistical mobility and site specialization likely played a pivotal role in managing environmental constraints and optimizing resource exploitation.

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Looking at function on geometric microliths: the case of the mesolithic shellmidden of Cabeço das Amoreiras, Portugal

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Geometric microliths represent one of the most discussed topics in material culture in Portugal, regarding the Late Mesolithic as well as the neolithization process. Specifically, for the Sado Mesolithic shellmiddens they were subject to long studies which interpreted them as chronocultural markers. However, on a functional level, there is little understanding if different typologies and production choices pertain to specific uses of these utensils on the communities that inhabited the Sado river valley, nor for what they were, in fact, used. As such, this paper will present a comparison between a morpho-typological and use-wear analysis on the geometric microliths of Cabeço das Amoreiras, retrieved from the 1950's and 2010's excavations of this site. The analysis demonstrates a standardized usage of these tools, with small apparent variation both on their production, hafting and use. This study improves our understanding on the methodological choices used by the last hunter-gatherers of the Sado river valley pertaining to geometric microliths and demonstrates a more standardized economy and usage than previously considered for these tools.

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Thursday 18th September, h.17:15-17:30

How many techniques to apply a microburin blow? An experimental approach for exploring the microburin blow technique variability

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The microburin blow technique is a crucial element in the chaîne opératoire that involves the production of geometrics. In Europe, it sporadically appeared at the end of the Upper Paleolithic, but it reached its maximum diffusion during the Mesolithic. Discussion concerning when this type of fracture transformed from an unintentional breakage into a deliberate method (Krukowski microburin vs ordinary microburin) is still open. Microburins were first identified by Chierici in 1875. Later, several pioneers faced this production waste, but it was only in 1980 that J. Tixier explained in detail the technical process behind this blank segmentation technique. Past works proposed two force application techniques for obtaining a microburin fracture: percussion and pressure. Despite some observations on the efficacy and mode of operation of both these modalities have been published, a detailed analysis for identifying micro-, meso- and macroscopic criteria for differentiating them has never been developed. To answer this question, we propose a first experimental attempt to distinguish different microburin blow techniques by applying several combinations of retouchers (mineral vs organic), force application modes (pressure vs percussion) and types of anvil (mineral vs organic). A low-and high-power approach was carried out to encompass all manufacturing traces and identify a high range of diagnostic criteria. This combined approach applied to the Early Mesolithic assemblage from Mondeval de Sora (BL, Italy) turned out to be a consistent methodology highlighting the existence of a common and normalised technical procedure for applying the microburin blow during the Sauveterrian of the Southern Alpine region.

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ORAL PRESENTATION

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The material and its use : combining petrography and technology to understand how a rock is exploited. The case of the microquartzite in the Mesolithic Brittany (France)

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Because of its geology, Brittany stands out for the absence of primary flint deposits. From the end of the Upper Palaeolithic, knappers had to make do with flint pebbles scattered along the offshore bar. In Argoat (inland Brittany), they also used metamorphic or sedimentary fine-grained rocks which presented knapping abilities. This petrographic diversity is first and foremost a challenge for the lithic experts, since the stigmata of knapping are imprinted in an atypical way on some of these rocks ; as for, the debitage products do not fit neatly into the classic categories adapted to flint pieces. However, it is also a tremendous asset as studies into the origin and distribution of the raw materials provide an insight into territorial structures. The first objective of our work is to study the petrography of these rocks in order to determine their geographical origin. By focusing our investigations on one of them, the microquartzite of the Elorn valley in north-west Brittany, we were able to identify several deposits during field walking prospectings. The microquartzite samples collected are used to supply the reference collections in PETRA lithotheque of the CReAAH (UMR 6566, CNRS). This work forms a necessary basis for the development of reliable and well-supported reference systems. Petrographic analysis have identified several facies of microquartzite whose representativeness varies according to the deposits. The second main objective of this program is to compare petrographic and technological analysis in order to verify the hypothesis of possible differential management of these facies during the Mesolithic.

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The Moynagh Points from Moynagh Lough: using pXRF analysis to determine variability within an assemblage

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Moynagh Points are Late Mesolithic to Early Neolithic elongated ground stone artefacts that are found only on the island of Ireland. They are made from a variety of fine-grained sedimentary stones that have not previously been identified. This group of just over fifty artefacts is poorly understood with little known about their raw materials, manufacture, morphology or use. Moynagh points are usually found as isolated finds, and rarely in pairs, however ten points were found at Moynagh Lough, which gave them their name. As well as being internally varied, the points from Moynagh Lough are visually distinctive from the rest of the known Irish examples, both in form and in raw material. This study combined geological identification and pXRF analysis to examine the stone used to make the artefacts from Moynagh Lough in order to characterise the internal variation or similarity within the group. The group was then compared to two visually dissimilar artefacts from different regions to establish the likelihood of different raw material sources between regions.

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Use of birch bark tar in Prehistory in the Eastern Baltic Region

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Birch bark tar has been discovered at numerous sites across the Eastern Baltic, dating from the Mesolithic period to the early Iron Age. The earliest evidence, from Mesolithic settlement sites in Estonia, dates back to approximately 8600 BC. Birch bark tar is primarily found in the form of traces of tar on composite bone and stone tools, as well as separate lumps, including chewed pieces. A multidisciplinary study of tar collections from Estonia, Latvia, and Lithuania included chemical analyses, microscopic examinations of surface treatment traces, direct radiocarbon dating, 3D scanning, photogrammetry, and computed tomography. These investigations provided new insights into the manufacture and use of composite tools and tar adhesives. Experimental studies, including the reproduction of tar and slotted tools, shed light on Stone Age technologies, enhancing our understanding of the techniques and innovations employed by prehistoric communities in the region. Moreover, our research revealed a unique tar figurine at the Pulli site in Estonia, which may be the oldest known portable figurine from the Eastern Baltic region. This shows that along with the most recognized use as an adhesive for composite, slotted, and hafted tools, as well as for pottery repairs, tar also played a role in artistic production from the earliest period.

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Friday 19th September, h.09:00-09:15

New insights into the role of bone tools in the acquisition of bark by Mesolithic communities: The case of 'bone daggers' from Dąbki 9, Poland, and bevel-ended tools from Pulli, Estonia

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During the early Holocene, bark was an important raw material in addition to wood. Bark was used in the construction of roofs and floors, and served as an important material in the manufacture of various objects, including containers, rafts and even boats. The bark of certain trees, such as birch, was also distilled to make tar. Unfortunately, little is known about how this raw material was obtained and what kind of tools Mesolithic hunters might have used in this type of activity. Recently, new data on this issue have been provided by the wear analysis of bevelled bone tools from the Early Mesolithic sites of Pulli in Estonia and the so-called "bone daggers" from Dąbki 9 in Poland. The traceological analysis of these artefacts has provided new insights into the methods of obtaining bark and the nature of the collected material. It has shed light on the importance of bone tools in the procurement of plant materials, particularly in the debarking of wood by Mesolithic hunter-gatherers. In addition, the studies reported here included extensive experimental research and classification of use-wear traces identified on experimental tools used in different types of debarking activities, which are also discussed.

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ORAL PRESENTATION

Friday 19th September, h.09:15-09:30

Retrieving Osseous Biographies: development and transmission of technologies in the Baltic Sea region c. 9500–3000 BCE

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Osseous production has generally been understudied in relation to lithic technology, partly due to the rarity of preserved bone materials from the Stone Age. However, the eastern Baltic Sea area offers several exceptions. The research project Retrieving Osseous Biographies addresses the knowledge gap about manufacturing processes, traditions, knowledge transmission and social networks related to osseous craft among hunter-fisher-gatherer societies across the Baltic Sea region, c. 9,500-3,000 BCE. The project examines four unique artefact collections from Sweden, Latvia and Estonia, and covers artefact studies, osteological and taphonomic analyses, radiocarbon dating and ZooMS-analysis. While many objects have been typologically attributed to different parts of the Stone Age, a significant portion of these implements remains undated. Bones also provide valuable biodata on animal populations and environmental conditions, offering insights about human choices, trade and exchange of objects and/or raw materials. We further investigate the environments in which these objects were created, used, and discarded through different palaeoecological analysis. Preliminary results suggest that a similar morphology can be observed on different types of tools over long periods of time. However, there are also noticeable differences within the region that are difficult to quantify so far, due to the very different taphonomic histories of the collections.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

POSTER

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

Polishing and sharpening in the Mesolithic: evidence of practices in the extreme west of the Iberian Peninsula

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Polishers emerged in the Mesolithic as a new category of tools, related to specific activities complementary to artifact production. As in other locations, the identification of these types of artifacts in Portugal reveals the need to optimize the performance of tools for tasks primarily of an economic nature, also constituting direct evidence of the technological complexity of these populations. The generalization of polishers will result in the development of polishing and abrasion techniques, which characterize the production methods of early Neolithic societies. These objects can take on various morphologies and are associated with different environments, demonstrating intentional productions linked to specific functions and materials. The objective of this paper is to present this contrast, based on collections from sites such as Toledo (Araújo, 2011), Gaspeia (Soares and Silva, 2020), and Barranco Horta do Almada 1 (Rosa, 2017).

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POSTER

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

TOOTH-DERIVED TOOLS AND TECHNOLOGICAL TRACES: ISSUES IN IDENTIFICATION

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Beaver mandible tools with working blades fashioned from modified incisors are among the most commonly found bone implements at Mesolithic sites in the forest zone of Eastern Europe, suggesting their significance for the local population. Paradoxically, their specific scope of application remains unclear. While wood would have been an obvious working material, it rarely survives at Stone Age sites, and when it does, the surface condition is seldom adequate for detailed analysis. Moreover, diagnostic traces of incisor use on wooden artefacts are exceptionally rare. Technological traces potentially associated with beaver incisors or other animal teeth have also been identified on elk antler and broad bones surfaces. To investigate and elucidate the role of dental enamel working edges in producing certain types of technological traces, particularly in the context of object decoration, a series of experiments was conducted. The results were subsequently compared with trace samples from the assemblage of the wetland site Zamostje 2 (Upper Volga region, ca. 7th–6th millennium cal BC).

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POSTER

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Exploiting little flint pebbles: the Mesolithic lithic assemblage of Riparo Blanc (Monte Circeo, central Italy)

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Riparo Blanc is a small rock shelter located along the Tyrrhenian Sea coast of Monte Circeo, in central Italy. It was the first Mesolithic site identified in the Italian peninsula at the end of 1960s. A recent reassessment of the site has revealed Riparo Blanc to be a significant Early Mesolithic burial ground in the Mediterranean area (see Altamura et al.). The Early Mesolithic occupation levels, whose excavation were resumed in 2016-2019 by Università di Roma Sapienza, have yielded a large number of shells, predominantly marine, along with a smaller number of land shells, charcoal remains, and fewer bone fragments from mammals, fish, reptiles, and birds. Notably, the site has also revealed the presence of a substantial collection of Columbella rustica shells (see Mussi et al.). Although it was never thoroughly studied, the lithic assemblage from Riparo Blanc was recognized as highly distinctive by Mariella Taschini in the 1960s since the outset of research, and likely related to the specific subsistence activities carried out at the site. It is composed of around 2000 artefacts from old excavations and 300 from new investigations and primarily manufactured on local marine pebbles by using bipolar technique. Furthermore, at least two small fragmented bladelets/flakes made on obsidian were also retrieved from the recent excavations. A new study aims to reconstruct the technical objectives and the reduction sequences applied to the small local marine pebbles, through a techno-economic analysis and an experimental program. The potential for conducting a traceological analysis will also be assessed.

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POSTER

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

Quartz Scrapers: Evidence of Curated Technology and Personal Gear in Northern Sweden

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At the excavation of a late Mesolithic site in Borgvattnet (Jämtland parish, northern Sweden), quartz was the dominating raw material. Quartz in Mesolithic Scandinavia is typically considered a wear-and-tear material, meaning that not much effort was invested in crafting formal tools. During the classification of the lithic material from the site, the vast majority of the quartz consisted of unmodified flakes and fragments. However, a small number of formal tools in the form of scrapers were identified. The scrapers consist of modified flakes that have been repeatedly retouched and re-hafted. The scrapers found at the site were worn out, replaced and discarded. This can be interpreted as a form of curated technology, which is unusual in quartz assemblages. Use-wear analysis of the scrapers reveals wear indicating that they were used on wood, skin, and rawhide/meat in a scraping motion. Furthermore, traces of resin and possible hafting traces were also observed. Recent studies have identified similar tools made from other raw materials at several Mesolithic sites in Sweden. This project presents the initial results of an ongoing study aimed at understanding this type of curated scrapers in Northern Sweden. Due to the significant maintenance invested in the scrapers, they can be seen not only as evidence of a curated technology but also as an expression of personal gear in hunter-gatherer communities in late Mesolithic Sweden.

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POSTER

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

Using a double awl from the SOMK Mesolithic site in Sardinia

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During the Last Glacial Maximum Sardinia was part of the largest Mediterranean island, the Sardo-Corsican Massif, but split from it when the sea level rose and never had any direct connection with the distant continental landmass. The first firm evidence of human peopling is of Early Holocene age, as recorded at a handful of Mesolithic sites and notably at S'Omu e S'Orku (SOMK), a now collapsed rockshelter on the western coast dated 9,500-7,800 cal BP. Obsidian was available and routinely flaked but, given the endemic fauna of Sardinia, which in the Holocene was depleted of any large mammal species, horn or sizeable bone was not available, but only the small Prolagus sardus. At SOMK there is a low-grade metamorphic rock, i.e. naturally occurring metasiltite or metasandstone in the form of lamellae, which may have been used by humans. A fine double awl was produced and the material is currently being defined. Surfaces were observed by digital microscopy (DM) with an Olympus Dsx1000 microscope. While the central body of the tool underwent minimal change, the two extremities show traces of processing, rounding and polishing probably due to the variable intensity of use. They differ in shape, one rounded and one pointed. Traces of ochre are being analysed by Raman microscopy. Experimentation will complete the current study. Naturally pointed metamorphic rocks from the SOMK area, together with small mammal bones, will be experimentally applied to animal and plant materials in order to clarify patterns of use and the types of materials processed.

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POSTER

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

A Slow Burn: an ethnographic review of hunter-gatherer fire-transport methods, and their consequences for archaeological findings at Star Carr

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The presence of fire-carrying strategies within the hunter-gatherer ethnographic record has been used to suggest the possibility of fire-carrying also being used during the Palaeolithic. However, the potential significance of these strategies to Mesolithic studies has been overlooked. A good example is the organic assemblage recovered from Star Carr (North Yorkshire, UK), which includes extensive evidence for charred artefacts and materials potentially linked to fire management, e.g., fungus. However, a systematic consideration of evidence for fire, its character, and the potential technological repertoire surrounding its curation and transport is lacking. This gap can be addressed using the ethnographic record, which may provide insight into possible prehistoric fire-transport methods and support a fuller interpretation of the archaeological evidence. This poster will focus on the results of an ethnographic literature review undertaken using the electronic Human Relations Area Files (eHRAF) ethnographic database, the aim of which was to collect hunter-gatherer fire-carrying techniques. In total, 61 hunter-gatherer/primarily hunter-gatherer groups were identified as possessing strategies for carrying fire. Information collected during this review included: the duration the fire was carried for, the context it was carried in, the carrying method, if it was carried by a particular individual, and what materials were used to carry the fire or if a composite construction was created. The results are used to re-examine charred objects from Star Carr to explore if there are consistencies with fire-carrying, possible strategies that might have been deployed to achieve this, and implications for the lifeways of the people occupying the site.

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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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ORAL PRESENTATION

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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ORAL PRESENTATION

Thursday 18th September, h.09:45-10:00

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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ORAL PRESENTATION

Thursday 18th September, h.10:15-10:30

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), D'Angelo Emanuela (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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MESO2025 - 11th International Conference on the Mesolithic in Europe

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

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

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)

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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.

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Session 9

Understanding the Social Context

Coordinated by Emanuela Cristiani and Oreto García Puchol

Approaching Mesolithic social life is fundamental for understanding social relationships among the last hunter-gatherer societies, encompassing various scales from local, regional and interregional connections. Research has focused on explaining the degree of complexity revealed by funerary practices, symbolic actions, hunter-gatherer and fishing strategies, storage practices, technological development, cultural transmission processes, mobility patterns and emerging sedentarisation processes and their implications in changing social strategies.
This session invites papers that aim to integrate data regarding the social organization of Mesolithic communities. We welcome different scientific approaches, including explanations covering different research lines from cultural, geospatial, and biological data. We encourage researchers to present works that test and describe hypotheses about social relationships across different spatial and temporal scales in Mesolithic societies. These works should focus on local settlements and regional analysis involving bioarchaeological data (anthropological and biomolecular analysis for approaching health, diet and kindship patterns) and cultural and contextual information (for addressing social patterns from material cultural records). We are particularly interested in works based on recent approaches to cutting-edge scientific developments, including ancient DNA, isotopic results, histological data, use-wear and residues analysis, dental calculus evidence, cultural patterns, and social network analysis.

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ORAL PRESENTATION

Tuesday 16th September, h.09:00-09:15

HUNTING MEGA-STRUCTURES OF THE NORTH ADRIATIC HINTERLAND

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The interpretation of LiDAR imagery from the Karst Plateau, located in the hinterland of Trieste Bay, on the border between Slovenia and Italy, has revealed traces of at least four large stone structures arranged over a distance of 25 km. These consist of driving lines, low stone walls up to 4 km long, that funnel into rectangular enclosures, cells, or pit-traps, built from large limestone blocks, located below cliffs, at sharp terrain changes, or within dolines. Similar structures, known as "desert kites," are found across arid regions of Old World. We argue that the Karst structures were mega-traps for hunting game, rather than enclosures for domestic animals. A detailed analysis reveals that kites function as large-scale hunting structures built to capture herds of wild animals. Their construction, particularly the design of the pit-traps, clearly indicates a purpose focused on hunting rather than the corralling of domesticated animals. This is further supported by GIS analysis, which demonstrates that location, size, and orientation were strategically planned to maximize effectiveness in the landscape. Radiocarbon dating suggests they predate the Bronze Age, distinguishing them from later pastoral enclosures of the Copper and Bronze Age. These mega-structures were built to hunt mobile herds of wild game. They demonstrate collective organization and coordinated labor, strategic planning and specialized hunting techniques, in-depth ecological knowledge and demand for large quantities of game. These findings have profound implications for our understanding of Holocene hunting communities in Adriatic hinterland and beyond.

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ORAL PRESENTATION

Tuesday 16th September, h.09:15-09:30

INVESTIGATING MESOLITHIC SOCIOCULTURAL PATTERNS ON THE ATLANTIC FAÇADE THROUGH ARCHAEOGENOMICS

Simões Luciana G. * (1), Peyroteo-Stjerna Rita (1) (2), Marchand Grégor (3), Araújo Ana Cristina (2) (4), Diniz Mariana (2) (5), Vialet Amélie (6), Günther Torsten (1), Jakobsson Mattias (1)

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In recent years, archaeogenomics studies have increasingly focused on multidisciplinary approaches to investigate finer-scale processes, resulting in a more nuanced understanding of human evolutionary history. We present new results from a multidisciplinary study of the well-know Late Mesolithic shell middens at Hoedic and Téviec in southern Brittany, France, and in the Tagus and Sado valleys in Portugal. We generated whole genome sequencing data for 23 individuals buried in these sites. Contrary to longstanding hypotheses, our findings reveal that these burials were not based on close biological kinship. This includes graves with sequential burials and even joint burials of adults and children, which were previously assumed to represent parent-child relationships. This provides new evidence supporting the idea that social bonds in Mesolithic hunter-gather societies extended beyond biological kinship. We then integrate kinship patterns with analyses of genomic diversity, chronological data, and dietary stable isotope data. Late Mesolithic hunter-gatherers along the European Atlantic façade had structured social dynamics, organized into distinct social units that were not based on familial bonds. These populations relied on exogamic practices, such as intermarriage networks, to avoid consanguinity. This contributed to the maintenance of low intra-group biological relatedness and stable (yet small) effective population sizes. Such strategies may have originated in hunter-gatherer practices from the Early Upper Palaeolithic and still persist in present-day hunter-gatherers populations. Our findings demonstrate that the social dynamics of European Mesolithic hunter-gatherers had a significant impact on their demographic history and ultimately their survival as a population.

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Tuesday 16th September, h.09:30-09:45

AGE AS A FACTOR OF SOCIAL IDENTITY AT THE LATE MESOLITHIC YUZHNIY OLENIY OSTROV BURIAL SITE, KARELIA, NW RUSSIA

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This paper explores the role of age in shaping social identities at the Late Mesolithic burial site of Yuzhniy Oleniy Ostrov (YOO) in Karelia, Northwest Russia. Age and aging, both as a physical trait influencing the form and capabilities of the human body and mind, and as a social construct, compose one of the most important factors determining an individual's perception within their community. As such they often play a significant part influencing e.g. resource access and mortuary treatments. Here we examine age as a concept including biological, calendar, and social aspects, and how they might have influenced how individuals were perceived and treated in life and death at YOO. With its diverse sample of individuals of different age and sex groups, a short period of use, and a consistent funerary tradition, the YOO site is specifically suited to this purpose. Accordingly, in this study we investigate if a) individual age has an archaeologically observable effect on differences in the mortuary record at YOO and b) to what degree the impact of aging as a social and physiological phenomenon can be traced using bioarchaeological methods, including osteological and stable isotope analyses. The results will be contextualized both in regard to their relevance to our understanding of the local communities, as well as in the framework of the wider Northern European Mesolithic.

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ORAL PRESENTATION

Tuesday 16th September, h.09:45-10:00

COLOURFUL WATERS: EXPLORING DEPOSITION AT TUFA SPRINGS, CHERHILL, WILTSHIRE, UK

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Excavations in recent years have highlighted the significance of tufa springs to late Mesolithic groups, with these sites seemingly serving as foci of deposition of animal remains and other unusual objects. This paper discusses ongoing excavations at Cherhill, Wiltshire, a stratified site of buried soils and tufa deposits, located a few kilometres from the Avebury and Stonehenge World Heritage sites. Here excavations since 2022 have focused on springs and channels that were the focus of late Mesolithic activity. Deer and aurochs prints (but no humans) suggest animals used this area in wetter parts of the year, humans in the drier months. Within the channel deposits were found small clusters of unusual material: an aurochs skull and two boar tusks; an antler beam mattock and flint blades; a decorated rib. Overall, the majority of the assemblage from the area appears specially selected for deposition (consisting of a faunal assemblage biased towards antler and tusks, and non-refitting larger flint material), though a single nodule has been split and a tool produced for an immediate task. The talk will conclude by exploring the broader significance of practices at Cherhill within long-term traditions of patterned animal deposition in the British Mesolithic and their contribution to understanding Mesolithic ontologies.

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ORAL PRESENTATION

Tuesday 16th September, h.10:00-10:15

Exploring cultural diversity from the Mesolithic record: An appraisal regarding social network dynamics at the Central and Western Mediterranean

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Late Mesolithic societies along the Central and Western Mediterranean started to exhibit a remarkable cultural homogeneity regarding lithic knapped tools at the onset of the Atlantic chronozone. Accordingly, the blade and trapeze technocomplex extended along a wide area encompassing both Mediterranean shores without a clear spatial and temporal pattern explaining the cultural transmission mechanism behind them based on the current archaeological record. In this presentation, we focus on data analysis from the Mesolithic record according to an extended database compiled in the framework of the EvolMed project, including lithic projectile tools, among others. Considering cultural variability as a good proxy for investigating evolutionary trajectories, we will try to approach patterns of cultural change according to a high-resolution site record based on accurate radiometric data and a Bayesian approach applied to non-dated levels. To do this, we will use a comparative framework from 200 hundred years windows to build a diachronic perspective based on social network metrics. The main goals consist of 1) building network metrics for approaching patterns of connectivity considering micro and macro levels, 2) exploring diachronic dynamics according to the temporal span of the last Mesolithic societies, comprising general networks and regional networks, 3) investigating cultural transmission mechanisms behind the different cultural records, 4) approaching cycles of stability and changes comparing several proxies including SPDs.

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ORAL PRESENTATION

Tuesday 16th September, h.10:15-10:30

Mobility, diet, and lifeways of the individuals buried in the Early Mesolithic and Middle-Late Neolithic rock shelter of Abri des Autours, Belgium

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The Sambre and Meuse basins in southern Belgium are among Europe's richest regions for Mesolithic and Neolithic burials, due to the exceptional preservation of human remains in the area's karstic caves and rock shelters. The Abri des Autours, a natural limestone cavity located 90 meters above the Meuse River near Dinant, is a remarkable site for understanding burial practices and lifeways across distinct prehistoric societies. Excavated in the early '90s, the site yielded three assemblages: an individual Early Mesolithic burial (AA3), which represents the most complete Mesolithic individual in Belgium, and two commingled assemblages (AA1 and AA2). AA1 consists of human remains dating to the Middle-Late Neolithic, while AA2 includes both inhumed and cremated individuals from the Early Mesolithic and the Neolithic periods. Despite the challenges posed by the commingling of the remains in AA1 and AA2 - where osteological elements were disarticulated and dental remains were often not in the alveoli - this study demonstrates how a multi-proxy approach can unravel social strategies underlying mobility, landscape use, subsistence, and lifeways of the individuals buried at Abri des Autours. New radiocarbon dates clarified the temporal dynamics of the funerary space, while oxygen (δ18O) and strontium (87Sr/86Sr) isotope analyses of tooth enamel provided insights into palaeomobility and landscape use. Dietary habits were reconstructed by coupling dental calculus and carbon (δ13C) and nitrogen (δ15N) stable isotope analyses.

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ORAL PRESENTATION

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Biological and archaeological perspectives on the Mesolithic shell midden population(s) of Cabeço da Amoreira (Muge, Portugal)

Coutinho Nogueira Dany * (1), Gonçalves Célia (2), Godinho Ricardo Miguel (2), Simão Patricia (2), Cascalheira João (2), André Lino (2), Bicho Nuno (2), Umbelino Cláudia (1) (2)

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Cabeço da Amoreira is one of 15 Mesolithic shell middens identified in the Tagus Valley. Located on the left bank of the Muge River, near the village of Muge (Salvaterra de Magos, Santarém), the site was first discovered in 1864 by Carlos Ribeiro and has been the focus of multiple archaeological excavations. To date, the remains of 39-40 individuals have been uncovered, buried within or beneath the shell midden deposits. This study provides new insights into the demographic characteristics of the Cabeço da Amoreira population, including sex distribution, age-at-death profiles, and estimated lifespan. It considers biases introduced by funerary practices, taphonomic processes, and incomplete past excavations. Biological data are integrated with archaeological evidence, focusing on the spatial distribution of burials and their stratigraphic context.

The findings are contextualized through comparisons with other sites in the Muge complex, offering broader perspectives on Mesolithic demographic patterns and cultural practices. Data from older and recent excavations reveal all age groups, including perinatal individuals and elderly adults, with a notable proportion of non-adults (around 40%). Unlike Moita do Sebastião, no specific burial area for non-adults has been identified. However, there is a concentration of burials in the area excavated by J. Roche in the 1960s which includes double burials and evidence of post-burial disturbance. By integrating data from diverse campaigns, this study enhances our understanding of Mesolithic populations in the Tagus Valley, providing a comprehensive view of life and death within these communities.

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HABITUAL ACTIVITIES AND THE ENVIRONMENT OF MESOLITHIC COMMUNITIES WITHIN AND BEYOND THE IRON GATES (SERBIA): A COMPARISON BASED ON THE USE-WEAR ANALYSIS, FAUNAL STUDIES AND GEOGRAPHICAL CHARACTERISTICS

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The reduction sequence of knapped stone tools together with use-wear analysis suggests whether the community is mobile or sedentary. These practices are closely related and greatly interlinked with strategies of raw material and food procurement. Namely, they are evident in the decisions whether the raw material and animal carcasses were brought to the settlement whole, or some steps in the process of tool production and food processing took place at the raw material source/animal kill site. In the territory of Serbia, for a long time such studies were possible on the lithic and faunal material from the Iron Gates region, the only area with recorded Mesolithic long-term occupancy. However, the latest research at Pešterija Cave in the mountainous Ponišavlje region of southeast Serbia provided the first substantial evidence of Mesolithic occupancy beyond the Iron Gates. The new discoveries enabled us to undertake the first comparative studies between Mesolithic sites in the two regions, within vastly different landscapes, and occupied by communities with different residential and habitual practices. This paper focuses on the diverse types and the duration of activities primarily based on techno-functional analysis of stone assemblages from Iron Gates (indicative of long-term habitation), and Pešterija (indicative of a series of short visits over time). In addition, the faunal record and the environmental conditions of the two regions were also compared in order to gain additional insight into the spectrum of activities, use of tools on different materials of animal and plant origin, and settlement patterns.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Tuesday 16th September, h.11:45-12:00

MACROLITHIC TOOLS FROM MESOLITHIC SITES IN NORTHERN GERMANY: NEW INSIGHTS INTO SUBSISTENCE PRACTICES AND SETTLEMENT FUNCTIONS

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Macrolithic tools (= Groundstone tools) from the well-known Mesolithic sites of Duvensee, Friesack 4 and Rothenklempenow 17 (Northern Germany) were comprehensively analysed. Generally, such unmodified ad hoc-tools are involved in most daily activities and are therefore considered as important to reveal a better understanding of land use, subsistence and crafting activities. The presentation summarizes and evaluates studies of the role of macrolithic tools in Mesolithic subsistence activities in Northern Germany. The sites are characterised by an excellent preservation of organic find materials. Their extensive find inventories altogether comprise nearly 600 macrolithic tools, that were investigated by a combined approach including use wear and residue analyses as well as experiments. These allowed for the detection of settlement activities some of which are so far mostly invisible in the archaeological record. The study aims on differentiating the individual functions and life histories of macrolithic tools, that were used predominantly unmodified and non-exhaustive. The stones served a wide variety of purposes including crafting technologies (e.g. flint knapping, preparation of birch tar) and the processing of various plant or animal food products. Beneath broad similarities, the find inventories also reveal characteristics that highlight the specific functions and dynamics of the respective settlements. By this, macrolithic tools contribute to enhance our understanding of the development of Mesolithic settlement activities and land use

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ORAL PRESENTATION

Tuesday 16th September, h.12:00-12:15

PAWS ON POTS: METAPODIAL BONE IMPRESSIONS ON EASTERN BALTIC HUNTER-FISHER POTTERY (4TH MILLENNIUM BC)

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1 - Institute of Latvian History, Faculty of Humanities, University of Latvia. Project lzp-2021/1-0119, "Skills in synergy, crafts in context: an integrated study of eastern Baltic Stone Age technologies" (Kalpaka bulvāris 4, Rīga LV-1050 Latvia)

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The adoption of pottery by hunter-fisher communities – quite apart from augmenting the technical possibilities of cooking and food storage – also offered another decorative medium for expressing connections with the non-human world, including relationships with the animals they were hunting. In this context, the use of animal-derived stamps for ornamenting pottery offers an exciting window of insight for the archaeologist, although this topic, at the nexus of zooarchaeology and pottery research, is hitherto woefully understudied.

Our research spotlights the phenomenon of impressions made using the distal ends of metapodial bones, as represented on 4th-millennium BC pottery of hunter-fisher-gatherers in the Eastern Baltic. The methodology developed for this purpose involves stereomicroscopy coupled with reflectance transformation imaging, which proved an invaluable tool for systematically documenting, comparing and analysing the impressions. Concomitantly, a reference collection imprints in clay tablets was created for comparison against archaeological examples.

The size range and morphology of the imprints indicate that they were obtained using metapodial bones of some of the smaller mammal species represented in the faunal assemblages – animals significant primarily for their furs. Further, the stamp employed for pottery decoration commonly consisted of two adjacent metapodial bones, probably still connected by soft tissue. Preparation of such bone stamps relates to specific practices of animal skinning. From an iconological perspective, we may enquire whether the imprints actually served to signify the respective animals, and how this tradition of pottery decoration relates to such practices as the use of animal tooth pendants for personal adornment.

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POSTER

Tuesday 16th September, h.12:15-12:30

A UNIQUE DISCOVERY: MESOLITHIC PAINTED PEBBLES FROM VLAKNO CAVE

Cvitkusic Barbara * (1) (2), Cristiani Emanuela (1), Vujević Dario (3)

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During the Pleistocene-Holocene environmental transition and the Palaeolithic-Mesolithic techno-cultural shift, Vlakno cave (Croatia) played a significant role in the Eastern Adriatic. The site has most likely served as one of the key "taskscape" locations for maintaining regional exchange and communication networks. In the Mesolithic period, the importance of the Vlakno cave is particularly evident in the production of ornaments. Analyses of these ornaments suggest that Vlakno cave functioned as a specialized site for crafting such items. In addition to the abundance of ornaments, two painted pebbles were discovered in Holocene layers, representing a unique find in the Eastern Adriatic region. Decorated with geometric lines using red pigments, these pebbles bear a striking resemblance to Azilian painted pebbles. Here, we would like to present the results of a functional analysis of these unique artefacts. Using both qualitative and quantitative approaches, residues and use-wear patterns on the pebbles will be examined. Obtained data will provide the first direct evidence of the functional and symbolic roles of modified pebbles in the lives of Mesolithic foragers in the Adriatic region. These findings underscore the symbolic role of the Vlakno cave site within the broader Mediterranean context and contribute to a deeper understanding of the symbolic and practical dimensions of Mesolithic material culture.

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Session 10

Rites and Symbols

Coordinated by Liv Nilsson Stutz and Tomasz Płonka

Rituals and symbols were an important part of life in Mesolithic societies. In this session, we invite papers that discuss various aspects of the symbolic culture and ritual practice among hunter-gatherer-fishers from the Early and Middle Holocene, including portable and rock art, graves and various manipulations of the human body, different types of ornaments and their use, ways of preparing and using pigments, and other artefacts and contexts related to the world of rituals and symbols of Stone Age foragers.

How can we identify ritual practice and symbols in the archaeological record from this period? How did these ritual practices and symbolic artefacts function? What role did they play in the life of hunter-gatherer-fisher groups, and how did they function in the social space? Who made symbolic artefacts and who used them? How were the media and raw material for symbolic communication selected and handled? What can the material culture record tell us about hunter-gatherer-fisher cosmologies?

One important focus for the session is the evidence of ritual practices and symbolic communication revealed through detailed contextual analysis. Another significant area is the theoretical approaches available to us as we interpret it. We welcome papers addressing both theoretical aspects of research on rituals and symbols within broader hunter-gatherer-fisher cosmology, and specific and detailed case studies.

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ORAL PRESENTATION

Thursday 18th September, h.12:15-12:30

ANIMATE STONE BODIES IN DEATH CONTEXTS

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In this paper I want to explore the diverse roles of lithics within Mesolithic funerary rites. Drawing on recent research, involving a broad range of analytical techniques (provenancing, technology, microwear etc), alongside contextual and spatial analyses of lithic artefacts from Northern European burials, to argue that some lithics, and their parts (e.g. axe blade edges) and treatment (e.g. intentional breakage) might reflect symbolic objects and behaviours, other lithics appear to acted as gendered animate beings, with their own life force. This ontological approach challenges the narrow viewpoint that has privileged cellular life forms - humans, non-human animals and plants over acellular (e.g. stone), even when such a distinction does not always exist within animist indigenous theory. Drawing on empirical evidence such as morphology, quantity, positioning in relation to the human body, prior use and other markers, I hope to illustrate the richness of information lithics, often regarded as utilitarian items, can provide about mortuary rites and rituals. In turn, opening up a discussion on what is stone within Mesolithic worldviews.

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ORAL PRESENTATION

Thursday 18th September, h.12:30-12:45

CRUSHED BONES AND BURNT GRAVE GOODS. A LATE MESOLITHIC DOUBLE GRAVE IN SOUTHERNMOST SWEDEN

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In connection with an investigation of a Viking Age settlement at Rinkaby, northeastern Scania, southernmost Sweden, a feature containing human bones was found. The bones were concentrated within a limited area of the feature and were in a markedly fragmented, but unburned, state. The teeth showed that the bones belonged to two persons a juvenile/ young adult and an adult. The grave is dated to the latter part of the Late Mesolithic period. The fragmentation of the bones indicates that the two individuals had been subjected to some form of soft tissue reduction. 13C and 15N isotope analysis indicates that they had a terrestrial and marine food base, respectively, and sequential strontium (87Sr/86Sr) analysis suggests they originated from different regions. In the same accumulation as the human bones, small burnt bone fragments were also found. They turned out to belong to a slotted bone dagger with double-sided ornamentation. The burial site with unburned remains of the dead and burnt grave goods, as well as the fragmentation, have no parallels in southernmost Scandinavia. The grave and its contents are discussed in relation to Mesolithic burial conditions.

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ORAL PRESENTATION

Thursday 18th September, h.12:45-13:00

EARLY MESOLITHIC BATONS WITH ORNAMENTATION AND THEIR MAGDALENIAN PREDECESSORS

Płonka Tomasz (1), Kufel-Diakowska Bernadeta * (2), Diakowski Marcin * (1), Trąbska Joanna (3), Wesełucha-Birczyńska Aleksandra (4), Trybalska Barbara (5)

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Perforated batons were one of characteristic artefacts for the Early Mesolithic of northwestern Europe. They were made of red deer antler beams. Traces of work indicate that they were used as tools, and the abrasion of the surface and ornamentation suggests they were used for a longer period of time. Many batons were ornamented not only with geometric patterns, but also with zoo- and anthropomorphic motifs. The ornamentation was sometimes organized within decorative zones separated from each other by various motifs. The patterns were sometimes filled with a dark inlay. The ornamentation was engraved in two ways: during one session or successively – during the use of the object. An example of the latter scenario is the baton from Szczecin-Podjuchy, while the artefacts from Pułtusk and Woźniki were made during single decorative actions. These differences probably reflect concepts about the relationship between ornamentation and the functionality of the object. This type of tool, usually made of reindeer antler, was known from the Upper Paleolithic, and was particularly common in the Magdalenian. However, there is no evidence that the Magdalenian specimens were prototypes of Mesolithic tools. Late Magdalenian batons are generally less massive and may have a few holes. They are also covered with very rich ornamentation, mainly with zoomorphic and geometrical motifs. The function of these tools is still hotly debated. Despite some similarity, Mesolithic and Magdalenian batons could have served different purposes – the latter are often broken at the perforation, while Mesolithic specimens usually have damaged distal ends.

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ORAL PRESENTATION

Thursday 18th September, h.13:00-13:15

Generations implemented in clay: ceramic figurines of the Circum-Baltic Forest Neolithic

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Ceramic anthropomorphic sculptures of the Forest Neolithic to the north and east of the Baltic Sea of the 4th-3rd millennium BC were produced by hunter-gatherer-fishers. Around 240 specimen are known. The most ancient examples have an embryonic form, while later ones resemble a wrapped body. Find contexts indicate connections with hearths and houses where the figures often occur in groups. While the embryo-shaped pieces were regularly found together with animal images (bird, snake, beaver, otter, elk), the wrapped body type (or Åland type) ones form scattered assemblages of exclusively human appearance. Facial décor on some of the sculptures probably reflects tattooed or painted motifs, which may have had totemic connotations. Similar facial decor patterns on sculptures found up to 700 km apart may indicate trans-regional kinship ties. The body décor on the Åland type sculptures suggests that the wrapped body was tied with cords or strings. We will discuss which types of person might have been depicted by these sculptures. The embryo-shaped specimen might indeed represent human embryos, albeit sometimes with facial traits that resemble zoomorphic features. The upright posture of the Åland type pieces with protruding feet and cord tying might represent infants attached to cradleboards, as widely known from North American, Sami and Siberian Indigenous groups. The varying heights of sculptures might portray different social roles of the depicted individuals. Further studies of figurine outfit may help to reveal more peculiarities about the communities that produced them and of the Forest Neolithic life worlds more general.

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ORAL PRESENTATION

Thursday 18th September, h.14:30-14:45

MAPPING THE PAST AND SKETCHING THE FUTURE OF MESOLITHIC ART RESEARCH

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The study of Mesolithic art boasts a long and rich history. Yet, given the fragmented and uneven nature of both the archaeological record and the archaeological practice itself, the field is by no means in equilibrium. Not only preservation conditions, but also the strategies, practices, and theoretical foundations of regional research traditions are highly variable. This talk surveys South Scandinavian Mesolithic art research through two approaches: 1), a bibliometric analysis, and 2), a mapping of theoretical and epistemological perspectives. This systemised exploration honours the field's academic tradition while attempting to pinpoint the biases, imbalances and knowledge gaps that haunt the field to this day. Proposing a way forward, researchers of Mesolithic art should prioritise synthesising knowledge through international collaboration and data sharing. To this end, this talk presents an openly accessible and interactive digital platform of South Scandinavian corpus of Mesolithic art. With its inclusion of maps, artefact drawings, source literature, and other pertinent metadata, this platform is meant to both facilitate public engagement and as a shared repository for researchers to utilise and co-develop. International colleagues are encouraged to contribute to and expand this collaborative platform. By embracing Open Science principles of data stewardship, analytical transparency and public inclusion, such international collaboration will ultimately improve our collective understanding of the Mesolithic art phenomenon.

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ORAL PRESENTATION

Thursday 18th September, h.14:45-15:00

MESOLITHIC WATER FUNERALS IN COASTAL WESTERN NORWAY. NEW ANALYSES OF THE HUMAN SKELETONS FROM BØNES AND BLEIVIK

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This contribution presents results of the investigations of two Mesolithic human bone assemblages retrieved at bog sites on the coast of western Norway at the sites Bleivik and Bønes. C14-dates of the two assemblages show relatively similar results, to the Middle Mesolithic, c. 7200-6700 cal BC. Morphologically, there are differences between the crania from the two sites, however, both skeletons are from adult male individuals. Stable carbon and nitrogen isotopes analyzed from both individuals have lived on marine food, which is in accordance with the current knowledge about this part of the Stone Age in western Norway. The find-spot of the Bleivik skeleton suggests that he had been deposited in the sea relatively close to the shore. Freshwater diatoms in the scull of the Bønes skeleton, on the other hand, indicates that his body after death had been deposited in a small pond. While accidental drowning as cause of death cannot be ruled out for either of them, a quite as likely interpretation is that they were deposited during funerary rituals in wet environments. Water funerals are known to have happened amongst hunter-fisher populations in the recent past and were clearly practiced amongst Mesolithic populations elsewhere in Scandinavia. This interpretative option is supported by the results of a review of Mesolithic stray-finds in western Norway, which show that a relatively high percentage of them were deposited in the sea – possibly as parts of funerary rituals.

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ORAL PRESENTATION

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

MICRO-ARCHAEOLOGICAL RESEARCH ON HUMAN-ANIMAL IDENTITIES IN THE LATE MESOLITHIC SKATEHOLM I AND II CEMETERIES, SWEDEN

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Animal originated materials recovered in mortuary contexts contain evidence of the relationships between human and non-human lifeways. Animal tooth pendants, burial goods made of bone, antler, teeth, and shell, as well as unworked animal remains can be understood as material representations of the cosmology and social links between humans and animals. Due to the poor preservation of soft organic materials, an important group of materials such as fur, feathers, and hair has been out of the scope of empirical research. However, the recent research has shown that microscopic remains of fibres can be detected not only in the surfaces of stone and bone tools but also in the soil samples. This presentation deals with the soil samples analysed in the Late Mesolithic Skateholm I and II cemeteries in the southern Sweden. In total 35 burials out of the 87 graves were included for the analyses. As a result, 83 feather fragments and 94 hair particles were recovered. The species composition and the distribution of fibres evidence the importance of clothes made of fur and feathers in identity building. The results will be discussed in relation to ethnographic references documented in north European forest regions. The research is part of Animals Make Identities (AMI) project (ERC Grant agreement No. 864358).

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ORAL PRESENTATION

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

MUMMIFICATION IN THE MESOLITHIC. PUTTING A NEWLY DISCOVERED RITUAL PRACTICE INTO PERSPECTIVE

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A recent interdisciplinary analysis of old photographs from an excavation in the shell midden in Arapouco in the Sado Valley (Portugal) revealed evidence of guided mummification of a corpse before burial. The discovery of what to date is the world's oldest case of mummification was unexpected, but a close examination of a couple of other graves in the valley showed indications of similar treatment, albeit significantly less clearly. While mummification has not been demonstrated anywhere else in the Mesolithic mortuary record, important studies in the past several decades have discussed the evidence of other forms of extended and hands-on and presumably ritualized practices involving the treatment of the dead. In this paper we discuss how we can understand mummification of the body during the Mesolithic as a ritual practice that would have been an integral part of the hunter-gatherer-fisher cosmology. The paper places the Arapouco case in a context of both Mesolithic mortuary ritual and ethnographic cases of mummification in small scale societies.

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ORAL PRESENTATION

Thursday 18th September, h.15:45-16:00

Of powder and bones: Questioning the use of ochre in the Mesolithic mortuary practices in northern France

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The use of pigments in Mesolithic mortuary practices is a widespread phenomenon in Europe. In France, pigments associated with Mesolithic human remains are mainly attested in the east and along the coast. In the Paris Basin, the use of pigments is rare and mostly described by the presence/absence of brown-red staining. As part of our PhD thesis focusing on the manipulation of the dead during the Mesolithic in Northern France and Belgium, a new study of the osseous human assemblages of Berry-au-Bac (Aisne, France) and Noyen-sur-Seine (Seine-et-Marne, France), which show brown-red traces interpreted as ochre, has been realized. In addition to analyzing the distribution and intensity of the brown-red colorations, the chemical composition of the residues identified on the human remains has been established using a Scanning Electron Microscope in order to determine their nature. Our analysis aims to verify the use of pigments, or to highlight new hypotheses such as post-depositional contamination by the surrounding environment.These data update our knowledge of the use of pigments in the funerary practices of Mesolithic populations in the Paris Basin. They also shed new light on the need to better analyze the brown-red staining of the osseous surface of human bones, particularly those from "old" excavations and for which the presence of ochre was first reported. The SEM thus appears to be a key methodological tool to address such issues, enabling us to go beyond than simple observation in the field and to support palethnologic interpretations with verified optical and physico-chemical data.

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ORAL PRESENTATION

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ORNAMENTAL TYPES AND DECORATION TECHNIQUES IN THE CONTEXT OF BONE INDUSTRIES DURING THE TRANSITION PERIOD (LATE 7TH – EARLY 6TH MILLENNIUM CAL BC)

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The technological repertoire for bone artefact manufacture often differs substantially from that employed in their decoration. Whilst some ornamental techniques, such as engraving, are universal and timeless, others are distinctly specific, being closely associated with particular decorative types and culturally-determined visual imagery. The rich ornamental traditions observed at some Mesolithic sites encompass a wide variety of figurative motifs executed through various techniques and combinations, showing minimal standardisation. This suggests either population heterogeneity or an extended chronological span that eludes conventional archaeological methods. This study examines the correlations between ornamental types, technical methods and functional contexts of over 300 artefacts crafted from hard organic materials (bone and elk antler). The analysis focuses on Late and Final Mesolithic assemblages industries (late 7th – early 6th millennium cal BC) from the multi-layered site of Zamostje 2 in the Upper Volga basin. The integration of symbolic practices into daily activities not only demonstrates their significance within late Mesolithic societies but also facilitates the identification of cultural distinctiveness and enables a more nuanced understanding of historical phenomena.

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ORAL PRESENTATION

Thursday 18th September, h.16:45-17:00

Symbolism expressed through artefactual deposits of antlers and human bones from Mesolithic burials at Hoëdic (Morbihan) and Mas d'Azil (Ariège)

David Éva * (1)

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The symbolic framework within which Mesolithic burial practices developed is discussed, based on the study of minimally transformed human and animal bones found in burials. These bones, testifying to decarnation actions on the human body, indicate established practices for the reduction of corpses for prolonged preservation. These bones, which bear witness to incarnation through the material deposits in the burials, suggest the care taken by the group to ensure certain human conditions during the transition to or for the afterlife. In both cases, the technical actions or measures taken were suitable for burying human bodies using common symbolic representations. These human or animal remains deposited in graves can therefore be analysed in the same way as any bone artefact i.e., as a material that has been transformed according to an anthropological concept, which can thus be emphasised by the technological approach to bone material. The identification of the artefacts in terms of their symbolic meaning is based on the osteo-anatomical contextualisation of the marks left on the surface of the bone by technical action, in the case of reduced cadavers, and on the contextualisation of the finds, once their nature has been identified, in the case of deposits. The presentation will focus on two archaeological series to illustrate both these cases: the recently dated cut human bones from the Mas d'Azil cave in Ariège and the antler remains recently re-attributed to the Hoëdic burials in Morbihan (France).

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ORAL PRESENTATION

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THE DOG BURIAL FROM LJUNGAVIKEN -PERSPECTIVES ON MESOLITHIC DOGS

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A dog burial was found during excavations 2019 of the Mesolithic settlement Ljungaviken located by the Baltic Sea coast in southern Sweden. The dog was buried in a pit nearby house structures and have been radiocarbon dated to ca 6,600 BCE and is contemporary with the settlement. The size of the dogs is typical of Mesolithic dogs from South Scandinavia. The morphology of skull and mandible show similarities to other Early Mesolithic with large teeth and massive jaws, which differ from the Late Mesolithic dogs. The postcranial slenderness and body proportion of the dog resembles that of wolves. Findings of microscopic fibres of feathers indicate that the dog has been buried on a bed of feathers and microblades of flint placed by the paws of the dog could be interpreted as grave gifts. The dog burial from Ljungaviken has been compared to other burials and depositions of dog remains from South Scandinavia to evaluate the ritual practice concerning dogs in the Mesolithic. The resemblance of dog burial with human burials indicates a personhood of certain dogs, while most dogs were treated differently and found among refuse, as some human remains. The dog burial from Ljungaviken contribute with additional perspectives and understanding of the ritual practice and role of dogs in the Mesolithic societies.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Thursday 18th September, h.17:15-17:30

THE TRADITION THAT UNITES. THE CONSERVATISM OF THE BURIAL RITES AT THE STONE AGE HUNTER-GATHERER SITES DUDKA AND SZCZEPANKI IN MASURIA, NE-POLAND

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Dudka and Szczepanki are two sites located on the former Staświn Lake in Masuria, NE-Poland. Both were settled from the Late Palaeolithic to the end of the Late Neolithic and the forager economy was maintained until the end of the Stone Age. The local community turned out to be exceptionally conservative in terms of rituals. The main cemetery at Dudka was used mainly c. 4300-3400 cal BC, i.e. in the Para-Neolithic Zedmar culture, when settlement had permanent character and the local population clearly increased. The various burial practices were used in this period (e.g. secondary burials, primary in sitting position and cremation), which are one of distinctive features and peculiarities of the Zedmar culture. Many of them, however, can be of Mesolithic origin. Both sites yielded evidence of long-term memory about the ritual places, customs and probably also beliefs. For example the main cemetery was located in a place used for burial purposes in the Late Mesolithic (grave VI-17) and the single interment was deposited there in the end of the Late Neolithic (grave VI-18). Moreover, the oldest and the youngest burials are very similar to each other. Similar continuity from the Mesolithic to Zedmar culture or even to the Late Neolithic applies also to the temporary and washed out human and dog burials at Dudka and Szczepanki, which were placed in the same spots of the settlement areas near the lake coastline.

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Friday 19th September, h.09:00-09:15

VARIABILITY OF BURIAL PRACTICES IN THE MIDDLE MESOLITHIC THROUGH THE RECENT DISCOVERY OF NEW BURIALS IN YVELINES (FRANCE)

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The recent discovery of ten new burials in the Yvelines department (France), doubling the number of graves for this period, has renewed the issues dealing with funerary practices during the Middle Mesolithic (second half of the 8th millennium BC). Despite their relative geographical proximity, on a departmental scale, these graves show a diversity of mortuary practices, regardless of the age or sex of the deceased, in terms of burial methods, body treatment grave arrangement. Individuals can be laid on their backs, seated or crouched, without preferred orientation. Some of their positions, especially on the lower limbs suggest an intentional arrangement in order to maintain them in unnatural position, using flexible wrappings and/or bindings. Regarding the deposits, individual inhumation is most often used. Nevertheless, at least one case of successive burial is attested. Secondary burials are also identified, as well as the use of cremation. Specific features can be observed around or above the bones, and the funerary structure, when it is observable, may show original digging. Some of these burials, distributed in small groups of relative contemporaneity, suggest a memory of the place. These burials well reflect the diversity of mortuary practices during the Middle Mesolithic recognized in the Ile-de-France region and, more broadly, in the northern half of France. However, some of the burials show some gestures that still elude us, suggesting a complex burial program for this chronological period.

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RITUAL BY THE SEA: UNVEILING THE SYMBOLISM OF MARINE REFERENCES IN THE COSMOLOGY OF LATE HUNTER-FISHER-GATHERER COMMUNITIES IN SOUTHWESTERN EUROPE

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Marine resources, although rarely analysed, hold immense potential for understanding the symbolic significance of the sea in the ritual practices of late hunter-fisher-gatherer communities. The sea, primary source of sustenance, also became a symbolic stage in death, playing a central role in the construction of their identities.

The distribution of similar artifacts along the Atlantic coasts of the Iberian Peninsula and Western France, as well as the recurrence of specific practices—such as the selection of shells as personal ornaments and the depiction of marine fauna in prehistoric art—demonstrates how the integration of marine items into daily life and funerary practices reflects shared beliefs connected to the sea, originating in the Upper Palaeolithic and evolving during the Mesolithic.

Nevertheless, the meaning of these practices remains elusive and requires further investigation. As part of the MSCA Doctoral Network ArCHe, to fill this gap, this paper presents the initial results of a new multidisciplinary approach combining iconographic, malacological, and contextual analyses to clarify the role of the sea in shaping the cosmology of these communities. The SEART dataset serves as a tool for the interactive exploration and comparison of parietal and portable marine depictions attested in Southwestern Europe. Additionally, the malacological analysis of shells from Cantabrian sites has provided insights into the evolution of shell bead symbolism and its meaning over time.

This paper aims to deepen understanding of the symbolic role of the sea for these communities, emphasizing its evolution during the Mesolithic as a key period of cultural transformation.

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ORAL PRESENTATION

Friday 19th September, h.09:30-09:45

Forgotten, hidden, or carefully deposited?

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In 2022, an out-of-the-ordinary archaeological find was discovered at the Middle Mesolithic site Roverud 4, located in the south-western Oslofjord region of Norway. Upon removing a thin soil layer, a total of 16 macro blades were collected from a 0.3 m² section. The blades varied in length (4.4–12.4 cm) and included a diverse range of blades: some with cortex, some with crested dorsal sides, others with lateral retouches, and some that displayed visible use wear. In addition to the macro blades, eight pieces of flint debris were also retrieved. Altogether, these 24 flint artifacts were identified as originating from the same Bryozoan flint nodule yet representing different stages of a blade production process. Importantly, there was no preserved evidence of disturbance of the surrounding soil, such as pit filling or discoloration. The assortment of macro flint blades significantly exceeds the usual debitage found at Middle Mesolithic sites, making it clear from the outset that this find offers rare insight into a Middle Mesolithic practice involving macro flint tool technology. The find indicates that selected blades could have been deposited intentionally – as a ritual deposit or as a cache. As such, this blade collection represents a remarkable archaeological discovery from a Middle Mesolithic settlement site in Southern Norway. The presentation will explore various interpretations of the possible functions that a macro blade collection might have served as part of Middle Mesolithic settlement activities, including specific depositional practices and their economic, social, and ritual context.

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ORAL PRESENTATION

Friday 19th September, h.09:45-10:00

The "shaman" burial of Bad Dürrenberg, Saxony-Anhalt, Germany - New multidisciplinary analysis and results

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The double burial of an adult woman and an infant, discovered in 1934 during construction work at the spa gardens in Bad Dürrenberg is considered one of the most significant Mesolithic burial finds in Central Europe. The woman, buried in a crouched or seated position alongside the infant, was accompanied by an extraordinary array of grave goods. These included flint and ground stone tools, bone and antler artifacts, a piece of red ochre, animal bones including the shells of pond turtles, as well as perforated and unperforated teeth from bovids, red deer, and wild boar. Notably, a roe deer antler mask and boar tusks—likely used as head or body ornaments—were also found. The burial's distinctive assemblage has led to its interpretation as that of a shaman. Pathological features on the woman's anterior teeth, cervical vertebrae, and skull base further support this hypothesis. Subsequent excavations in 2019, conducted as part of preparations for the State Garden Exhibition, provided new insights of the burial. These investigations also uncovered numerous additional finds that could be definitively linked to the burial. Furthermore, the excavations provided evidence of a complex construction of the burial pit, as well as a second pit close to the burial containing two red deer antler masks. Genetic analysis of the woman revealed her to be a typical representative of Western Hunter-Gatherers. The recovery of the infant's petrous bone also enabled a genetic analysis of this individual, adding a new dimension to our understanding of this remarkable burial.

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Human skeletons in motion, defleshed animals in action and transformations of species' in the Northern Tradition rock art of Scandinavia. A preserved proxy for insight into World views of the Mesolithic

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The challenges in Mesolithic research, and interpretations, is to look thousands of years back in time on traces of human activity and at the same time free our minds, methods and approaches of modern knowledge and avoid the latter being projected onto the past. One often faces that archaeological material from distant and unknown past conditions in the process of being excavated are contaminated by modern standards as soon as it is unearthed, that may ignore unusual conditions or anomalies for a western eye. It is therefore a need to understand the Mesolithic on their own premises, with past surroundings most likely perceived as animated, and possible cosmological past realities in the border sone between life and death and between species'. This is where narratives in rock art – with complex compilations of anthropomorphs and animals – can be a valuable source. Taking into consideration global ethnographic approaches to cultures, comparable with Mesolithic societies, demonstrating that numerous cultures draw no clear ontological distinctions between humans, different types of animals, and plant species thus emphasizing the relevance of conditions displayed in the iconography. It will therefore be argued that on the basis of more nuanced dating of the Northern Tradition rock art in which past relations are preserved, the iconography can work as a relevant proxy for insight into Mesolithic world views.

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POSTER

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MESOLITHIC ART IN ITALY. TRADITIONS, INNOVATIONS, REGIONALISATIONS, TRANSTERRITORIAL CONNECTIONS

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The Italian Mesolithic figurative evidence is less abundant than the one of the final Upper Paleolithic. This scarcity is also evident within individual sites, with the exception of Grotta delle Veneri and Grotta Marisa, in Salento (Apulia). The Author presents a synthesis framework highlighting the following themes: 1-Importance of the Epigravettian tradition and innovation aspects. The engraved stones from Grotta del Cavallo (Lecce) date to the final Epigravettian ("Romanellian" facies) and Early Mesolithic ("Epiromanellian" facies), showing a continuous local graphic tradition in Salento which is also found at Grotta Romanelli. Epigravettian productions feature rare zoomorphic figures with geometric-linear signs, while Mesolithic ones emphasize geometric-linear patterns. Sites like Grotta delle Veneri and grotta Marisa together with Grotta dei Cervi belong to the latter. This trend characterises also other sites across Apulia. 2-Typology of sign alphabets. Salento's Paleo-Mesolithic iconographic production (Grotta del Cavallo and Grotta Romanelli) has a codified sign repertoire, with rare naturalistic (10%) and frequent non-naturalistic (90%) signs, structured or unstructured. 3-Stylistic variability in relation to the geographical location. The rare evidence from Trentino (north-eastern Italy) seems to indicate a completely different trend compared to the one attested in southern Italy. 4-Iconographic practice as an indicator of connections between different cultural regions even over long distances. Azilian art, emerging in the Pyrenees in the Late Glacial, spreads across the Mediterranean, reaching the coasts of Italy and stopping at eastern Sicily. This graphic style has remained homogeneous, continuing into the Early Mesolithic across various cultural facies.

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POSTER

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The Mesolithic needle in the haystack. Reassessing material culture and human remains from Grotta Moser (Trieste Karst, Italy) at the NHMW, Vienna

Posch Caroline * (1), Fontana Federica (2), Visentin Davide (2), Bertola Stefano (2), Bosch Marjolein D. (3), Drucker Dorothée G. (4), Fabbricatore Alessio (5), Paronuzzi Paolo (2), Posth Cosimo (4) (6), Ruhland Tamara (7), Saliari Konstantina (8), Wiltschke-Schrotta Karin (9)

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One hundred forty years ago, local enthusiast Ludwig Karl Moser began researching the Trieste Karst in northeastern Italy, which was then part of the Austro-Hungarian Empire. He focused on excavating caves, including the so-called Grotta Moser (Jama na Dolech), which yielded a rich stratigraphic sequence and two burials. Large parts of Moser's collection, including the lithic and osseous assemblages and two human skulls from Grotta Moser, later reached the Natural History Museum Vienna (NHMW). A reassessment of Moser's collection and recent examination of his diaries led to a tentative proposition of a Mesolithic chronology for the burials found in Grotta Moser, previously considered Roman. This gave impulse to a reconsideration of the two skulls in the Anthropological collection of the NHMW, including the performance of radiocarbon dating, which confirmed an Early Mesolithic attribution. The unexpected outcome spurred a revaluation of the entire Grotta Moser assemblage. With this poster, we aim to present initial results on the site's biography and ongoing analysis of its material culture, including the provenance and techno-morphological aspects of the lithic assemblage, alongside a techno-typological study of osseous artefacts. An anthropological study of the skulls, including aDNA and stable isotope analyses, is underway. In doing so, we aim to shed light on these previously unknown Mesolithic burials from the Trieste Karst, by highlighting the rites connected to the deposition of the two individuals, as well as tackling questions such as the mobility and subsistence of the groups who occupied Grotta Moser at the beginning of the Holocene.

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POSTER

Friday 19th September, h.10:15-10:30

Mesolithic burials and funerary practices in central Italy: new evidence from Riparo Blanc (Mount Circeo, Latium)

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Up to recently the Mesolithic funerary record was poorly documented in Central Italy. Riparo Blanc, a small rockshelter of Mount Circeo in southern Latium overlooking the Tyrrhenian Sea, adds relevant new information. The site, at the base of a limestone cliff, was first excavated by Istituto Italiano di Paletnologia Umana in 1960-1963 and again by our team of Sapienza University of Rome in 2016-2019. It yielded a Mesolithic deposit dated 11,300-9,500 cal BP, with abundant seashells, faunal remains and lithic artifacts. Past and recent excavations have also uncovered a primary burial and a considerable quantity of human fossil bones in secondary deposits, classified as post-Mesolithic during the 1960s. Through the meticulous reassessment of archival and stratigraphic data, complemented by new radiocarbon dates, Riparo Blanc is now established as a significant burial site dating to the Early Holocene. After the analysis of both the burial and the reworked human remains, the minimum number of individuals is established as seven including adults, juveniles, and infants. Accordingly, this funerary record is one of the largest Mesolithic ones in Italy and on the Mediterranean coast. Notably, at least one humerus exhibits signs indicative of post-mortem manipulation, specifically cut marks consistent with defleshing. Archaeological and taphonomic studies suggest that in the Early Holocene Riparo Blanc was a burial site where multiple practices were undertaken, thereby shedding for the first time light on the funerary behaviors of Early Holocene groups in Central Italy.

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POSTER

Friday 19th September, h.10:15-10:30

A new look at an old burial. Multidisciplinary analysis of the organic residues included in the burial goods of Mondeval de Sora - VF1 (Belluno Dolomites, Italy)

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The burial found at the high-altitude site of Mondeval de Sora - VF1 (Belluno Dolomites, Italy; 2130 m asl) is one of the richest and best-preserved ones of the Late Mesolithic in Southern Europe. The deceased was placed supine within an elliptical-shaped pit with outstretched limbs. Sixty items were carefully arranged on and around the body, suggesting the existence of a specific funerary ritual. Most of these objects were found grouped in three assemblages placed on the left side of the deceased. These were interpreted as the remains of three bags made of organic material, containing numerous lithic and osseous artefacts and two lumps of organic amorphous residues. Recently, the lithic artefacts included in the burial goods have been the object of a traceological re-examination aimed at identifying the presence of transport-related wear. All the artefacts have been analysed in detail at low- and high-magnification. Besides the multiple types of wear, the presence of organic and inorganic residues on the chert artefacts motivated further analytical developments such as SEM microscopy, GC-MS and Raman spectroscopy. The results of these analyses show that all analysed artefacts (including the amorphous lumps) revealed the presence of red ochre, which led to the preservation of various plant microremains, especially grass phytoliths and, to a lesser extent, micro-fragments of wood and charcoal. GC-MS analyses of micro-samples taken on the blades were negative, while the biomolecular characterisation of the lumps is still ongoing. This presentation aims to report our results and discuss preliminary hypotheses regarding these findings.

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POSTER

Friday 19th September, h.10:15-10:30

PHOTOGRAMMETRY OF BOULDER ARTWORKS FROM LEPENSKI VIR

Cristiani Emanuela (1), Boric Dusan * (2) (3), Mihailovic Bojana (4), Zupancich Andrea (1)

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The boulder sculptures of Lepenski Vir represent one of the most unique and rare examples of Mesolithic monumental art in Europe. Lepenski Vir is situated in the Danube Gorges area of the north-central Balkans. Here, sandstone artworks, depicting hybrid human-fish figures or dressed in geometric motifs, are intricately associated with the trapezoid-shaped building floors and central hearths associated with phase I-II that dates to 6150–5920 cal BCE. Multiple interpretations have emerged regarding their purpose, including their symbolic role, connections to burials, and spatial associations with living spaces. This paper introduces ongoing research focused on re-documenting these boulders by means of advanced 3D technologies, alongside technological and functional analyses aimed at exploring their potential uses and methods of production. Particular emphasis is placed on the artisan skills required to create these artefacts, their role within Mesolithic symbolic and ritual practices as well as their possible use in every-day practices. By combining high-resolution imaging, use-wear and residue analysis, and contextual studies, we aim to shed light on the profound interplay between this artisan expression, beliefs, and daily life at the very end of the Mesolithic in southeastern Europe.

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Session 11

Bioarchaeological Approaches

Coordinated by Dušan Borić and Julien Riel Salvatore

Over the past several decades, there have been major methodological advances in bioarchaeology, encompassing a wide range of scientific approaches to shed light on the diversity of human lives in the Mesolithic. Applied primarily to human and animal bone samples, these include biomolecular approaches and isotope analyses (notably nitrogen, carbon, sulfur, oxygen and strontium) to reconstruct diet, provenance/mobility, and/or seasonality. In addition, bone chemistry is an integral part of accelerated mass spectrometry (AMS) applied to short-lived organisms and are critical in establishing robust and precise chronologies. Likewise, the fast-growing field of past population genetics has also made remarkable progress over the past decade, as has proteomic research, including methods such as collagen finger-printing (e.g., Zooarchaeology by Mass Spectrometry, or ZooMS) which allow the identification of highly fragmented animal remains to the genus level. On the other hand, more traditional approaches such as morphometrics and histology have also developed substantially in analytical sophistication, contributing novel insights into Mesolithic human life histories. In this session, we invite contributors to present diverse studies within the wider field of bioarchaeology through both novel analytical approaches and state-of-the-art methodologies applied to Mesolithic assemblages.

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ORAL PRESENTATION

Friday 19th September, h.11:15-11:30

Ancient DNA from artefacts offers a new perspective on the Mesolithic in Southern Scandinavia

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The population history of northern Europe remains a topic of intense research, particularly on the origins and spread of key technological innovations during the Mesolithic. Our study, which builds upon recent advancements in ancient DNA recovery, focuses on using birch tar mastics and hafted materials, such as slotted bone points, as sources of ancient human DNA. These tools, first appearing in Scandinavia around 9200 BP, are considered an innovation likely originating in northern Eurasia. However, the mechanisms by which this technology spread and reached Denmark—whether through incoming hunter-gatherer groups or local adoption by indigenous populations—remain unresolved. Through the extraction of ancient human DNA from birch tar mastics and slotted points, we have generated some of the oldest human genomes from Denmark and southern Scandinavia, significantly expanding the dataset of Mesolithic genomes beyond those published in 2024 by Allentoft et al. These genomes provide unprecedented insights into the population dynamics during the Maglemose (11,000–8,400 cal. BP) and Kongemose (8,400–7,400 cal. BP) cultures. Our findings address long-standing questions about the introduction of pressure-blade technologies in northern Europe, highlighting the potential for novel sampling strategies to transform our understanding of early human history.

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ORAL PRESENTATION

Friday 19th September, h.11:30-11:45

Exploring the genetic legacy of Mesolithic populations in the Eastern Alps: aDNA evidence from the Veneto and Trentino-Alto Adige Regions

Posth Cosimo * (1), Reiter Ella (1), Gnecchi-Ruscone Guido Alberto (1), Yavuz Orhan Efe (1), Mottes Elisabetta (2), Fontana Federica (3), Duches Rossella (4), Sparacello Vitale (5), Nicolis Franco (2)

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Recent studies conducted by our team have explored the biological makeup and the social and ecological context of Mesolithic hunter-gatherers in the Alpine region of northern Italy, focusing on the exceptionally rare human remains discovered in the Veneto and Trentino-Alto Adige regions. The genetic composition of these populations provides critical insights into the demographic and evolutionary processes that shaped early human groups in Europe. This study analyzes ancient DNA (aDNA) from three Mesolithic individuals recovered from archaeological sites across the eastern Alps: Mezzocorona-Borgonuovo and Vatte di Zambana in Trentino-Alto Adige, and Mondeval de Sora in Veneto. The analysis examines genetic diversity, population structure, and connections to broader European populations. Preliminary results reveal a genetic profile dominated by Villabruna ancestry, consistent with Epigravettian individuals from the Italian peninsula and comparable to other Mesolithic groups in Western Europe. Regional analyses, however, suggest localized differentiation and possible interactions with neighboring groups. Evidence from genetic data also explores the potential for early interactions between Mesolithic hunter-gatherers and incoming Neolithic farming populations, providing insights into the cultural and biological transitions in this region These findings provide a deeper understanding of the genetic and cultural landscape of post-glacial Europe, highlighting Northern Italy's role as a potential corridor for human migration and interaction. Future research will further investigate the impact of environmental changes and the transition to the Neolithic on the genetic makeup of these populations.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

ORAL PRESENTATION

Friday 19th September, h.11:45-12:00

FROM BONES TO MUMMIFICATION: BREAKING GROUND IN MESOLITHIC MORTUARY STUDIES WITH BIOARCHAEOLOGY

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Mummification of the dead is a worldwide mortuary practice. It is the simplest and the most effective way to preserve a corpse offering the survivors a prolonged period of engaging with the body. Yet, in the absence of historical accounts, mummification in prehistory, while plausible, is largely unknown. In 2022, together with other colleagues, we discovered evidence of mummification in Mesolithic Portugal from 8000 years ago. This discovery prompts a radical reassessment of early mummification in Europe and opens a new debate about the cultural significance of the practice. In this presentation, we introduce our new research project, funded by the Swedish Research Council (2024-2027), which aims to develop a pioneering non-invasive bioarchaeological framework to investigate mummification at archaeological sites containing human bones but lacking tangible evidence of mummified soft tissues. Our innovative approach combines bioarchaeology and funerary archaeology to create methods for detecting mummification when only skeletal remains are preserved. By identifying prehistoric examples in Europe, we aim to evaluate the prevalence of the practice in Mesolithic Europe.

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ORAL PRESENTATION

Friday 19th September, h.12:00-12:15

MANDIBULAR MORPHOLOGICAL CHANGES IN THE MESOLITHIC – NEOLITHIC TRANSITION ARE IMPACTED MORE BY POPULATION HISTORY THAN BY DIET

Godinho Ricardo Miguel * (1), Simão Patrícia (1), Umbelino Cláudia (2), Gonçalves Célia (1), Cascalheira João (1), Bicho Nuno (1), Siklósi Zsuzsanna (3), Anders Alexandra (3), Raczky Pál (3), Gémes Anett (3), Wiltschke-Schrotta Karin (4), Semal Patrick (5), Polet Caroline (6), Évinger Sándor (7), Hajdu Tamás (3), Smith Patricia (8), Von Cramon-Taubadel Noreen (9)

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The transition from Mesolithic hunting-gathering to Neolithic agro-pastoralism involved meaningful social, cultural, economic and biological changes. These include, e.g., changes in population structure, diet and skull morphology. The latter have been shown to be impacted by the former two because bone morphology responds both to genotype and to biomechanical loading. Yet, it is still unclear which of these factors is driving the morphological changes arising in this transition. This study uses mandibular morphological, genetic and diet data to clarify this question. A sample of 259 mandibles from north Africa to western Eurasia and from the Upper Palaeolithic to the Chalcolithic was digitised and used in Geometrics Morphometrics (GM) based morphological analysis. Mitochondrial DNA (mtDNA) haplogroups were used as proxy for population history and dental wear magnitude as proxy for diet. These data were then used to generate distance matrices and Mantel tests to examine the relationship between these variables and to quantify the proportion of mandibular morphology that is explained by diet and by population history. Our results show that mandibular morphology is significantly correlated with population history and diet, but that the former explains a much larger proportion of mandible form. Thus, although our study is consistent with previous research in showing that the changes in diet introduced in this transition do impact skull morphology, it also shows that this impact is much smaller than that of the caused by changes in population structure arising due to migrations.

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ORAL PRESENTATION

Friday 19th September, h.12:15-12:30

MANDIBULAR SHAPE IN THE MESO-NEOLITHIC TRANSITION: THE ZVEJNIEKI CASE STUDY

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Subsistence strategy influences mandible morphology, such that agricultural groups have shorter and narrower mandibles than foraging groups. The same pattern is observed when comparing individuals across the Meso-Neolithic transition and its associated subsistence change.These morphological differences are often explained by a reduced masticatory stress resulting from a more processed agricultural diet, but recent research suggests population history may explain a higher proportion of this morphological variation than previously suspected. The Zvejnieki archaeological site in Latvia is one of the largest Stone Age cemeteries in Europe with over 300 burials dated from ~7500 cal BP to ~2600 cal BP. Here, the Meso-Neolithic transition was characterised by the appearance of pottery at 5400 cal BP without associated population replacement. Later, in the Bronze/Iron Age, the population adopted an agro-pastoralism subsistence. Hence, this population presents a compelling case study to study the influence of subsistence strategy on mandible morphology, while controlling for population history. In this study, we 3D scanned nearly 100 mandibles from Zvejnieki individuals, 36 from the Mesolithic, 57 from the Neolithic, and 5 from the Bronze/Iron Age, from which we collected coordinates for 21 anatomical landmarks, followed by geometric morphometric analyses, from which we will present preliminary analyses. This research stands to contribute to our understanding of this extraordinary population, as well as the Mesolithic and its transition to the Neolithic, more broadly. In addition, our results shed light on modern issues of tooth crowding and malocclusion, which have been associated with increased diet processing.

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ORAL PRESENTATION

Friday 19th September, h.12:30-12:45

INTERACTIONS WITH THE DEAD: THE POTENTIAL FOR 3D DIGITAL MICROSCOPY TO REVEAL POST-MORTEM MANIPULATIONS OF THE BODY

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This paper reports on the application of 3D digital microscopy to surface modifications on Mesolithic human bone, to elucidate the timing of post-mortem interactions with the body. A key piece of evidence for the deliberate manipulation of the body are bone surface modifications, such as cut-marks, scrape-marks and chop-marks. Macroscopic analysis of their location and morphology can provide information on the timing and motivation behind the action (e.g. cut-marksconcentrated around skeletal joints suggest disarticulation of a fleshed body, those focused on the shaft of a bone may relate to defleshing or cleaning) but this is limited and not quantifiable. Recent work has however shown the potential for 3D digital imaging of the surface micromorphology of such marks to provide information which can distinguishbetween marks made at different stages of decay/ decomposition (see Bello et al., 2016, Wallduck and Bello 2016a) and differentiate between marks resulting from the processing of bodies and those derived from engraving bone (e.g. Wallduck and Bello, 2016b). Confirming the timing of these interactions with the body is a key part of reconstructing the specific processes involved, which in turn is crucial evidence for reconstructing attitudes and beliefs towards the dead. Within the Mesolithic, however, application of this technique has so far been confined to sites within the Danube Gorges (Serbia). This paper will present the results of the application of this method to an assemblage of Mesolithic remains from northern Europe and discuss its implications for understanding mortuary treatment at this and other sites.

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Friday 19th September, h.12:45-13:00

THE BIOLOGICAL PROFILE OF MESOLITHIC INFANTS: A GEOMETRIC MORPHOMETRICS TECHNIQUE FOR SEX ESTIMATION USING THE AURICULAR SURFACE

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The Muge shellmiddens served as burial grounds for the last hunter-gatherers of the Iberian Peninsula. Approximately 300 individuals have been recovered, making it one of Europe's largest Mesolithic skeletal collections. These remains provide invaluable insights into the demographics and social structure of these communities. However, the lack of data on the biological sex of non-adults limits our understanding of these groups. This study uses three-dimensional Geometric Morphometrics (GM) and the auricular surface to estimate the biological sex of non-adults aged 0-6 years old. The ilia of 46 individuals (20 females, 26 males) from the Luís Lopes Identified Skeletal Collection were surface-scanned, and GM-based morphological analysis was conducted, including GPA, PCA, and non-parametric statistical tests to assess sex differences. Differences in the auricular surface morphology were identified in infants under one year, but no differences were observed in older individuals. The same methodology was applied to eight archaeological infants from two Muge shellmiddens, Cabeço da Arruda and Moita do Sebastião. Although the results were inconclusive, tentative sex estimation was possible for individuals under one year, suggesting that 2/5 of the archaeological infants may be female, and 3/5 are male. This study underscores the potential of 3D GM for sex estimation in archaeological non-adult skeletal remains. It also demonstrates that the auricular surface is a reliable sex indicator in infants under one year, but the biological signal reflecting sexual dimorphism fades after that age. Future research should include larger, more diverse samples to investigate inter-population variability and incorporate cross-validation and AI-based approaches.

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ORAL PRESENTATION

Friday 19th September, h.14:30-14:45

The shaman's Mesolithic burial of Bad Dürrenberg (Saxony-Anhalt, Germany): environmental and dietary reconstruction

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The Shaman's Mesolithic burial of Bad Dürrenberg, discovered in 1934, represents a remarkable archaeological find dated to approximately 7,000 cal. B.C. The burial contained the remains of a woman and an infant, accompanied by an elaborate assemblage of grave goods, including a roe deer headdress, pond turtle shell fragments, and other faunal remains, as well as stone artefacts. This study aims to reconstruct the environment and diet of the shaman, as well as other contemporary humans from Bottendorf, Hadmersleben, Kuckenburg, and Merseburg Ost, all located in central Germany. We analyzed 15 faunal remains mostly from Bad Dürrenberg and 11 human remains. Stable carbon, nitrogen, and sulfur isotope analyses were conducted on collagen to infer dietary and environmental conditions. Our findings indicate that the Mesolithic landscape around Bad Dürrenberg was predominantly open. Even species typically associated with forested environments, such as roe deer (Capreolus capreolus) and red deer (Cervus elaphus), exhibited carbon isotope values ranging from -20.8‰ to -20.3‰ and -21.6‰ to -20.7‰, respectively, consistent with open-land habitats. Dietary reconstruction suggests that the primary food sources of the shaman and the other Mesolithic individuals have not yet been fully identified, as the burial offerings were not the main source of their daily diet. Furthermore, despite the proximity to the Saale River, sulfur stable isotopes suggest that aquatic resources were not a substantial component of their subsistence. An exception maybe the four individuals from Bottendorf, whose isotope values could be explained by aquatic resource consumption.

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ORAL PRESENTATION

Friday 19th September, h.14:45-15:00

Investigating Mesolithic foodways at the transition to agriculture

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How prehistoric farming became established in Northern Europe, a region that supported relatively dense populations of hunter-gatherer-fishers, has troubled archaeologists for over a century. Empirical assessment of changes to food production, human diet and the ways that foods were prepared and eaten has been fundamental to exploring this problem. In one of the largest studies of its kind, here we present data from organic residue analysis of over a 1000 Mesolithic and Early Neolithic ceramic vessels to examine the role of pottery at the transition. We found unexpected consistency in the use of aquatic foods at odds with prevailing narrative of large-scale demographic and economic change. We argue that the ability of farming groups to adapt to their environment by learning hunter-gatherer-fisher practices, combined with dairying, was key to their northerly expansion. We also provide new, compelling, multi-proxy evidence of the use of dairy products by hunter-gatherer-fishers which we attribute to long-distance exchange with farmers, implying a much greater degree of interaction and cooperation than previously described. Focusing on Denmark, finally we offer a demographic explanation to reconcile the different lines of evidence for aquatic food exploitation at the transition to agriculture..

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ORAL PRESENTATION

Friday 19th September, h.15:00-15:15

What was the Mesolithic? Reassessing coastal adaptations by hunter-gatherers in Italy

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Defining the Mesolithic is difficult, if one aims to understand it as a phenomenon, rather than simply identifying its inception with the Pleistocene-Holocene boundary or even with the first production of microlithic industries. Ever since its establishment as a period of human prehistory, the Mesolithic has been associated with the Ertebølle køkkenmøddinger of Denmark. As a result, Mesolithic hunter-gatherers have been depicted as reliant on marine resources to adapt to Postglacial environments. On this basis, Antonio Radmilli proposed the Mesolithic in Italy, following his 1958 excavations at Grotta La Porta and at other poorly published sites. This proposal was met with skepticism, but the inconsistencies in relevant chronologies, as well as poor typological reasoning and superficial analyses of subsistence data, were never addressed in detail. The present contribution does so, by reassessing what is known about coastal hunter-gatherer adaptations in Italy from the closing millennia of the Pleistocene to the arrival of Neolithic farmers. Recently acquired data on shellfish consumption by central Mediterranean Late- and Post-Glacial foragers, as well as zooarchaeological evidence for fishing and for the exploitation of marine mammals, along with isotopic data on human diets, will be presented to evaluate Mesolithic reliance on marine resources. This, in turn, forms the basis for a discussion on the unity of the Mediterranean Mesolithic, as well as its implications for understanding the transition to farming in Italy.

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ORAL PRESENTATION

Friday 19th September, h.15:15-15:30

FISHFUL THINKING: STABLE ISOTOPE ANALYSIS OF AMINO ACIDS IN EASTERN BALTIC FORAGERS AND EARLY FARMERS

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The transition from foraging to farming was a pivotal moment in ancient socio-economies, but its complexities and regional variation are still poorly understood. Recent research shows that in the Eastern Baltic during the 3rd millennium BCE, hunter-fisher-gatherers (HFG) and early farmers lived side by side. Farming was introduced by the Corded Ware cultural group (CWC), but dietary segregation existed, as stable isotope analysis of human bone collagen suggest that some individuals had greater access to domesticates while others relied more on wild resources. The local HFGs did not adopt domesticates. Instead of a transition, there was a complex system of parallel worlds: local HFGs continued their foraging lifestyles, while incoming farmers practiced mixed economies. These subsistence strategies persisted for at least a millennium after the introduction of domesticated animals. Here, we will investigate the dietary shift in more granular detail by deploying compound specific isotope analysis (CSIA) of amino acids from human bone collagen. Our goal is to better quantify the consumption of aquatic foodstuffs in the diets of 3rd millennium BCE HFGs and early farmers living on the Baltic Sea coast, which remains ambiguous using bulk stable isotopes alone. Through this case study, we will demonstrate the overall value of the CSIA methodology in providing a more nuanced and accurate assessment of ancient diets.

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ORAL PRESENTATION

Friday 19th September, h.15:30-15:45

Looking for diachronic patterns in Danish Mesolithic diets

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After more than 40 years of stable isotope research, the stark contrast between Late Mesolithic Ertebølle and Early Neolithic Funnel Beaker culture diets observed by Tauber (1981, DOI 10.1038/292332a0) is still evident, and perhaps reinforced by archaeogenetic evidence of a major population turnover at this transition (Allentoft et al. 2024, DOI 10.1038/s41586-023-06862-3). Within the Ertebølle epoch, however, we (Meadows and Fischer 2024, DOI 10.1016/j.quascirev.2024.108745) found no diachronic dietary patterns: most of the 40 Ertebølle individuals with δ13C and δ15N data depended overwhelmingly on marine resources, particularly species associated with eelgrass (Zostera marina) meadows, but exceptions occurred throughout the 1500-year period (~5400-3900 cal BC). δ13C and δ15N data from only 20 earlier Mesolithic individuals are available, covering nearly twice the Ertebølle timespan. They appear to show a steadily increasing reliance on marine resources between 8400 and 5500 cal BC, although terrestrial resources always predominate. Here, we examine whether this trend is robust and corresponds to changes in technology and resource availability, or reflects natural developments in the isoscape, or whether the data are too sparse to say anything definitive. Additional Ertebølle cases provide further evidence of synchronic dietary variation, and provide a statistical framework for distinguishing diachronic from synchronic patterns in the earlier Mesolithic.

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POSTER

Friday 19th September, h.15:45-16:00

11 000 YEAR OLD HUMAN SKULLS FROM SOUTH-WESTERN LITHUANIAN PEAT BOG

Daubaras Mantas * (1), Brazaitis Džiugas (2), Jankauskas Rimantas (3), Kozakaitė Justina (3), Piličiauskienė Giedrė (1), Kooijman Ellen (5), Skipitytė Raminta (6), Mittnik Alissa (7), Reich David (8)

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Re-discovery of unique human skull collection assembled by Jurgis Žilinskas in the 1st half of XX c. Lithuania provided a lot of new important anthropological data for Lithuanian archaeologists. Among the skulls was a unique group of 3 human skulls that were directly AMS dated to be around 11 000 years old. All 3 skulls were found in a peat bog making them the oldest known human remains from peat bogs in all of the north-eastern Eurasia. Results from C and N stable isotope analysis are expected to show the prevalent source of food for these societies living at the very early stages of Holocene. The main question here is where their food economy was focused on fishing or hunting migratory animals (e. g. reindeer)? 2 out of 3 skulls had their teeth preserved and this enabled us to do Sr isotope analysis to see their migratory patterns during their lifetime. The main question to be answered here is were they of local or migratory origin? Further research possibilities will be outlined as well.

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POSTER

Friday 19th September, h.15:45-16:00

Transitions and changes in eastern Middle Sweden 5000 – 2200 BC

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According to cultural history research, migration was a natural part of transition and change. However, the migrations became unfashionable and were abandoned both in new archeology and postmodern research. DNA research represented a paradigm shift and reversal of migration models, albeit often simplistic and high-level ones. The transition must be broken down to the local level. My essay deals with a specific region, Östergötland, in eastern Central Sweden and its local story, its history. Transitions started approx. 5000 BC with a dissolution of the large Mesolithic settlements in favor of numerous, small, and scattered ones. The Neolithic farms were established on these Mesolithic sites and probably the local hunters and gatherers became farmers and incorporated into the funnel cup culture. However, according to DNA analysis, we know the migration from the south 3900 BC. Approx. 3200 BC another transition took place. The FBC disappeared and the hunters and gatherers returned, known here as the Pitted Ware Culture. According to DNA analyses, it was a new genetic population that settled along the coasts and waterways. The PWC had some genetic relatedness to the older, Mesolithic, population but was still a new and distinctly separate genetic population. To summarize: the transition from the Mesolithic to the Neolithic did not end with the rise of the FBC. If you like, in this area the early Neolithic was just a break in the Mesolithic.

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MESO2025 - 11th International Conference on the Mesolithic in Europe

Session 12

Current Research and Mesolithic Narratives

Coordinated by Colas Guéret and Adriana Soto Sebastián

Beyond their definition of hunter-gatherer-fisher societies, Mesolithic communities constituted diverse and complex realities. The research carried out on those populations reveals: the development and adoption of different strategies of exploitation and relationship with the environment, along with different ways of mobility and territoriality; the exploration of new spaces; the dynamism of their contact and exchange networks; the construction of different identities; their technological, artistic and symbolic practices; and their social and spatial organisation, among many other issues. These heterogeneous and dynamic realities can only be tackled successfully from a plurality of perspectives, approaches, methodologies, and interpretations.

This session aims to include all those proposals that do not fit in the topics addressed in the other sessions, but which reflect the diversity of narratives and perspectives that encompass Mesolithic research. In this sense, the following issues will be welcomed: presentations of projects or new lines of research, with innovative thematic, methodological, and/or theoretical approaches; results of fieldwork and discoveries; analysis of materials and archaeological contexts; collaborative projects (collaborative databases, networks, etc.); and dissemination and social valorisation activities about Mesolithic research, as well as its impact on current societies. In short, all those efforts that constitute and build from plural and diverse perspectives our knowledge about Mesolithic societies.

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ORAL PRESENTATION

Friday 19th September, h.09:45-10:00

The NAUTICC (Norms and Uses of Techniques in Prehistoric Coastal Communities) database: a tool for prehistoric maritime techniques

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Coastal hunter-gatherer communities in Europe interacted with their environment through diverse technical actions, but studies of their maritime life have long been marginalised. As part of the MSCA doctoral network ArCHe, through my doctoral research this gap will be addressed by producing a comprehensive synthesis of the technical systems employed by these prehistoric coastal societies. The research spans multiple disciplines, including archaeology, archaeozoology, ethnography, and paleoecology and different geographical coastal areas: Cantabria (Spain), Brittany (France), South-East Norway and Latvia. A key objective is to establish a unified methodology that integrates and makes heterogeneous datasets comparable. A central tool in this project is the NAUTICC relational database (NORMS AND USES OF TECHNIQUES IN PREHISTORIC COASTAL COMMUNITIES), designed to systematically record and organize data from diverse sources. This database facilitates the extrapolation of new archaeological insights into the social structures of coastal communities on local scales, as well as patterns of cultural continuity and change across regions. The project analyzes data related to key aspects of Mesolithic life, including hunting, fishing, cooking, dwelling, tool making and symbolic practices. Data are gathered from four primary sources: grey literature (to improve accessibility), open databases, open data repositories, and published literature. By synthesizing a vast array of data across time and space, this research provides new perspectives on the norms and practices of prehistoric coastal communities.

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ORAL PRESENTATION

Friday 19th September, h.10:00-10:15

The Skoklefall site revisited - resource exploitation and subsistence in coastal Late Mesolithic, southeast Norway

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Marine resources are considered of central importance to the economy and settlement of the Mesolithic population of southeast Norway. There is, however, limited data that can provide direct information about the Mesolithic diet and economy in the region. Although some Late Mesolithic sites have produced bone material, this is often burnt and very fragmented. Due to taphonomic processes, the fauna material is not considered representative in terms of the composition and utilization of species. Consequently, the importance of marine resources to Late Mesolithic subsistence in this region is still not clear, as well as its implications for our understanding of these societies. This is especially relevant considering the dramatic reshaping of the landscape due to sea-level change in the area during the Mesolithic. The Late Mesolithic Skoklefall site located in the inner Oslo Fjord, southeast Norway, contribute to this discussion providing a well-preserved fauna material both from a shell midden, the, so far, only of its kind in southeast Norway, as well as the associated settlement area. In this talk, we present the result from the archeological excavations, focusing on the fauna material. The results provide new understanding of Late Mesolithic resource exploitation and subsistence in the Oslo Fjord region.

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ORAL PRESENTATION

Friday 19th September, h.10:15-10:30

NOT JUST A DISASTER STORY – INVESTIGATIONS OF THE SOCIAL IMPACTS OF THE STOREGGA TSUNAMI 8200 YEARS AGO

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During the coldest years of the 8.2ka climatic cold anomaly, the coast of west Norway, Scotland and northeastern England, and beyond, was hit by a massive tsunami, the Storegga tsunami. The to date, largest known submarine landslide triggered a tsunami larger than the 'Boxing-Day' tsunami in Asia 2004. This large-scale geo-event has been thought to bring about disaster and demographic collapse to the Mesolithic coastal communities in the region. One of the aims of the LAST-project (2021-2024), however, was to challenge this somewhat one-sided narrative. In this paper, I will present results from this project together with some of the obstacle faced when investigating social impacts of a tsunami. For one, there are few well dated sites with evidence of direct impact. The question is though, do we need that? In this paper then, I'll discuss the archaeological visibility of crisis, or perhaps more: our expectations of such. I will show how 'the day the sea turned monster' turned out to be more than a disaster story.

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ORAL PRESENTATION

Friday 19th September, h.10:30-10:45

The impact of Storegga in Northern Scotland: excavations at Tarradale 2D

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The Storegga submarine landslide and tsunami of c.8150 cal BCE left an indelible mark on coastal sedimentation sequences around the North Sea basin, testament to its incredible intensity and short term environmental impact. However, tracking human responses in coastal areas is complicated by the destructive nature of the event itself, with a lack of evidence for coastal activity in this region in the late 7th millenium BCE often ascribed to the erosion of deposits during Storegga. Excavations at the shell midden site of Tarradale 2D, in the Beauly Firth, Northern Scotland, provided a unique opportunity to address this lacunae in an area of Britain that has seen little focussed research on Mesolithic coastal settlement to date. Test pitting of the midden undertaken by Eric Grant and the North of Scotland Archaeology Society in 2011 recovered shell-rich deposits containing charcoal and animal bone, and produced two radiocardon measurements bracketing 8150 cal BCE. In recognition of the potential of these deposits to inform on human responses to Storegga, the site was revisited in 2023 by the Life After the Storegga Tsunami project. This paper will present the results of these excavations and subsequent post excavation analysis, including new radiocarbon dates, zooarchaeological analysis, soil micromorphology, ZooMS and stable isotope analysis. These results provide rare insights into changes in Mesolithic coastal exploitation strategies in response to changing evironmental conditions around the time of the Storegga Tsunami.

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ORAL PRESENTATION

Friday 19th September, h.11:15-11:30

Excavations at No Name Hill: an early Mesolithic wetland site in the Star Carr landscape

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In this paper we report on new archaeological and palaeoenvironmental investigations at a Mesolithic wetland site in the Vale of Pickering, in the North of England. While the area is best known for the excavations at the early Mesolithic site at Star Carr, a further 25 areas of Mesolithic activity have been identified within the surrounding landscape. New excavations at one of these sites, an island within a palaeo-lake, have recorded an extensive area of early Mesolithic activity that includes faunal remains, worked flint, antler working waste, osseous material culture, and wood working debris. Palaeoenvironmental analysis shows that this activity was focused on the island's shore, with much of the material deposited into an adjacent area of shallow water. The results of this work have been combined with earlier investigations at the site, providing important new information on the ways human societies occupied this landscape during the early part of the Mesolithic.

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Friday 19th September, h.11:30-11:45

WRITING MESOLITHIC HUNTER-FISHER-GATHERERS: A VIEW FROM ARCHAEOZOOLOGY AND MULTISPECIES ARCHAEOLOGY

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Following recent debates on the implications of the term hunter-gatherer, this paper will explore whether there are particular ways of writing Mesolithic hunter-fisher-gatherer relations with animals, particularly from an archaeozoological and a multispecies perspective. Although the tradition of classifying societies on the basis of the modes of subsistence and conventional terminology largely obscure the multifaceted nature of human experience, there still remains something deeply engrained in Mesolithic and hunter-gatherer research that makes it intimately bound to animals and their remains from archaeological sites. Nevertheless, hunting and fishing practices, as well as the variety of interspecies relations they afforded, were by no means exclusive to societies we traditionally lump under the term hunter-gatherer. What kinds of narratives do we weave then based on the faunal record, and is there such a thing as hunter-fisher-gatherer (as opposed to any other) archaeozoology? To address this question, I use two distinct faunal assemblages (from a Mesolithic-Neolithic and a Medieval context) as case studies, and reflect on the different interpretations I offered, the language I used, and the themes I engaged with while studying them. While there are obvious reasons why certain theoretical approaches figure more prominently in studies of particular time periods, it is worth examining the underlying assumptions wrapped around such practices. This paper is an attempt to move away from the polarizing view of framing hunter-gatherer research in ontological terms, and the study of everyone else in terms of ideology, and to engage instead with the diversity of lived experience

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ORAL PRESENTATION

Friday 19th September, h.12:15-12:30

MESOLITHIC HEARTH FEATURES OF SW IBERIA. NEW FUEL FOR AN OLD DISCUSSION

Cruz José Bruno * (1), Abreu Carla (2), Costa Ana Maria (3) (4) (5) (6), Martinho Micael (2), Monteiro Patricia (3) (7), Neves César (4) (8), Simões Carlos (7), Teixeira André (9), Tomás Carla (10), Araújo Ana Cristina (3) (4) (6)

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From c. 10.5 k cal BP onwards and before the advent of the first agro-pastoral economies in south-west Iberia, the archaeological record mirrors a human settlement scattered along the present-day coast and a subsistence system that systematically includes a significant marine component even in sites located quite far from the littoral. Sites are mostly shell middens, rather small and essentially related to the exploitation of local resources. However, two particular sites have been discovered and excavated in Central Portugal, revealing a different reality, hitherto unknown and still difficult to define. The Casal Leitão and Cova da Baleia sites are both located near the present-day coast but are not shell middens. Both are characterized by a considerable number of pit-like hearth features, strikingly similar in terms of architecture, size and contents and featuring burned clay walls. At Casal Leitao, in addition to the walls themselves, these structures yielded charcoal and burned local sandstone cobbles within a sandy, homogeneous sedimentary content. Radiocarbon dating indicates an Early Mesolithic chronology for these two sites, revealing a novel type of occupation, in terms of the well-known patterns recorded at neighbouring coeval sites. The ongoing multidisciplinary research on the recently excavated Casal Leitao is designed to address a number of issues pertaining to site formation processes, function and use, typology, lifetime, single or multiple use, etc. Our ultimate goal is to contribute to a better understanding of Early Mesolithic societies and their ways of life, know-how and adaptations in SW Iberia and beyond.

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ORAL PRESENTATION

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Uncovering Mesolithic Life: Archaeological Excavations and Interpretations at Cabeço da Amoreira, Muge (Central Portugal)

Gonçalves Célia * (1), Bicho Nuno (1), Umbelino Cláudia (2) (1), Godinho Ricardo Miguel (1), Coutinho Nogueira Dany (2), Rufà Anna (1) (3), Filipe Leonor (1), André Lino (1), Cascalheira João (1)

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The Muge shell middens, located in the Tagus Valley (Portugal), represent one of the most significant archaeological contexts of the European Mesolithic. These sites provide unparalleled insights into human adaptations during the Holocene, illustrating the interplay between environmental changes and the emergence of early social complexity. Among them, Cabeço da Amoreira stands out as a key site, with extensive data resulting from systematic archaeological excavations and interdisciplinary analyses conducted over the past fifteen years. The occupation of Cabeço da Amoreira, dated to between 7950 and 7350 cal BP, has yielded a diverse array of evidence, including lithic artifacts, faunal remains, and funerary contexts. These findings reflect the intensive exploitation of estuarine and terrestrial resources alongside complex social behaviors, such as the development of funerary practices. A layer of small pebbles and sediments, interpreted as a cairn, raises critical questions regarding its function: was it a deliberate landscape marker following the site's abandonment, or does it reflect natural taphonomic processes? Such findings provide new perspectives on the symbolic and functional dimensions of Mesolithic landscape use. This presentation synthesizes the results of long-term excavations at Cabeço da Amoreira, showcasing the breadth of data accumulated and the understanding it provided about the Mesolithic in the Tagus Valley. By integrating chronological, spatial, and bioarchaeological evidence, the study enhances our comprehension of how Mesolithic communities organized their subsistence strategies, social structures, and interactions with their environment.

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ORAL PRESENTATION

Friday 19th September, h.12:45-13:00

New evidence of Mesolithic presence in northwestern inland Iberia: A Cova de Veiga do Muín (León, Spain)

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A Cova de Veiga de Muín, a small limestone cave located in El Bierzo comarca (León, Spain), was investigated through some test pits conducted between 2020 and 2022. These excavations revealed archaeological materials within a stratigraphic context, although the deposits have been affected by various natural and biological post-depositional processes. The recovered assemblage consists primarily of faunal remains (mainly macromammals), ceramics attributed to Recent Prehistory, and lithic artifacts. While evidence suggests sporadic visits to the site during Recent Prehistory, the typo-technological characteristics of the lithic industry—such as the presence of laminar blanks and microliths (notably crescents)—indicate a Mesolithic occupation. Radiocarbon dating, alongside faunal analysis, provides further insights into this phase of human activity. This study aims to present the key features of the archaeological assemblage and its significance for understanding the Mesolithic occupation of the site. Analyzing this record will improve our knowledge of Mesolithic groups in the northwestern Iberian interior and facilitate comparisons with surrounding regions. Furthermore, it contributes to the broader discussion on hunter-gatherer adaptations during the Holocene within the Iberian context.

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ORAL PRESENTATION

Friday 19th September, h.13:00-13:15

Level 3 Bauma dels Fadrins (7200-6700 cal BC): a new Mesolithic occupation in the Eastern Pyrenees

Tornero Carlos * (1) (2), Díaz-Cansco Celia (2) (3), Del Valle Héctor (2) (4), Berihuete Marian (1), Morales Juan Ignacio (2) (4), Soto Maria (5) (6), Picornell-Gelabert Llorenç (7), Carbonell Eudald (2)

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The Bauma dels Fadrins is a large rockshelter located in the Eastern Pyrenees (Spain) at 1190 meters above sea level. Between 2019 and 2023, excavation work on occupation level 3 was completed, covering an area of more than 20 m². Radiocarbon dating has placed this level between approximately 7200-6700 cal BC. The archaeological work has documented around ten combustion structures, well defined and characterized by the accumulation of charred archaeobotanical remains both inside and around them. Areas with large accumulations of lithic remains, mostly debitage, linked to knapping events in the rockshelter, have also been identified. An abundant set of faunal remains, all from wild species, has been found, with wild goat and red deer being the main targeted species. The lithic reduction remains indicate a production mainly made of quartz, suggesting a techno-complex of flakes and retouched flakes. Additionally, macro-lithic elements such as pestles, mills, and grindstones, as well as personal ornamentation objects, were also found in smaller quantities. This communication presents the overall results of the study, considering both the spatial distribution of activity areas and the exploitation of biotic and abiotic resources, as well as the characterization of artifact and ecofactual productions. Knowledge of the last hunter-gatherer groups in the Northeast Iberian Peninsula is limited, especially in the Pyrenean context. The Bauma dels Fadrins site provides significant information, using current and modern techniques to better understand the nature of these Mesolithic groups.

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ORAL PRESENTATION

Friday 19th September, h.14:30-14:45

The Mesolithic occupations at the new site of Balma del Barranc del Regatxol (Mas de Barberans, Catalonia, Spain): implications for the Prehistory of the lower Ebro River basin

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In 2019, the SAPPO-GRAMPO research group (UAB), in collaboration with Museu de les Terres de l'Ebre and Parc Natural dels Ports, conducted systematic surveys to revitalise the study of prehistoric occupations in El Port Massif (Catalonia, Spain). These surveys identified significant prehistoric potential at Balma del Barranc del Regatxol (Mas de Barberans, Tarragona), leading to archaeological fieldwork to examine the preserved stratigraphic sequence. Excavations carried out in 2021, 2023, and 2024 confirmed a Mesolithic occupation sequence dated between 10,000 and 6,500 cal. BC. This site is now a key reference for reconstructing the Mesolithic of the region. It also stands out for its abundance of findings, comparable to the well-known sites of Cova del Clot de l'Hospital and Cova del Vidre. Preliminary analyses reveal a series of occupations characterized by intensive exploitation, processing and production involving lithic materials, minerals pigments, bones and marine resources. This communication presents initial data from the occupation sequence in Trench 4 and its associated materials, integrating the recovered record with local and regional evidence to offer new insights into the last hunter-gatherer communities in the Lower Ebro basin.

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ORAL PRESENTATION

Friday 19th September, h.14:45-15:00

La Baume de la Bruyère 3: new evidence of Early Holocene human occupation in Southeastern France

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For the past two years, the Baumes de la Bruyère project has been pivotal in advancing the study of human occupation during the Pleistocene-Holocene transition in eastern Provence, uncovering previously undocumented prehistoric occupations in two of the several karstic cavities in the Bruyère Gorge (Var, France). This is particularly significant considering the scarcity of early Holocene sites in the region, which make difficult the reconstruction of prehistoric cultural identities.

Initial surveys and investigations identified 17 cavities, seven of which revealed evidence of archaeological significance. Among these, two—BBY1 and BBY3—are currently the focus of ongoing research, with preliminary results proving highly promising.

The most notable findings to date pertain to cavity number 3 (BBY3) where a multi-stratified sequence was uncovered, revealing a complex record of human activity at the site. Several layers (US3 to US8) have been radiocarbon dated to the Pre-Boreal/Boreal period (11,100–9,500 cal BP). Significantly, numerous episodes of human occupation are preserved within alluvial silt sediments, demonstrating a high degree of archaeological integrity. Organic remains, including faunal materials, show exceptional preservation. The assemblage is remarkably diverse, featuring lithic industries, marine shell ornaments, mammalian fauna and malacofauna. The presence of small elements such as flint debris and micro-flakes indicates minimal post-depositional disturbance, further emphasizing the assemblage's integrity.

An interdisciplinary analysis is underway to synthesize findings on Mesolithic occupation, focusing on technical traditions, economic and symbolic practices, and subsistence strategies, providing valuable insights into human activities during this transitional period.

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ORAL PRESENTATION

Friday 19th September, h.15:30-15:45

The Early Holocene occupation of the Ljubljansko barje (Ljubljana Marshes), Slovenia. The case of the Vrbičev hribec site

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The Ljubljansko barje (Ljubljana Marshes) are an extensive marshy plain south of Ljubljana, where a lake formed at the end of the Pleistocene. Numerous pile dwellings were built on the shores of the lake during the Holocene, dating from the Late Neolithic to Early Bronze Age. Archaeological finds indicate the presence of humans in the Ljubljansko barje area as early as the Middle Palaeolithic. Traces of human occupation accumulate in the Late Upper Palaeolithic and Mesolithic periods. Lithic scatters from this period were discovered on isolated elevations or in their surroundings on the edge of Ljubljansko barje. The finds from these sites were mostly collected by surface surveys. Test excavations were only carried out in Vrbičev hribec and in Breg pri Škofljici. Among the Mesolithic sites, Zalog pri Verdu stands out, where the finds were collected during an underwater investigation of the Ljubija riverbed. In our presentation, we will present and critically evaluate archaeologically investigated Mesolithic sites in Ljubljansko barje. We will present the preliminary results of a new excavation on Vrbičev hribec, which took place in the summer of 2024. The new excavation confirmed the existence of two cultural layers. In addition to stone tools, the lower cultural layer also contained poorly preserved, fragmented animal remains and fragments of bone points. A paved area was discovered in the upper cultural layer. The lithic assemblage is characterised by a large number of cores. Rock crystal is also represented among the raw materials, which mostly consist of local chert.

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ORAL PRESENTATION

Friday 19th September, h.15:45-16:00

The Final Paleolithic – Mesolithic site Rostislavl 2 in the Central East European Plain

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The Rostislavl 2 site is situated in the southern part of the Moscow region, on the right bank of the Oka River at an elevation of approximately 6 meters above the river level. The site was discovered by A.V. Trusov in 2014 and has been investigated over an area of 48 m² in 2014–2020. In 2024, further work was conducted by Y.V. Kuzminova. The site has revealed two distinct layers: a Mesolithic layer and a Final Paleolithic layer, separated by sterile deposits ranging from 20 to 90 cm in thickness. The Mesolithic layer has been partially explored over a small area, revealing a section that appears to be associated with a lithic processing site. The flint inventory found here includes a core, flakes, narrow blades and bladelets, burins along with hammerstones. The lower layer contains compact well-defined concentrations of stone artifacts characterized by various tools including single-platform flake-blade cores, as well as flake and wide blade tools (up to 3 cm), end-scrapers, retouched and dihedral burins, curved backed point, asymmetric shouldered points, and large Lyngby tanged point. The faunal remains are mostly poorly preserved; however, one area yielded an artifact crafted from moose antler. Based on stratigraphy, typology, and data from faunal and paleopedological analysis, the materials from the lower layer can be referred to the Allerød period, dating back approximately 13,000 years. This site currently stands as the easternmost location on the Russian Plain associated with Final Paleolithic cultures featuring Lyngby-Ahrensburgian tanged points.

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ORAL PRESENTATION

Friday 19th September, h.16:00-16:15

When the dead become alive: life histories of Mesolithic individuals from Northern Europe

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This paper summarizes some results of the project Animals Make Identities, where we study human-animal relationships based on burial materials from northern European cemeteries. Our approach has been holistic, consisting of many kinds of archaeological evidence, including human skeletons, find inventories, and the landscape. Animals and artifacts made of them may have played active roles in representation of social identities, family relations, or societal roles, and these elements can be reflected in mortuary practices. Therefore, artifacts, when studied together with other grave evidence, including bioarchaeological analyses, can yield important information about individuals' identities and the structure of their societies. To better understand and compare the information that grave inventory can provide, we have reconstructed the life histories of several individuals from three renowned northern European cemeteries: Donkalnis in Lithuania, Zvejnieki in Latvia, and Yuzhniy Oleniy Ostrov in Russian Karelia. The aim is to create "informed narratives" of the buried individuals. These narratives, reconstructed based on our research and containing some speculative elements, bring Mesolithic people back to life again. This approach allows us to portray them in a manner that is more live, more fascinating, and less alienating.

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ORAL PRESENTATION

Friday 19th September, h.16:45-17:00

History of research, archaeological data and relative chronology: what do we know about Mesolithic in Kaliningrad district, Russia (South-Eastern Baltic)?

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Mesolithic materials in the Kaliningrad region (part of former East Prussia) were first discovered in the early 20th century (mostly bone and antler artifacts). Unfortunately, after 1945 most of the collections were lost, and only publications with approximate descriptions of the locations of finds survived. In the second half of the 20th century, a series of locations with Mesolithic-Neolithic materials were discovered. At most, only surface material was collected. In total, Mesolithic materials were found at 12 sites, most of them multi-layered. Only at three sites Mesolithic materials be traced (according of stratigraphic position, typological and technological materials). The report will summarize all the materials related to the Mesolithic period and propose possible cultural interpretation of them.

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POSTER

Friday 19th September, h.11:45-12:00

A DATABASE ON SHELL MIDDENS, A TOOL TO COMPARE THEM ACROSS THE ATLANTIC COAST OF EUROPE

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Shell midden sites are a precious source of information about lifeways during prehistoric times. They are the archaeological evidence of human activities along the shore by hunter-fisher-gatherer communities. The important concentration of shells generates an alkaline environment in the soil that creates great conditions of preservation of various types of archaeological artefacts specifically organic ones. These types of sites allow us access to information regarding life on the shore: diet, settlement patterns, activities around a shell midden. The accumulation is so significant in some cases that they can appear as small mounds in the landscape. Knowledge on shell middens is heterogeneous across the Atlantic Coast of Europe. They present a great diversity of size and shape; therefore, the quality and the quantity of information may vary significantly from place to place. In the context of the Archaeological Coastal Heritage: Past, present and future of a hidden prehistoric legacy project (ArCHe), our goal is to study and compare shell midden sites along the Atlantic coast of Europe and compare them. We plan to achieve this goal by updating and working on a database that will gather information (location, type of species, carbon dating) on shell midden from all regions across the Atlantic coast of Europe. We aim to have a better understanding of their great diversity on a European scale. This database will allow us to compare components and physical characteristics of shell middens to observe their singularities and common phenomena.

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POSTER

Friday 19th September, h.11:45-12:00

Increasing the scientific and public value of Europe's Mesolithic coastal heritage – approaches on contemporary nature-culture relations in the HORIZON MSCA Doctoral network ArCHe

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The material remains of hunter-fisher-gatherer populations in coastal areas across Europe are fractured, highly vulnerable and often merely visible. In addition to being endangered by climate change and development in coastal areas, this often-underestimated legacy tends to be under-communicated to the public. The HORIZON MSCA Doctoral Network ArCHe "Archaeological Coastal Heritage: Past, present and future of a hidden prehistoric legacy" (www.arche.uio.no), sets the scientific and public value of archaeological remains of Stone Age hunter-fisher-gatherers (c. 12.000-2.000 calBC) across different European coastal areas on the agenda, analysing them in a comparative, international and interdisciplinary perspective. The network trains 10 Doctoral Candidates based at six beneficiaries in five European countries (University of Oslo, University of Gothenburg, CNRS/University of Rennes, University of Latvia, University of Cantabria and Fundación Instituto Hidráulica Ambiental de Cantabria) – in the fields of archaeology, social anthropology, critical heritage studies, heritage management, bioarchaeology, geology, oceanography, coastal engineering/preservation. Further, the communication of this coastal heritage in its respective environments and lived landscapes is in focus. With its past-present-future approach ArCHe unites research on hunter-fisher-gatherer past, the embeddedness of our knowledge on this past in its present situation/lived landscapes and management, and the development of integrated practices for the future of this heritage. The poster will present the project and its objectives with a specific focus on nature-culture-relations.

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POSTER

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FINDING MESOLITHIC TIME: ASSESSING SCOTLAND'S MESOLITHIC STONE TOOLS AS A HERITAGE RESOURCE

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While knowledge of the Scottish Mesolithic continues to expand, certain regions of the country, including the North East and The Borders, have received comparatively less attention. Excitingly, lithic collections held by National Museums Scotland (NMS) and other regional museums, have the potential to bring these regions' Mesolithic narratives to the fore. Using typo-technological, metric and multivariate statistical analysis, lithic assemblages from the two case study regions will be subjected to extensive examination with the primary aim of elucidating regional stone working traditions and technologies. Subsequently, these findings will be presented to the public through interactive workshops and NMS' own gallery redesign, providing a unique opportunity for the lithic artefacts to be assessed on their value as heritage resources to inform both academic and public understanding of Mesolithic lifeways.

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POSTER

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New stratigraphic evidence from Grotta dell'Arco (Palermo, Sicily): the spread of Mesolithic in the Central Mediterranean

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Grotta dell'Arco (Bagheria, Palermo) is a karst cavity opening along the current coastline in the Triassic-Liassic dolomitic limestones. The cavity is located northwest of the promontory of Capo Zafferano, in an area rich in archaeological evidence that covers a wide chronological span. The area is characterised by a system of fractures and faults oriented in a NW-SE and NE-SW direction. The current morphology is determined by phenomena due to sea level oscillations and tectonics. The remnant of the vault of the cave, partially collapsed, forms a monumental natural arch. Previous survey and an old radiocarbon date from a Patella suggested the presence of an archaeological (Mesolithic) deposit still in situ. Since the cave is reachable only by the sea or by ropes from the slope, the probability to find a preserved archaeological record is high, so, in agreement and cooperation with the Soprintendenza dei BB.CC.AA. of Palermo, we planned a research intervention. The first 2024 excavation campaign was aimed at 3D surveying of the cavity, identifying preserved archaeological deposits and excavating the best-preserved area with visible remains of malacofauna (mainly marine) and charcoal. The excavation highlighted the presence of 4 subcomplexes (named 3.1, 3.2, 3.3 and 3.4) starting from an altitude of 30.58 m asl to 29.70 m asl. Sampling was performed also for vegetal microremains. The finds were coordinated (SR ETRS'89 – UTM33N coordinate system) by 20 cm squares. In this poster we would like to present the first results of the ongoing archaeobotanical, lithic and malacofaunal studies.

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POSTER

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A Mesolithic site under the football field: escue excavation at Scandicci (Florence, Central Italy)

Wierer Ursula * (1), Balli Patrizio (2), Biagiotti Federica (3), Boschin Francesco (4) (5), Capotorti Andrea (6), Crezzini Jacopo (4) (5), Gonzalez Muro Xabier (7)

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In spring 2024 during excavations for a new school building planned in the sports area "Turri" at Scandicci (Tuscany), a few km West of Florence, Mesolithic layers were identified and investigated through a rescue excavation. The discovery occurred on the southern margin of the Piana Fiorentina crossed by the Arno River and its tributaries. Evidence of fire associated with lithic industry and with few faunal remains, indicate a small short-term open-air site used by hunter-gatherers at the beginning of the Holocene period. Diagnostic techno-typological features of the lithics allow to attribute the context to the Sauveterrian, which is confirmed by the C14-datings. Knapping was carried out on-site, as shown by the presence of cores and flaking waste. First data about the excavation and the finds are reported, and the dwelling contextualized in the frame of the rare coeval sites known in the region.

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POSTER

Friday 19th September, h.15:00-15:15

A new Mesolithic frequentation in the Romagna Apennine: Comignolo open-air site on the shores of Lake Ridracoli (Emilia Romagna, Italy)

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While hundreds of sites are known for Aemilian and Tosco-Aemilian Apennine, current knowledge about Mesolithic settlement in the Romagna Apennine is still limited. The recent discovery and excavation of an open-air site on an alluvial terrace along the banks of Ridracoli Lake at 560 m of elevation (National Park of Foreste Casentinesi, Monte Falterona, and Campigna, Emilia Romagna, Italy) provided new data relating to a Mesolithic frequentation in this mid-altitude area. The study of the lithic assemblage found at the site revealed the existence of occupations likely ranged between the Sauveterrian and early Neolithic. However, disturbance in the original record prevents precise chronological and environmental interpretations. Recent anthropic activities and periodical water flooding of the area are the main causes of this lack of information. Here we summarize and present data from the site focusing on the lithic industry and the raw material sourcing, revealing possible connections with non-local contexts along and beyond the Apennine watershed.

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The Mesolithic occupations of Jonquilles cave: first interdisciplinary results

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Located in the heart of the Causse de Gramat, in the northern part of the Causses du Quercy (Lot, France), the Mesolithic site of Jonquilles, near Cuzoul de Gramat, offers an exceptional context for studying human occupations during the Mesolithic. Situated in a dolina in the Braunhie forest, this partially collapsed cave lies in a remarkable karstic environment. Discovered in 2018, the site has been under excavation since 2021. It reveals a significant stratigraphic sequence encompassing the Late and Early Mesolithic. The Late Mesolithic (6-5 ka cal BC) is characterized by deposits rich in ash and snail shells. The lithic material, although scarce and heavily altered, is complemented by abundant but fragmented and often burnt faunal remains. The levels attributed to the Early Mesolithic are more clayey, darker, and rich in charcoal. Lithic material appears to be rare. As this sequence has not yet been excavated, data remains limited. This poster presents the initial results of ongoing lithic, zooarchaeological, anthracological, carpological, and geoarchaeological analyses. These studies shed new light on settlement dynamics and the interactions between human groups and their environment, while also highlighting site complementarity within a dense local network of Mesolithic occupations.

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POSTER

Friday 19th September, h.15:00-15:15

New data on Mesolithic occupations in the Bayas river valley (northen Spain)

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In the 1980s, several archaeological excavations were carried out in the middle valley of the Bayas river (northern Spain), which led to the identification of the first hunter-gatherer occupations in the region. The identified record included various sites, Fuente Hoz and Socuevas in rock shelters, and the open-air site of Berniollo, covering a chronology initially placed between an undetermined Epipalaeolithic and the Neolithic. Subsequent interventions allowed to extend the archaeological sequence in the case of the Socuevas, and recognised a detailed stratigraphy from the end of the Upper Magdalenian to the Late Mesolithic. In the last year, a new comprehensive research project has been proposed for these archaeological records, aiming to reconstruct the occupation dynamics of the valley from the end of the Late Glacial period to the early Neolithic and their relationship with neighbouring regions (Cantabrian area and the Ebro Valley). In this presentation, we offer the preliminary results of this project, focusing primarily on the data (chronology, stratigraphy, fauna, lithic industry, raw materials and catchment areas) from the Mesolithic levels of the Fuente Hoz site.

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POSTER

Friday 19th September, h.17:00-17:15

The tunnel valley of Ahrensburg: Status and plans for new activities

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The well known sites in the Ahrensburg Tunneltal in Northern Germany have yielded spectacular finds of especially the Late Palaeolithic, notably nearly complete arrows. Construction activities will require renewed excavations by the State Heritage authorities (Archäologisches Landesamt Schleswig-Holstein, ALSL) and include a collaboration with the Leibniz Zentrum für Archäologie (LEIZA-ZBSA). The current knowledge will be presented and the project plans outlined.

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POSTER

Friday 19th September, h.17:00-17:15

Ground stone tools in action: subsistence strategies of Early and Middle Holocene Hunter-Gatherer-Fishers at Šventoji, Lithuania

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The Early and Middle Holocene hunter-gatherer-fisher sites at Šventoji, Lithuania, are renowned for their exceptional artefacts made from organic raw materials, mainly wood, bone and plant fibres, remarkably preserved and found in significant quantities. In addition to the organic finds, the Šventoji sites have yielded other categories of artefacts, including ground stone tools, which encompass a diverse and multipurpose category of non-flint artefacts utilised for percussion, abrasion, polishing, cutting, and grinding activities. This category of artefacts from the above-mentioned sites has received little recognition and analysis. However, based on the variability and numbers, it is safe to say that these tools played an important role in the economic aspects of life for the communities living in Šventoji. This poster delineates the primary objectives and preliminary findings of a recently initiated research project focused on reconstructing the usage history of ground stone tools from the Šventoji sites. The research employs a multidisciplinary approach, integrating advanced qualitative and quantitative analyses of technology, use-wear, and residues. The study's overarching objective is to characterise various aspects of this artefact category, including raw material selection and procurement, tool preparation and design, use-related actions and processed materials, and potential multiple uses. Ultimately, we aim to comprehensively understand the role of ground stone tools at the studied sites within Early and Middle Holocene adaptations in the region.

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POSTER

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The Early Mesolithic site Djupedalen 111 at Stord, Western Norway: the northernmost Maglemosean site in Europe?

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The site Djupedalen 111 is well-defined within the context of the Early Mesolithic (EM) of coastal Norway. Assuming that the site was shore-bound, it can be dated to approximately 9000 Cal BC. Among a total of 12,467 lithics, primarily composed of high-quality Senonian flint, the main tool categories include burins (23) and flake axes (33). The extensive production and maintenance of flake axes are evident in the presence of 258 wing-shaped flakes and waste from the production of symmetrical flat-trimmed axes. Five of the flake axes may be regarded as chisels. While this is a relatively ordinary composition of artifacts for EM sites in the area, several characteristics make Djupedalen special. First, while most sites have a maritime orientation facing large bodies of open water, the Djupedalen site is located at the inner part of a long, narrow inlet, clearly oriented towards terrestrial resources. Second, and most importantly, the projectiles make this site exceptional in a Norwegian context. These consist of 104 simple lanceolate microliths, remarkably homogeneous and almost exclusively produced using the microburin technique (confirmed by the 143 microburins from the site and refitting studies). Furthermore, there is an almost complete absence of tanged and single-edge points, which is the opposite of what is observed at EM sites in the region. We believe that the closest parallels for this material can be found within the South Scandinavian Maglemose o techno complex. If this holds true, the Djupedalen site represents one of the northernmost occurrences of Maglemose culture in Europe.

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POSTER

Friday 19th September, h.17:00-17:15

STONE DEAD PROJECT: A MULTI-PROXY STUDY OF LITHIC GRAVE GOODS FROM ZVEJNIEKI CEMETERY

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This poster presents results from the AHRC-funded Stone Dead Project. Focussed on the lithic assemblages from the Stone Age (Mesolithic & Neolithic) Zvejnieki cemetery (Latvia) in NE Europe, the primary aim of Stone Dead was to better understand why people gave lithics to the dead, and how their choices varied across the site and over time. To achieve this, we applied a multiproxy approach, combining geology, techno-functional analysis (experimental archaeology and microwear analysis), contextual studies and spatial modelling. Information on the biography of lithic artefacts was integrated from human biographical data to assess whether certain tool types, used and unused, were given to specific individuals based on their age and sex and other key categories. Results revealed both spatial and temporal patterns in the deposition of stone axes, bifacial points and scrapers. Wear traces on axes from both the cemetery and adjacent settlement has enabled critical new insights into the special treatment and role of axes within Stone Age death rites. Finally, we present an important legacy from the project: an open access database of Zvejnieki lithic grave goods and associated burial contexts.

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Mid-Conference excursion to Passo Giau - group 1

Mid-Conference excursion to Passo Giau - group 2

Mid-Conference excursion to MUSE, Trento

Mid-Conference excursion to Gaban rock shelter, Trento

Post-Conference excursion to Arene Candide, Liguria