

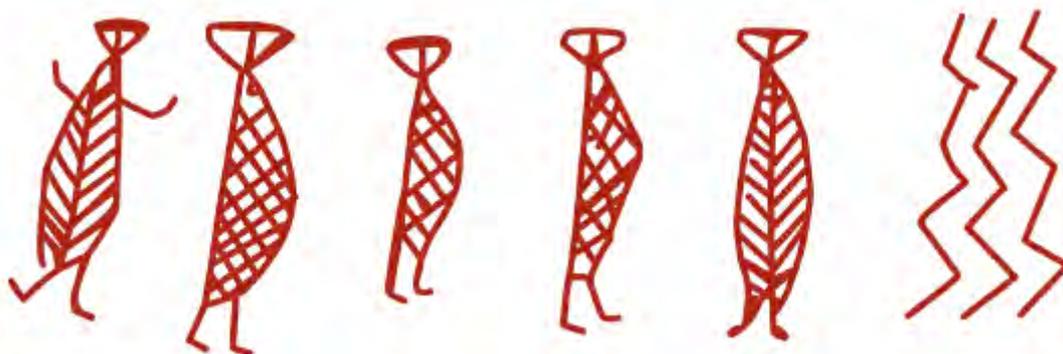
Mesolithic Miscellany



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Editorial

Greetings MM readers!

The pandemic has created chaos in many areas of our lives, and getting out this issue of MM is certainly one of those. Harry Robson has stepped in with welcome expertise (which the rest of us do not have) and has not only produced this issue but has also contributed to it very substantially. We have asked him to join the Editorial Board, expanding it from four to five, acknowledging his work on this issue, but also on previous issues.

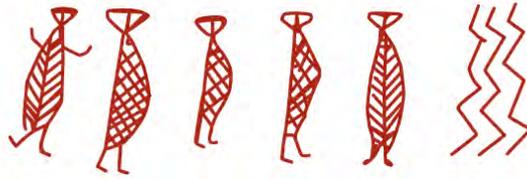
Interestingly, the pandemic has not reduced the amount of material we've received. Quite the contrary in fact, and we now have enough in hand to send out 28.2 before the end of the year. We are keen to keep the momentum going, and submissions are always welcome.

This issue contains four papers. The first by T. Douglas Price aims to examine the question of Mesolithic complexity by taking a personal journey from the Netherlands to Denmark and beyond. This is followed by Chris Meiklejohn's latest instalment in his on-going series concerning recent publications including Mesolithic human remains. The list is the largest to date, which reflects not only the ever-growing interest and research into the Mesolithic period but also into recently discovered and legacy human remains. Grzegorz Osipowicz and colleagues summarise on-going research in the Chełmno-Dobrzyń Lakeland of Central Poland where a series of Mesolithic sites are being excavated prior to a suite of multi-disciplinary post-excavation analyses. Finally, Erik Brinch Petersen and Chris Meiklejohn provide a eulogy to Henrik Tauber who was perhaps the most influential geochemist in Mesolithic research, and who is best known for his seminal 1981 publication, *¹³C evidence for dietary habits of prehistoric man in Denmark*.

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Research Projects

Continental Unity and Local Diversity. Mesolithic communities of the Chełmno-Dobrzyń Lakeland (Central Poland)

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Abstract

The interdisciplinary project aims to study Mesolithic settlements in the Chełmno-Dobrzyń Lakeland of Central Poland focussing on the identification of cultural, environmental and economic factors that determine site characteristics and structure. Further, it aims to generate wider settlement models that test existing theoretical concepts of Early Holocene hunter-gatherer mobility.

Methods, data and discussion

The spatial organisation and function of prehistoric hunter-gatherer camps has become the target of relatively recent research. From a methodological perspective, most of these studies often refer to the behavioural concepts developed by Binford (1980).

This project is an on-going interdisciplinary and multifaceted study of Mesolithic settlement sites in the region of the Chełmno-Dobrzyń Lakeland. It focuses on identifying and interpreting cultural, environmental and economic factors that determine settlement characteristics and structure. The aim is to generate broader settlement models based on reliable information and sources that can then be used to test theoretical concepts pertaining to the mobility of Early Holocene hunter-gatherer communities. This aim will be achieved by means of analyses and interpretation of function and internal organisation of individual encampments, and by the functional structure of settlement systems within diverse environmental niches. The research will cover three landscape zones whose characteristics influenced the structure and functional profile of the Early Holocene settlements, namely, (1) the littoral zone, (2) the area of a small river valley, and (3) a broad valley zone. During the ten year project, we have already examined clusters of Mesolithic camps in the vicinity of a prehistoric lake in Ludowice (zone 1), and the sub-glacial valley of Lake Grodno and Lake Plebanka (zone 2). In the subsequent years, the project will investigate a complex of Mesolithic camps that were recently discovered in the vicinity of Grudziądz in the River Vistula valley (zone 3) (Figure 1).

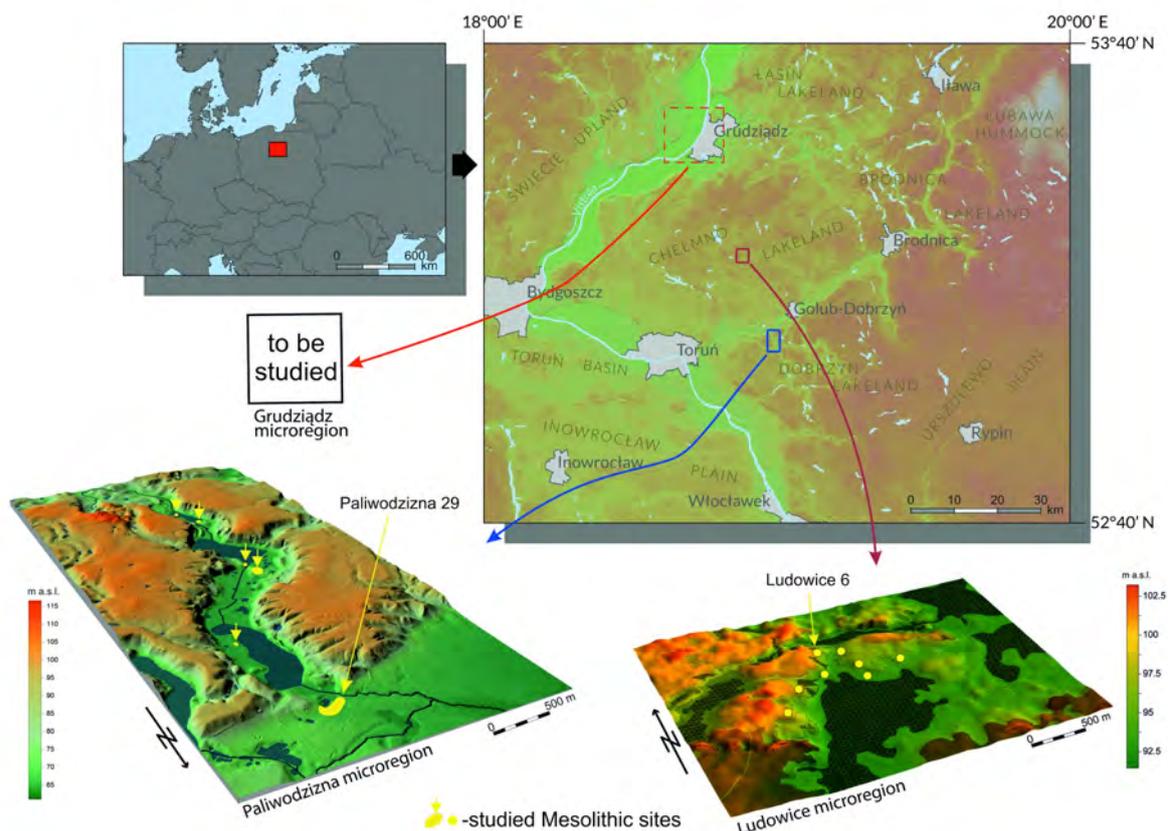


Figure 1. Location of the sites to be studied in the project (M. Sykuła and P. Weckwert).

Due to the heavy reliance of Mesolithic hunter-gatherer groups on natural resources, palaeoenvironmental research based on geomorphological, palaeopedological and palaeobotanical analyses is an important aspect of the project. These studies are aimed at palaeoenvironmental reconstruction of the site environs at the beginning of the Holocene as

well as site formation processes that led to the current levels of preservation. An understanding of the palaeoenvironment will provide a better appreciation of human settlement patterns, the choice of economic activities and environmental interaction, including the ability to exploit a range of environmental resources. During the current investigation at the site of Paliwodzizna 29 near Lake Grodno a close connection was identified between settlement evidence, variation in lake level and camp location at a point of exceptionally high environmental diversity (Figure 2). Similar observations were made at other locations of examined Mesolithic camps.

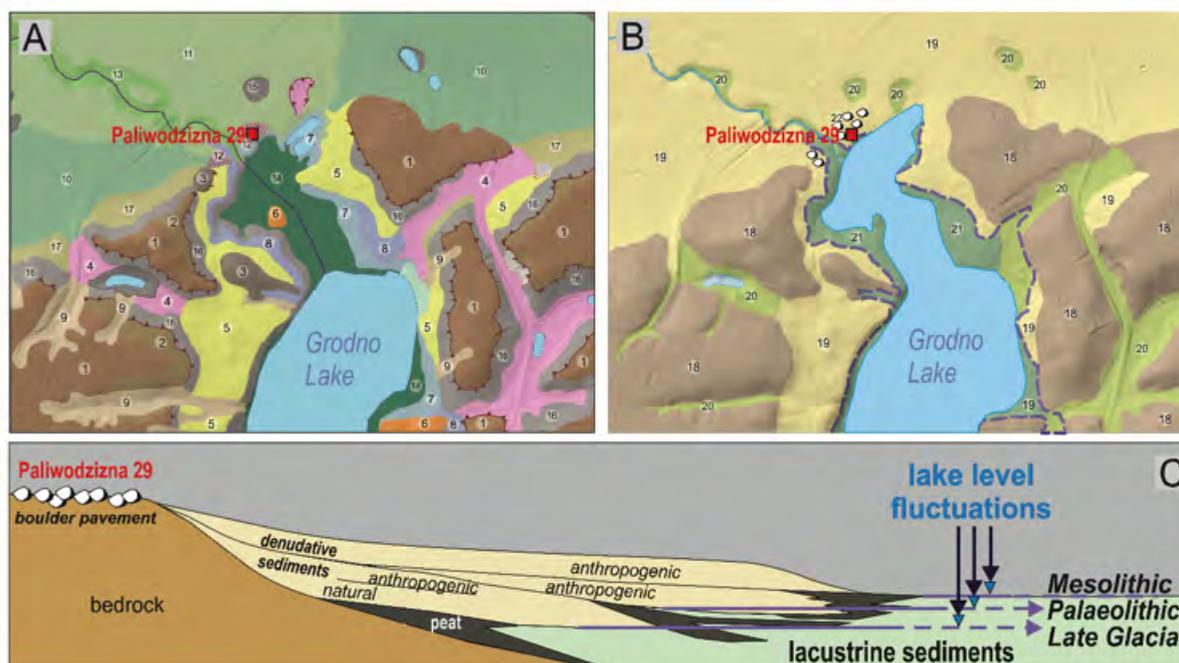


Figure 2. Paliwodzizna, site 29. Preliminary results of the geomorphological and soil studies. A - geomorphological map of the study area (1 - till plains, 2 - degraded till plains, 3 - hills in sub glacial valleys, 4 - tunnel valleys and sub glacial channels, 5 - outwash plains, 6 - kames, 7- older lake level, 8 - younger lake level, 9 - denudation valleys, 10 - river terrace - higher level, 11 - river terrace - lower level, 12 - boulder pavement; 13 - small river valleys, 14 - peat plains, 15- kettle holes, 16 - slopes, 17 - colluvium; B - reconstruction of habitats and environmental resources during the Early Holocene (18 - eutrophic, fresh deciduous forests, 19 - mesotrophic, fresh deciduous and mixed forests, 20 - wetlands, 21 - maximum range of the Late Glacial lake, 22 - boulder pavement, C - model of sedimentary processes in lake near shore areas and its interaction with human activity dating to the late Palaeolithic and Mesolithic communities. Causes of lake level fluctuations: 1 – de-glaciation, 2 - lake drainage (outburst flood?), 3 - permafrost and buried ice degradation, 4 - Early Holocene climate warming (M. Jankowski and P. Weckwert).

All the finds obtained from the sites have been plotted three-dimensionally in relation to their geographical coordinates. This will enable us to undertake research based on digital models of the spatial distribution of artefacts that take into account the results of technological, use-wear and palaeoenvironmental analyses (Figure 3). Moreover, this has allowed us to create

publicly available interactive maps of the investigated areas (www.searchingformesolithic.umk.pl). Each artefact is subject to multifaceted tests aimed at creating its biography; an example being the multi-disciplinary analyses of an osseous *bâton percé* from the site of Gołębiewo 47 (Figure 4). As a result of raw material, typological, isotope and aDNA analyses as well as radiocarbon dating, the *bâton* was found to be made of reindeer (*Rangifer tarandus*) antler, originally from the Kola Peninsula, North-west Russia. From there it was soon brought to Poland, thus providing good evidence of long-distance exchange among Early Holocene hunter-gatherer communities (Osipowicz *et al.* 2017). Further results, (including those using optical coherence tomography), derived from use-wear analysis and physical-chemical analysis of residues on the surface of the *bâton*, as well as findings of experimental studies, soil and geomorphological analyses of context indicated that this baton was used for activities that had contact with plants containing silica. It would appear that the baton had cultural as well as economic significance, as evidenced by its zoomorphic form, the intentional removal of some decoration and a likely ritual deposition in the lake.

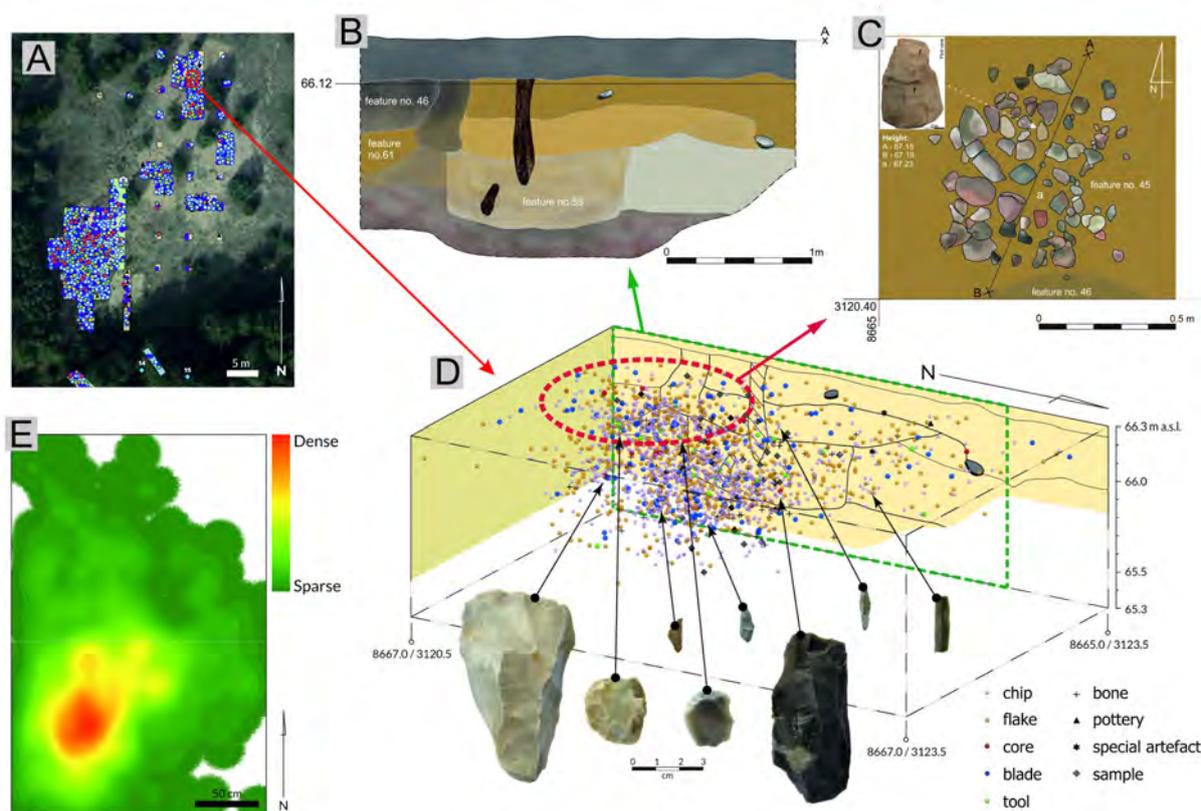


Figure 3. Paliwodzizna, site 29, Feature no. 59. Example of spatial documentation of archaeological sources: A – location of the feature within the virtual map of the site; B – digitized drawing of the feature's profile; C – stone structures of the Mesolithic hearth (feature 45) built on feature 59 after its intentional filling up (both features have the same AMS results); photo in the top left corner shows a Late Palaeolithic core deposited between the stones); D – 3D spatial distribution of the artefacts inside the feature; E – spatial distribution of the flints inside the feature using the Kernel Density Estimation method (interpolation radius 0.5 m) (G. Osipowicz and M. Sykuła).

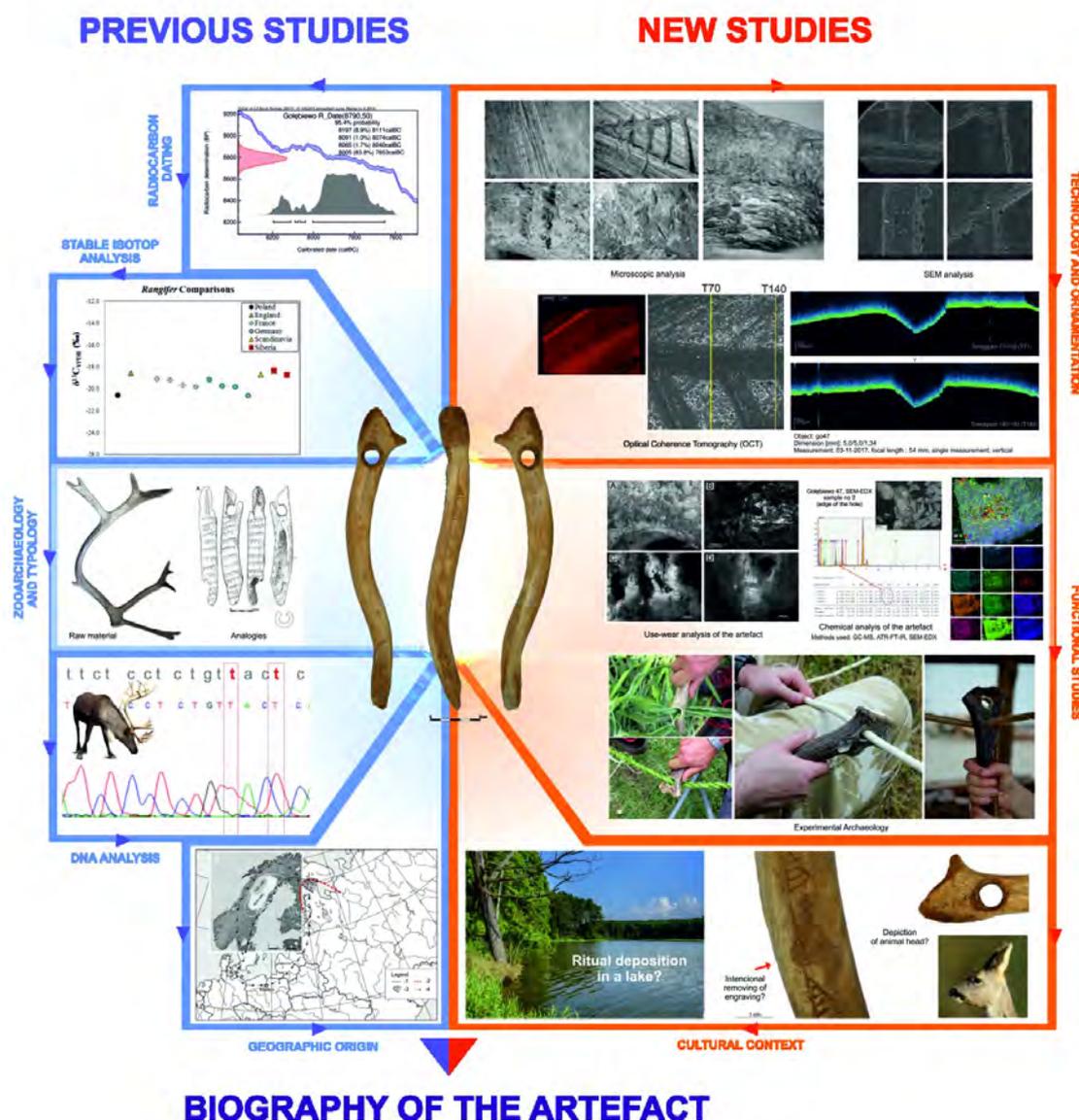


Figure 4. An example of a multifaceted study that was conducted to reconstruct the biography of a *bâton percé* from site Gołębiewo 47. Similar methodologies will be applied more widely. In this case, research included AMS dating, stable isotope and aDNA analysis, zooarchaeological and typological studies, studies on the “geographic origin” of the artefact, traceological (including SEM) and OCT studies on the artefact technology and ornamentation, functional studies (use-wear analysis, SEM-EDX, archaeological experimentation) and studies of the cultural behaviours written in the artefact (G. Osipowicz and J. Orłowska).

Owing to these findings, similar studies will be undertaken as a part of the project in order to interpret the role and intensity of links between Mesolithic communities of Central Poland and other regions. This is important for our understanding of group mobility and internal organisation. In this project studies looking at the structure of Mesolithic settlements have

placed a particular emphasis on determining function and positioning of individual camps within a known settlement area. Spatial studies using various point density analysis techniques (e.g. Kernel Density Estimates) have been employed that take into account all types of artefacts and ecofacts including the results of other tests, e.g. technological, raw material and use-wear analyses. The results of palaeoenvironmental studies have also been considered and various relevant theoretical models tested (e.g. Grøn 2003). This approach has been used to interpret the function and settlement profile of several previously analysed Mesolithic camps. For example, Ludowice 6 was studied early on in the project, and was possibly a highly specialized seasonal camp where the processing of plants containing silica was carried out on a large scale during the autumn months. This is evidenced primarily from the results of use-wear analysis on a wide range of tool types where processing of this raw material dominated (Figure 5; cf. Osipowicz 2018). The processing of plant species using specific tool types has been determined from palynological evidence, studies of macroremains and experimental studies. In contrast, the Paliwodzizna 29 camp complex is most likely a place of seasonal (spring) pike fishing where gathering was also important (Figure 6). Based on the characteristics of some of the excavated stone structures and analysis of the organic substances, it is likely that birch bark tar was distilled.

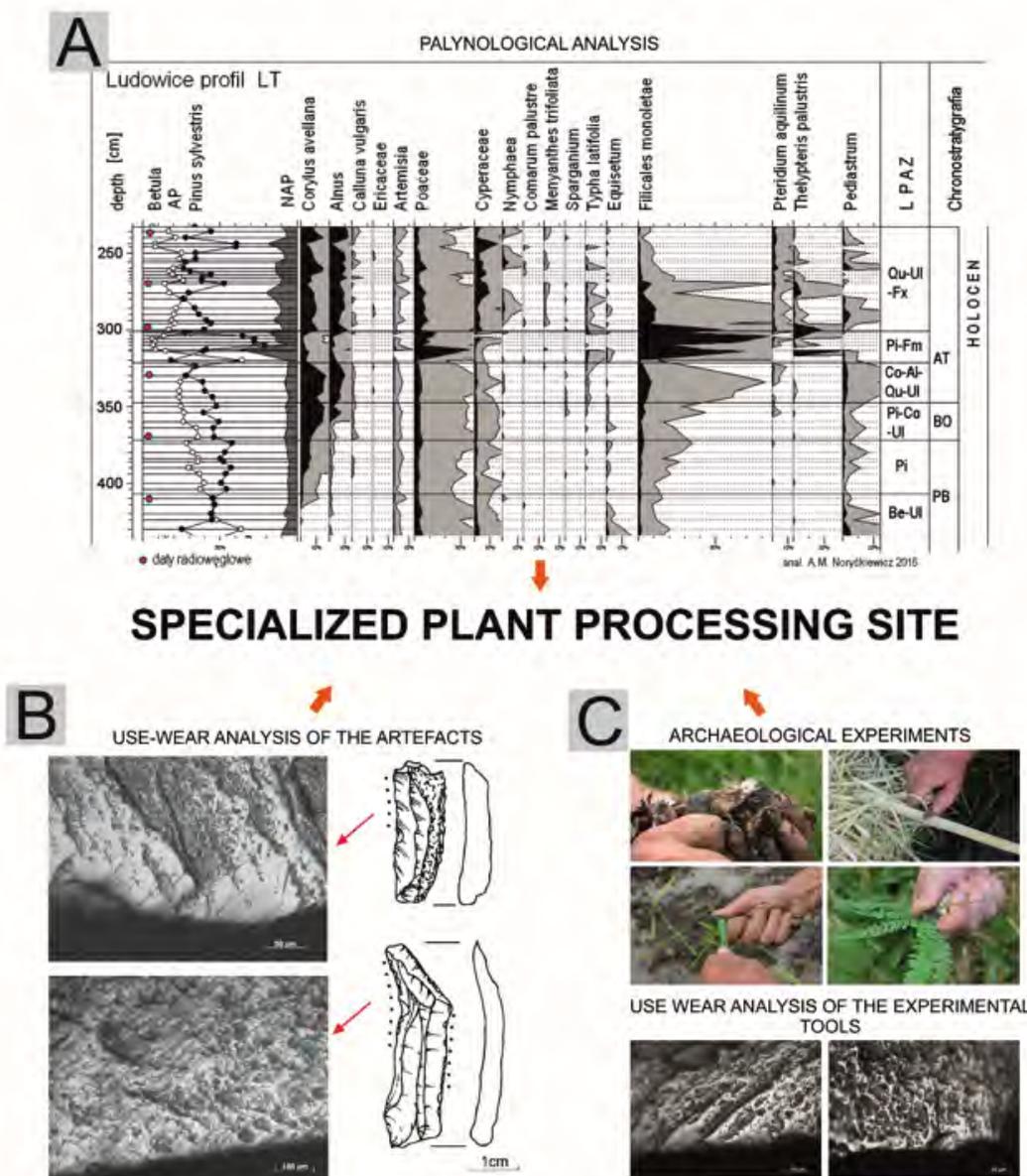


Figure 5. The function of site Ludowice 6. A – simplified palynological profile made for the site; B - the example of the use-wear traces typical for plant processing observed on the tools discovered at the site; C – the examples of the experiments conducted to interpret precise function of the plant processing tools from Ludowice and an example of use-wear traces observed on the experimental tools (G. Osipowicz, A. Noryskiewicz, D. Nowak and J. Orłowska).

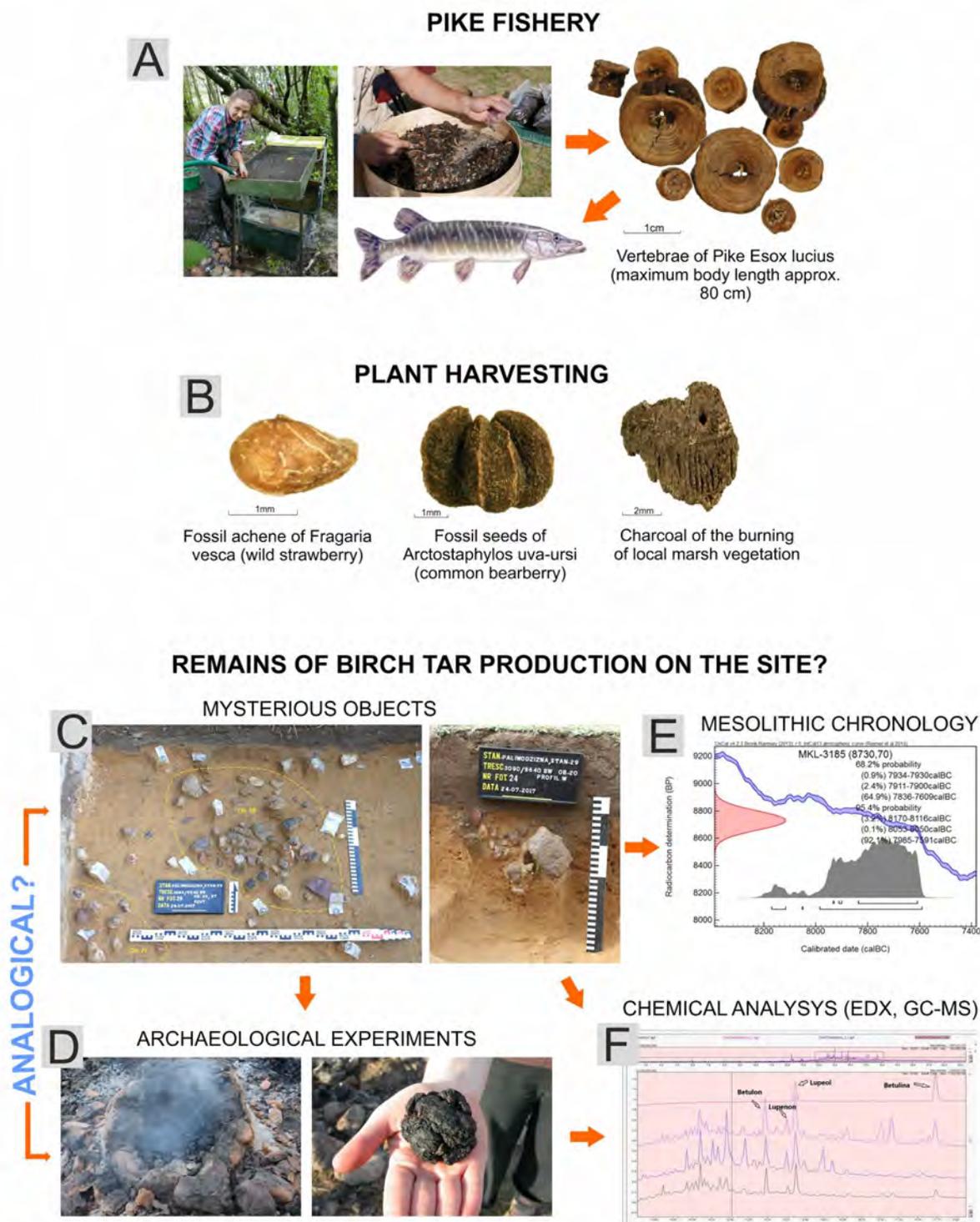


Figure 6. The function of site Paliwodzizna 29. A – pike vertebrae discovered during flotation of the Mesolithic layers; B – plant macrofossils from the site; C – atypical features with stone constructions discovered at the site, and (D) analogous (?) structures resulting from experimental birch bark tar distillation; E – AMS dating confirming an Early Mesolithic age of the features in question; F – results of GC-MS analysis showing the same chemical structure of the substance from the Mesolithicic features compared with experimentally produced birch bark tar without the use of pottery (G. Osipowicz, J. Orłowska, M. Bosiak and M. Badura).

In order to identify mobility patterns of these communities it is important to recognize the characteristics of the known settlement structures at Paliwodzizna 29. The multifaceted spatial analyses carried out as part of this project will allow us to determine their internal structure. It was possible to identify multi-season structures, single season huts and open hearths related to raw material processing or short-term visits by hunters. It was noted that all longer term settlement structures have a similar internal organisation, including a hearth, a utility space by the entrance and a sleeping area deeper inside. Interestingly, some dwelling structures, for example Sądziejno 4 and Ludowice 6 (Osipowicz 2018; Osipowicz *et al.* 2017), are highly analogous to those in Scandinavia, for instance Ulkestrup I. This provides further evidence for mutual influences and interactions between Mesolithic groups from Northern and Central Europe. It is possible that a similar diversity of settlement features is present at Paliwodzizna 29 (Figure 7). Next to the putative semi-dugout house, a temporary open air hearth was identified, and most likely a ritual zone where exceptionally large hearth structures were found (up to 2.5 m diameter), some containing deposits of Palaeolithic flints. There is also a pit containing *ca.* 2000 intentionally crushed flint artefacts and also a possible burial.

PALIWODZIZNA, SITE 29

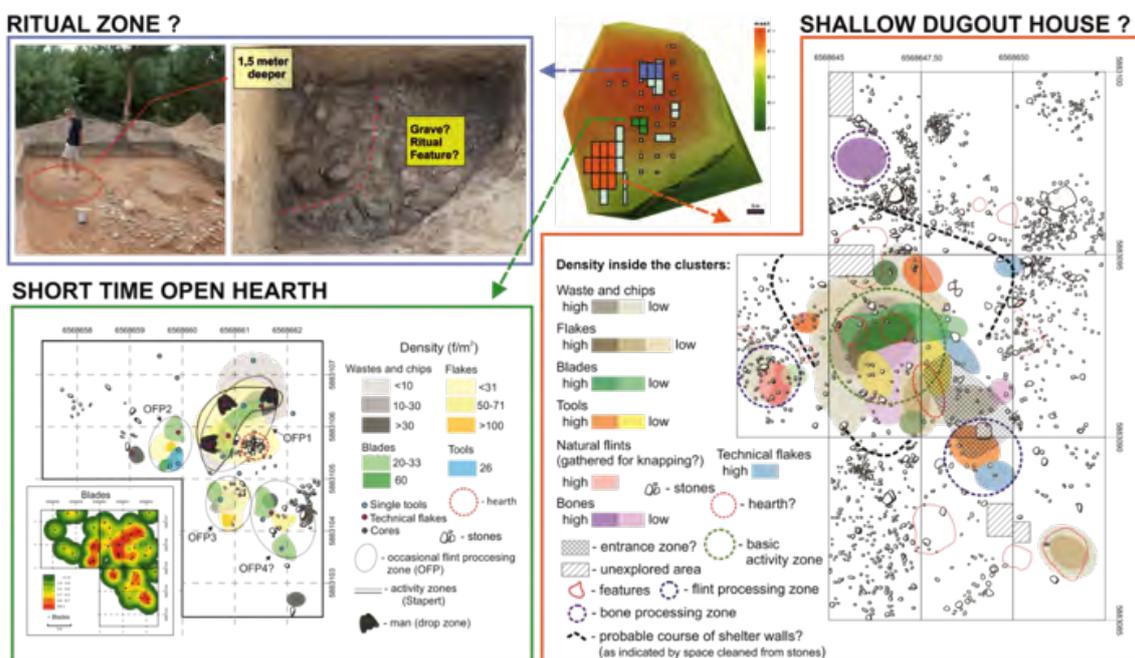


Figure 7. Paliwodzizna, site 29. Initial results of spatial studies suggest the presence of different types of residential structures at the site and its probable functional internal organization with the ritual zone located at the top of the hill (G. Osipowicz and M. Sykuła).

Due to the excellent preservation of the settlement evidence in the Chelmno-Dobrzyn Lakeland of Central Poland it has been possible to examine in detail the diversity of settlement types, site function and organisational structure. The high-resolution analyses and

results are likely to prove important for the interpretation of evidence at other Mesolithic sites of similar profile throughout Europe.

Acknowledgements

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