



Press Release

Earliest evidence of wooden tools used by humans

International research team from Germany, the UK and Greece finds evidence of wooden tool use in Greece 430,000 years ago

Tübingen, 26.01.2026

An international team led by researchers from Universities of Tübingen and Reading and Senckenberg Nature Research Society has discovered the earliest known hand-held wooden tools used by humans.

A study jointly led by Professor Katerina Harvati from the Senckenberg Centre for Human Evolution and Palaeoenvironment at the University of Tübingen and Dr Annemieke Milks at University of Reading describes discoveries from the Marathousa 1 site in Greece's central Peloponnese which date back 430,000 years.

Published in the journal *PNAS*, the finds consist of two objects crafted and used by humans, one made of alder wood and the other of willow or poplar. The objects represent the oldest hand-held wooden tools ever found, pushing back evidence of this type of tool use by at least 40,000 years.

Other finds of stone tools and the remains of an elephant and other animals indicate that the site, once on the shore of a lake, was used for butchering animals. The site was used by early humans around 430,000 years ago during the Middle Pleistocene – the period from around 774,000 to 129,000 years ago.

“The Middle Pleistocene was a critical phase in human evolution, during which more complex behaviors developed. The earliest reliable evidence of the targeted technological use of plants also dates from this period,” says Professor Katerina Harvati, a paleoanthropologist and expert in human evolution, who leads the long-term research program at Marathousa 1.

University of Tübingen
Public Relations Department

Christfried Dornis
Director

Janna Eberhardt
Research reporter
Phone: + 49 7071 29-77853
janna.eberhardt[at]uni-tuebingen.de

presse[at]uni-tuebingen.de
www.uni-tuebingen.de/aktuell

Senckenberg Nature Research Society
Press Office

Sabine Wilke
Director

Judith Jördens
Press Office & Social Media
Phone +49 69 7542 1434
judith.joerdens[at]senckenberg.de

pressestelle[at]senckenberg.de
www.senckenberg.de/presse

Worked stones and bone artifacts from the site highlighted the skill and diverse activities of the people who once lived there, so the research team took a closer look at the associated finds made of wood.

“Unlike stones, wooden objects need special conditions to survive over long periods of time,” says Dr Annemieke Milks, a leading expert in early wooden tools.

“We examined all the wooden remains closely, looking at their surfaces under microscopes. We found marks from chopping and carving on two objects – clear signs that early humans had shaped them.”

Meticulous examination

The research team identified two wooden artifacts which had been worked by humans: a small piece of an alder trunk shows clear signs of having been shaped as well as signs of wear and tear. The stick was probably used for digging at the edge of the lake, or for removing tree bark.

A second, very small piece of wood from a willow or poplar tree shows signs of working and possible signs of use. A third find – a larger piece of alder trunk with a groove pattern – had been clawed by a large carnivore, possibly a bear, and not shaped by humans, the researchers concluded.

“The oldest wooden tools come from places such as the United Kingdom, Zambia, Germany, and China and include weapons, digging sticks, and tool handles. However, they are all more recent than our finds from Marathousa 1”, Annemieke Milks says. There is only one older piece of evidence of wood used by humans, from the Kalambo Falls site in Zambia, dating to around 476,000 years ago. Yet that wood was used not as a tool but as structural material.

“We have discovered the oldest wooden tools known to date, as well as the first evidence of this kind from southeastern Europe,” Harvati says. “This shows once again how exceptionally good the conditions at the Marathousa 1 site are for preservation. And the fact that large carnivores left their mark near the butchered elephant alongside human activity indicates fierce competition between the two.”

The team included also researchers from the Aristotle University of Thessaloniki, the University of Ioannina, the Hellenic Ministry of Culture and the American School of Classical Studies at Athens.

Research on the Marathousa 1 finds is funded by the European Research Council and the German Science Foundation.



Small wooden tool which is a new wood tool type used by humans, documented here for the first time from the Marathousa 1 site in Greece which dates back 430,000 years. Currently the function of the tool is not known. Photograph by N. Thompson, copyright K. Harvati.



Digging or multifunctional stick used by humans from the Marathousa 1 site in Greece which dates back 430,000 years. Photograph by D. Michailidis, copyright K. Harvati.



An artist's reconstruction of a Marathousa 1 paleolithic woman producing a digging stick from a small alder tree trunk with a small stone tool. This kind of wood was used for the Marathousa 1 digging stick. Usewear analysis of stone tools at Marathousa 1 show evidence of wood-working. Original art by G. Prieto, copyright K. Harvati.

Publication:

Annemieke Milks, Maria Ntinou, Stylianos Koutalis, Dimitrios Michailidis, George E. Konidaris, Domenico Giusti, Nicholas Thompson, Georgia Tsartsidou, Eleni Panagopoulou, Vangelis Turloukis, Panagiotis Karkanas, Katerina Harvati: Evidence for the earliest hominin use of wooden hand-held tools found at Marathousa 1 (Greece). *PNAS*, <https://doi.org/10.1073/pnas.2515479123>

Contact:

Professor Dr. Katerina Harvati
University of Tübingen
Institute for Archaeological Sciences – Paleoanthropology
Senckenberg Centre for Human Evolution and Palaeoenvironment
Phone +49 7071 29-76516
katerina.harvati@ifu.uni-tuebingen.de

Dr. Annemieke Milks
University of Reading
Department of Archaeology
Phone +44 7896 083 872
a.g.milks@reading.ac.uk