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A glimpse into Neolithic pile-dwelling societies: Multi-proxy study of the 3550 BC old lake-littoral settlement Mooswinkel, Lake Mondsee, Austria

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Abstract

Cultural sediment layers of the short-lived Neolithic lake village of Mooswinkel (Upper Austria) radiocarbon dated to 3542 ± 153 BC were analysed in an interdisciplinary study between palaeoethnobotanists, palynologists, wood-anatomists, sedimentologists, radiocarbon specialists and archaeologists within the International D.A.CH-Programme „Beyond Lake Villages“ (2015–2019). This study was performed on a 1.15 m long sediment core with a diameter of 9 cm extracted 2 meters underwater in the southwestern part of the former village area, and comprised Neolithic cultural layers 50 cm thick. The high-resolution sedimentological, XRF-scanning (μ -XRF), palynological, and palaeoethnobotanical analyses revealed that these cultural layers were quickly deposited at the littoral north-eastern edge of Lake Mondsee in a humid, non-inundated state, attesting therefore an at least 2 meters lower lake level during Neolithic Times than today. It also revealed a huge amount of plant macrofossil remains such as from strawberry (*Fragaria vesca*), blackberry (*Rubus fruticosus*), raspberry (*Rubus idaeus*), pomaceous fruit trees (*Malus/Pyrus*), hazel (*Corylus avellana*), flax (*Linum usitatissimum*), and cereal chaff (such as from *Triticum monococcum*) within the cultural layers, all witnessing Neolithic fruit collection and crop production practices. However, whole cereal grains were not found, implying eventually the presence of a Neolithic refuse heap in this near-lake, southwestern part of the former pile-dwelling village. The determination of several wood and charcoal remains to species level added massively to the palynological reconstruction of the tree and shrub vegetation in and around the site, and the according use by Neolithic societies. Pollen finds of mistletoe (*Viscum album*) and ivy (*Hedera helix*) do hint at the use of these species as winter fodder for livestock, and pollen of boneset (*Symphytum*) might be the result of the palaeoethnobotanical use of this taxon for medical purposes. High elemental copper values within the organic cultural layers might have been the result of local copper smelting and production within the prehistorical settlement. In addition, some bones, silex radiolarite, gem (epidot), slag, ceramic, coleopteran, and twined fiber remains give detailed insights into prehistoric live of these Central European Neolithic societies belonging to the so-called Mondsee-Culture.