

In the ancient world, plant-based materials played a crucial role in the daily lives of Stone Age hunter-gatherer communities. Sadly, the preservation of such products over time is a rare occurrence. However, there is a remarkable exception in northeastern Europe—the Šventoji site in Lithuania, dating back to the 4th to early 3rd millennium cal BC. Here, a remarkable collection of wooden artefacts has been unearthed, showcasing thousands of items and fragments, including fishing fences, a dugout boat, and a famous wooden idol statue. Among these finds are numerous smaller objects like paddles, floats, leister prongs, bows, arrows, containers, sleeves, hammers, and shafts, totalling over 530 items. This collection is possibly the largest of its kind associated with Stone Age hunter-gatherer-fisher communities in Europe. Additionally, the Šventoji site boasts a unique global-scale collection of plant fibre products, featuring hundreds of specimens such as cords, nets, and mats, all remarkably well-preserved.

The project unfolds with dual objectives: an archaeological aim, contributing to our understanding of prehistoric societies, and a methodological aim, influencing the approach to archaeological research methodologies. On the archaeological front (level 1), the primary goal is to construct a comprehensive understanding of the manufacturing and utilisation of products crafted from plant raw materials (wood and plant fibres) among the hunter-gatherer-fisher communities residing in the East Baltic Plain during the Middle Holocene. This involves delving into (1) the significance of raw materials in crafting wooden objects and items from various plant species, (2) the techniques and tools employed in shaping objects from wood and plant fibres, (3) the diverse applications of wooden items and plant fibre products, (4) the role of non-flint stone artefacts in processing plant raw materials, and (5) the integration of plant-based objects into the daily lives of Middle Holocene hunter-gatherer-fishers. From a methodological perspective (level 2), the project aims to impact and enhance the methodologies employed in archaeological research on ancient sources. The primary project objective here is to formulate a robust methodology for traceological analysis of wooden artefacts, specifically tailored to their unique characteristics and emphasising criteria for interpreting their functions. Unlike stone and bone objects, a dedicated methodology for traceological analysis of prehistoric wooden artefacts has yet to be developed. This facet of the research raises critical questions: To what extent can findings from stone and bone object analyses be applied to wooden artefacts? What additional criteria and procedures are essential for traceological analyses of prehistoric wooden artefacts? Furthermore, the research will meticulously explore the impact and significance of post-depositional processes (affecting the artefact after its deposition in the ground) on the type of analysis under consideration, along with the influence of the conservation process, including preservatives, on technological and use-wear traces.

The traceological method stands as the primary investigative tool in this project. It enables the interpretation of the manner of production and function of artefacts based on the technological (created during their production) and functional (created during their use) traces visible on them. Commencing with established methodologies for the microscopic analysis of stone and bone specimens, we will progressively tailor and adapt them to accommodate the unique characteristics of wooden artefacts. This iterative process will culminate in the development of a dedicated protocol for the analysis of wooden materials. To ascertain the wood species used in crafting the analysed wooden artefacts, dendroarchaeological analyses will be conducted. Specialised studies of residues discovered on the examined artefacts from Šventoji form another pivotal aspect. These studies encompass in situ microscopic analysis, transmitted light microscopy, and examinations using SEM, SEM-EDX, GC-MS, and ATR-FT-IR. For archaeobotanical assessments of samples extracted from plant fibre artefacts, optical microscopes will be employed, leveraging observations in reflected, transmitted, and polarised light, with SEM as needed. Extensive explorations within the realm of experimental archaeology will play a critical role in this project. This includes the organisation of two international experimental archaeology research, undertaking experiments crucial for the planned traceological research, and establishing reference databases for studies of this nature, including archaeobotanical research.