

Multiple-proxy study of ostracods from Middle Pleistocene lake sediments at Marks Tey, Essex: Qualitative and quantitative approaches to palaeoenvironmental reconstruction

Anna March (1), David Horne (1), Jonathan Holmes (2), and Simon Lewis (1)

(1) Queen Mary University of London, London, United Kingdom (a.c.march@qmul.ac.uk), (2) University College London, London, United Kingdom (j.holmes@ucl.ac.uk)

Preliminary results of a multiple-proxy study of ostracods from the Middle Pleistocene lacustrine sedimentary succession at Marks Tey, Essex, UK, are presented. Both assemblage-based and isotopic analyses are used to investigate changes in the palaeoclimate and palaeoenvironment and the associated faunal response across the transition from interglacial to colder conditions. The >30m thick succession includes substantial intervals represented by laminated sediments amenable to high-resolution sampling and comprises not only the most complete record of the Hoxnian interglacial (MIS 11c) in Britain but also the transition (MIS11b-a) to the succeeding glacial (MIS 10). A fairly diverse freshwater (possibly slightly saline in some intervals) lacustrine ostracod fauna has so far been recovered, including *Candona* spp., *Ilyocypris* spp., *Cytherissa lacustris* (Sars, 1863), *Limnocytherina sanc-tipatricii* (Brady & Robertson, 1869), *Limnocythere inopinata* (Baird, 1843), *Limnocythere falcata* (Diebel, 1968), *Limnocythere suessenbornensis* (Diebel, 1968), and rare *Limnocythere parallela* (Diebel, 1968) (the first record from the UK). Taphonomic analyses confirm the in situ nature of the main elements of the assemblages, which can therefore be considered representative of local palaeoenvironments and contemporary palaeoclimates. Changes in dominant species throughout the succession are presented alongside results of a pilot study of stable isotopes; as yet the extent to which these variations reflect temperature and/or evaporative enrichment is unclear, although both may be related to climate change. Some of the higher assemblages are comparable with those of Late Quaternary thermokarst lakes in Alaska and Siberia. The prospects for multi-proxy quantitative analysis, combining the Mutual Ostracod Temperature Range method with stable isotope data, are discussed.