



Developing quantitative records of past climate and environment in Ireland: a palaeoecological, sedimentological and archaeological approach

Naomi Holmes (1), Graeme Warren (1), Steve Davis (1), Jonathan Turner (2), Steve McCarron (3), Melanie Leng (4), and Steve Brooks (5)

(1) School of Archaeology, University College Dublin, Ireland (naomi.holmes@ucd.ie), (2) School of Geography, Planning and Environmental Policy, University College Dublin, Ireland, (3) Department of Geography, NUI Maynooth, Ireland, (4) NERC Isotope Geosciences Laboratory, British Geological Survey, UK, (5) Department of Entomology, Natural History Museum, UK

Much archaeological and palaeoecological research focussing on past relationships between humans and their local environment has been carried out in Ireland. The majority of the palaeoecological research has provided qualitative information about past environments, with an emphasis on palynological studies from lake and bog sites. There is, however, a lack of quantitative palaeoclimatic research from Ireland. The quantitative studies that have been carried out focus on the late-glacial to early-Holocene transition. The mid-Holocene remains relatively unstudied, even though this was a period of key changes in past society. This project aims to address the lack of quantitative data by producing palaeoenvironmental data from one area which is particularly rich in archaeological sites, north County Mayo, in the NW of Ireland. Results from this research will be presented here.

This interdisciplinary project, involving palaeoecologists, archaeologists, and geographers, has a specific focus on the period from the adoption of agriculture in Ireland (c. 6000 cal. year BP) to a subsequent hypothesised decline in Neolithic agriculture (c. 5200 cal. year BP), both events argued to have been influenced by changes in climate. North County Mayo is a particularly important area in this context, with the internationally renowned sub-bog Neolithic field systems known as the Céide Fields, four excavated court-tombs, and, 6 km west of Céide, the small valley of Belderrig, which offers a remarkable range of materials from the Mesolithic to the later pre-historic. This area is thus ideal for examining interactions between changing settlement and environment over time.

A 7 m core was obtained from Cregganmore, a small lake located c. 3 km from the main archaeological complexes in Belderrig. This core will provide a local palaeoclimatic (chironomid-inferred summer temperature) record which will complement extant palaeoenvironmental information (pollen studies) from this archaeologically rich area. A 7 m core was also obtained from Lough Navroony, a lake located c. 40 km from Belderrig. This occurs in an area with no known archaeology and will hopefully provide a regional palaeoclimatic record. Generating comparable data from two sites will allow us to compare regional/local variation. This is an important issue when creating data to be used to help understand past human activity, which will have responded to variations in local weather as opposed to regional climate.

The results of multiproxy investigations on these lake cores, including subfossil chironomid analysis, loss-on-ignition, Itrax XRF analyses, Geotek MSCL analyses and isotope analysis, will be presented. These palaeoenvironmental data will be integrated alongside extant archaeological and palaeoecological information to provide a more complete picture of the human and environmental history of the area.