



Contents lists available at ScienceDirect

Journal of Archaeological Science: Reports

journal homepage: www.elsevier.com/locate/jasrep

Late Pleistocene-Holocene shoreline reconstruction and human exploitation of molluscan resources in northern Pieria, Macedonia, Greece

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ARTICLE INFO

Article history:

Received 1 July 2015

Received in revised form 11 November 2015

Accepted 4 February 2016

Available online xxxx

Keywords:

Late Pleistocene

Holocene

Landscape reconstruction

Palaeoenvironment

Geoarchaeology

Archaeomalacology

Mollusc exploitation

Prehistory

Pieria

Northern Greece

ABSTRACT

This study presents new stratigraphic, sedimentological, pedological dating and macro- and micro-fauna data, in order to reconstruct late Pleistocene and Holocene landscapes and shorelines of northern Pieria, northern Greece, and to discuss human exploitation of coastal environments. At the end of the Pleistocene, coastal Pieria formed part of the broad coastal plain that extended from northern Anatolia to Thessaly. Holocene marine transgression flooded the Pleistocene terrain and by the Early-Middle Neolithic (5870/5690–5720/5610 BCE) brackish water reached the Korinos area. A relatively shallow marine embayment was eventually established and the shoreline was at least 3.5 km west of its present position. Massive Final Neolithic alluviation (4339/3999–4039/3775 BCE) resulted in marine regression and the building up of a sand barrier. An open, brackish lagoon occupied a large part of the study area at least since the Early Bronze Age (3090–2880/2870 BCE). By the Late Bronze Age (1740/1505–1520/1254 BCE) renewed alluviation resulted in a second phase of sea regression and the creation of marshes at the edges of the lagoon. Alluvial sediments and intercalated palaeosols cap the marine/lagoon/marsh sequence and indicate a significant increase in sediment supply that started ca. 2000 years ago and culminated during the Early Christian period (4th–6th century CE). Rapid shore progradation resulted in the creation of the modern coastal plain of Korinos. Archaeomalacological data indicate that prehistoric communities exploited intensively shallow aquatic environments for food and artefact manufacture. Specialisation in the gathering of the brackish mollusc *Cerastoderma glaucum* (the common cockle) persisted for at least 6000 years (from the Early Neolithic to the Early Iron Age), thus becoming a regional culinary tradition. Although attitudes towards molluscs were originally (7th–6th mil. BCE) shaped by natural availability and proximity to shell sources, substantial residual variability from the Late Neolithic (late 6th–early 5th mil. BCE) onwards, suggesting local preferences in food and material culture, can be attributed to cultural choices and highlights the complexity of human/environment interactions.

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1. Introduction

The last twenty years have seen rigorous and productive research collaboration between archaeologists, bioarchaeologists and earth scientists in northern Pieria (central Macedonia, Greece) (Fig. 1). The Pierian landscape is littered with archaeological sites and monuments, dating from the Early Neolithic¹ (6700/6500–5800/5600 BCE) to the end of the Ottoman period (15th–20th century CE). Small- and larger-scale excavations, carried out by the Greek Archaeological Service (e.g. Pappa and Besios, 1999, Besios, 2010), have led to intensive post-excavation analysis by an international group of scholars. These efforts

have produced an exceptional record of integrated studies addressing issues central to prehistoric and early historic research in Greece and beyond (e.g. Halstead, 2000, 2006, Kotsakis, 2014, Triantaphyllou, 2001, Valamoti, 2004, Pappa et al., 2004, 2013, Pappa, 2008, Tsoraki, 2008, Veropoulidou, 2011, Tzifopoulos, 2012, Livarda et al., forthcoming). Moreover, systematic geoarchaeological work and the thorough recovery and analysis of terrestrial and marine organic remains have yielded one of the richest palaeoenvironmental datasets in Greece that has shed important light on the complex and dialectical relationship between people and landscape in the past (Krahtopoulou, 2000, 2010, Besios and Krahtopoulou, 2003; Krahtopoulou and Veropoulidou, 2014).

This paper, based on further detailed geoarchaeological and bioarchaeological work, examines landscape changes in the previously unexplored coastal zone of Pieria, focusing on the coastal plain of Korinos (Figs. 1, 2). Moving beyond straightforward lithostratigraphic, chronostratigraphic and biostratigraphic analysis and palaeogeographic reconstruction, it offers new insights into human exploitation of the prehistoric (ca. 7th to 1st millennium BCE) coastal landscapes of Pieria.

¹ Abbreviations: EN (Early Neolithic, 6700/6500–5800/5600), MN (Middle Neolithic, 5800/5600–5400/5300), LN (Late Neolithic, 5400/5300–4700/4500), FN (Final Neolithic, 4700/4500–3300/3100), EBA (Early Bronze Age, 3300/3100–2300/2200), MBA (Middle Bronze Age, 2300/2200–1700/1500), LBA (Late Bronze Age, 1700/1500–1100/1050), EIA (Early Iron Age, 1050–750/700). Dates follow Andreou et al., 1996: Table 1 in calendrical dates BCE.



Fig. 1. General map of central Macedonia showing the main physiographic units of northern Pieria, the coastal plain of Korinos and location of archaeological sites mentioned in the text.

2. Regional setting and geoarchaeological background

Northern Pieria is located in central Macedonia, northern Greece (Fig. 1). The Pieria Mountains (2198 m asl) border the region to the west and give way to the smooth, gently rolling Pierian hills (up to 400 m asl) to the east. The large, nearly flat (up to 40 m asl) alluvial plain of Katerini occupies the eastern part of northern Pieria and extends along the Thermaic Gulf of the Aegean Sea. The smaller coastal plain of Korinos occupies the northeastern part of the Katerini plain, while the brackish Lake Aliko forms its northeastern limit. The hills and coastal plains of Pieria consist of soft, easily erodible Neogene and Quaternary deposits (Mountrakis, 1985, IGME Katerini Sheet, 1986).

Detailed geoarchaeological investigation in the inland valleys of northern Pieria, closely integrated with archaeological and

palaeoenvironmental information, demonstrated that during the Late Pleistocene and, especially, the Holocene this landscape was shaped by relatively infrequent and, in some cases at least, short-lived phases of slope destabilisation, valley alluviation and occasional stream adjustments, triggered by a complex interplay between environmental and cultural agents of change (Krahtopoulou, 2000, 2010). Significantly, all major alluviation episodes identified in inland Pieria have left discernible traces in the coastal record of the area (Krahtopoulou and Veropoulidou, 2014).

Post-occupational slope erosion and valley sedimentation have erased and/or masked much of the ancient topography and shaped the preservation and visibility of the archaeological record of the area, with major implications for understanding of settlement patterns, historical topography, resource availability and land use history

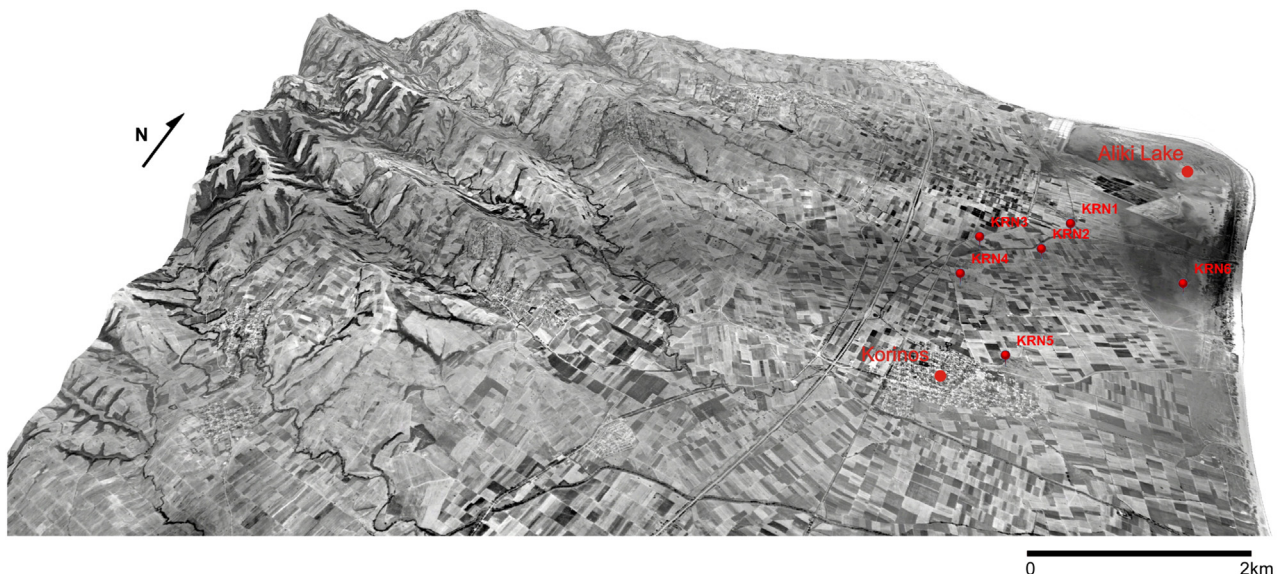


Fig. 2. Topographical map of northern Pieria, showing location of the coastal plain of Korinos, modern village of Korinos, Aliko Lake and location of coring sites.

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