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## Geoarchaeological research at Barcın Höyük: Implications for the initial Neolithic occupation of northwest Anatolia



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### ABSTRACT

Landscape archaeological research has been undertaken on the mound of Barcın Höyük in northwest Anatolia, Turkey. It is the oldest Neolithic site in the region, making it of particular interest in regard to the spread of farming from the regions of origin (southeast and central Anatolia) to northwest Anatolia. This study shows that the site was founded approximately 8550 a cal BP on a natural elevation in a generally wet environment, at the edge of a retreating lake. The site was subject to environmental shifts in younger periods, with a phase of arid conditions and erosion at least prior to the Bronze Age, succeeded by a phase of more humid conditions and rising lake levels mostly in the last two millennia, and finally a return to arid conditions and declining lake levels. Considering the Neolithic environmental conditions, the local environment of Barcın Höyük resembled the local environment of Çatalhöyük, a central Anatolian site. This suggests that despite the general differences between the regions, the earliest sedentary population of northwest Anatolia favoured local conditions similar to those of central Anatolia, while younger sites in the aforementioned region diverge to slightly different localities.

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### 1. Introduction

Archaeological research at the mound of Barcın Höyük (Fig. 1) in the Yenişehir Basin, northwest Anatolia, helps elucidate the spread of farming from the Near East to Europe (Özdoğan, 2011; Düring, 2013). Recent discussions (Schoop, 2005; Düring, 2013) on this spread of farming emphasise the differences in environment and climate between the steppes and steppe-like regions of origin and initial development (southeast and central Anatolia) and the valleys of west and northwest Anatolia. In order to study the influence of the environment on the Neolithisation process in northwest Anatolia, more research is required to model the palaeoenvironment of Neolithic sites.

As has been shown for other localities in Turkey (Roberts et al., 1999; Litt et al., 2009; Roeser et al., 2012; Ülgen et al., 2012), lacustrine basins offer great potential for Late Quaternary climate and environment reconstruction. Whilst not as elaborately studied as contemporary lakes such as Lake İznik, the Yenişehir Basin and its palaeolake offer a valuable opportunity to gain more insight in Holocene environmental change and human-environment interactions, especially in the context of a Neolithic site such as Barcın Höyük that is the earliest in the region, and also experienced younger occupation phases (see section 3.2). This study provides a reconstruction of the site environment, establishing links between environmental developments and the archaeology present, and placing these developments in the wider framework of the Neolithisation of northwest Anatolia. Research questions can be stated as: why was Barcın Höyük chosen as the site of early settlement; which factors played a role? What was the initial landscape of the earliest occupation like? Are there notable environmental similarities in the early Neolithic in central Anatolia and in northwest Anatolia?

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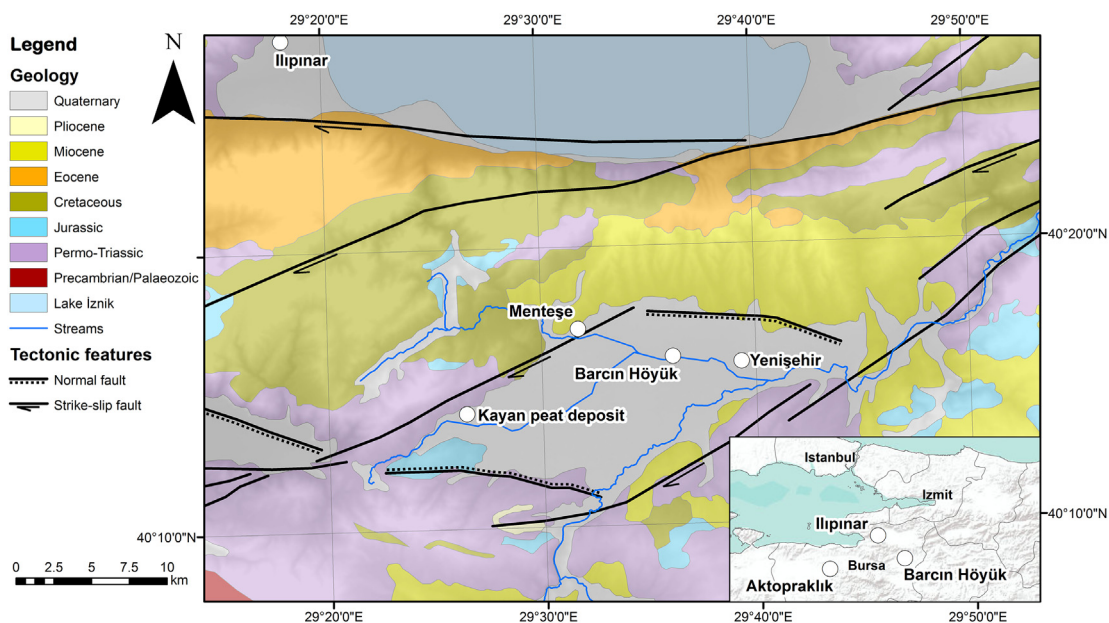
**Fig. 1.** Impression of the research area of Barcin Höyük and the ongoing excavations, view to the northeast. The exposed earthen wall stubs in the centre-bottom of the photo belong to Neolithic phase VIc. The top of the Neolithic levels corresponds to the top of the dirt stairs descending into the excavation trenches.

## 2. Study area

The valley of Yenişehir is a flat river plain in the Bursa province, northwest Turkey. It is elliptical in shape (approximately  $45 \times 10$  km) oriented along a NE–SW axis (Fig. 2). The Yenişehir Basin is thought to have formed as a pull apart basin during the Pliocene–Quaternary due to neotectonic activity along two southern branches of the North Anatolian Fault (NAF) (Barka and Kadinsky-Cade, 1988; Yılmaz and Koral, 2007), with subsidence of the basin estimated at 8.5 mm/a for the past 10,000 years (Koral, 2007). The valley is separated from Lake İznik in the north by the Katırlı Mountains, which are located between the southern and middle NAF branches. The mountain outcrops consist of Permo-Triassic metamorphic and clastic rocks, Upper

Cretaceous sandstone and limestone and Eocene volcanic rocks, unconformably overlain by Upper Miocene (carbonated) sandstone. Towards the south, the valley is separated from the valley of İnegöl by a further mountain range along the Yenişehir Fault of the NAF, consisting of Permo-Triassic metamorphic rocks, Cretaceous clastic rocks and limestone and Jurassic limestone, overlain by Miocene and Pliocene clastic rocks (Yılmaz et al., 1995; Adatepe et al., 2002; Türkecan and Yurtsever, 2002; Yılmaz and Koral, 2007; Öztürk et al., 2009; Gok and Polat, 2011).

The Yenişehir Basin fill consists of Quaternary alluvial and detritic deposits, mainly transported as sheet wash from the ridges around the basin (Kolat et al., 2012). The deposits in the north of the basin consist primarily of clay and silt deposits with sand and gravel



**Fig. 2.** Map of the Yenişehir Basin and surroundings, indicating places mentioned in the text. Inset: location of the region within northwest Turkey. Geology simplified from Türkecan and Yurtsever (2002), tectonic setting from Öztürk et al. (2009).

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