

Life on the frontier: climate and landscape change in Byzantine Anatolia, AD 500–1200

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The transition from antiquity to medieval times in Anatolia was marked by important climatic fluctuations and by a change in rural land-use practices from tree crops (arboriculture or the cultivation of fruit and nut crops) to agro-pastoralism. The latter is particularly recorded by the end of the Beyşehir Occupation Phase (BOP) in pollen diagrams from southwestern and central Anatolia (Eastwood et al. 1998; England et al. 2008). At most sites in these regions, land abandonment is dated to the mid first millennium AD (late seventh and eighth centuries AD), around the time of the Arab incursions into Byzantine territory and the Arab-Byzantine wars. To the north, in contrast, Bithynia and Pontus lay relatively safe inside the frontier zone until the loss of the Anatolian plateau to Turkic tribes following the Battle of Manzikert (AD 1071). One of us (Adam Izdebski) has proposed that in northwestern Anatolia the demise of ‘Classical’ agriculture and the final end of the BOP was deferred by up to four centuries extending into medieval times, the so-called middle Byzantine period (Izdebski 2013; Eastwood, Yiğitbaşıoğlu forthcoming). Published pollen records from northern Anatolia, notably from Lake Abant (Bottema et al. 1993/1994), give some support to this idea. However, existing pollen sequences for this region and time period are not well dated and generally have relatively poor pollen resolution in order to investigate environmental changes of the late Holocene (for example the last 3,000 years or so). Essentially, the medieval/post-BOP period was not the prime focus of the original investigations by previous researchers (Beug 1967; Bottema et al. 1993), meaning that this research question cannot be resolved.

In this new project, a team of UK, Polish and Turkish palaeoenvironmentalists and historians will investigate changes in rural land use and vegetation change in northwestern Anatolia between the sixth and 13th centuries AD using pollen analysis, alongside reconstructed changes in climate from stable isotope analysis of lake sediments, peats and cave carbonates (speleothems). The resulting synthesis will build upon existing records, such as the record of past climate changes reconstructed from speleothems recovered from Sofular Cave in northwestern Turkey (Göktürk et al. 2011). Our work will involve the resampling and radiocarbon dating of archived sediment cores as well as a programme of field coring and laboratory analysis of additional sites.

Our first targeted site is Yeniçağa marsh, east of Bolu, in northwestern Turkey. Yeniçağa was one of the very first sites to be cored for pollen analysis in Turkey, by H.-J. Beug in 1957, but his published pollen diagram (Beug 1967) was only analysed at a low temporal resolution for the time



Yeniçağa marsh (photo by Aziz Ören)

period of our project. The predominantly peaty sediments of this site are particularly suitable for excellent pollen preservation as well for chronology building using ^{14}C dating. Following preliminary reconnaissance, we cored the marsh west of the lake in August 2015; the resultant sediment core is 9m long. Over the coming months, sub-samples from this core will be prepared for pollen analysis, in order to identify the end of the BOP, and ^{14}C dated, in order to establish the age of this important change in rural land use and settlement. We thank Aziz Ören and Ahmet Köse for assistance during fieldwork coring at Yeniçağa marsh.

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